

**Proposed Plan of Subdivision
3160 Carp Road
Transportation Impact
Assessment Strategy Report**

Prepared For:

T&L Carroll Holdings

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1.0 PROPOSED DEVELOPMENT

Robinson Consultants Inc (RCI) has been retained by T&L Carroll Holdings Limited to prepare a Transportation Impact Assessment (TIA) to support a plan of subdivision application for a proposed industrial development at the property municipally known as 3160 Carp Road in Ottawa, Ontario. The existing site is vacant and is located predominately around and behind three separate properties fronting onto Carp Road (OR 5). The proposed subdivision will subdivide the lot into twelve industrial blocks ranging between 1.07 and 4.74 Ha. The subdivision will include an internal circulation road that provides two connections to Carp Road. The subject site location and surrounding road context is illustrated in Figure 1 and the draft plan of subdivision is included as Appendix A.

The existing zoning designations for 3160 Carp Road are for Rural Commercial – Carp Road Corridor. As per the RC9 zone, light industrial, office and research and development centre are permitted uses.

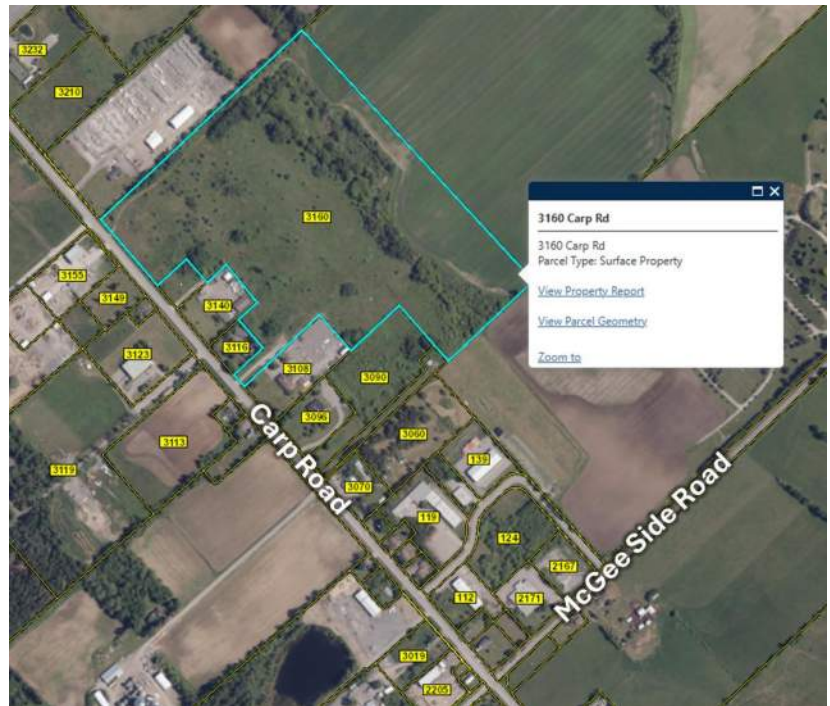


Figure 1: Site Location

2.0 TIA SCREENING

Per the City of Ottawa’s 2017 TIA Guidelines and 2023 update, TIA Screening has been undertaken for the proposed site concept; the screening evaluation is summarized in the Tables below.

Table 1: Description of Proposed Development

| | |
|------------------------------------|--|
| Municipal Address | 3160 Carp Road |
| Description of Location | Existing vacant site on east side of Carp Road between McGee Side Road and March Road; site surrounds 3116, 3140 and 3146 Carp Road. |
| Planning Application Type(s) | Plan of Subdivision |
| Land Use Classification | RC9 |
| Development Size (units) | Estimated 12 blocks, each lot to have buildings with 1,115 m ² GFA, split |
| Development Size (m ²) | between 185-280 m ² office and 835-930 m ² light industrial |
| Lot Area (m ²) | 230,309.33m ² (23.03 Ha) |
| Number of Accesses and Locations | Two accesses proposed to Carp Road, north of 3146 Carp Road and between 3108 and 3116 Carp Road |
| Phases of Development | Subject to acquisition and site plan for each lot. |
| Buildout Year | Access road to be constructed 2026, lots sold for development over next 1-3 years. |

Table 2: Trip Generation Trigger

| Land Use Type | Minimum Development Size | Proposed Development Size |
|-------------------------------------|--------------------------|------------------------------------|
| Single-Family Homes | 60 units | - |
| Multi-use Family (Low-Rise) | 90 units | - |
| Multi-Use Family (High-Rise) | 150 units | - |
| Office | 1,400 m ² | 185-280 m ² x 12 blocks |
| Industrial | 7,000 m ² | 835-930 m ² x 12 blocks |
| Fast-food restaurant or coffee shop | 110 m ² | - |
| Destination Retail | 1,800 m ² | - |
| Gas Station or convenience market | 90 m ² | - |

Per the May 2023 updates to the City of Ottawa TIA Guidelines, a development will meet the trip generation trigger if the development generates 60 or more person trips. Specific building sizes will be subject to site acquisition and development; preliminary projections suggest each block can accommodate approximately 1,115 m² of GFA, split between office and light industrial use. Under this assumption, the trip generation trigger will be met.

Table 3: Location Triggers

| Location Trigger | Trigger Met |
|---|-------------|
| Does the development propose a new driveway to a boundary street that is designated as part of the City's Transit Priority, Rapid Transit or Cross-Town Bikeway Network ? | No |
| Is the development in an Urban or Village Design Priority Area or Protected Major Transit Station Area ? | No |

The location trigger is not met based on the location of the site.

Table 4: Safety Triggers

| Safety Trigger | Trigger Met |
|---|------------------------|
| Are posted speed limits on a boundary street are 80 km/hr or greater? | Yes, Carp Road 80 km/h |
| Are there any horizontal/vertical curvatures on a boundary street limits sight lines at a proposed driveway? | No |
| Is the proposed driveway within the area of influence of an adjacent traffic signal or roundabout (i.e. within 300 m of intersection in rural conditions, or within 150 m of intersection in urban/ suburban conditions)? | No |
| Is the proposed driveway within auxiliary lanes of an intersection? | No |
| Does the proposed driveway make use of an existing median break that serves an existing site? | No |
| Is there is a documented history of traffic operations or safety concerns on the boundary streets within 500 m of the development? | No |
| Does the development include a drive-thru facility? | No |

Based on a review of the site location, the safety trigger is met.

Table 5: TIA Screening Summary

| | |
|---|-----|
| Does the development satisfy the Trip Generation Trigger? | Yes |
| Does the development satisfy the Location Trigger? | No |
| Does the development satisfy the Safety Trigger? | Yes |

Based on a review of the proposed site plan and site location, the proposed development is expected to meet the trip generation and safety triggers for a TIA.

3.0 EXISTING CONDITIONS

3.1 Existing Road Network

The study area for this traffic study includes the following roads:

Carp Road (Ottawa Road 5) is a City of Ottawa arterial road that travels on a north-south alignment from Stittsville Main Street to the village of Fitzroy Harbour, where it continues north as Harbour Street. Throughout the study area, Carp Road has a posted speed limit of 80km/h and is configured with one lane in each direction. The road has a dashed painted centreline allowing passing throughout the study area. Carp Road is designated as a truck route and follows a rural cross-section with asphalt pavement and paved shoulders of varying width, consistent with its designation as part of the paved shoulder network within the Rural Active Transportation Network. The paved shoulders are bounded by drainage ditches. No pedestrian facilities are present along the corridor. The road is bounded by mostly agricultural and industrial uses. The existing and protected right-of-way (ROW) for Carp Road within the study area is 30 metres, as per Schedule C16 of the City of Ottawa Official Plan.

The study area for this traffic study includes the following intersections:

Carp Road (OR 5) / McGee Side Road is a rural side approach stop-controlled intersection with stop-control on McGee Side Road and free movement for Carp Road (OR 5). All approaches consist of a single lane in each direction with no auxiliary lanes.



Figure 2: Carp and McGee Intersection

Carp Road (OR 5) / March Road (OR 49) is a signalized intersection. The Carp Road approaches have one through lane in each direction with approximately 140m and 130m long left turn lanes in the NB and SB directions respectively. The March Road approaches have one through lane in each direction with approximately 115m and 150m long left turn lanes in the WB and EB directions respectively. All approaches to the intersection have painted bike lanes, but all end just before the intersection and do not continue through the intersection.



Figure 3: Carp and March Intersection

3.2 Existing Traffic Volumes

Traffic volumes for intersections within the Study Area have been obtained as a basis for operational analysis. Table 6 summarizes the provided traffic volumes used for this study; the provided traffic counts are included as Appendix B.

Table 6: Provided Traffic Data

| Intersection | Count Date | Count Source |
|-----------------------------|----------------|----------------|
| Carp (OR 5) / McGee | April 9, 2019 | City of Ottawa |
| Carp (OR 5) / March (OR 49) | March 20, 2018 | City of Ottawa |

The COVID-19 pandemic extended from 2020 to approximately 2022 and resulted in widespread closures of businesses which in turn resulted in extensive reductions in traffic volumes. Since in-person operations have commenced, traffic volumes have returned to approximately pre-pandemic levels. As a result, the 2019 traffic volumes have been used as the basis for existing traffic without additional growth or adjustments applied. The resulting baseline traffic volumes in the study area are summarized in Figure 4.

3.3 Existing Transit

While the OC Transpo rural shopping route 303 follows Carp Road through the study area, there are no bus stops between the village of Carp and the Carp Road Park and Ride at Highway 417.

3.4 Existing Active Transportation Network

There are currently no sidewalks or dedicated bicycle lanes within the study area. Carp Road is designated as part of the paved shoulder network within the Rural Active Transportation Network of the 2023 Transportation Master Plan (Part 1), supporting cycling connectivity along the corridor.

3.5 Existing Driveways

Nearby accesses to Carp Road from adjacent properties include:

William Mooney Road is a private Road that intersects with Carp Road approximately 150m north of the proposed subdivision access. William Mooney Road is paved for approximately 200m west of Carp Road before becoming a gravel surface and provides access to an existing aggregate pit located at 1200 Diamondview Road.

REL Controls Inc. (3096 Carp Road) is a small office building that provides building control products for large commercial buildings. Their driveway is located approximately 170 metres south of the proposed development's south entrance.

Shouldice Mechanical (3108 Carp Rd) is a commercial HVAC contractor. Their driveway provides access to a small office building, a truck yard, and a small quarry/landfill area. this access

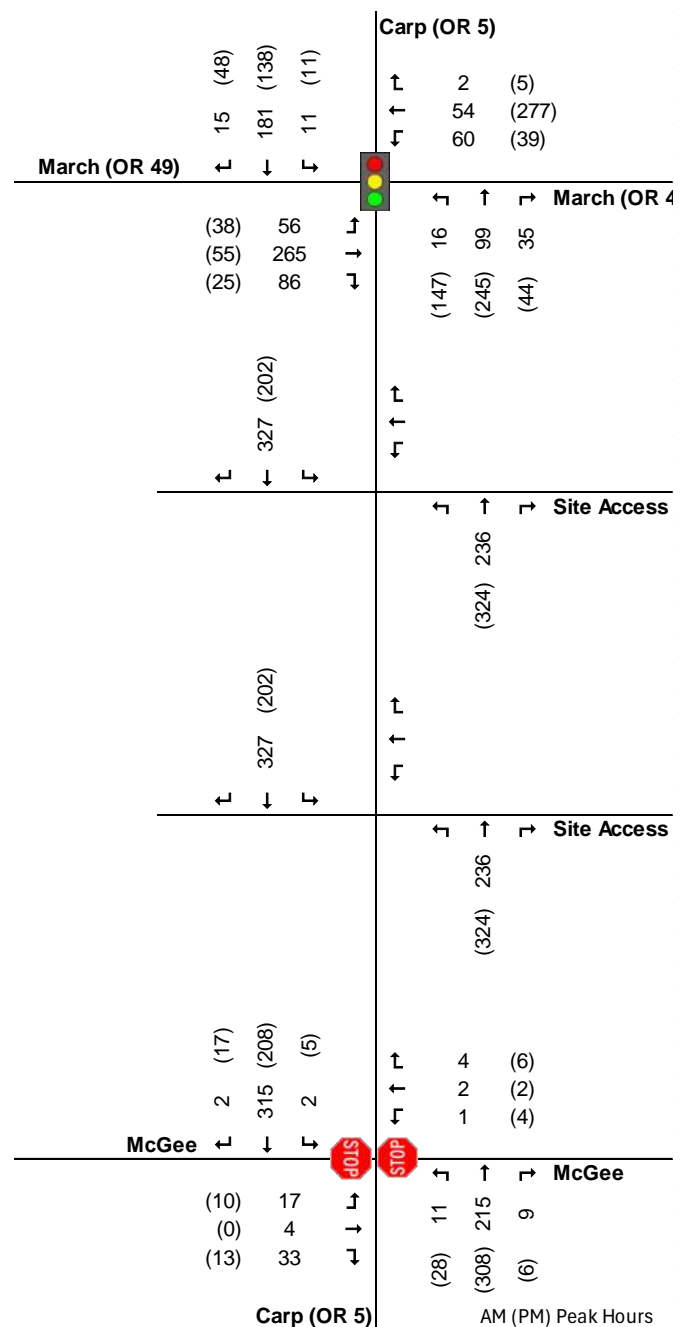


Figure 4: Existing Traffic Volumes

point falls within the 3160 Carp Road property; this will become the south access to Carp Road in the proposed plan of subdivision and will continue to provide access to the adjacent property at 3108 Carp Road.

West Ottawa Community Church (3123 Carp Road) is a church that hosts a variety of events, including mass, prayer groups, and other community gatherings. The driveway is on the west side of Carp Road, directly across from the proposed development. This access is shared with the **County Canines Dog Park at 3119 Carp Road** and **Carp Lake Escape Campground at 3117 Carp Road**, both located behind the 3123 Carp Road property.

Lor-Issa Construction (3140 Carp Road) is a construction firm specializing in large commercial and residential window repair and installation. Their driveway provides access to a small office building and storage yard; the access is located on the property known as 3146 Carp Road but provides access to the buildings at 3140 Carp Road. This access will be located approximately 60m south of the north access on the proposed plan of subdivision.

Thunderbolt Contracting Ltd. (3155 Carp Road) is a large construction firm; their driveway provides access to an office building and a large storage area for trucks, heavy equipment, and fill. The entrance is situated across from the proposed development approximately 55m south of William Mooney Road.

The Huntley Presbyterian Cemetery (3149 Carp Road) is an existing cemetery located immediately across Carp Road from the north access on the proposed plan of subdivision. The cemetery includes two accesses to Carp Road, both of which are gated.

Manderley Turf Products / KOTT Landscaping (3186 Carp Road) is a large landscaping supply depot on the east side of Carp Road immediately north of the 3160 Carp Road site. The site access is located approximately 55m north of William Mooney Road.

There are also 3 single-family residential homes located across from the proposed development at 3099, 3107 and 3145 Carp Road, all with individual driveway access to Carp Road.



Figure 5: 3160 Carp Road - Nearby Accesses (GeoOttawa)

4.0 HISTORICAL COLLISION REVIEW

Historical collision data from 2017 to 2022 for the study area was provided by the City of Ottawa. The provided data included 33 recorded collisions:

Table 7: Historical Collision Data

| Location | Number |
|---|--------|
| Carp (OR 5) / March (OR 49) Intersection | 17 |
| Carp (OR 5) / McGee Intersection | 4 |
| Carp (OR 5) between John Cavanaugh & McGee | 1 |
| Carp (OR 5) between John Cavanaugh & Russ Bradley | 6 |
| Carp (OR 5) between March (OR 49) & Russ Bradley | 4 |
| Carp (OR 5) / John Cavanaugh | 1 |

27 (82%) of the recorded collisions were property damage only and the remaining 6 (18%) were non-fatal injuries. Key trends from this data include the following:

Carp Road (OR 5):

- Two rear-end collisions involving northbound vehicles at March Road (OR 49)
- Six collisions involving vehicles running red lights and another vehicle at March Road (OR 49)
- Three non-fatal injuries caused by two-vehicle angle collisions at March Road (OR 49)
- Four collisions at McGee Side Road in wet conditions, two of which involved left turning northbound vehicles.
- Four rear-end collisions and three collisions involving vehicles overtaking left-turning vehicles (one of which resulted in a non-fatal injury) between McGee Side Road and Russ Bradley Road.
- A non-fatal injury caused by a two-vehicle collision between a northbound and a southbound vehicle between John Cavanaugh Drive and Russ Bradley Road.
- Four single-vehicle collisions (one of which resulted in a non-fatal injury) between March Road and Russ Bradley Road, all of which occurred in dry conditions. One involved a wild animal, while the others involved vehicles driving off the road.

5.0 PLANNED CONDITIONS

5.1 Planning Policy

The **Carp Road Corridor Community Design Plan (CDP)** was adopted in June 2004 by the City of Ottawa is a guide for the long-term growth and development of the Carp Road Corridor from Rothbourne Road to March Road, to the south of the Village of Carp, emphasizing this corridor's role as a rural employment area. From a transportation perspective, the CDP notes the importance of the Carp Road Corridor as a connection between the local development to Highway 417 and the Carp Airport. The CDP projects future capacity constraints on Carp Road in the vicinity of the interchange with Highway 417 and indicates a requirement of a wider 37.5m right of way for the southern segment to accommodate future expansion. The CDP indicates that additional road improvements will be identified by Transportation Impact Studies as part of development review.

The current **Ottawa Transportation Master Plan (TMP)** was adopted in 2013 as a guide for the expansion and improvements to the City of Ottawa road and transportation network; at the time of this report, an update to the 2013 plan is currently being developed. The 2013 TMP included the widening of Carp Road to the south of Highway 417 as a Phase 2 project and this project has now entered the planning and design phase; the TMP network does not include any planned modifications to Carp Road north of Highway 417.

5.2 Changes to the Study Area Transportation Network

Carp Road Widening – Carp Road from Hazelden Road to Highway 417 is proposed to be widened from 2 lanes to 4 lanes. The project has just completed the tender for design and is now being reviewed by engineering consultants. A functional design was created by Parsons in April 2016. This functional design concept includes an additional lane in each direction, as well as a multi-use pathway (MUP) on both sides of the road. The total segment is 1.8 km long. This project is expected to be tendered for construction in spring 2026. This road reconstruction is not expected to have any impacts on traffic for the proposed development.



Figure 6: Carp Road Widening Location

5.3 Other Study Area Developments

Several other land developments have been proposed around the site of 3160 Carp Road. These include the following:

273 & 275 Russ Bradley is a proposal submitted by Macintosh Perry (now Egis) for the construction of twelve (12) self storage warehouse buildings, with a total of 423 individual storage units in all the buildings. There is no current TIA study or TIA screening completed for this project.

2167 McGee Side Road is a proposed 1,853 square foot industrial warehouse to be located just east of the intersection of Carp Road and McGee Side Road. A TIA screening was completed by CGH Transportation in June 2023. The screening criteria were not met, therefore no TIA was required for this development.

3119 Carp Road is listed on Ottawa Devapps as a pending application for a plan of subdivision or for a rural commercial/industrial development that is approximately 300,000 ft² and includes a total of 12 blocks. There are 2 different applications for this address, one for a plan of subdivision and another for a plan of condominium. A transportation brief was conducted for this development by Delcan (now Parsons) in January 2014; the development file

was last updated on DevApps in July 2020 and is listed as still pending; it is noted that the 3199 Carp Road property has been listed for sale since 2024.¹



Figure 7 illustrates the locations of the study area developments. Overall, the traffic generated by the Russ Bradley and McGee Side Road developments is expected to have a minimal impact on Carp Road. Given the age of the 3119 Carp Road development application and current listing of the property for sale, this development will not be considered as part of future background traffic as the status of its implementation is unclear and will likely need an updated development application including updated TIA in order to proceed further.

Figure 7: Other Study Area Developments

6.0 DEVELOPMENT GENERATED TRAVEL DEMAND

6.1 Trip Generation and Mode Share

Trip generation for the proposed development at 3160 Carp Road has been estimated to account for trips generated from both industrial and office use. The proposed plan of subdivision shows a total of 12 blocks that will all connect to an internal U-shaped access road with both ends connecting to Carp Road. The blocks are expected to be occupied by a combination of office space (185-280 m² per block) and light industrial (835-930 m² per block). For the purposes of trip generation estimation, an average of 232.5 m² of office GFA and 882.5 m² of light industrial space per block have been assumed, for a total of 2,790 m² of office and 10,590 m² of light industrial GFA across all 12 blocks of the proposed subdivision.

Trip generation calculations for the proposed development are based on trip generation rates from the ITE Trip Generation 11th Edition and supplementary information from the 2020 TRANS Trip Generation Manual Summary Report (WSP). Rates for General Office Buildings (ITE Land Use Code 710) have been used for the office GFA and rates for Industrial Park (ITE Land Use Code 130) have been used for the light industrial GFA proposed. Per Table 1 of the TRANS Trip Generation Manual, an additional person-trip conversion factor of 1.28 has been applied to account for all modes of travel, including service vehicles and commercial trucks. The calculation of AM and PM peak period person trip generation for the proposed development is summarized in Table 8.

¹ <https://www.realtor.ca/real-estate/27067551/3119-carp-road-ottawa-9104-huntley-ward-south-east>

Table 8: Peak Hour Person Trip Generation

| Unit Type | ITE Land Use Code | GFA (sq.m) | GFA (1000 sq.ft) | Trip Generation Rate (per 1000 sq.ft) | Person-Trip Conversion Factor | Person Trips |
|-------------------------|-------------------|---------------|------------------|---------------------------------------|-------------------------------|--------------|
| AM Peak Period | | | | | | |
| General Office Building | 710 | 2,790 | 3.00 | $\ln(t)=0.86\ln(x)+1.29$ | 1.28 | 76 |
| Industrial Park | 130 | 10,590 | 113.99 | 0.41 | 1.28 | 60 |
| Total | | 13,380 | | | | 136 |
| PM Peak Period | | | | | | |
| General Office Building | 710 | 2,790 | 3.00 | $\ln(t)=0.83\ln(x)+1.29$ | 1.28 | 78 |
| Industrial Park | 130 | 10,590 | 113.99 | 0.40 | 1.28 | 58 |
| Total | | 13,380 | | | | 137 |

The proposed unit counts are projected to create a total of 136 person trips during the AM and 137 person trips for the PM peak hours, respectively. Directional splits from ITE Trip Generation 11th Edition for each land use category have been used to separate the peak hour trip generation into inbound and outbound trips; the directional split is summarized in Table 9.

Table 9: Peak Hour Trip Generation Directional Split

| Unit Type | ITE Land Use Code | Total Trips | % Inbound | % Outbound | Trips Inbound | Trips Outbound |
|-------------------------|-------------------|-------------|-----------|------------|---------------|----------------|
| AM Peak Period | | | | | | |
| General Office Building | 710 | 76 | 88% | 12% | 67 | 9 |
| Industrial Park | 130 | 60 | 87% | 13% | 52 | 8 |
| Total | | 136 | | | 119 | 17 |
| PM Peak Period | | | | | | |
| General Office Building | 710 | 78 | 17% | 83% | 13 | 65 |
| Industrial Park | 130 | 58 | 21% | 79% | 12 | 46 |
| Total | | 137 | | | 26 | 111 |

Baseline assumptions for non-residential trip mode shares are provided in Table 12 of the TRANS trip generation manual based on the results of the most recent TRANS O-D survey. Mode shares for the rural areas, including the West Rural area where this development will be located are distributed as 85% Auto Driver, 5% Auto Passenger, 9% Transit and 2% active modes.

For this site it is noted that there is no existing transit serving this location and no additional transit proposed as part of the City of Ottawa’s New Ways to Bus plan. As a result, it is anticipated that the 9% transit mode share will be an excessive assumption for this area. Recognizing there is no existing or planned transit service here, transit mode share will conservatively be assumed to be zero and proportionately redistributed to the auto driver and auto passenger modes. The modified mode share assumptions and resulting in and outbound trips by mode are summarized in Table 10.

Table 10: TRANS Trip Generation (2020) Non-Residential Mode Shares (Other Rural Districts)

| Travel Mode | Mode Share | AM Peak Hour | | PM Peak Hour | |
|-----------------------|------------|--------------|-----------|--------------|-----------|
| | | Trips In | Trips Out | Trips In | Trips Out |
| Auto Driver | 93% | 111 | 16 | 24 | 103 |
| Auto Passenger | 5% | 6 | 1 | 1 | 6 |
| Transit | 0% | 0 | 0 | 0 | 0 |

| Travel Mode | Mode Share | AM Peak Hour | | Mode Share | PM Peak Hour | |
|----------------|------------|--------------|-----------|------------|--------------|-----------|
| | | Trips In | Trips Out | | Trips In | Trips Out |
| Cycling | 1% | 1 | 0 | 1% | 0 | 1 |
| Walking | 1% | 1 | 0 | 1% | 0 | 1 |

The proposed development is anticipated to create approximately up to 127 new auto driver trips during each of the weekday AM and PM peak hours, respectively.

6.2 Trip Distribution and Assignment

The proposed site of 3160 Carp Rd is located within the TRANS Rural West District, the TRANS model for the Rural West District is included as Appendix C. The OD survey data summarized in Table 11 provides an overview of the AM peak hour trip distribution from the TRANS survey results to and from the Rural West District.

Table 11: TRANS Travel Survey Trip Generation

| Origin/Destination | Outbound Trips | Inbound Trips | % Outbound Trips | % Inbound Trips |
|--|----------------|---------------|------------------|-----------------|
| Urban Ottawa | 750 | 2,222 | 12% | 22% |
| East Ottawa | 0 | 0 | 0% | 0% |
| South Ottawa / Nepean | 120 | 110 | 2% | 1% |
| Rural West (within the district) | 4,020 | 4,020 | 66% | 40% |
| Kanata / Stittsville and Rural Southwest | 1,130 | 3,410 | 19% | 34% |
| Quebec | 80 | 220 | 1% | 2% |

The TRANS travel survey results indicate that approximately 60% of AM peak hour inbound trips to and 34% of outbound trips from the Rural West district are between destinations within Urban Ottawa or Kanata / Stittsville to the south; predominately via Carp Road and Highway 417 to the south. The remaining 66% of inbound and 40% of outbound trips originate from within the Rural West District and may be more evenly distributed, especially considering the second access to Highway 417 at March Road to the west that may serve trips within the district.

The distribution of site-generated traffic from the proposed subdivision has been estimated based on the TRANS survey distribution of AM inbound traffic to the district, as it is anticipated this reflects commuter behaviour to the Rural West District that will be attracted by the proposed subdivision's industrial employment use. Site generated trips have been distributed with the following proportions:

- 60% of site generated trips to and from Urban Ottawa, Kanata and Stittsville via Carp Road and Highway 417 to the south.
- 20% of site generated trips to and from within the Rural West District via Carp Road to the south; distributed to turning movements at the McGee Side Road intersection based on existing traffic patterns.
- 20% of site generated trips to and from within the Rural West District via Carp Road to the north; distributed to turning movements at the March Road intersection based on existing traffic patterns.

As the development parcels are roughly evenly distributed between the two accesses to Carp Road, site-generated traffic has been evenly distributed between the two accesses. The resulting site-generated trips are illustrated in Figure 8.

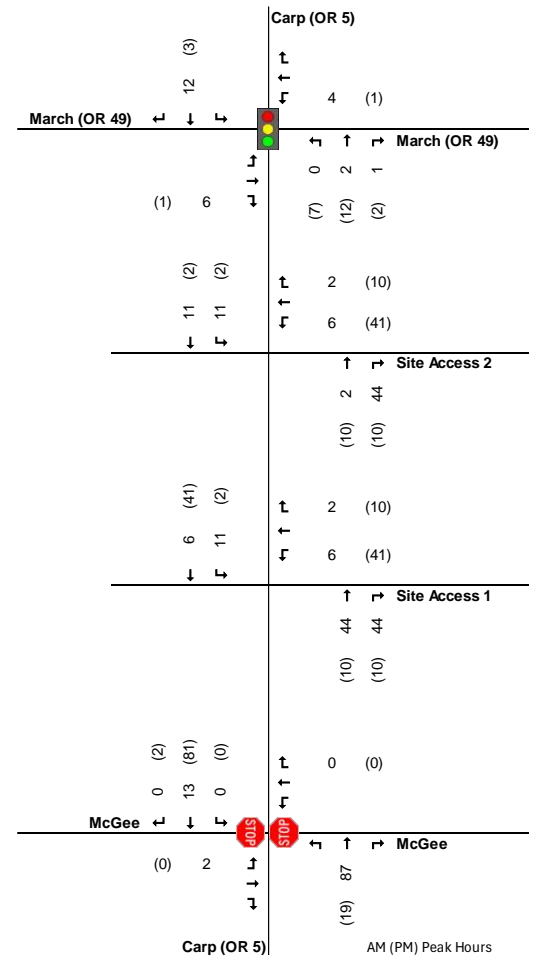


Figure 8: Site Generated Trips

6.3 Background Growth and Study Horizons

Volume projections from the TRANS Model have been provided by the City of Ottawa, the 2022 and 2046 projected volumes and associated growth rates are summarized in Table 12; the provided model plots are included as Appendix D.

Table 12: 2022 Baseline and 2046 Projected TRANS Model Volumes, Carp Road

| Segment / Direction | 2022 TRANS Volume | 2046 TRANS Volume | Annual Growth Rate |
|-----------------------------------|-------------------|-------------------|--------------------|
| Carp Road N of McGee Side Road NB | 111 | 146 | 1.1% |
| Carp Road S of March Road NB | 244 | 337 | 1.4% |
| Carp Road S of March Road SB | 330 | 344 | 0.2% |
| Carp Road N of McGee Side Road SB | 360 | 483 | 1.2% |
| TOTAL | 1045 | 1310 | 0.9% |

The TRANS model projections indicate annual growth rates ranging between 0.2% and 1.4% per year for each segment and direction of traffic on Carp Road in the TRANS model network, and an overall growth rate of 0.9% per year on all segments combined.

Based on the TRANS model growth rates, an annual growth rate of 1.0% has been selected to forecast future traffic volumes. As noted previously, the provided traffic counts from 2018-2019 have been treated as equivalent to existing (2023) traffic volumes as a result of the fluctuations of traffic during the COVID-19 pandemic and the 1% annual growth has only been applied forward from a 2023 base year.

Traffic analysis in this TIA has been based on an opening year scenario anticipating full occupancy of the subdivision by 2029, and a future 5-year scenario of 2034. The projected 2029 and 2034 volumes are summarized in Figure 9 and Figure 10.

As the projected site generated traffic is relatively low, it is not anticipated that additional adjustments for demand rationalization will be required. The resulting intersection level of service resulting from the projected volumes will be examined in more detail as part of the Intersection Design Module in Section 16 of this report.

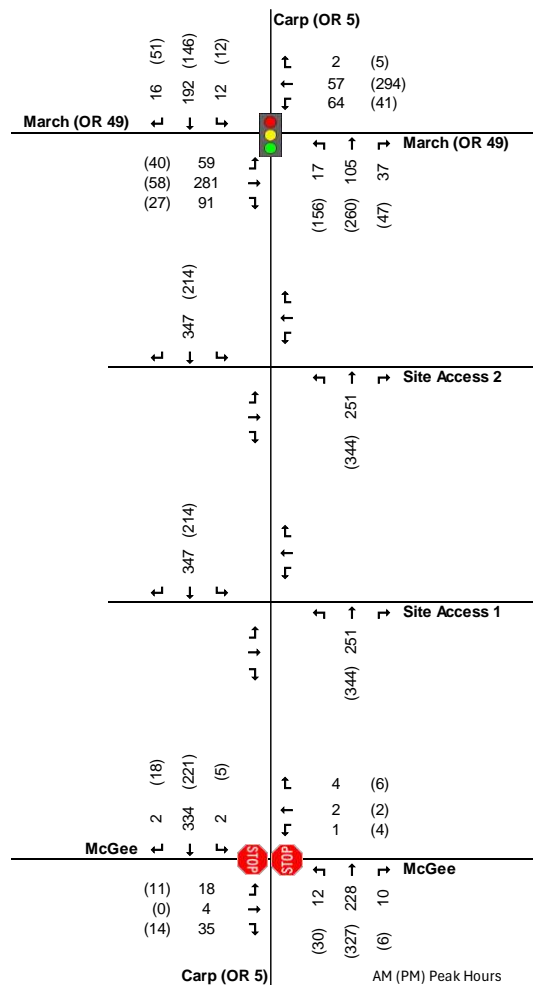


Figure 9: 2029 Background Volumes

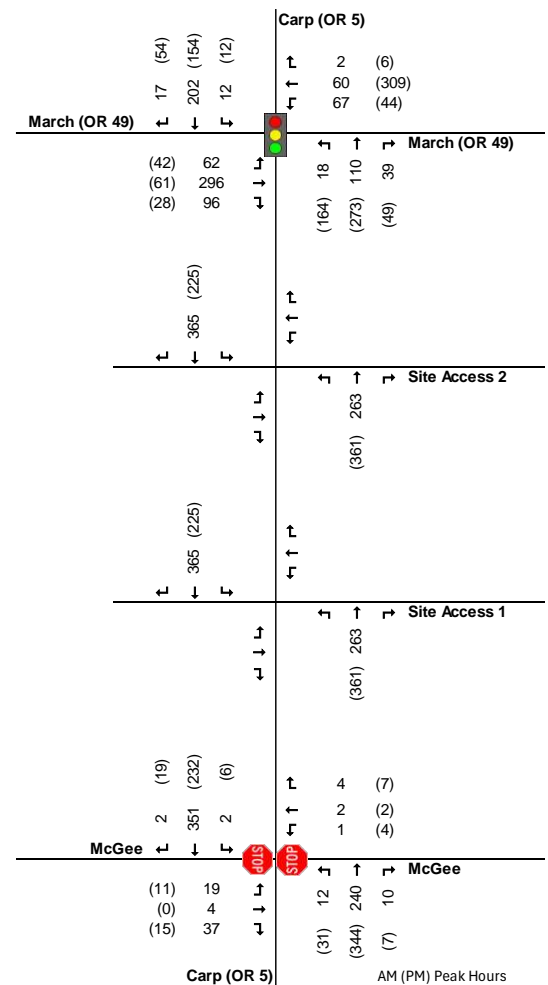


Figure 10: 2034 Background Volumes

7.0 EXEMPTIONS REVIEW

Based on a review of the proposed development and surrounding road network, a summary of the proposed TIA Module exemptions is summarized in Table 13.

Table 13: TIA Module Exemptions Review

| Module / Element | Exemption Considerations | Exemption and Rationale |
|---|--|---|
| 4.1 Development Design | | |
| 4.1.1 Design for Sustainable Modes | Required for All TIAs | Required |
| 4.1.2 Circulation and Access | Only required for site plans and ZBA | Exempt |
| 4.1.3 New Street Network | Only required for plans of subdivision | Required |
| 4.2 Parking | | |
| 4.2.1 Parking Supply | Only required for site plans and ZBA | Exempt |
| 4.2.2 Spillover Parking | Deleted per 2023 TIA Guidelines Update | Exempt – Deleted per 2023 TIA Guidelines Update |
| 4.3 Boundary Streets | Required for All TIAs | Required |
| 4.4 Access Intersections Design | Deleted and moved to 4.9 per 2023 TIA Guidelines Update | N/A |
| 4.5 TDM | Required for All TIAs | Required |
| 4.6 Neighbourhood Traffic Calming | Required If the development meets all of the following criteria along the route(s) site generated traffic is expected to utilize between an arterial road and the site's access: | Exempt – Only auto trip generation and application for zoning by-law are met |
| | 1. Access to Collector or Local; | Not Met – access to subdivision is directly from Carp Road. |
| | 2. "Significant sensitive land use presence" exists, where there is at least two of the following adjacent to the subject street segment: School (within 250m walking distance); Park; Retirement / Older Adult Facility (i.e. long-term care and retirement homes); Licenced Child Care Centre; Community Centre; or 50%, or greater, of adjacent property along the route(s) is occupied by residential lands and a minimum of 10 occupied residential units are present on the route. | Not Met – access to subdivision is directly from Carp Road. |
| | 3. Application is for Zoning By-Law Amendment or Draft Plan of Subdivision; | Met – Plan of Subdivision |
| | 4. At least 75 site-generated auto trips; | Met |
| 5. Site Trip Infiltration is expected. Site traffic will increase peak hour vehicle volumes along the route by 50% or more. | Not Met | |

| Module / Element | Exemption Considerations | Exemption and Rationale |
|--------------------------------|--|--|
| 4.7 Transit | | |
| 4.7.1 Route Capacity | Required if > 75 site transit trips | Exempt – no nearby transit service |
| 4.7.2 Transit Priority | Required if > 75 site auto trips | Exempt – no nearby transit service |
| 4.8 Network Concept | When proposed development generates > 200 person-trips during the peak hour in excess of the equivalent volume permitted by established zoning | Exempt , site is zoned for industrial |
| 4.9 Intersection Design | | |
| 4.9.1 Intersection Control | Required if > 75 site auto trips | Required |

8.0 DEVELOPMENT DESIGN

8.1 Design for Sustainable Modes

The proposed design includes a U-shaped internal circulation road connecting to Carp Road at both ends, configured with a single traffic lane in each direction. The proposed plan of subdivision includes a 20 m right of way for the internal circulation road, which is consistent with a local road designation per Schedule C-16 of the Ottawa Official Plan.

Per Policy 4.1.2 (11) of the City of Ottawa Official Plan, there is no requirement for sidewalk connections in the Rural Transect, and there are no connecting pedestrian facilities on Carp Road or any other roads that would provide a pedestrian connection to the subdivision site. As a result, it is not anticipated that the internal circulation road will include sidewalks.

The internal circulation road will connect to the paved shoulders along Carp Road which are part of the City's rural active transportation network; it is not anticipated that the road will include dedicated cycling facilities but will provide an on-street connection for cyclists between Carp Road and the development parcels.



Figure 11: Proposed New Local Road

There is no existing or proposed transit service along Carp Road, and the internal circulation road is not assumed to accommodate transit.

8.2 New Street Network

The proposed development includes a 20m right of way reserved for a U-shaped local road designed to service 12 development parcels, accommodating traffic between Carp Road to and from these parcels within the subdivision. The road's configuration and right of way will be consistent with other local roads in the area and will not provide any additional connections that would encourage cut-through traffic.

It is not anticipated that the internal access road will include sidewalks or dedicated cycling facilities given the Transect and low anticipated volumes, but the road configuration will allow for on-street cycling connecting from the Carp Road shoulders to the parcels within the development area.

9.0 BOUNDARY STREETS

The segment of Carp Road within the study area has been evaluated based on the current City of Ottawa Multi-Modal Level of Service (MMLOS) Guidelines. MMLOS targets have been based on the General Rural Area Designation, for a cycling spine-route and designated truck route; results of the MMLOS evaluation segments are summarized in Table 14. The full MMLOS worksheets are included in Appendix E.

Table 14: Existing MMLOS Evaluation, Carp Road

| Segment | PLOS | BLOS | TLOS | TkLOS |
|---------------------------------------|-----------|------|-----------|-------|
| Target - General Rural | No target | D | No Target | C |
| Carp Road – March Rd to McGee Side Rd | - | F | - | C |

The MMLOS analysis indicates the following for the existing study area configuration:

Pedestrian LOS (PLOS) does not have a required target for the General Rural Area and there are no existing sidewalks on Carp Road or any other side roads.

Bicycle LOS (BLOS) along Carp Road is F, exceeding the target of D. In this segment, the paved shoulders have been treated as a painted bike lane for the purpose of BLOS evaluation and meet LOS F as there are segments along the corridor with shoulder widths of 1.2m or less. A consistent shoulder width of greater than 1.2m along Carp Road would be required to improve to a BLOS of C to meet the target.

Transit LOS (TLOS) does not require a target in the general rural area due to low density and limited accessibility. There is no existing OC Transpo service on the Carp Road corridor.

Truck LOS (TkLOS) target of C is met on the existing Carp Road corridor due to the 3.5m existing lane width.

10.0 TRANSPORTATION DEMAND MANAGEMENT

The City of Ottawa TDM-Supportive Development Design and Infrastructure Checklist for Non-Residential Developments has been completed and is included as Appendix F to this report. It is noted that many of the TDM supportive elements reviewed as part of this checklist address building locations and design features and are thus premature to evaluate for a plan of subdivision; it is anticipated that these, as well as the Non-Residential TDM Measures checklist, will be reevaluated as part of future TIA studies for the individual development parcels within the subdivision.

Key observations from the TDM checklist that apply to the plan of subdivision include the following:

- It is not anticipated that the proposed local access road will include adjacent sidewalks, as there are no additional sidewalk connections in the area that would facilitate pedestrian access to and from the subdivision site. Per the Ottawa OP policy 4.1.2 (11), there are no requirements for sidewalks within the Rural Transect and the provision of no sidewalks would be consistent with the other development in the area.
- It is not anticipated that dedicated bike facilities will be included on the local subdivision road; on-street cycling would accommodate any cycling connections between the shoulders on Carp Road and the development parcels within the subdivision.
- As there is no existing or planned transit on Carp Road, no transit-supportive measures have been considered.

Given the rural context for this development, it is anticipated that TDM measures at the site plan level are likely to be more effective when development on the subdivision property parcels is further defined.

11.0 INTERSECTION DESIGN

11.1 Intersection Control

Traffic Analysis of the study area intersections has been undertaken using Synchro for the existing and future traffic volumes as developed in the preceding section of the report. Reported signalized LOS is based on V/C ratio per the City of Ottawa MMLOS Guidelines; unsignalized intersection is listed as reported by Synchro based on delay.

EXISTING CONDITIONS

The results of the existing conditions analysis are summarized in Table 15; detailed analysis output is included as Appendix G.

Table 15: Traffic Operations Analysis – Existing Conditions

| Movement | LOS | AM Peak Hour | | | LOS | PM Peak Hour | | |
|---|-----|--------------|-----------|---------|-----|--------------|-----------|---------|
| | | V/C | Delay (s) | Q95 (m) | | V/C | Delay (s) | Q95 (m) |
| Carp Road / March Road – Signalized | | | | | | | | |
| EBL | A | 0.11 | 16.5 | 14.2 | A | 0.09 | 16.4 | 10.7 |
| EBTR | A | 0.48 | 19.9 | 69.1 | A | 0.11 | 11.7 | 15.1 |
| WBL | A | 0.19 | 18.1 | 16.0 | A | 0.09 | 16.2 | 10.8 |
| WBTR | A | 0.08 | 15.4 | 13.4 | A | 0.38 | 19.4 | 57.1 |
| NBL | A | 0.04 | 15.5 | 5.8 | A | 0.31 | 19.1 | 33.2 |
| NBTR | A | 0.20 | 14.1 | 25.1 | A | 0.40 | 18.8 | 57.2 |
| SBL | A | 0.02 | 15.1 | 4.5 | A | 0.03 | 15.3 | 4.6 |
| SBTR | A | 0.28 | 17.4 | 38.9 | A | 0.27 | 15.7 | 35.1 |
| TOTAL | A | - | 17.7 | - | A | - | 17.7 | - |
| Carp Road / McGee Side Road – Unsignalized | | | | | | | | |
| EB | B | 0.11 | 12.7 | 2.9 | B | 0.05 | 12.8 | 1.3 |
| WB | B | 0.01 | 12.0 | 0.3 | B | 0.03 | 12.5 | 0.6 |
| NB | A | 0.01 | 0.5 | 0.3 | A | 0.02 | 0.8 | 0.6 |
| SB | A | 0.00 | 0.1 | 0.0 | A | 0.00 | 0.2 | 0.1 |
| TOTAL | A | - | 1.5 | - | A | - | 1.3 | - |

The results of the existing conditions analysis indicate that all intersections in the study area operate at an acceptable level of service B or better for all movements. All existing queues at the intersection of Carp Road and March Road are expected to fit within the available storage lengths.

Future Background Analysis

Future background analysis for the assumed buildout year of 2029 and future 2034 horizon (Buildout year plus 5 years) has been completed using Synchro; the future background includes future volumes projected based a growth rate of 1.0% developed in section 6.3 of this report, as previously illustrated in Figure 9 and Figure 10. The results of the future background analysis are summarized in Table 16 and Table 17; detailed analysis output is included as Appendix F.

Table 16: Traffic Operations Analysis – Future Background 2029

| Movement | LOS | AM Peak Hour | | | LOS | PM Peak Hour | | |
|---|-----|--------------|-----------|---------|-----|--------------|-----------|---------|
| | | V/C | Delay (s) | Q95 (m) | | V/C | Delay (s) | Q95 (m) |
| Carp Road / March Road – Signalized | | | | | | | | |
| EBL | A | 0.12 | 16.6 | 14.8 | A | 0.11 | 16.6 | 11.4 |
| EBTR | A | 0.50 | 20.5 | 74.3 | A | 0.12 | 11.6 | 15.7 |
| WBL | A | 0.21 | 18.6 | 17.0 | A | 0.09 | 16.2 | 11.4 |
| WBTR | A | 0.08 | 15.4 | 14.0 | A | 0.40 | 19.8 | 60.9 |
| NBL | A | 0.05 | 15.6 | 6.0 | A | 0.33 | 19.6 | 35.6 |
| NBTR | A | 0.22 | 14.4 | 26.5 | A | 0.42 | 19.3 | 61.2 |
| SBL | A | 0.02 | 15.2 | 4.8 | A | 0.03 | 15.3 | 4.9 |
| SBTR | A | 0.29 | 17.6 | 41.2 | A | 0.28 | 16.0 | 37.0 |
| TOTAL | A | - | 18.1 | - | A | - | 18.0 | - |
| Carp Road / McGee Side Road – Unsignalized | | | | | | | | |

| Movement | LOS | AM Peak Hour | | | LOS | PM Peak Hour | | |
|--------------|-----|--------------|-----------|---------|-----|--------------|-----------|---------|
| | | V/C | Delay (s) | Q95 (m) | | V/C | Delay (s) | Q95 (m) |
| EB | B | 0.12 | 13.1 | 3.2 | B | 0.06 | 13.3 | 1.5 |
| WB | B | 0.01 | 12.3 | 0.3 | B | 0.03 | 12.9 | 0.7 |
| NB | A | 0.01 | 0.5 | 0.3 | A | 0.03 | 0.9 | 0.6 |
| SB | A | 0.00 | 0.1 | 0.0 | A | 0.00 | 0.2 | 0.1 |
| TOTAL | A | - | 1.5 | - | A | - | 1.3 | - |

Table 17: Traffic Operations Analysis – Future Background 2034

| Movement | LOS | AM Peak Hour | | | LOS | PM Peak Hour | | |
|---|-----|--------------|-----------|---------|-----|--------------|-----------|---------|
| | | V/C | Delay (s) | Q95 (m) | | V/C | Delay (s) | Q95 (m) |
| Carp Road / March Road – Signalized | | | | | | | | |
| EBL | A | 0.13 | 16.6 | 15.3 | A | 0.12 | 16.7 | 11.9 |
| EBTR | A | 0.53 | 21.1 | 79.2 | A | 0.13 | 11.7 | 16.2 |
| WBL | A | 0.23 | 19.2 | 18.2 | A | 0.10 | 16.3 | 11.9 |
| WBTR | A | 0.08 | 15.5 | 14.5 | A | 0.42 | 20.1 | 64.4 |
| NBL | A | 0.05 | 15.7 | 6.3 | A | 0.36 | 20.1 | 37.6 |
| NBTR | A | 0.23 | 14.6 | 27.7 | A | 0.44 | 19.6 | 64.3 |
| SBL | A | 0.02 | 15.2 | 4.8 | A | 0.03 | 15.3 | 4.9 |
| SBTR | A | 0.31 | 17.9 | 43.3 | A | 0.30 | 16.3 | 39.3 |
| TOTAL | A | - | 18.5 | - | A | - | 18.4 | - |
| Carp Road / McGee Side Road – Unsignalized | | | | | | | | |
| EB | B | 0.13 | 13.5 | 3.5 | B | 0.06 | 13.6 | 1.6 |
| WB | B | 0.01 | 12.5 | 0.4 | B | 0.03 | 13.1 | 0.8 |
| NB | A | 0.01 | 0.5 | 0.3 | A | 0.03 | 0.9 | 0.6 |
| SB | A | 0.00 | 0.1 | 0.0 | A | 0.01 | 0.3 | 0.1 |
| TOTAL | A | - | 1.5 | - | A | - | 1.3 | - |

The 2029 and 2034 future background analysis indicates only incremental improvements to intersection LOS as a result of the application of the 1% annual growth to these horizon years. All intersection movements are expected to remain at the same LOS as existing, with all movements operating at a LOS B or better.

Future Total Traffic

Future analysis for assumed buildout year of 2029 and for 2034 (Buildout year plus 5 years) has been completed using Synchro, based on the addition of the site generated traffic volumes to the 2029 and 2034 future background volumes assessed previously. The total traffic volumes are illustrated in Figure 12 and Figure 13.

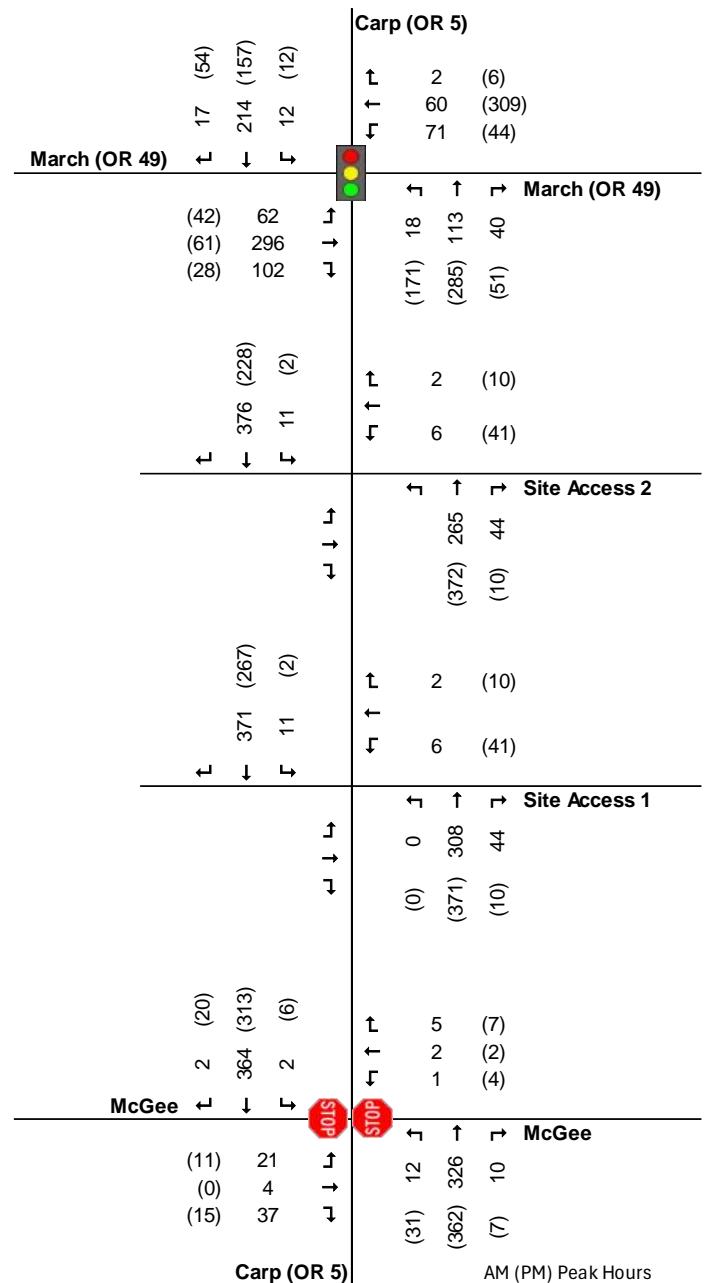
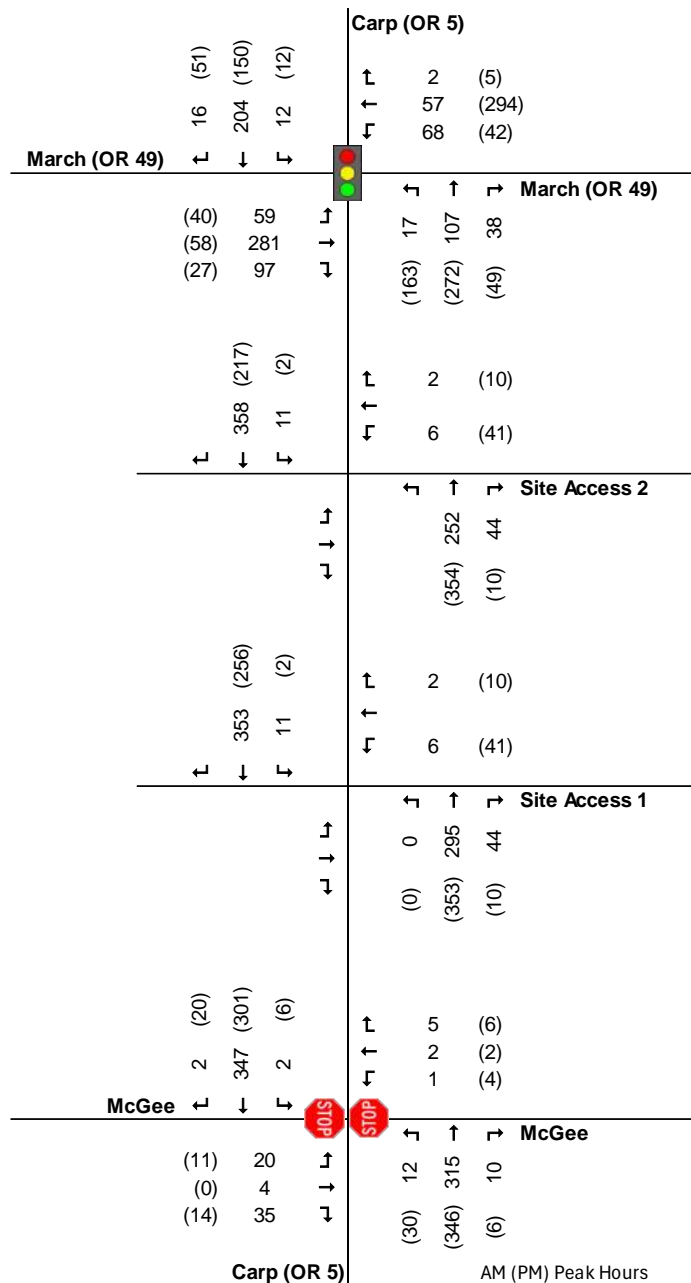


Figure 12: 2029 Total Traffic Volumes

Figure 13: 2034 Total Traffic Volumes

Table 18: Traffic Operations Analysis – Total Traffic 2029

| Movement | LOS | AM Peak Hour | | | PM Peak Hour | | | |
|--|-----|--------------|-----------|---------|--------------|-----------|---------|------|
| | | V/C | Delay (s) | Q95 (m) | V/C | Delay (s) | Q95 (m) | |
| Carp Road / March Road – Signalized | | | | | | | | |
| EBL | A | 0.12 | 16.6 | 14.8 | A | 0.11 | 16.6 | 11.4 |
| EBTR | A | 0.51 | 20.6 | 75.6 | A | 0.12 | 11.6 | 15.7 |
| WBL | A | 0.23 | 19.0 | 18.2 | A | 0.09 | 16.2 | 11.6 |
| WBTR | A | 0.08 | 15.4 | 14.0 | A | 0.40 | 19.8 | 60.9 |
| NBL | A | 0.05 | 15.6 | 6.1 | A | 0.35 | 19.9 | 37.2 |
| NBTR | A | 0.22 | 14.5 | 27.2 | A | 0.44 | 19.6 | 64.2 |
| SBL | A | 0.02 | 15.2 | 4.8 | A | 0.03 | 15.3 | 4.9 |

| Movement | LOS | AM Peak Hour | | | PM Peak Hour | | | |
|--|-----|--------------|-----------|---------|--------------|------|-----------|---------|
| | | V/C | Delay (s) | Q95 (m) | LOS | V/C | Delay (s) | Q95 (m) |
| SBTR | A | 0.31 | 17.9 | 43.5 | A | 0.29 | 16.1 | 37.9 |
| TOTAL | A | - | 18.2 | - | A | - | 18.2 | - |
| Carp Road / North Subdivision Access – Unsignalized | | | | | | | | |
| WB | B | 0.02 | 13.0 | 0.1 | B | 0.12 | 13.6 | 3.2 |
| NB | A | 0.19 | 0.0 | 0.0 | A | 0.24 | 0.0 | 0.0 |
| SB | A | 0.01 | 0.3 | 0.2 | A | 0.00 | 0.1 | 0.0 |
| TOTAL | A | - | 0.3 | - | A | - | 1.1 | - |
| Carp Road / South Subdivision Access – Unsignalized | | | | | | | | |
| WB | B | 0.02 | 13.4 | 0.4 | B | 0.12 | 14.1 | 3.4 |
| NB | A | 0.21 | 0.0 | 0.0 | A | 0.23 | 0.0 | 0.0 |
| SB | A | 0.01 | 0.3 | 0.2 | A | 0.00 | 0.1 | 0.0 |
| TOTAL | A | - | 0.3 | - | A | - | 1.1 | - |
| Carp Road / McGee Side Road – Unsignalized | | | | | | | | |
| EB | B | 0.14 | 14.4 | 3.8 | B | 0.07 | 14.8 | 1.8 |
| WB | B | 0.02 | 13.0 | 0.4 | B | 0.03 | 13.9 | 0.8 |
| NB | A | 0.01 | 0.5 | 0.3 | A | 0.03 | 0.9 | 0.7 |
| SB | A | 0.00 | 0.1 | 0.0 | A | 0.01 | 0.2 | 0.1 |
| TOTAL | A | - | 1.5 | - | A | - | 1.3 | - |

Under projected 2029 opening day volumes, the additional site generated traffic volumes will result in minimal increases in delays at the intersections of Carp Road with March Road and McGee Side Road compared to the 2029 future background scenario, with all movement LOS remaining at the same LOS of B or better. Projected volumes at the site accesses will operate at a LOS A for movements along Carp Road and LOS B for WB movements from the site access road; queues at the site access are expected to be minimal under projected volumes.

Table 19: Traffic Operations Analysis – Total Traffic 2034

| Movement | LOS | AM Peak Hour | | | PM Peak Hour | | | |
|--|-----|--------------|-----------|---------|--------------|------|-----------|---------|
| | | V/C | Delay (s) | Q95 (m) | LOS | V/C | Delay (s) | Q95 (m) |
| Carp Road / March Road – Signalized | | | | | | | | |
| EBL | A | 0.13 | 16.6 | 15.3 | A | 0.12 | 16.7 | 11.9 |
| EBTR | A | 0.54 | 21.2 | 80.5 | A | 0.13 | 11.7 | 16.2 |
| WBL | A | 0.25 | 19.5 | 19.2 | A | 0.10 | 16.3 | 11.9 |
| WBTR | A | 0.08 | 15.5 | 14.5 | A | 0.42 | 20.1 | 64.4 |
| NBL | A | 0.05 | 15.7 | 6.3 | A | 0.38 | 20.4 | 39.5 |
| NBTR | A | 0.23 | 14.8 | 28.6 | A | 0.46 | 20.0 | 67.9 |
| SBL | A | 0.02 | 15.2 | 4.8 | A | 0.03 | 15.4 | 4.9 |
| SBTR | A | 0.32 | 18.1 | 45.7 | A | 0.31 | 16.4 | 39.9 |
| TOTAL | A | - | 18.6 | - | A | - | 18.6 | - |
| Carp Road / North Subdivision Access – Unsignalized | | | | | | | | |
| WB | B | 0.02 | 13.3 | 0.4 | B | 0.12 | 14.0 | 3.3 |
| NB | A | 0.19 | 0.0 | 0.0 | A | 0.25 | 0.0 | 0.0 |
| SB | A | 0.01 | 0.3 | 0.2 | A | 0.00 | 0.1 | 0.0 |
| TOTAL | A | - | 0.3 | - | A | - | 1.1 | - |
| Carp Road / South Subdivision Access – Unsignalized | | | | | | | | |
| WB | B | 0.02 | 13.8 | 0.5 | B | 0.13 | 14.5 | 3.5 |
| NB | A | 0.22 | 0.0 | 0.0 | A | 0.25 | 0.0 | 0.0 |

| Movement | LOS | AM Peak Hour | | | PM Peak Hour | | | |
|---|-----|--------------|-----------|---------|--------------|------|-----------|---------|
| | | V/C | Delay (s) | Q95 (m) | LOS | V/C | Delay (s) | Q95 (m) |
| SB | A | 0.01 | 0.3 | 0.2 | A | 0.00 | 0.1 | 0.0 |
| TOTAL | A | - | 0.3 | - | A | - | 1.1 | - |
| Carp Road / McGee Side Road – Unsignalized | | | | | | | | |
| EB | B | 0.15 | 14.8 | 4.2 | B | 0.07 | 15.2 | 1.9 |
| WB | B | 0.02 | 13.3 | 0.4 | B | 0.03 | 14.1 | 0.8 |
| NB | A | 0.01 | 0.5 | 0.3 | A | 0.03 | 0.9 | 0.7 |
| SB | A | 0.00 | 0.1 | 0.0 | A | 0.01 | 0.2 | 0.1 |
| TOTAL | A | - | 1.5 | - | A | - | 1.3 | - |

Total traffic operations under the projected 2034 volumes indicate an incremental increase in delays and queuing from the 2029 total traffic and 2034 background scenarios, with all intersection movements continuing to operate at a LOS B or better. The site access approaches will continue to operate at a LOS on the stop-controlled side approaches with minimal queuing expected.

Overall, the traffic analysis indicates that operations at study area intersections and proposed site accesses are anticipated to operate at an acceptable LOS under all horizon years assessed. Increases in traffic volumes as a result of anticipated background growth and site generated volumes are expected to have a relatively minor impact on traffic operations, with all future LOS remaining at a similar level to existing operations.

11.2 Intersection Design

Intersection MMLOS

The Ottawa MMLOS Guidelines intersection MMLOS methodology applies to only signalized intersections, as a result MMLOS intersection has not been undertaken for the Carp Road / McGee Side Road intersection or proposed subdivision accesses with Carp Road.

Intersection MMLOS has been undertaken for the signalized intersection of Carp Road and March Road, the MMLOS analysis is summarized in Table 20 and full worksheet is included in Appendix E.

Table 20: Existing MMLOS Evaluation, Carp Road

| Segment | PLOS | BLOS | TLOS | TkLOS | VLOS |
|---------------------------------------|-----------|------|-----------|-------|------|
| Target – General Rural | No target | D | No Target | C | D |
| Carp Road – March Rd to McGee Side Rd | - | E | - | E | A |

The results of the MMLOS evaluation for the Carp Road / March Road intersection indicate the following:

- There is no **PLOS** target for the General Rural area. While the Carp Road / March Road intersection does include pedestrian signals, it does not include painted sidewalks on any of the legs. This intersection would achieve a PLOS of C based on the current configuration and signal timing if standard transverse markings were provided.
- **BLOS** is E for all approaches, exceeding the target of D. While the paved shoulders at the intersection are treated as painted bike lanes for the purpose of analysis, the BLOS E is governed by the lack of left turn facilities for bikes and the need to cross a lane of traffic to turn left in mixed traffic. Under the current configuration and posted speed limits, a two-stage left turn would be required on all approaches to meet the target.
- **TLOS** has no target for the General Rural Area, and there is no existing or planned transit service along the Carp Road corridor. The existing intersection delays would correspond to a TLOS of C if service was introduced.
- **TkLOS** is at E under the current intersection configuration, exceeding the target of C. This is a result of all turning radii being between 10 and 15m and both Carp Road and March Road including single receiving lanes for right turns. A wider radius or additional receiving lane would be required to meet the TkLOS target.
- **VLOS** will operate at A for all movements.

It is noted that the proposed plan of subdivision is located approximately 2 km from March Road and thus the planned development will not impact the configuration of the Carp Road / March Road intersection.

Turn Lane Warrants

The City of Ottawa has indicated a desire for the evaluation of turn lanes at the proposed site accesses, as a result of total and heavy truck volumes along Carp Road. The warrant evaluation has been undertaken based on the MTO Supplement to the TAC Design Guidelines for Canadian Roads (2023 Draft), Chapter 9. The warrant analysis is a graphical assessment based on the approaching (V_A) and opposing (V_O) volumes, design speed (conservatively assumed to be the posted speed limit plus 20) and the percentage of left turns in the approaching traffic stream. Based on the projected 2034 traffic volumes, these values are as follows:

- Design speed 100 km/h (based on the posted 80 km/h)
- North Subdivision Access, SB Left turn from Carp Road
 - 2029 Total Traffic – AM Peak: $V_A = 369$, $V_O = 296$, %LT in $V_A = 3\%$
 - 2029 Total Traffic – PM Peak: $V_A = 219$, $V_O = 364$, %LT in $V_A = 1\%$
 - 2034 Total Traffic – AM Peak: $V_A = 387$, $V_O = 309$, %LT in $V_A = 3\%$
 - 2034 Total Traffic – PM Peak: $V_A = 230$, $V_O = 381$, %LT in $V_A = 1\%$
- South Subdivision Access, SB Left turn from Carp Road
 - 2029 Total Traffic – AM Peak: $V_A = 364$, $V_O = 339$, %LT in $V_A = 3\%$
 - 2029 Total Traffic – PM Peak: $V_A = 258$, $V_O = 363$, %LT in $V_A = 1\%$
 - 2034 Total Traffic – AM Peak: $V_A = 382$, $V_O = 352$, %LT in $V_A = 3\%$
 - 2034 Total Traffic – PM Peak: $V_A = 269$, $V_O = 381$, %LT in $V_A = 1\%$

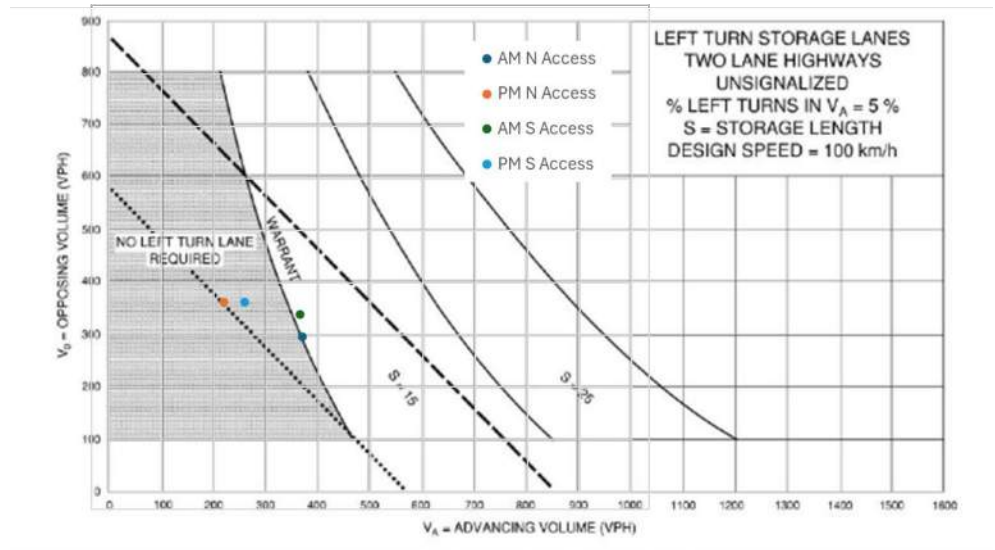


Figure 14: Left Turn Warrant - 2029 Total Traffic

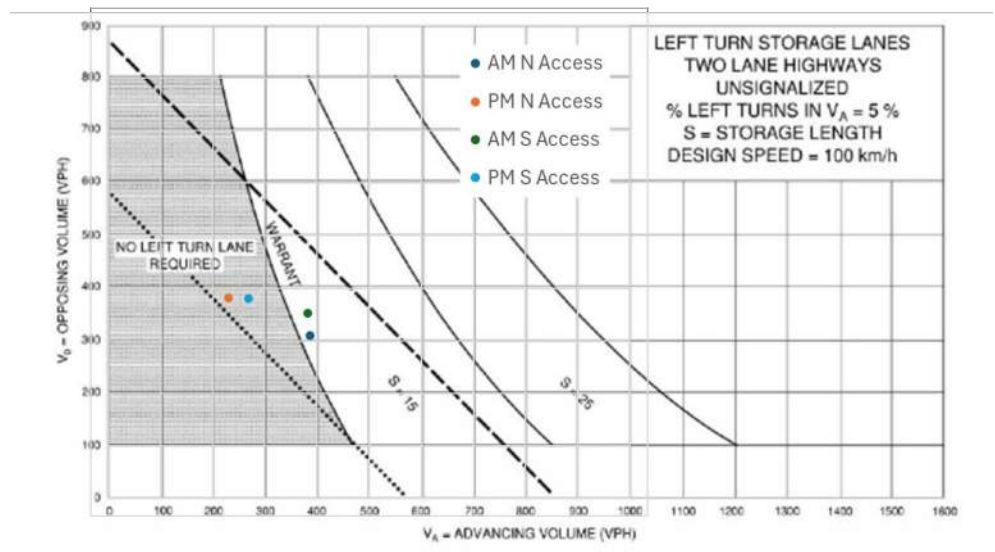


Figure 15: Figure 12: Left Turn Warrant - 2034 Total Traffic

The left turn lane warrants for the 2029 and total traffic volumes are illustrated in Figure 14 and Figure 15 respectively.

The turn lane warrants indicate that the north and south accesses will both fall under the warrant for a 15m left turn storage lane for SB left turns into the subdivision. It is noted that turning movements to and from the proposed subdivision accesses without a left turn lane would be consistent with all other existing property and local and collector side street accesses along the corridor, and

the operational analysis of the proposed site accesses indicate that queues into the subdivision are expected to be minimal. It is noted that as this warrant evaluation is based on projected through volumes on Carp Road and the lowest proportion of left turns in the MTO methodology, this requirement for a SB left turn lane would be met for every existing access along the Carp Road corridor in addition to the proposed subdivision accesses.

Based on these observations, it is recommended that consideration of left turn lanes to access properties along the Carp Road corridor should be monitored by the City of Ottawa and considered for the corridor as a whole, rather than a site by site basis, as the warrant and mitigation for rear end collisions is equally met for all properties along the corridor.

12.0 CONCLUSIONS AND RECOMMENDATIONS

T&L Carroll Holdings Limited is submitting a plan of subdivision for a proposed commercial / industrial subdivision to be located on the site municipally known as 3160 Carp Road, on the east side of Carp Road north of McGee Side Road. The subdivision is proposed to include up to 12 development parcels which will be offered for sale starting in 2026; this TIA assumes full build out by 2029. The proposed subdivision will include a U-shaped internal circulation road that will connect to Carp Road at two points; this road will include a 20m protected right of way consistent with a local road designation. It is not anticipated that the proposed circulation road will include dedicated active transportation facilities consistent with Ottawa OP policy for the rural transect and other local roads in the area, but it is noted that the local road will provide an on-street cycling connection between the Carp Road paved shoulders in the Ottawa rural cycling network and development parcels within the subdivision. TDM measures that can be considered at the plan of subdivision stage are limited in the rural context, but it is anticipated that additional site-specific TDM measures can be considered as part of site plan approval for the individual development parcels.

Based on the anticipated land use, the proposed subdivision is estimated to generate approximately 127 vehicle trips during each of the weekday AM and PM peak hours; an operational analysis has been undertaken for the intersections of Carp Road with March Road, McGee Side Road and the two proposed subdivision accesses for the 2029 opening day and 2034 future traffic scenarios. The analysis indicates that all intersection movements currently operate at a LOS B or better and are expected to remain at the same LOS under all future scenarios with only minor increases in queuing and delays.

The City of Ottawa requested a review of warrants for turn lanes approaching the accesses to the proposed subdivision. While the proposed access configuration is generally consistent with other accesses along the Carp Road corridor, left turn lane warrants per the MTO supplement to the TAC Design Guidelines for Canadian Roads are met under the projected future volumes at the proposed subdivision accesses on Carp Road. It is noted however that this warrant will be equally met for every access along this segment of the Carp Road corridor with southbound left turns. Additionally, it is noted that the operational analysis indicates that the site accesses are expected to operate at an acceptable level of service under future traffic volumes without extensive delays to inbound turns. As a result, it will likely be more beneficial for the City of Ottawa to consider the need for turn lanes at the corridor level as part of future road improvements rather than on a site-by-site basis.

Overall, the TIA study indicates that the proposed plan of subdivision can be accommodated by the adjacent transportation network at an acceptable level of service. It is anticipated however that the individual parcels within the proposed subdivision will be subject to additional site plan approval with accompanying TIA studies, which will provide additional detail on the anticipated site generation volumes and traffic circulation.



Certification Form for Transportation Impact Assessment (TIA) Study

TIA Reports

Individuals submitting TIA reports will be responsible for all aspects of development-related transportation assessment and reporting, and undertaking such work, in accordance and compliance with the City of Ottawa's Official Plan, the Transportation Master Plan and the Transportation Impact Assessment (2017) Guidelines and 2023 amendments.

Please note that the Certification is only required for the submission of a TIA. The Screening can be undertaken by a non-certified individual for the purpose of identifying if a TIA is needed or not.

By submitting the attached TIA report (and any associated documents) and signing this document, the individual acknowledges that they meet the four criteria listed below.

CERTIFICATION



I have reviewed and have a sound understanding of the objectives, needs and requirements of the City of Ottawa's Official Plan, Transportation Master Plan and the Transportation Impact Assessment (2017) Guidelines; (Update effective July 2023)



I have a sound knowledge of industry standard practice with respect to the preparation of transportation impact assessment reports, including multi modal level of service review;



I have substantial experience (more than 5 years) in undertaking and delivering transportation impact studies (analysis, reporting and geometric design) with strong background knowledge in transportation planning, engineering or traffic operations; and



I am either a licensed or registered¹ professional in good standing, whose field of expertise



is either transportation engineering



or transportation planning.

¹ License of registration body that oversees the profession is required to have a code of conduct and ethics guidelines that will ensure appropriate conduct and representation for transportation planning and/or transportation engineering works.

Dated at Ottawa this 24th day of February, 20 25.
(City)

Name: Adam Howell, P.Eng.

Professional title: Senior Project Manager, Transportation Planning



Signature of individual certifier that they meet the above four criteria

Office Contact Information (Please Print)

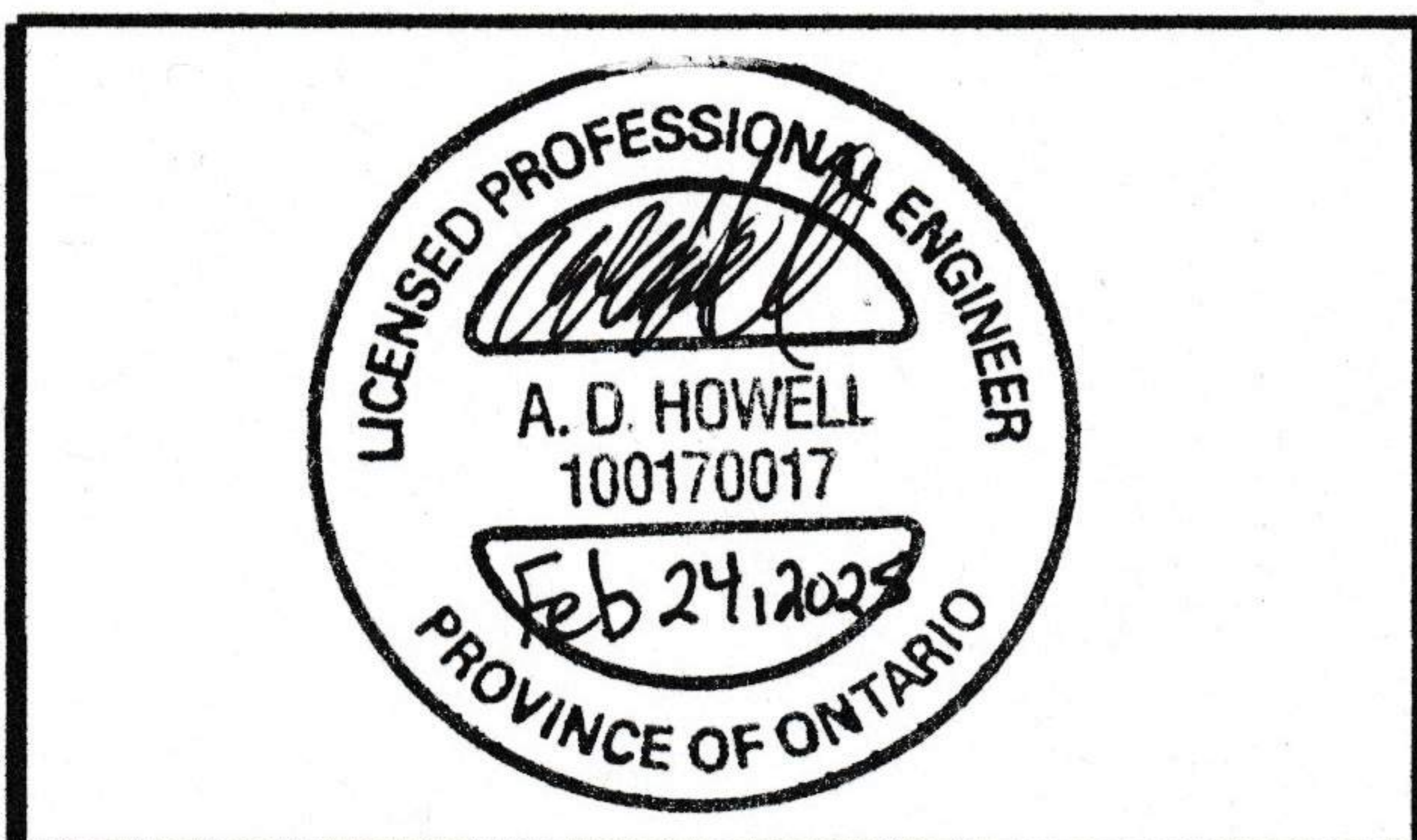
Address: 210-350 Palladium Drive

City / Postal Code: Ottawa, ON, K2V1A8

Telephone / Extension: 613-592-6060 x132

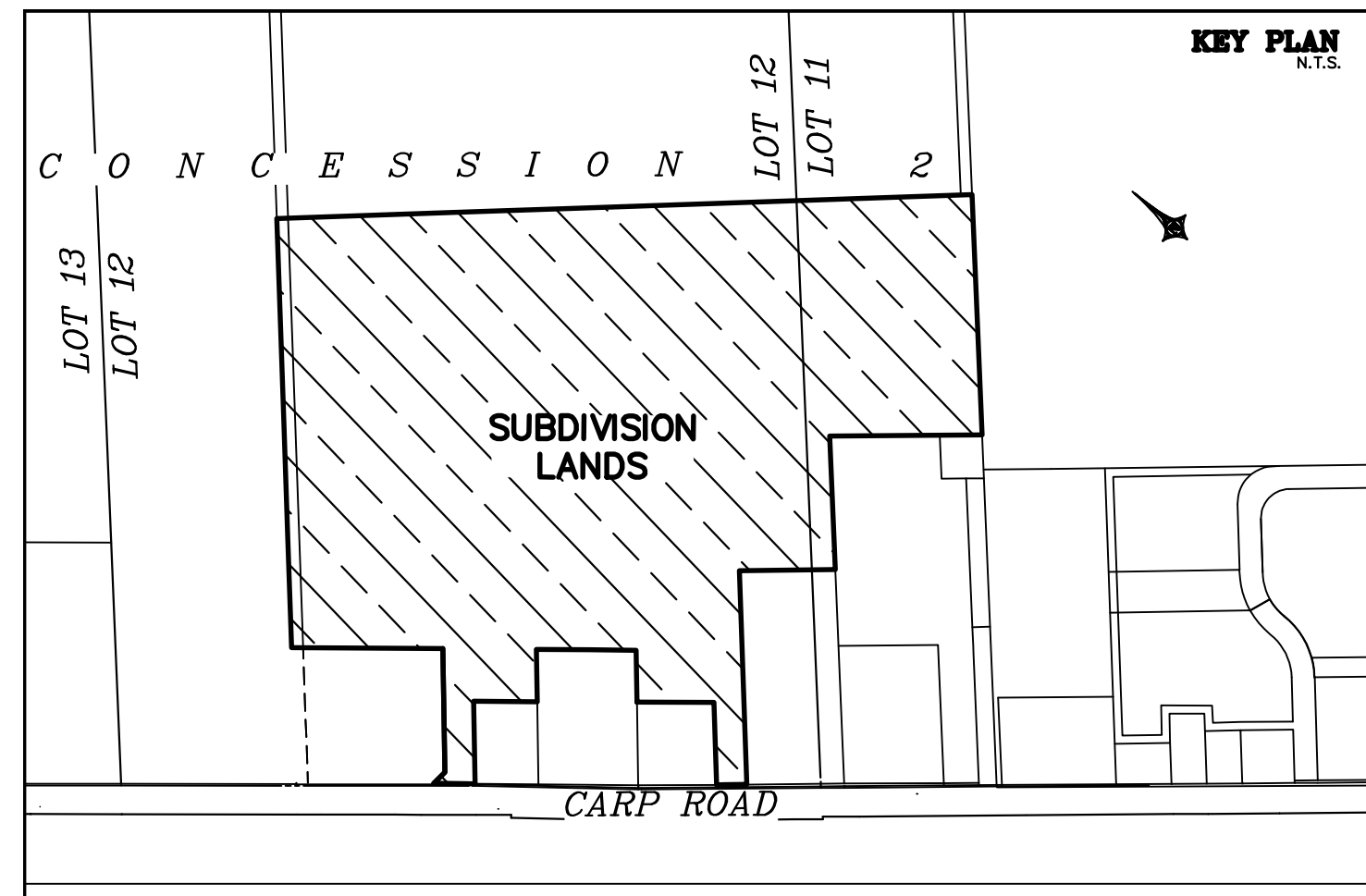
Email Address: ahowell@rcii.com

Stamp



Revision Date: December 2023

APPENDIX A
Proposed Draft Plan of Subdivision Concept



**DRAFT PLAN OF SUBDIVISION
PART OF LOTS 11 AND 12
CONCESSION 2
GEOGRAPHIC TOWNSHIP
OF HUNTLEY
CITY OF OTTAWA**

BLOCKS 2-12 for future industrial use
BLOCKS 1 & 13 for other use
STREET A = 20 metres wide

APPLICANT AND PROPERTY OWNER
T & L CARROLL HOLDINGS INC.
1380 HOME ROAD
CARP, ON, N0A 1L0

I HEREBY AUTHORIZE THE PREPARATION AND SUBMISSION OF THIS PLAN TO THE
COUNCIL OF THE CITY OF OTTAWA
DATED ON _____ 2025.

T & L CARROLL HOLDINGS INC.
I HAVE THE AUTHORITY TO BIND THIS CORPORATION

I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LANDS TO BE SUBDIVIDED AS
SHOWN ON THIS PLAN AND THEIR RELATIONSHIP TO THE ADJOINING LANDS ARE
ACCURATELY AND CORRECTLY SHOWN.

JOHN GAUTHER
ONTARIO LAND SURVEYOR

**ADDITIONAL INFORMATION REQUIRED UNDER
SECTION 51 (17) OF THE PLANNING ACT**

- A. AS SHOWN ON DRAFT PLAN
- B. AS SHOWN ON DRAFT PLAN
- C. AS SHOWN ON DRAFT PLAN
- D. AS DESCRIBED ON THE TITLE BLOCK
- E. AS SHOWN ON DRAFT PLAN
- F. NOT APPLICABLE
- G. AS SHOWN ON DRAFT PLAN
- H. REFER TO SOILS REPORT
- I. AS SHOWN ON DRAFT PLAN
- J. INDIVIDUAL PRIVATE SEPTIC SYSTEMS
- K. AS SHOWN ON DRAFT PLAN
- L. AS SHOWN ON DRAFT PLAN

| SCHEDULE OF AREAS | | |
|------------------------------------|--------------|----------------|
| LOT/BLOCK | AREA (ha) | TYPE |
| BLOCK 1 | 0.07 | OTHER |
| BLOCK 2 | 1.29 | INDUSTRIAL USE |
| BLOCK 3 | 1.30 | INDUSTRIAL USE |
| BLOCK 4 | 3.08 | INDUSTRIAL USE |
| BLOCK 5 | 1.43 | INDUSTRIAL USE |
| BLOCK 6 | 1.37 | INDUSTRIAL USE |
| BLOCK 7 | 4.74 | INDUSTRIAL USE |
| BLOCK 8 | 1.28 | INDUSTRIAL USE |
| BLOCK 9 | 1.14 | INDUSTRIAL USE |
| BLOCK 10 | 1.20 | INDUSTRIAL USE |
| BLOCK 11 | 1.36 | INDUSTRIAL USE |
| BLOCK 12 | 1.46 | INDUSTRIAL USE |
| BLOCK 13 | 0.04 | OTHER |
| TOTAL LOT/BLOCK AREA (ha) | 19.69 | |
| STREET | | |
| STREET A | 1.81 | 900.08 |
| TOTAL SUBDIVISION AREA (ha) | 21.50 | |

- LEGEND:**
- O BELL UTILITY POLE
 - H HYDRO UTILITY POLE
 - O BELL & HYDRO UTILITY POLE
 - AN ANCHOR
 - AN ANCHOR
 - O BIP BELL UTILITY PEDESTAL
 - SPW OVERHEAD WIRES
 - SPW BOARD FENCE
 - SPW POST & RAIL FENCE
 - PWF POLYWINE, CHLORIDE (PLASTIC)
 - MW MONITORING WELL
 - BT BELL TREE LINE
 - CT SIGN

DISTANCES:
DISTANCES SHOWN ON THIS PLAN ARE GROUND DISTANCES AND CAN BE USED TO
COMPUTE GRID DISTANCES BY MULTIPLYING BY A COMBINED SCALE FACTOR OF
0.999905.

BEARINGS:
BEARINGS ARE MTM GRID BEARINGS, DERIVED BY REAL TIME NETWORK GNSS
OBSERVATIONS ON OBSERVED REFERENCE POINTS 'A' AND 'B' SHOWN HEREON, AND
ARE REFERRED TO THE NAD83 (ORIGINAL) MTM ZONE 9 COORDINATE SYSTEM.

ELEVATIONS:
ELEVATIONS AND EXISTING TOPOGRAPHIC FEATURES SHOWN ON THIS PLAN WERE
PROVIDED BY AERIAL PHOTOGRAMMETRY BY MONTGOSH PERRY
SURVEYING INC. FILE 23-1983

SCALE 1 : 750
0 15 30 45 60 75 Metres

DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN
BE CONVERTED TO FEET BY DIVIDING BY 0.3048

| No. | DESCRIPTION | DATE | BY |
|-----|---|------------|----|
| 1 | REVISED PERMANENT ADJUSTMENT COMPLETED, REDUCED ROW TO 2005-02-01 | 2025-02-01 | MP |

JOB No. 23-1983 DRAWING # 23-1983 Draft Plan of Subdivision_13
PREPARED FOR: T & L Carroll Holdings Inc.

APPENDIX B
Provided Traffic Counts

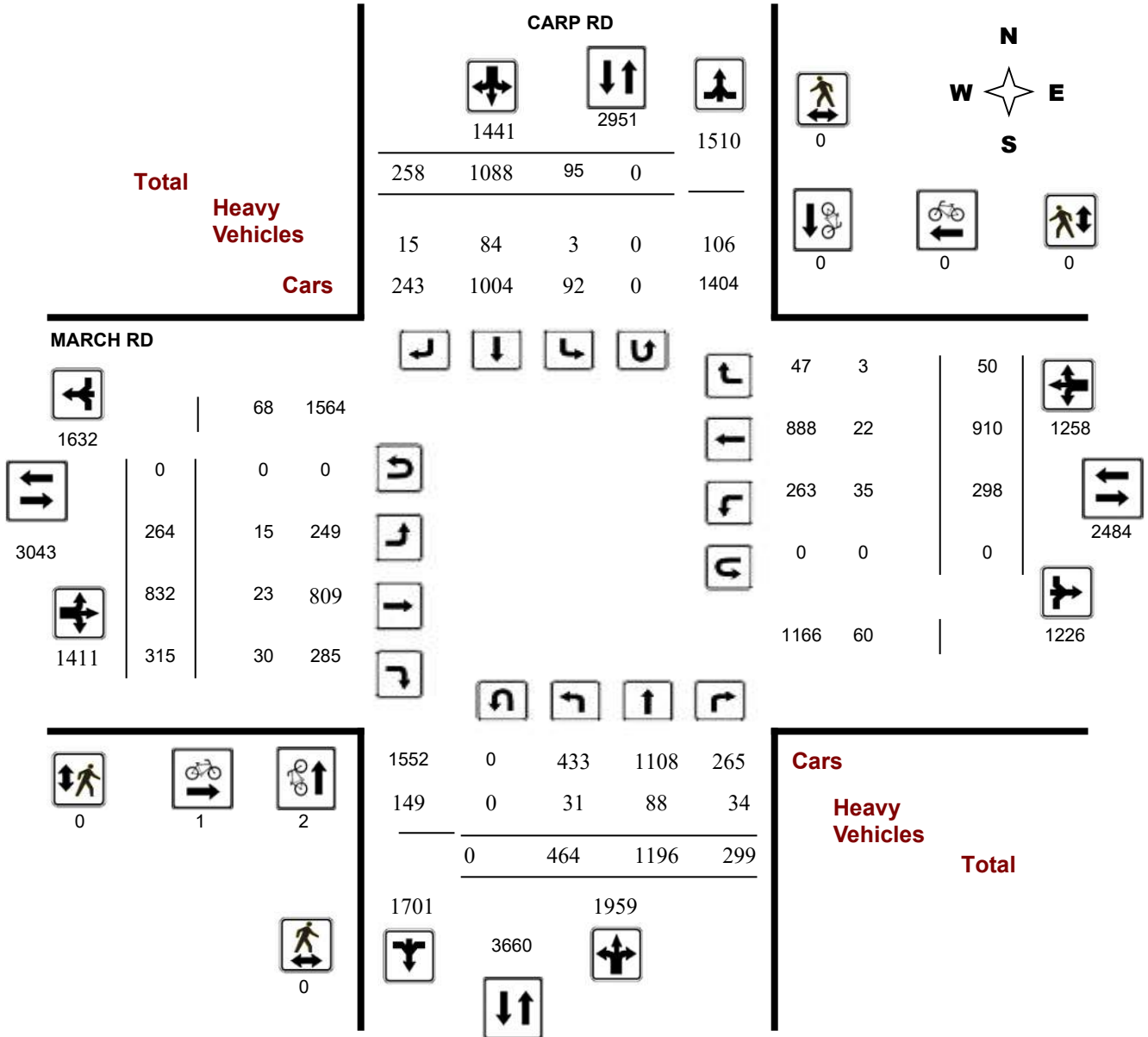
Survey Date: Tuesday, March 20, 2018

WO No: 37603

Start Time: 07:00

Device: Miovision

Full Study Diagram



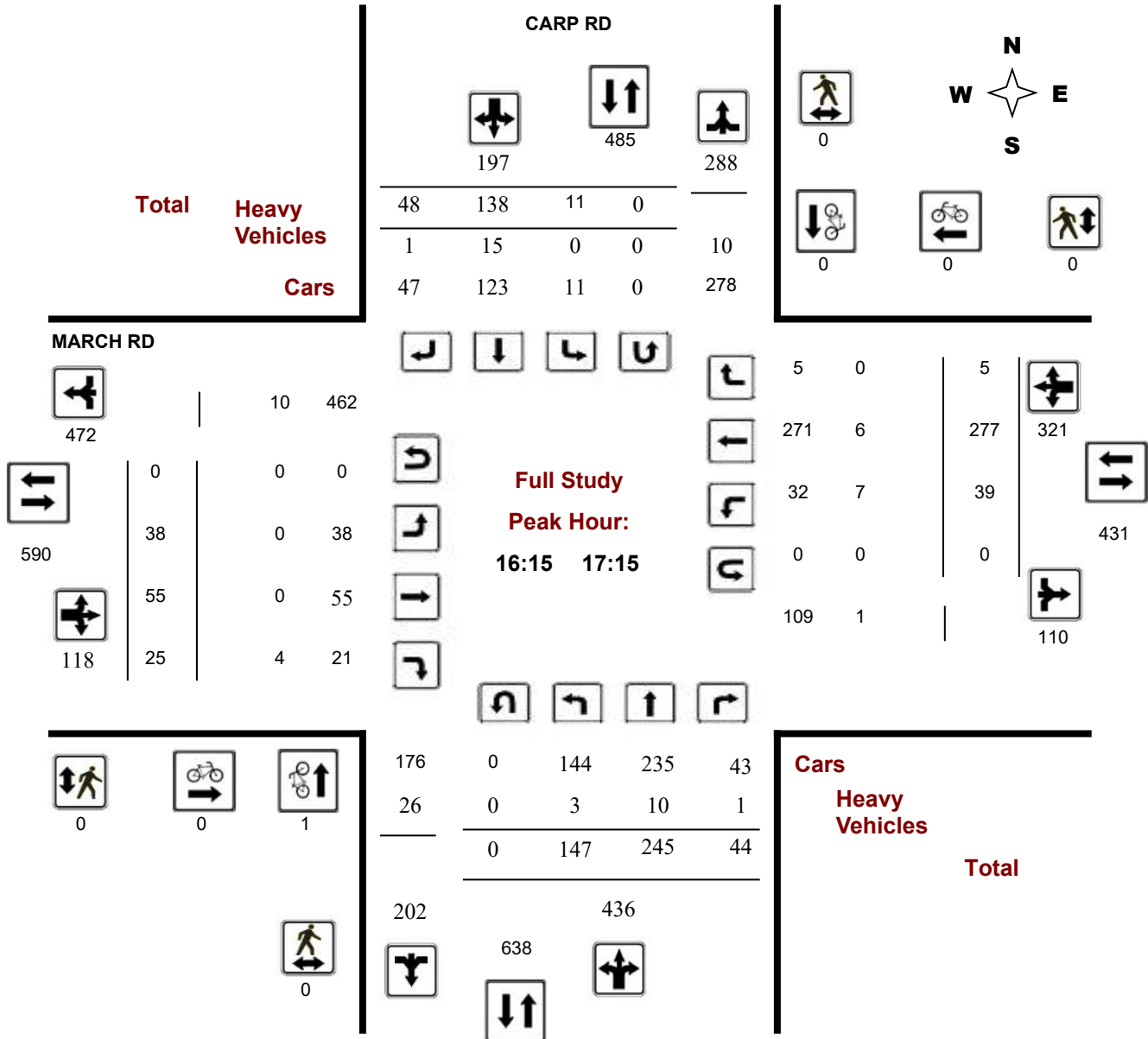
Survey Date: Tuesday, March 20, 2018

WO No: 37603

Start Time: 07:00

Device: Miovision

Full Study Peak Hour Diagram





Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

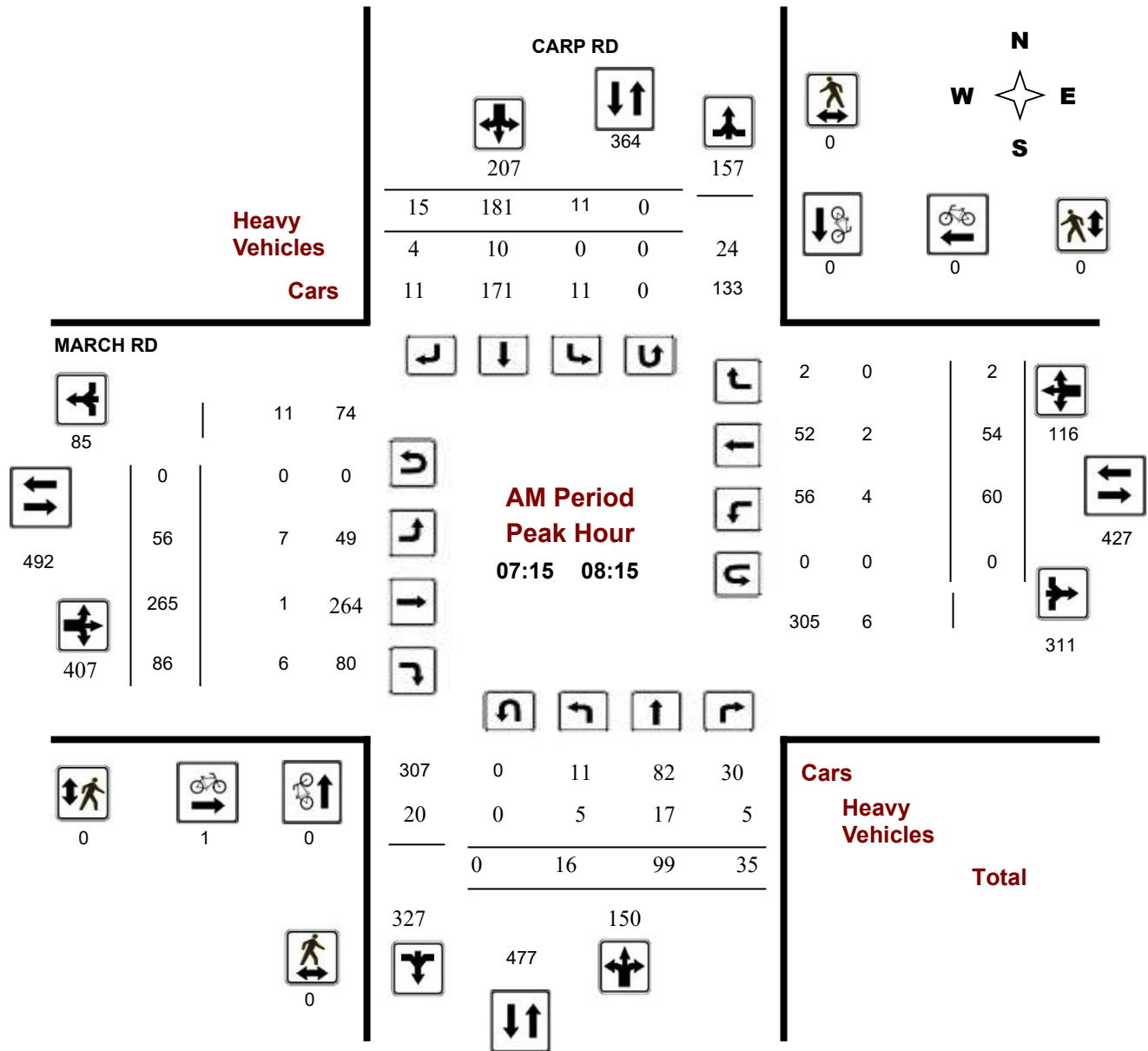
CARP RD @ MARCH RD

Survey Date: Tuesday, March 20, 2018

Start Time: 07:00

WO No: 37603

Device: Miovision





Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

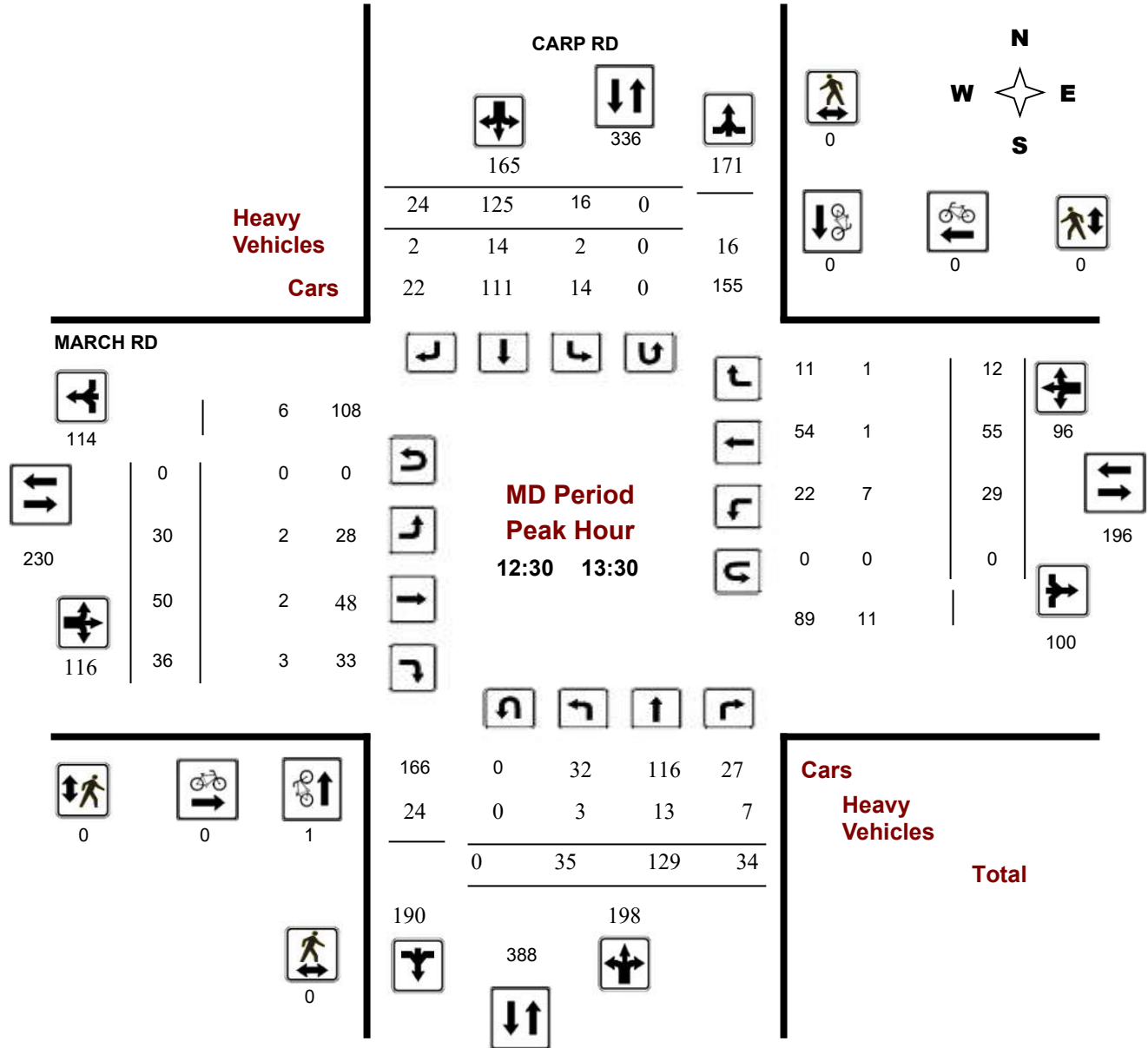
CARP RD @ MARCH RD

Survey Date: Tuesday, March 20, 2018

Start Time: 07:00

WO No: 37603

Device: Miovision



Comments



Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

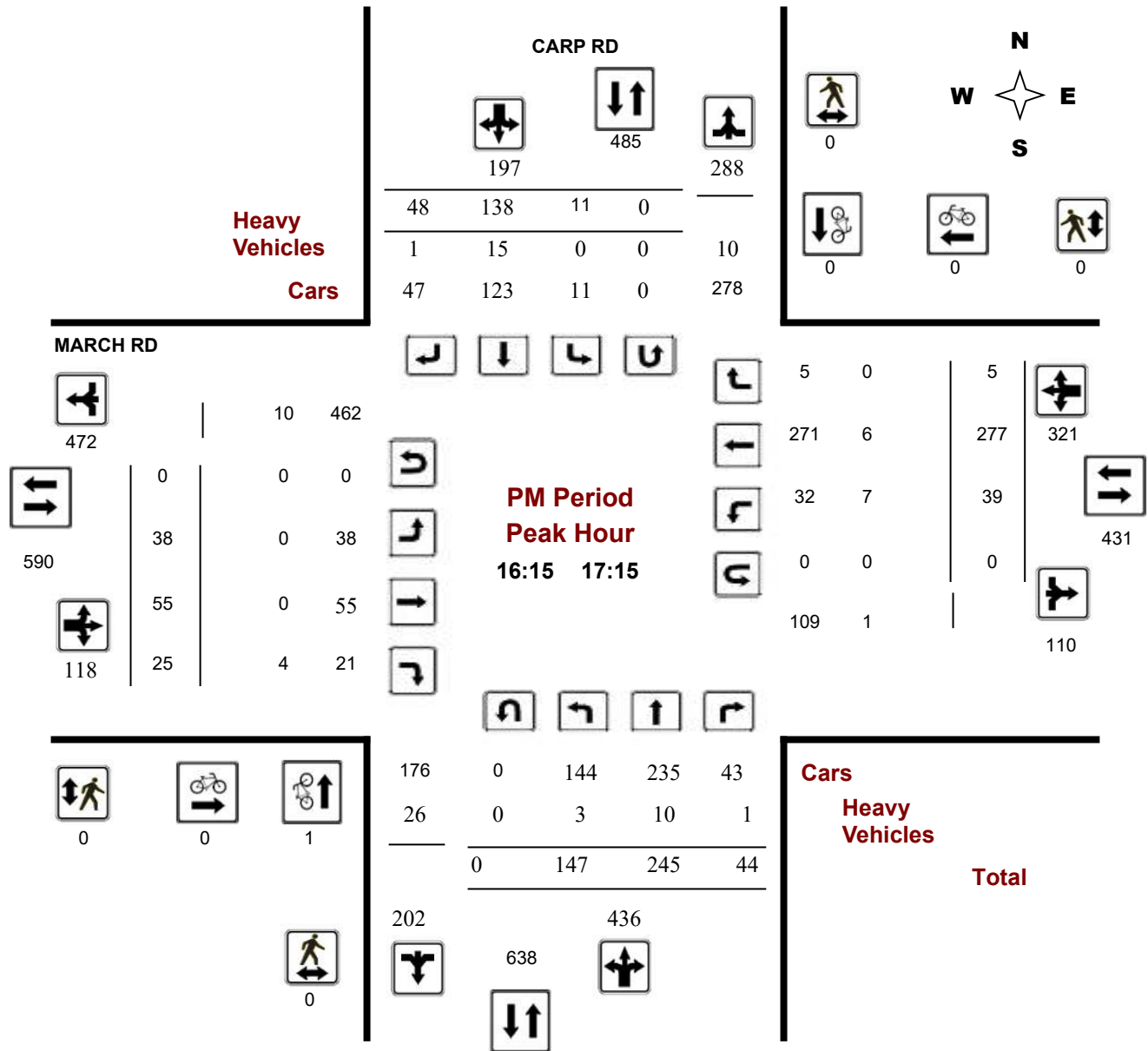
CARP RD @ MARCH RD

Survey Date: Tuesday, March 20, 2018

Start Time: 07:00

WO No: 37603

Device: Miovision





Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARP RD @ MARCH RD

Survey Date: Tuesday, March 20, 2018

WO No: 37603

Start Time: 07:00

Device: Miovision

Full Study Summary (8 HR Standard)

Survey Date: Tuesday, March 20, 2018

Total Observed U-Turns

AADT Factor

Northbound: 0 Southbound: 0
 Eastbound: 0 Westbound: 0

1.00

| Period | CARP RD | | | | | | | | | | MARCH RD | | | | | | | | | | Grand Total |
|---|------------|------|-----|--------|---------|------------|------|-----|--------|---------|-----------|------|-------------|--------|---------|-----------|------|----|--------|---------|-------------|
| | Northbound | | | | | Southbound | | | | | Eastbound | | | | | Westbound | | | | | |
| | LT | ST | RT | NB TOT | STR TOT | LT | ST | RT | SB TOT | STR TOT | LT | ST | RT | EB TOT | STR TOT | LT | ST | RT | WB TOT | STR TOT | |
| 07:00 08:00 | 12 | 87 | 32 | 131 | 351 | 10 | 198 | 12 | 220 | 351 | 44 | 242 | 114 | 400 | 351 | 54 | 52 | 2 | 108 | 508 | 859 |
| 08:00 09:00 | 24 | 103 | 32 | 159 | 334 | 12 | 130 | 33 | 175 | 334 | 40 | 238 | 49 | 327 | 334 | 45 | 49 | 4 | 98 | 425 | 759 |
| 09:00 10:00 | 32 | 104 | 21 | 157 | 326 | 11 | 125 | 33 | 169 | 326 | 31 | 99 | 27 | 157 | 326 | 48 | 43 | 4 | 95 | 252 | 578 |
| 11:30 12:30 | 39 | 128 | 37 | 204 | 367 | 13 | 121 | 29 | 163 | 367 | 20 | 41 | 17 | 78 | 367 | 24 | 59 | 8 | 91 | 169 | 536 |
| 12:30 13:30 | 35 | 129 | 34 | 198 | 363 | 16 | 125 | 24 | 165 | 363 | 30 | 50 | 36 | 116 | 363 | 29 | 55 | 12 | 96 | 212 | 575 |
| 15:00 16:00 | 92 | 179 | 45 | 316 | 530 | 15 | 159 | 40 | 214 | 530 | 30 | 61 | 29 | 120 | 530 | 31 | 173 | 5 | 209 | 329 | 859 |
| 16:00 17:00 | 140 | 245 | 53 | 438 | 626 | 7 | 140 | 41 | 188 | 626 | 37 | 54 | 26 | 117 | 626 | 40 | 277 | 6 | 323 | 440 | 1066 |
| 17:00 18:00 | 90 | 221 | 45 | 356 | 503 | 11 | 90 | 46 | 147 | 503 | 32 | 47 | 17 | 96 | 503 | 27 | 202 | 9 | 238 | 334 | 837 |
| Sub Total | 464 | 1196 | 299 | 1959 | 3400 | 95 | 1088 | 258 | 1441 | 3400 | 264 | 832 | 315 | 1411 | 3400 | 298 | 910 | 50 | 1258 | 2669 | 6069 |
| U Turns | | | | 0 | 0 | | | | 0 | 0 | | | | 0 | 0 | | | | 0 | 0 | 0 |
| Total | 464 | 1196 | 299 | 1959 | 3400 | 95 | 1088 | 258 | 1441 | 3400 | 264 | 832 | 315 | 1411 | 3400 | 298 | 910 | 50 | 1258 | 2669 | 6069 |
| EQ 12Hr | 645 | 1662 | 416 | 2723 | 4726 | 132 | 1512 | 359 | 2003 | 4726 | 367 | 1156 | 438 | 1961 | 4726 | 414 | 1265 | 70 | 1749 | 3710 | 8436 |
| Note: These values are calculated by multiplying the totals by the appropriate expansion factor. | | | | | | | | | | | | | 1.39 | | | | | | | | |
| AVG 12Hr | 645 | 1662 | 416 | 2723 | 4726 | 132 | 1981 | 470 | 2003 | 4726 | 367 | 1156 | 438 | 1961 | 4726 | 414 | 1265 | 70 | 1749 | 3710 | 8436 |
| Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor. | | | | | | | | | | | | | 1.00 | | | | | | | | |
| AVG 24Hr | 845 | 2177 | 545 | 3567 | 6191 | 173 | 2595 | 616 | 2624 | 6191 | 481 | 1514 | 574 | 2569 | 6191 | 542 | 1657 | 92 | 2291 | 4860 | 11051 |
| Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor. | | | | | | | | | | | | | 1.31 | | | | | | | | |
| Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown. | | | | | | | | | | | | | | | | | | | | | |



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARP RD @ MARCH RD

Survey Date: Tuesday, March 20, 2018

WO No: 37603

Start Time: 07:00

Device: Miovision

Full Study 15 Minute Increments

CARP RD

MARCH RD

Northbound

Southbound

Eastbound

Westbound

| Time Period | LT | ST | RT | N TOT | LT | ST | RT | S TOT | STR TOT | LT | ST | RT | E TOT | LT | ST | RT | W TOT | STR TOT | Grand Total |
|---------------|------------|-------------|------------|-------------|-----------|-------------|------------|-------------|-------------|------------|------------|------------|-------------|------------|------------|-----------|-------------|-------------|----------------|
| 07:00-07:15 | 2 | 16 | 6 | 24 | 1 | 49 | 3 | 53 | 77 | 6 | 44 | 36 | 86 | 14 | 10 | 1 | 25 | 111 | 188 |
| 07:15-07:30 | 5 | 13 | 7 | 25 | 0 | 67 | 2 | 69 | 94 | 14 | 55 | 20 | 89 | 18 | 13 | 0 | 31 | 120 | 214 |
| 07:30-07:45 | 2 | 28 | 10 | 40 | 3 | 41 | 2 | 46 | 86 | 11 | 77 | 33 | 121 | 12 | 13 | 0 | 25 | 146 | 232 |
| 07:45-08:00 | 3 | 30 | 9 | 42 | 6 | 41 | 5 | 52 | 94 | 13 | 66 | 25 | 104 | 10 | 16 | 1 | 27 | 131 | 225 |
| 08:00-08:15 | 6 | 28 | 9 | 43 | 2 | 32 | 6 | 40 | 83 | 18 | 67 | 8 | 93 | 20 | 12 | 1 | 33 | 126 | 209 |
| 08:15-08:30 | 5 | 36 | 5 | 46 | 2 | 34 | 10 | 46 | 92 | 8 | 67 | 16 | 91 | 6 | 10 | 0 | 16 | 107 | 199 |
| 08:30-08:45 | 6 | 14 | 7 | 27 | 5 | 37 | 9 | 51 | 78 | 9 | 52 | 11 | 72 | 10 | 12 | 1 | 23 | 95 | 173 |
| 08:45-09:00 | 7 | 25 | 11 | 43 | 3 | 27 | 8 | 38 | 81 | 5 | 52 | 14 | 71 | 9 | 15 | 2 | 26 | 97 | 178 |
| 09:00-09:15 | 4 | 24 | 5 | 33 | 2 | 39 | 7 | 48 | 81 | 6 | 30 | 5 | 41 | 13 | 11 | 0 | 24 | 65 | 146 |
| 09:15-09:30 | 13 | 24 | 8 | 45 | 1 | 28 | 8 | 37 | 82 | 10 | 28 | 6 | 44 | 12 | 16 | 1 | 29 | 73 | 155 |
| 09:30-09:45 | 7 | 27 | 3 | 37 | 5 | 33 | 10 | 48 | 85 | 8 | 24 | 9 | 41 | 13 | 7 | 0 | 20 | 61 | 146 |
| 09:45-10:00 | 8 | 29 | 5 | 42 | 3 | 25 | 8 | 36 | 78 | 7 | 17 | 7 | 31 | 10 | 9 | 3 | 22 | 53 | 131 |
| 11:30-11:45 | 7 | 34 | 9 | 50 | 3 | 42 | 15 | 60 | 110 | 5 | 14 | 3 | 22 | 10 | 18 | 2 | 30 | 52 | 162 |
| 11:45-12:00 | 13 | 30 | 9 | 52 | 1 | 28 | 5 | 34 | 86 | 1 | 10 | 4 | 15 | 7 | 14 | 1 | 22 | 37 | 123 |
| 12:00-12:15 | 8 | 37 | 8 | 53 | 4 | 22 | 4 | 30 | 83 | 6 | 4 | 8 | 18 | 4 | 12 | 5 | 21 | 39 | 122 |
| 12:15-12:30 | 11 | 27 | 11 | 49 | 5 | 29 | 5 | 39 | 88 | 8 | 13 | 2 | 23 | 3 | 15 | 0 | 18 | 41 | 129 |
| 12:30-12:45 | 8 | 35 | 3 | 46 | 2 | 40 | 3 | 45 | 91 | 7 | 12 | 6 | 25 | 6 | 9 | 3 | 18 | 43 | 134 |
| 12:45-13:00 | 10 | 33 | 8 | 51 | 3 | 37 | 7 | 47 | 98 | 8 | 10 | 12 | 30 | 8 | 12 | 2 | 22 | 52 | 150 |
| 13:00-13:15 | 11 | 37 | 8 | 56 | 5 | 23 | 8 | 36 | 92 | 7 | 11 | 8 | 26 | 9 | 17 | 4 | 30 | 56 | 148 |
| 13:15-13:30 | 6 | 24 | 15 | 45 | 6 | 25 | 6 | 37 | 82 | 8 | 17 | 10 | 35 | 6 | 17 | 3 | 26 | 61 | 143 |
| 15:00-15:15 | 16 | 39 | 8 | 63 | 1 | 25 | 8 | 34 | 97 | 7 | 17 | 5 | 29 | 10 | 36 | 2 | 48 | 77 | 174 |
| 15:15-15:30 | 21 | 53 | 12 | 86 | 5 | 55 | 10 | 70 | 156 | 6 | 12 | 10 | 28 | 5 | 41 | 3 | 49 | 77 | 233 |
| 15:30-15:45 | 25 | 43 | 13 | 81 | 6 | 50 | 8 | 64 | 145 | 3 | 13 | 7 | 23 | 10 | 44 | 0 | 54 | 77 | 222 |
| 15:45-16:00 | 30 | 44 | 12 | 86 | 3 | 29 | 14 | 46 | 132 | 14 | 19 | 7 | 40 | 6 | 52 | 0 | 58 | 98 | 230 |
| 16:00-16:15 | 36 | 54 | 19 | 109 | 2 | 33 | 10 | 45 | 154 | 7 | 13 | 5 | 25 | 7 | 59 | 1 | 67 | 92 | 246 |
| 16:15-16:30 | 31 | 58 | 11 | 100 | 0 | 38 | 10 | 48 | 148 | 10 | 18 | 7 | 35 | 11 | 86 | 2 | 99 | 134 | 282 |
| 16:30-16:45 | 45 | 69 | 13 | 127 | 1 | 35 | 9 | 45 | 172 | 11 | 7 | 8 | 26 | 16 | 70 | 1 | 87 | 113 | 285 |
| 16:45-17:00 | 28 | 64 | 10 | 102 | 4 | 34 | 12 | 50 | 152 | 9 | 16 | 6 | 31 | 6 | 62 | 2 | 70 | 101 | 253 |
| 17:00-17:15 | 43 | 54 | 10 | 107 | 6 | 31 | 17 | 54 | 161 | 8 | 14 | 4 | 26 | 6 | 59 | 0 | 65 | 91 | 252 |
| 17:15-17:30 | 12 | 53 | 19 | 84 | 2 | 28 | 8 | 38 | 122 | 10 | 16 | 2 | 28 | 5 | 68 | 4 | 77 | 105 | 227 |
| 17:30-17:45 | 19 | 58 | 6 | 83 | 2 | 17 | 13 | 32 | 115 | 5 | 10 | 5 | 20 | 8 | 38 | 0 | 46 | 66 | 181 |
| 17:45-18:00 | 16 | 56 | 10 | 82 | 1 | 14 | 8 | 23 | 105 | 9 | 7 | 6 | 22 | 8 | 37 | 5 | 50 | 72 | 177 |
| Total: | 464 | 1196 | 299 | 1959 | 95 | 1088 | 258 | 1441 | 3400 | 264 | 832 | 315 | 1411 | 298 | 910 | 50 | 1258 | 2669 | 6,069 |

Note: U-Turns are included in Totals.



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARP RD @ MARCH RD

Survey Date: Tuesday, March 20, 2018

WO No: 37603

Start Time: 07:00

Device: Miovision

Full Study Cyclist Volume

| Time Period | CARP RD | | | MARCH RD | | | Grand Total |
|--------------|------------|------------|--------------|-----------|-----------|--------------|-------------|
| | Northbound | Southbound | Street Total | Eastbound | Westbound | Street Total | |
| 07:00 07:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 07:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:30 07:45 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| 07:45 08:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:00 08:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:15 08:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:30 08:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:45 09:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:00 09:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:15 09:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:30 09:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:45 10:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:30 11:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:45 12:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:00 12:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:15 12:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:30 12:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:45 13:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13:00 13:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13:15 13:30 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
| 15:00 15:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:15 15:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:30 15:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:45 16:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:00 16:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:15 16:30 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
| 16:30 16:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:45 17:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:00 17:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:15 17:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:30 17:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:45 18:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 2 | 0 | 2 | 1 | 0 | 1 | 3 |



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARP RD @ MARCH RD

Survey Date: Tuesday, March 20, 2018

WO No: 37603

Start Time: 07:00

Device: Miovision

Full Study Pedestrian Volume

CARP RD

MARCH RD

| Time Period | NB Approach (E or W Crossing) | SB Approach (E or W Crossing) | Total | EB Approach (N or S Crossing) | WB Approach (N or S Crossing) | Total | Grand Total |
|--------------------|----------------------------------|----------------------------------|----------|----------------------------------|----------------------------------|----------|-------------|
| 07:00 07:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 07:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:30 07:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:45 08:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:00 08:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:15 08:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:30 08:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:45 09:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:00 09:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:15 09:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:30 09:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:45 10:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:30 11:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:45 12:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:00 12:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:15 12:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:30 12:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:45 13:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13:00 13:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13:15 13:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:00 15:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:15 15:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:30 15:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:45 16:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:00 16:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:15 16:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:30 16:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:45 17:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:00 17:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:15 17:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:30 17:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:45 18:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 |



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARP RD @ MARCH RD

Survey Date: Tuesday, March 20, 2018

WO No: 37603

Start Time: 07:00

Device: Miovision

Full Study Heavy Vehicles

CARP RD

MARCH RD

Northbound

Southbound

Eastbound

Westbound

| Time Period | CARP RD Northbound | | | | CARP RD Southbound | | | | MARCH RD Eastbound | | | | MARCH RD Westbound | | | | Grand Total | | |
|-------------|--------------------|----|----|-------|--------------------|----|----|-------|--------------------|----|----|----|--------------------|----|----|----|-------------|-------|---------|
| | LT | ST | RT | N TOT | LT | ST | RT | S TOT | STR TOT | LT | ST | RT | E TOT | LT | ST | RT | | W TOT | STR TOT |
| 07:00 07:15 | 1 | 4 | 2 | 11 | 0 | 1 | 0 | 5 | 16 | 0 | 0 | 2 | 4 | 1 | 1 | 0 | 4 | 8 | 12 |
| 07:15 07:30 | 1 | 3 | 2 | 8 | 0 | 2 | 0 | 6 | 14 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 4 | 9 |
| 07:30 07:45 | 0 | 4 | 0 | 10 | 0 | 3 | 1 | 8 | 18 | 0 | 0 | 2 | 3 | 1 | 0 | 0 | 1 | 4 | 11 |
| 07:45 08:00 | 2 | 2 | 1 | 12 | 0 | 2 | 1 | 7 | 19 | 2 | 1 | 4 | 11 | 1 | 1 | 0 | 4 | 15 | 17 |
| 08:00 08:15 | 2 | 8 | 2 | 17 | 0 | 3 | 2 | 17 | 34 | 4 | 0 | 0 | 9 | 2 | 1 | 0 | 5 | 14 | 24 |
| 08:15 08:30 | 1 | 7 | 0 | 16 | 0 | 4 | 2 | 15 | 31 | 2 | 2 | 1 | 8 | 3 | 0 | 0 | 5 | 13 | 22 |
| 08:30 08:45 | 1 | 1 | 2 | 11 | 0 | 5 | 1 | 8 | 19 | 1 | 2 | 1 | 7 | 1 | 1 | 0 | 6 | 13 | 16 |
| 08:45 09:00 | 0 | 3 | 1 | 9 | 0 | 2 | 2 | 7 | 16 | 0 | 2 | 2 | 6 | 1 | 0 | 0 | 4 | 10 | 13 |
| 09:00 09:15 | 1 | 2 | 1 | 9 | 0 | 3 | 0 | 5 | 14 | 0 | 3 | 0 | 5 | 2 | 1 | 0 | 7 | 12 | 13 |
| 09:15 09:30 | 1 | 2 | 1 | 10 | 0 | 5 | 1 | 8 | 18 | 0 | 0 | 1 | 6 | 0 | 3 | 0 | 4 | 10 | 14 |
| 09:30 09:45 | 4 | 0 | 0 | 12 | 0 | 4 | 0 | 4 | 16 | 0 | 0 | 2 | 6 | 2 | 0 | 0 | 2 | 8 | 12 |
| 09:45 10:00 | 1 | 4 | 2 | 10 | 0 | 2 | 2 | 9 | 19 | 0 | 1 | 1 | 5 | 0 | 0 | 1 | 4 | 9 | 14 |
| 11:30 11:45 | 2 | 2 | 2 | 10 | 0 | 2 | 0 | 4 | 14 | 0 | 2 | 1 | 7 | 1 | 2 | 0 | 7 | 14 | 14 |
| 11:45 12:00 | 1 | 5 | 2 | 9 | 0 | 1 | 0 | 6 | 15 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 3 | 5 | 10 |
| 12:00 12:15 | 0 | 1 | 2 | 4 | 0 | 0 | 0 | 2 | 6 | 1 | 0 | 1 | 3 | 0 | 1 | 0 | 3 | 6 | 6 |
| 12:15 12:30 | 1 | 1 | 3 | 6 | 1 | 0 | 0 | 2 | 8 | 0 | 1 | 0 | 2 | 1 | 0 | 0 | 6 | 8 | 8 |
| 12:30 12:45 | 0 | 2 | 1 | 10 | 1 | 5 | 0 | 9 | 19 | 1 | 1 | 1 | 3 | 1 | 0 | 0 | 4 | 7 | 13 |
| 12:45 13:00 | 1 | 4 | 2 | 12 | 0 | 3 | 2 | 9 | 21 | 0 | 0 | 1 | 5 | 1 | 1 | 0 | 4 | 9 | 15 |
| 13:00 13:15 | 0 | 4 | 1 | 9 | 1 | 2 | 0 | 8 | 17 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 5 | 5 | 11 |
| 13:15 13:30 | 2 | 3 | 3 | 16 | 0 | 4 | 0 | 8 | 24 | 1 | 1 | 1 | 5 | 3 | 0 | 0 | 7 | 12 | 18 |
| 15:00 15:15 | 0 | 4 | 1 | 11 | 0 | 3 | 0 | 7 | 18 | 0 | 1 | 2 | 3 | 1 | 0 | 0 | 3 | 6 | 12 |
| 15:15 15:30 | 2 | 3 | 0 | 9 | 0 | 3 | 0 | 7 | 16 | 0 | 1 | 0 | 4 | 1 | 1 | 1 | 4 | 8 | 12 |
| 15:30 15:45 | 1 | 3 | 0 | 12 | 0 | 6 | 0 | 9 | 21 | 0 | 4 | 1 | 6 | 1 | 0 | 0 | 5 | 11 | 16 |
| 15:45 16:00 | 0 | 2 | 1 | 5 | 0 | 1 | 0 | 4 | 9 | 1 | 0 | 0 | 2 | 1 | 1 | 0 | 3 | 5 | 7 |
| 16:00 16:15 | 2 | 4 | 1 | 10 | 0 | 3 | 0 | 8 | 18 | 1 | 0 | 0 | 5 | 0 | 2 | 0 | 3 | 8 | 13 |
| 16:15 16:30 | 0 | 4 | 1 | 13 | 0 | 3 | 1 | 8 | 21 | 0 | 0 | 2 | 7 | 3 | 4 | 0 | 8 | 15 | 18 |
| 16:30 16:45 | 2 | 5 | 0 | 18 | 0 | 6 | 0 | 11 | 29 | 0 | 0 | 1 | 5 | 4 | 2 | 0 | 6 | 11 | 20 |
| 16:45 17:00 | 1 | 1 | 0 | 7 | 0 | 5 | 0 | 6 | 13 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 7 |
| 17:00 17:15 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 1 | 3 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 2 |
| 17:15 17:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:30 17:45 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 2 | 2 |
| 17:45 18:00 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 2 | 2 |
| Total: None | 31 | 88 | 34 | 302 | 3 | 84 | 15 | 208 | 510 | 15 | 23 | 30 | 136 | 35 | 22 | 3 | 120 | 256 | 383 |



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARP RD @ MARCH RD

Survey Date: Tuesday, March 20, 2018

WO No: 37603

Start Time: 07:00

Device: Miovision

Full Study 15 Minute U-Turn Total

CARP RD

MARCH RD

| Time Period | | Northbound U-Turn Total | Southbound U-Turn Total | Eastbound U-Turn Total | Westbound U-Turn Total | Total |
|-------------|-------|----------------------------|----------------------------|---------------------------|---------------------------|-------|
| 07:00 | 07:15 | 0 | 0 | 0 | 0 | 0 |
| 07:15 | 07:30 | 0 | 0 | 0 | 0 | 0 |
| 07:30 | 07:45 | 0 | 0 | 0 | 0 | 0 |
| 07:45 | 08:00 | 0 | 0 | 0 | 0 | 0 |
| 08:00 | 08:15 | 0 | 0 | 0 | 0 | 0 |
| 08:15 | 08:30 | 0 | 0 | 0 | 0 | 0 |
| 08:30 | 08:45 | 0 | 0 | 0 | 0 | 0 |
| 08:45 | 09:00 | 0 | 0 | 0 | 0 | 0 |
| 09:00 | 09:15 | 0 | 0 | 0 | 0 | 0 |
| 09:15 | 09:30 | 0 | 0 | 0 | 0 | 0 |
| 09:30 | 09:45 | 0 | 0 | 0 | 0 | 0 |
| 09:45 | 10:00 | 0 | 0 | 0 | 0 | 0 |
| 11:30 | 11:45 | 0 | 0 | 0 | 0 | 0 |
| 11:45 | 12:00 | 0 | 0 | 0 | 0 | 0 |
| 12:00 | 12:15 | 0 | 0 | 0 | 0 | 0 |
| 12:15 | 12:30 | 0 | 0 | 0 | 0 | 0 |
| 12:30 | 12:45 | 0 | 0 | 0 | 0 | 0 |
| 12:45 | 13:00 | 0 | 0 | 0 | 0 | 0 |
| 13:00 | 13:15 | 0 | 0 | 0 | 0 | 0 |
| 13:15 | 13:30 | 0 | 0 | 0 | 0 | 0 |
| 15:00 | 15:15 | 0 | 0 | 0 | 0 | 0 |
| 15:15 | 15:30 | 0 | 0 | 0 | 0 | 0 |
| 15:30 | 15:45 | 0 | 0 | 0 | 0 | 0 |
| 15:45 | 16:00 | 0 | 0 | 0 | 0 | 0 |
| 16:00 | 16:15 | 0 | 0 | 0 | 0 | 0 |
| 16:15 | 16:30 | 0 | 0 | 0 | 0 | 0 |
| 16:30 | 16:45 | 0 | 0 | 0 | 0 | 0 |
| 16:45 | 17:00 | 0 | 0 | 0 | 0 | 0 |
| 17:00 | 17:15 | 0 | 0 | 0 | 0 | 0 |
| 17:15 | 17:30 | 0 | 0 | 0 | 0 | 0 |
| 17:30 | 17:45 | 0 | 0 | 0 | 0 | 0 |
| 17:45 | 18:00 | 0 | 0 | 0 | 0 | 0 |
| Total | | 0 | 0 | 0 | 0 | 0 |

Turning Movement Count - Study Results

CARP RD @ MCGEE SIDE RD

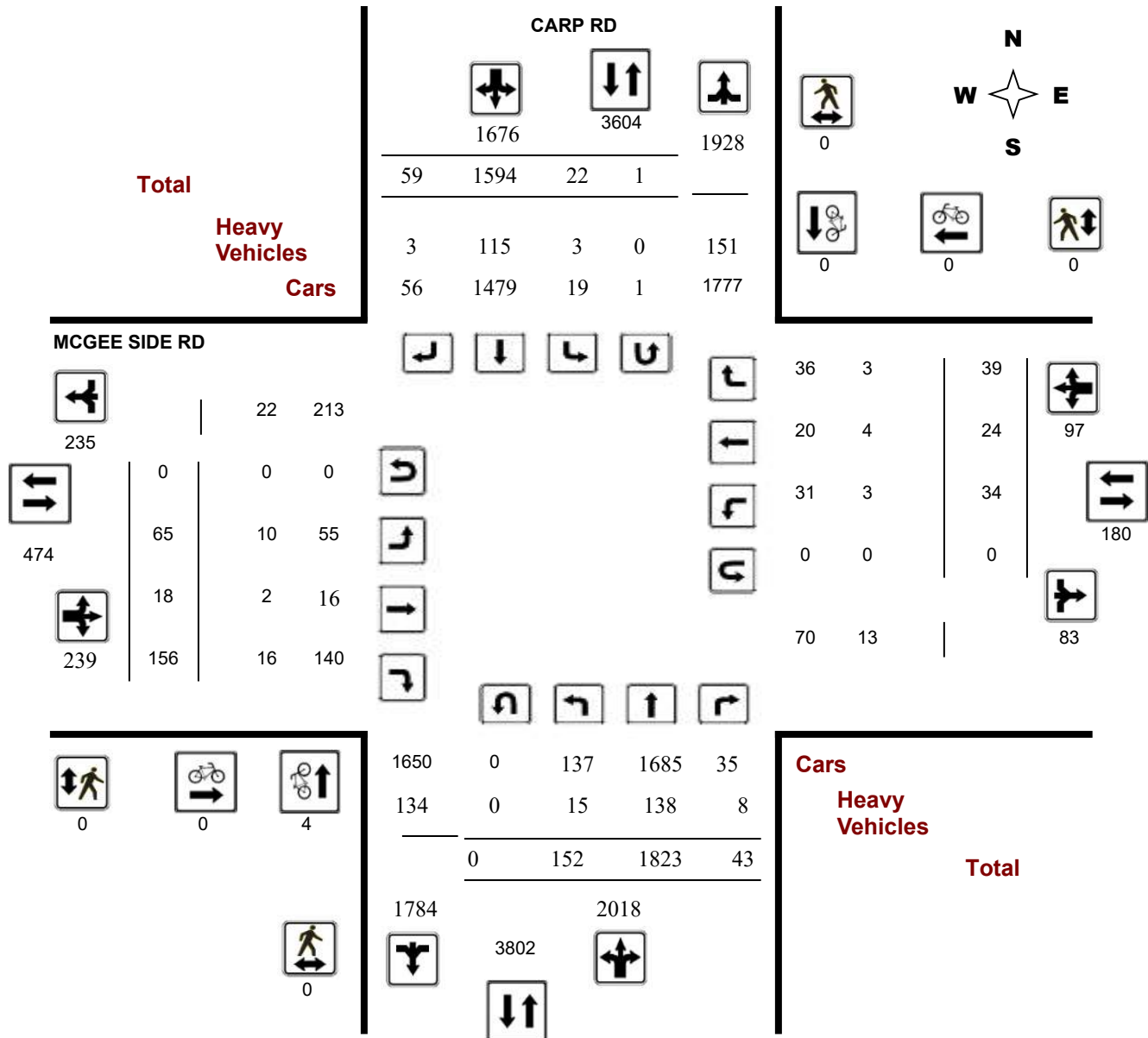
Survey Date: Tuesday, April 09, 2019

WO No: 38506

Start Time: 07:00

Device: Miovision

Full Study Diagram



Turning Movement Count - Study Results

CARP RD @ MCGEE SIDE RD

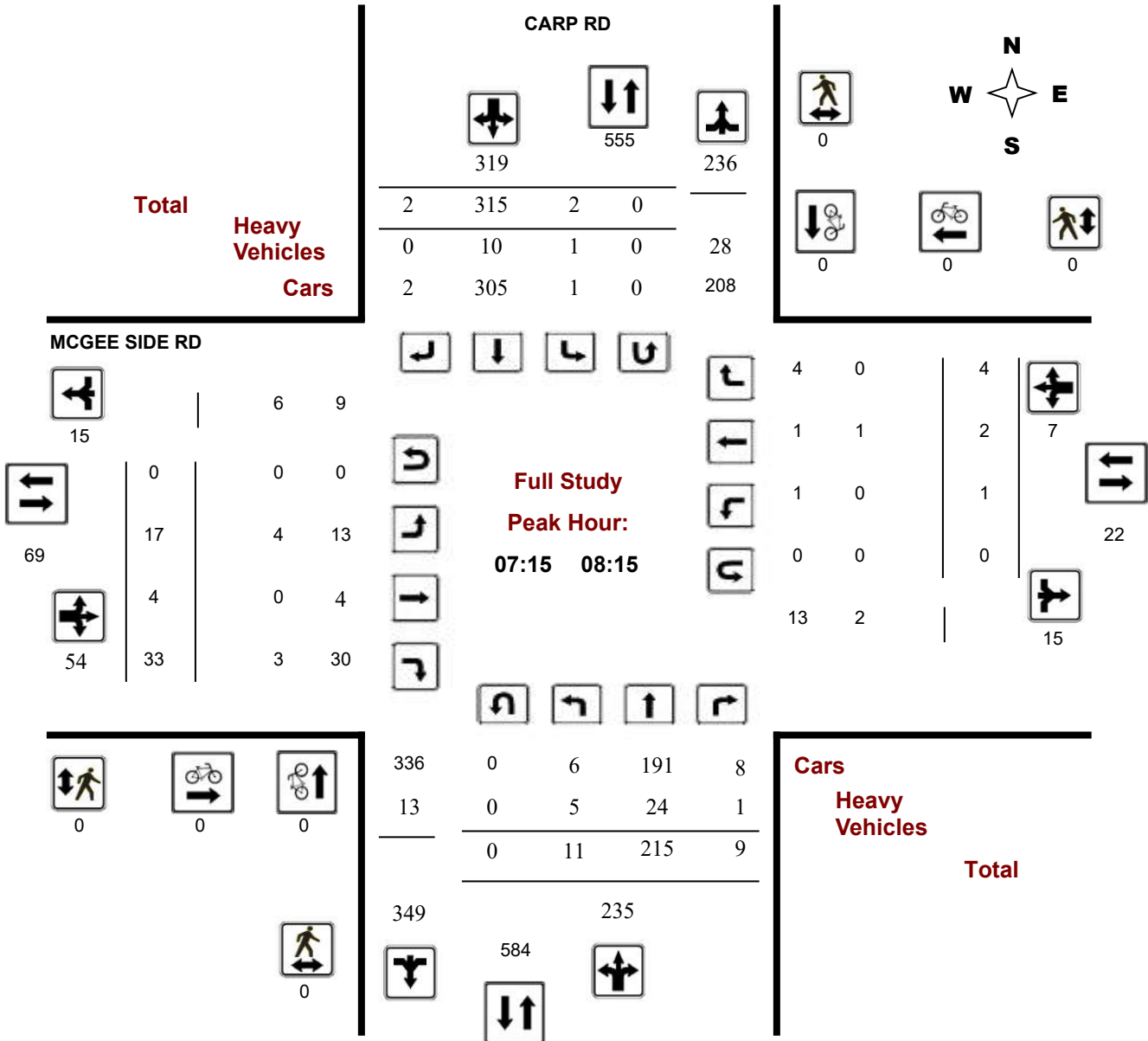
Survey Date: Tuesday, April 09, 2019

WO No: 38506

Start Time: 07:00

Device: Miovision

Full Study Peak Hour Diagram



Turning Movement Count - Study Results

CARP RD @ MCGEE SIDE RD

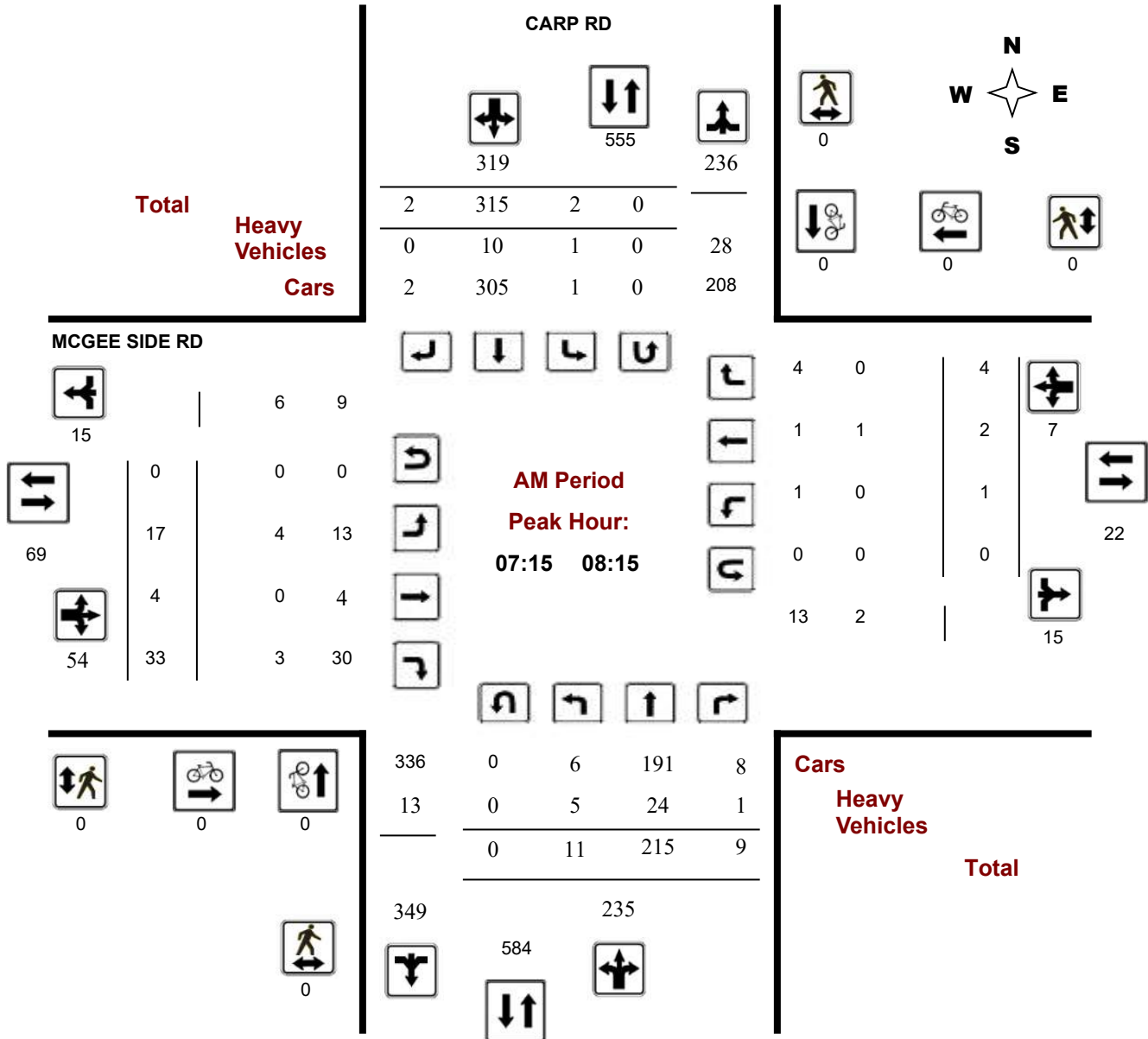
Survey Date: Tuesday, April 09, 2019

WO No: 38506

Start Time: 07:00

Device: Miovision

AM Period Peak Hour Diagram



Turning Movement Count - Study Results

CARP RD @ MCGEE SIDE RD

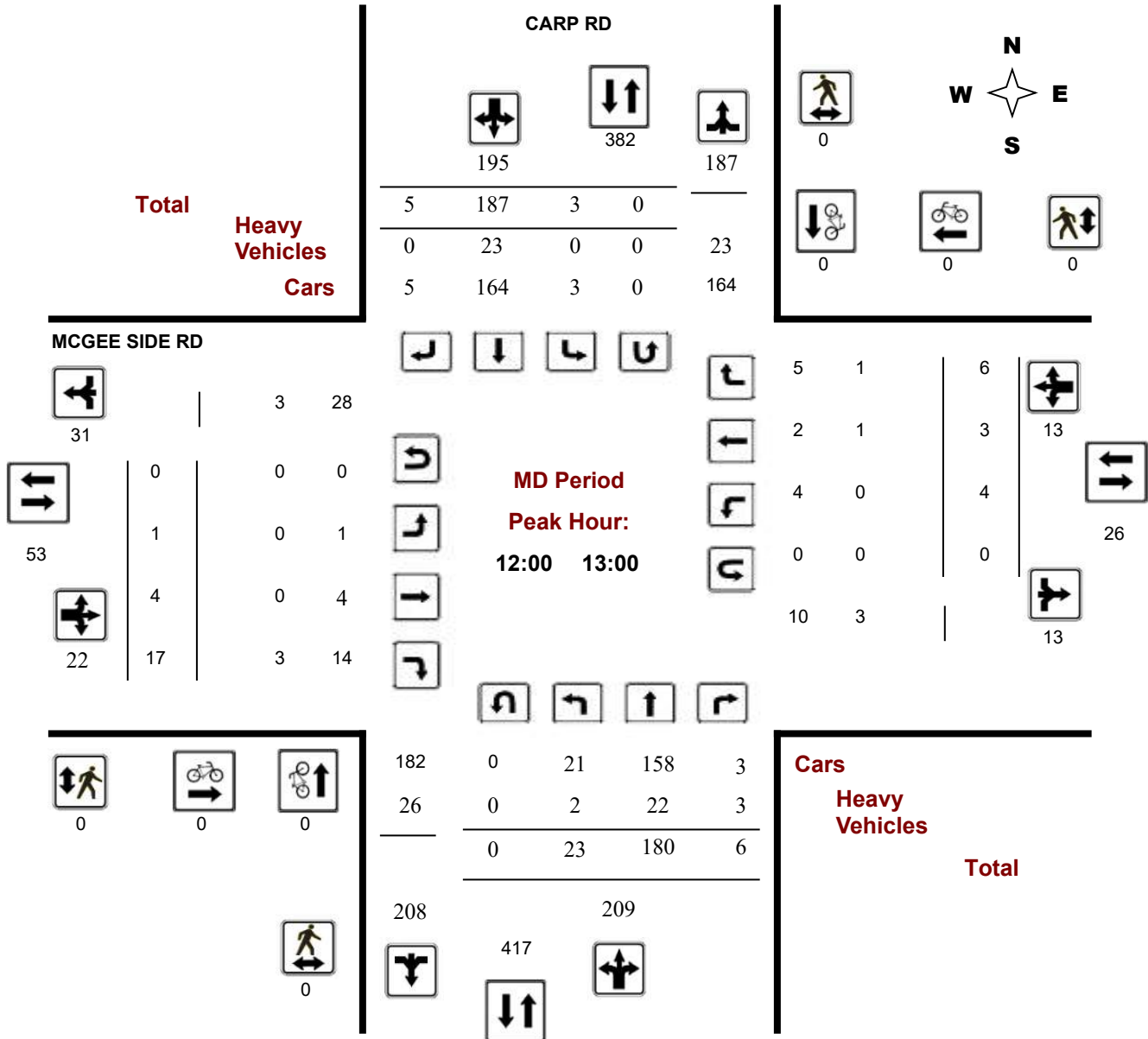
Survey Date: Tuesday, April 09, 2019

WO No: 38506

Start Time: 07:00

Device: Miovision

MD Period Peak Hour Diagram



Turning Movement Count - Study Results

CARP RD @ MCGEE SIDE RD

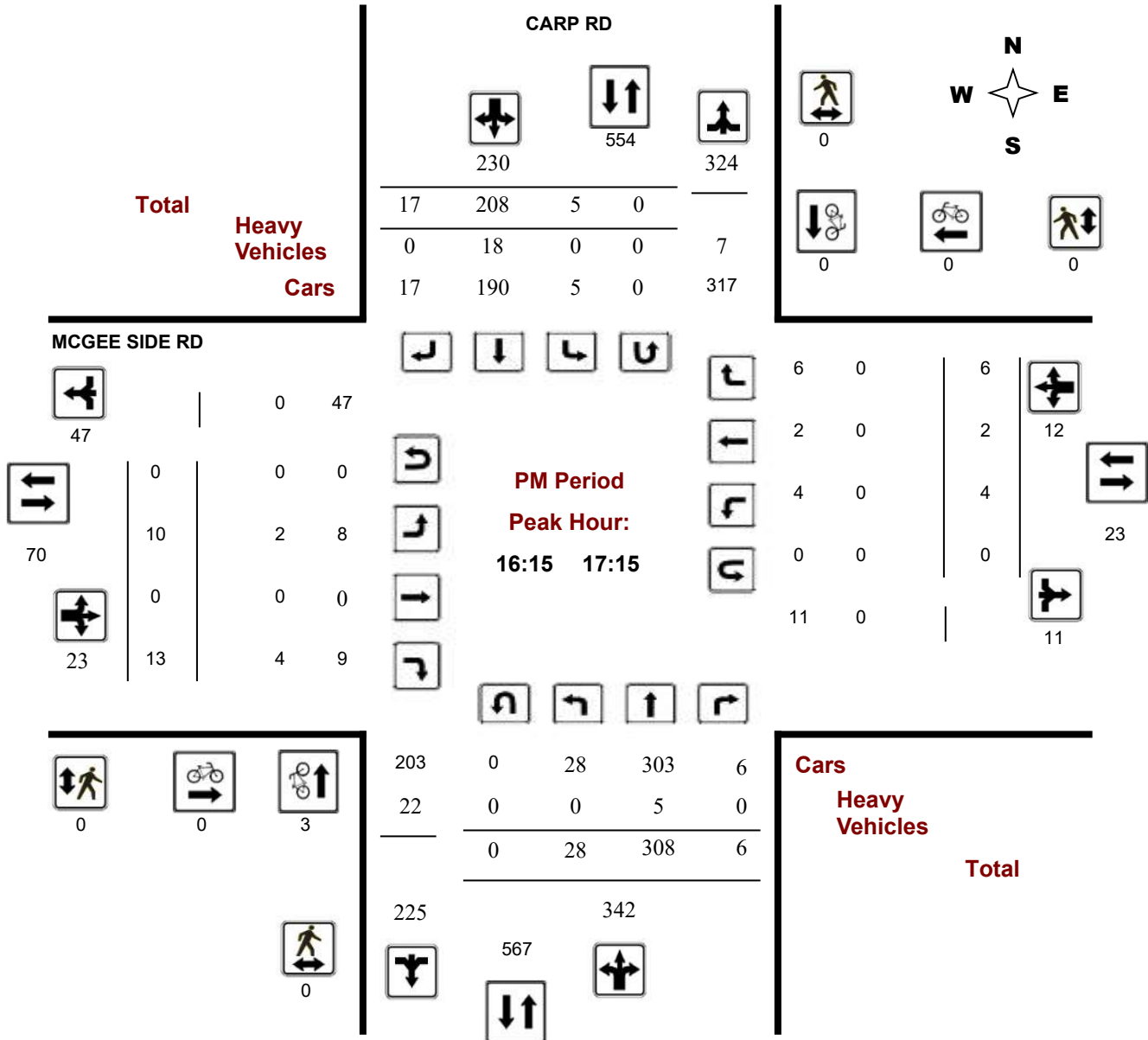
Survey Date: Tuesday, April 09, 2019

WO No: 38506

Start Time: 07:00

Device: Miovision

PM Period Peak Hour Diagram





Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARP RD @ MCGEE SIDE RD

Survey Date: Tuesday, April 09, 2019

WO No: 38506

Start Time: 07:00

Device: Miovision

Full Study Summary (8 HR Standard)

Survey Date: Tuesday, April 09, 2019

Total Observed U-Turns

AADT Factor

Northbound: 0 Southbound: 1
 Eastbound: 0 Westbound: 0

.90

| Period | CARP RD | | | | | | | | | | MCGEE SIDE RD | | | | | | | | | | Grand Total |
|------------------|------------|------|----|--------|---------|------------|------|----|--------|---------|---------------|----|-----|--------|---------|-----------|----|----|--------|---------|-------------|
| | Northbound | | | | | Southbound | | | | | Eastbound | | | | | Westbound | | | | | |
| | LT | ST | RT | NB TOT | STR TOT | LT | ST | RT | SB TOT | STR TOT | LT | ST | RT | EB TOT | STR TOT | LT | ST | RT | WB TOT | STR TOT | |
| 07:00 08:00 | 13 | 190 | 11 | 214 | 540 | 3 | 320 | 3 | 326 | 540 | 11 | 3 | 31 | 45 | 397 | 1 | 0 | 4 | 5 | 50 | 590 |
| 08:00 09:00 | 12 | 195 | 7 | 214 | 449 | 5 | 225 | 5 | 235 | 449 | 14 | 4 | 29 | 47 | 397 | 2 | 4 | 3 | 9 | 56 | 505 |
| 09:00 10:00 | 10 | 184 | 4 | 198 | 390 | 3 | 182 | 7 | 192 | 390 | 9 | 3 | 22 | 34 | 390 | 0 | 1 | 4 | 5 | 39 | 429 |
| 11:30 12:30 | 22 | 172 | 2 | 196 | 397 | 4 | 190 | 7 | 201 | 397 | 7 | 3 | 15 | 25 | 397 | 6 | 2 | 4 | 12 | 37 | 434 |
| 12:30 13:30 | 17 | 192 | 7 | 216 | 373 | 0 | 153 | 4 | 157 | 373 | 0 | 3 | 14 | 17 | 373 | 2 | 3 | 5 | 10 | 27 | 400 |
| 15:00 16:00 | 21 | 265 | 5 | 291 | 468 | 2 | 169 | 6 | 177 | 468 | 10 | 1 | 14 | 25 | 468 | 12 | 6 | 7 | 25 | 50 | 518 |
| 16:00 17:00 | 27 | 305 | 6 | 338 | 547 | 3 | 193 | 13 | 209 | 547 | 10 | 0 | 14 | 24 | 547 | 8 | 3 | 6 | 17 | 41 | 588 |
| 17:00 18:00 | 30 | 320 | 1 | 351 | 529 | 2 | 162 | 14 | 178 | 529 | 4 | 1 | 17 | 22 | 529 | 3 | 5 | 6 | 14 | 36 | 565 |
| Sub Total | 152 | 1823 | 43 | 2018 | 3693 | 22 | 1594 | 59 | 1675 | 3693 | 65 | 18 | 156 | 239 | 3693 | 34 | 24 | 39 | 97 | 336 | 4029 |
| U Turns | | | | 0 | | | 1 | 1 | | | | 0 | | | 0 | | | 0 | 1 | | |
| Total | 152 | 1823 | 43 | 2018 | 3694 | 22 | 1594 | 59 | 1676 | 3694 | 65 | 18 | 156 | 239 | 3694 | 34 | 24 | 39 | 97 | 336 | 4030 |

Note: These values are calculated by multiplying the totals by the appropriate expansion factor. **1.39**

| | | | | | | | | | | | | | | | | | | | | | |
|-----------------|-----|------|----|------|------|----|------|----|------|------|----|----|-----|-----|------|----|----|----|-----|-----|------|
| AVG 12Hr | 190 | 2281 | 54 | 2524 | 4622 | 28 | 2612 | 97 | 2097 | 4622 | 81 | 22 | 195 | 299 | 4622 | 42 | 30 | 49 | 122 | 420 | 5042 |
|-----------------|-----|------|----|------|------|----|------|----|------|------|----|----|-----|-----|------|----|----|----|-----|-----|------|

Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor. **.90**

| | | | | | | | | | | | | | | | | | | | | | |
|-----------------|-----|------|----|------|------|----|------|-----|------|------|-----|----|-----|-----|------|----|----|----|-----|-----|------|
| AVG 24Hr | 249 | 2988 | 71 | 3306 | 6055 | 37 | 3422 | 127 | 2747 | 6055 | 106 | 29 | 255 | 392 | 6055 | 55 | 39 | 64 | 160 | 550 | 6605 |
|-----------------|-----|------|----|------|------|----|------|-----|------|------|-----|----|-----|-----|------|----|----|----|-----|-----|------|

Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor. **1.31**

Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARP RD @ MCGEE SIDE RD

Survey Date: Tuesday, April 09, 2019

WO No: 38506

Start Time: 07:00

Device: Miovision

Full Study 15 Minute Increments

CARP RD

MCGEE SIDE RD

Northbound

Southbound

Eastbound

Westbound

| Time Period | LT | ST | RT | N TOT | LT | ST | RT | S TOT | STR TOT | LT | ST | RT | E TOT | LT | ST | RT | W TOT | STR TOT | Grand Total |
|---------------|------------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|-------------|-----------|-----------|------------|------------|-----------|-----------|-----------|-----------|------------|----------------|
| 07:00 07:15 | 5 | 43 | 3 | 51 | 3 | 59 | 1 | 63 | 114 | 1 | 1 | 7 | 9 | 0 | 0 | 1 | 1 | 10 | 124 |
| 07:15 07:30 | 3 | 43 | 5 | 51 | 0 | 104 | 1 | 105 | 156 | 1 | 0 | 7 | 8 | 0 | 0 | 0 | 0 | 8 | 164 |
| 07:30 07:45 | 4 | 50 | 2 | 56 | 0 | 74 | 0 | 74 | 130 | 4 | 1 | 10 | 15 | 0 | 0 | 1 | 1 | 16 | 146 |
| 17:30 17:45 | 3 | 90 | 0 | 93 | 0 | 33 | 3 | 36 | 129 | 1 | 1 | 4 | 6 | 2 | 2 | 2 | 6 | 12 | 141 |
| 09:15 09:30 | 1 | 48 | 0 | 49 | 0 | 47 | 0 | 47 | 96 | 1 | 2 | 7 | 10 | 0 | 1 | 0 | 1 | 11 | 107 |
| 09:30 09:45 | 3 | 49 | 1 | 53 | 1 | 40 | 1 | 42 | 95 | 3 | 0 | 5 | 8 | 0 | 0 | 1 | 1 | 9 | 104 |
| 09:45 10:00 | 5 | 38 | 2 | 45 | 2 | 39 | 4 | 45 | 90 | 5 | 0 | 7 | 12 | 0 | 0 | 3 | 3 | 15 | 105 |
| 12:30 12:45 | 5 | 51 | 3 | 59 | 0 | 34 | 1 | 35 | 94 | 0 | 1 | 3 | 4 | 0 | 1 | 3 | 4 | 8 | 102 |
| 13:00 13:15 | 2 | 56 | 1 | 59 | 0 | 38 | 0 | 38 | 97 | 0 | 0 | 3 | 3 | 0 | 0 | 1 | 1 | 4 | 101 |
| 13:15 13:30 | 5 | 43 | 2 | 50 | 0 | 36 | 1 | 37 | 87 | 0 | 1 | 1 | 2 | 2 | 2 | 0 | 4 | 6 | 93 |
| 15:00 15:15 | 5 | 44 | 0 | 49 | 0 | 48 | 1 | 49 | 98 | 1 | 1 | 5 | 7 | 0 | 3 | 2 | 5 | 12 | 110 |
| 15:15 15:30 | 3 | 65 | 2 | 70 | 0 | 34 | 0 | 34 | 104 | 3 | 0 | 3 | 6 | 0 | 1 | 1 | 2 | 8 | 112 |
| 15:30 15:45 | 1 | 80 | 1 | 82 | 1 | 38 | 3 | 42 | 124 | 3 | 0 | 4 | 7 | 10 | 0 | 3 | 13 | 20 | 144 |
| 16:00 16:15 | 5 | 80 | 0 | 85 | 0 | 49 | 0 | 49 | 134 | 1 | 0 | 6 | 7 | 4 | 2 | 1 | 7 | 14 | 148 |
| 16:15 16:30 | 7 | 65 | 0 | 72 | 0 | 57 | 2 | 59 | 131 | 3 | 0 | 2 | 5 | 2 | 1 | 3 | 6 | 11 | 142 |
| 17:15 17:30 | 11 | 82 | 0 | 93 | 0 | 33 | 3 | 36 | 129 | 2 | 0 | 6 | 8 | 1 | 1 | 0 | 2 | 10 | 139 |
| 07:45 08:00 | 1 | 54 | 1 | 56 | 0 | 83 | 1 | 84 | 140 | 5 | 1 | 7 | 13 | 1 | 0 | 2 | 3 | 16 | 156 |
| 08:00 08:15 | 3 | 68 | 1 | 72 | 2 | 54 | 0 | 56 | 128 | 7 | 2 | 9 | 18 | 0 | 2 | 1 | 3 | 21 | 149 |
| 11:45 12:00 | 5 | 47 | 0 | 52 | 0 | 42 | 3 | 45 | 97 | 2 | 0 | 2 | 4 | 1 | 0 | 1 | 2 | 6 | 103 |
| 08:15 08:30 | 3 | 44 | 0 | 47 | 1 | 60 | 1 | 62 | 109 | 1 | 0 | 7 | 8 | 0 | 1 | 0 | 1 | 9 | 118 |
| 08:30 08:45 | 3 | 34 | 5 | 42 | 0 | 65 | 3 | 69 | 111 | 3 | 2 | 7 | 12 | 1 | 0 | 2 | 3 | 15 | 126 |
| 12:00 12:15 | 8 | 40 | 0 | 48 | 3 | 59 | 2 | 64 | 112 | 0 | 0 | 5 | 5 | 2 | 2 | 2 | 6 | 11 | 123 |
| 08:45 09:00 | 3 | 49 | 1 | 53 | 2 | 46 | 1 | 49 | 102 | 3 | 0 | 6 | 9 | 1 | 1 | 0 | 2 | 11 | 113 |
| 09:00 09:15 | 1 | 49 | 1 | 51 | 0 | 56 | 2 | 58 | 109 | 0 | 1 | 3 | 4 | 0 | 0 | 0 | 0 | 4 | 113 |
| 11:30 11:45 | 4 | 38 | 0 | 42 | 1 | 40 | 2 | 43 | 85 | 4 | 1 | 6 | 11 | 1 | 0 | 1 | 2 | 13 | 98 |
| 12:15 12:30 | 5 | 47 | 2 | 54 | 0 | 49 | 0 | 49 | 103 | 1 | 2 | 2 | 5 | 2 | 0 | 0 | 2 | 7 | 110 |
| 16:30 16:45 | 8 | 80 | 3 | 91 | 1 | 44 | 6 | 51 | 142 | 2 | 0 | 5 | 7 | 0 | 0 | 1 | 1 | 8 | 150 |
| 12:45 13:00 | 5 | 42 | 1 | 48 | 0 | 45 | 2 | 47 | 95 | 0 | 1 | 7 | 8 | 0 | 0 | 1 | 1 | 9 | 104 |
| 17:45 18:00 | 10 | 65 | 1 | 76 | 0 | 32 | 4 | 36 | 112 | 0 | 0 | 2 | 2 | 0 | 1 | 3 | 4 | 6 | 118 |
| 15:45 16:00 | 12 | 76 | 2 | 90 | 1 | 49 | 2 | 52 | 142 | 3 | 0 | 2 | 5 | 2 | 2 | 1 | 5 | 10 | 152 |
| 17:00 17:15 | 6 | 83 | 0 | 89 | 2 | 64 | 4 | 70 | 159 | 1 | 0 | 5 | 6 | 0 | 1 | 1 | 2 | 8 | 167 |
| 16:45 17:00 | 7 | 80 | 3 | 90 | 2 | 43 | 5 | 50 | 140 | 4 | 0 | 1 | 5 | 2 | 0 | 1 | 3 | 8 | 148 |
| Total: | 152 | 1823 | 43 | 2018 | 22 | 1594 | 59 | 1676 | 3694 | 65 | 18 | 156 | 239 | 34 | 24 | 39 | 97 | 336 | 4,030 |

Note: U-Turns are included in Totals.



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARP RD @ MCGEE SIDE RD

Survey Date: Tuesday, April 09, 2019

WO No: 38506

Start Time: 07:00

Device: Miovision

Full Study Cyclist Volume

| Time Period | CARP RD | | | MCGEE SIDE RD | | | Grand Total |
|--------------|------------|------------|--------------|---------------|-----------|--------------|-------------|
| | Northbound | Southbound | Street Total | Eastbound | Westbound | Street Total | |
| 07:00 07:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 07:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:30 07:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:30 17:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:15 09:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:30 09:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:45 10:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:30 12:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13:00 13:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13:15 13:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:00 15:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:15 15:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:30 15:45 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
| 16:00 16:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:15 16:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:15 17:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:45 08:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:00 08:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:45 12:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:15 08:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:30 08:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:00 12:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:45 09:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:00 09:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:30 11:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:15 12:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:30 16:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:45 13:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:45 18:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:45 16:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:00 17:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:45 17:00 | 3 | 0 | 3 | 0 | 0 | 0 | 3 |
| Total | 4 | 0 | 4 | 0 | 0 | 0 | 4 |



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARP RD @ MCGEE SIDE RD

Survey Date: Tuesday, April 09, 2019

WO No: 38506

Start Time: 07:00

Device: Miovision

Full Study Pedestrian Volume

CARP RD

MCGEE SIDE RD

| Time Period | NB Approach (E or W Crossing) | SB Approach (E or W Crossing) | Total | EB Approach (N or S Crossing) | WB Approach (N or S Crossing) | Total | Grand Total |
|--------------------|----------------------------------|----------------------------------|----------|----------------------------------|----------------------------------|----------|-------------|
| 07:00 07:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 07:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:30 07:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:30 17:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:15 09:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:30 09:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:45 10:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:30 12:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13:00 13:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13:15 13:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:00 15:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:15 15:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:30 15:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:00 16:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:15 16:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:15 17:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:45 08:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:00 08:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:45 12:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:15 08:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:30 08:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:00 12:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:45 09:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:00 09:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:30 11:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:15 12:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:30 16:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:45 13:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:45 18:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:45 16:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:00 17:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:45 17:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 |



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARP RD @ MCGEE SIDE RD

Survey Date: Tuesday, April 09, 2019

WO No: 38506

Start Time: 07:00

Device: Miovision

Full Study Heavy Vehicles

CARP RD

MCGEE SIDE RD

Northbound

Southbound

Eastbound

Westbound

| Time Period | CARP RD Northbound | | | | CARP RD Southbound | | | | MCGEE SIDE RD Eastbound | | | | MCGEE SIDE RD Westbound | | | | Grand Total | | |
|-------------|--------------------|-----|----|-------|--------------------|-----|----|-------|-------------------------|----|----|----|-------------------------|----|----|----|-------------|-------|---------|
| | LT | ST | RT | N TOT | LT | ST | RT | S TOT | STR TOT | LT | ST | RT | E TOT | LT | ST | RT | | W TOT | STR TOT |
| 07:00 07:15 | 0 | 8 | 0 | 8 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| 07:15 07:30 | 1 | 5 | 1 | 7 | 0 | 0 | 0 | 0 | 7 | 1 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 2 | 9 |
| 07:30 07:45 | 3 | 5 | 0 | 8 | 0 | 3 | 0 | 3 | 11 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 12 |
| 17:30 17:45 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 09:15 09:30 | 0 | 3 | 0 | 3 | 0 | 5 | 0 | 5 | 8 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 9 |
| 09:30 09:45 | 0 | 8 | 0 | 8 | 0 | 10 | 0 | 10 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18 |
| 09:45 10:00 | 1 | 8 | 0 | 9 | 0 | 2 | 0 | 2 | 11 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 12 |
| 12:30 12:45 | 1 | 7 | 1 | 9 | 0 | 4 | 0 | 4 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 |
| 13:00 13:15 | 0 | 3 | 0 | 3 | 0 | 6 | 0 | 6 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| 13:15 13:30 | 1 | 7 | 1 | 9 | 0 | 2 | 0 | 2 | 11 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 2 | 13 |
| 15:00 15:15 | 0 | 2 | 0 | 2 | 0 | 4 | 1 | 5 | 7 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 2 | 9 |
| 15:15 15:30 | 1 | 2 | 1 | 4 | 0 | 3 | 0 | 3 | 7 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 8 |
| 15:30 15:45 | 0 | 4 | 1 | 5 | 0 | 3 | 0 | 3 | 8 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 9 |
| 16:00 16:15 | 1 | 5 | 0 | 6 | 0 | 2 | 0 | 2 | 8 | 1 | 0 | 1 | 2 | 1 | 0 | 1 | 2 | 4 | 12 |
| 16:15 16:30 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 2 | 3 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 4 |
| 17:15 17:30 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 2 | 3 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 4 |
| 07:45 08:00 | 1 | 7 | 0 | 8 | 0 | 5 | 0 | 5 | 13 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 14 |
| 08:00 08:15 | 0 | 7 | 0 | 7 | 1 | 2 | 0 | 3 | 10 | 3 | 0 | 0 | 3 | 0 | 1 | 0 | 1 | 4 | 14 |
| 11:45 12:00 | 0 | 4 | 0 | 4 | 0 | 5 | 0 | 5 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| 08:15 08:30 | 0 | 9 | 0 | 9 | 0 | 5 | 0 | 5 | 14 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 15 |
| 08:30 08:45 | 1 | 2 | 0 | 3 | 0 | 2 | 2 | 4 | 7 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 2 | 9 |
| 12:00 12:15 | 0 | 3 | 0 | 3 | 0 | 6 | 0 | 6 | 9 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 10 |
| 08:45 09:00 | 1 | 6 | 0 | 7 | 1 | 0 | 0 | 1 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| 09:00 09:15 | 0 | 5 | 0 | 5 | 0 | 5 | 0 | 5 | 10 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 11 |
| 11:30 11:45 | 1 | 4 | 0 | 5 | 0 | 3 | 0 | 3 | 8 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 9 |
| 12:15 12:30 | 0 | 8 | 1 | 9 | 0 | 5 | 0 | 5 | 14 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 15 |
| 16:30 16:45 | 0 | 1 | 0 | 1 | 0 | 6 | 0 | 6 | 7 | 1 | 0 | 2 | 3 | 0 | 0 | 0 | 0 | 3 | 10 |
| 12:45 13:00 | 1 | 4 | 1 | 6 | 0 | 8 | 0 | 8 | 14 | 0 | 0 | 2 | 2 | 0 | 0 | 1 | 1 | 3 | 17 |
| 17:45 18:00 | 0 | 3 | 1 | 4 | 0 | 2 | 0 | 2 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| 15:45 16:00 | 0 | 2 | 0 | 2 | 1 | 3 | 0 | 4 | 6 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 7 |
| 17:00 17:15 | 0 | 2 | 0 | 2 | 0 | 2 | 0 | 2 | 4 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 2 | 6 |
| 16:45 17:00 | 0 | 1 | 0 | 1 | 0 | 8 | 0 | 8 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| Total: None | 15 | 138 | 8 | 161 | 3 | 115 | 3 | 121 | 282 | 10 | 2 | 16 | 28 | 3 | 4 | 3 | 10 | 38 | 320 |



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARP RD @ MCGEE SIDE RD

Survey Date: Tuesday, April 09, 2019

WO No: 38506

Start Time: 07:00

Device: Miovision

Full Study 15 Minute U-Turn Total

CARP RD

MCGEE SIDE RD

| Time Period | | Northbound U-Turn Total | Southbound U-Turn Total | Eastbound U-Turn Total | Westbound U-Turn Total | Total |
|-------------|-------|----------------------------|----------------------------|---------------------------|---------------------------|-------|
| 07:00 | 07:15 | 0 | 0 | 0 | 0 | 0 |
| 07:15 | 07:30 | 0 | 0 | 0 | 0 | 0 |
| 07:30 | 07:45 | 0 | 0 | 0 | 0 | 0 |
| 17:30 | 17:45 | 0 | 0 | 0 | 0 | 0 |
| 09:15 | 09:30 | 0 | 0 | 0 | 0 | 0 |
| 09:30 | 09:45 | 0 | 0 | 0 | 0 | 0 |
| 09:45 | 10:00 | 0 | 0 | 0 | 0 | 0 |
| 12:30 | 12:45 | 0 | 0 | 0 | 0 | 0 |
| 13:00 | 13:15 | 0 | 0 | 0 | 0 | 0 |
| 13:15 | 13:30 | 0 | 0 | 0 | 0 | 0 |
| 15:00 | 15:15 | 0 | 0 | 0 | 0 | 0 |
| 15:15 | 15:30 | 0 | 0 | 0 | 0 | 0 |
| 15:30 | 15:45 | 0 | 0 | 0 | 0 | 0 |
| 16:00 | 16:15 | 0 | 0 | 0 | 0 | 0 |
| 16:15 | 16:30 | 0 | 0 | 0 | 0 | 0 |
| 17:15 | 17:30 | 0 | 0 | 0 | 0 | 0 |
| 07:45 | 08:00 | 0 | 0 | 0 | 0 | 0 |
| 08:00 | 08:15 | 0 | 0 | 0 | 0 | 0 |
| 11:45 | 12:00 | 0 | 0 | 0 | 0 | 0 |
| 08:15 | 08:30 | 0 | 0 | 0 | 0 | 0 |
| 08:30 | 08:45 | 0 | 1 | 0 | 0 | 1 |
| 12:00 | 12:15 | 0 | 0 | 0 | 0 | 0 |
| 08:45 | 09:00 | 0 | 0 | 0 | 0 | 0 |
| 09:00 | 09:15 | 0 | 0 | 0 | 0 | 0 |
| 11:30 | 11:45 | 0 | 0 | 0 | 0 | 0 |
| 12:15 | 12:30 | 0 | 0 | 0 | 0 | 0 |
| 16:30 | 16:45 | 0 | 0 | 0 | 0 | 0 |
| 12:45 | 13:00 | 0 | 0 | 0 | 0 | 0 |
| 17:45 | 18:00 | 0 | 0 | 0 | 0 | 0 |
| 15:45 | 16:00 | 0 | 0 | 0 | 0 | 0 |
| 17:00 | 17:15 | 0 | 0 | 0 | 0 | 0 |
| 16:45 | 17:00 | 0 | 0 | 0 | 0 | 0 |
| Total | | 0 | 1 | 0 | 0 | 1 |



Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2018 To: December 31, 2022

Location: CARP RD @ MARCH RD

Traffic Control: Traffic signal

Total Collisions: 17

| Date/Day/Time | Environment | Impact Type | Classification | Surface Cond'n | Veh. Dir | Vehicle Manoeuver | Vehicle type | First Event | No. Ped |
|------------------------|---------------|------------------|------------------|----------------|----------|---------------------|---------------------------|-----------------------|---------|
| 2018-Jan-29, Mon,09:07 | Clear | Angle | P.D. only | Dry | North | Going ahead | Automobile, station wagon | Other motor vehicle | 0 |
| | | | | | East | Going ahead | Automobile, station wagon | Other motor vehicle | |
| 2018-May-16, Wed,17:00 | Clear | Turning movement | P.D. only | Dry | South | Turning left | Pick-up truck | Other motor vehicle | 0 |
| | | | | | North | Going ahead | Automobile, station wagon | Other motor vehicle | |
| 2018-Aug-26, Sun,09:49 | Clear | SMV other | P.D. only | Dry | North | Turning right | Pick-up truck | Pole (utility, power) | 0 |
| 2018-Aug-30, Thu,14:42 | Clear | Angle | P.D. only | Dry | East | Going ahead | Automobile, station wagon | Other motor vehicle | 0 |
| | | | | | South | Turning left | Pick-up truck | Other motor vehicle | |
| 2018-Oct-02, Tue,17:45 | Rain | Turning movement | P.D. only | Wet | East | Turning left | Automobile, station wagon | Other motor vehicle | 0 |
| | | | | | West | Going ahead | Automobile, station wagon | Other motor vehicle | |
| 2018-Dec-20, Thu,01:18 | Clear | SMV other | P.D. only | Dry | South | Turning left | Automobile, station wagon | Pole (utility, power) | 0 |
| 2019-Jan-31, Thu,10:14 | Clear | Angle | P.D. only | Dry | East | Going ahead | Delivery van | Other motor vehicle | 0 |
| | | | | | North | Going ahead | Pick-up truck | Other motor vehicle | |
| | | | | | East | Stopped | Automobile, station wagon | Other motor vehicle | |
| 2019-Feb-19, Tue,06:27 | Clear | Angle | P.D. only | Dry | East | Going ahead | Automobile, station wagon | Other motor vehicle | 0 |
| | | | | | South | Going ahead | Passenger van | Other motor vehicle | |
| 2019-Sep-06, Fri,15:41 | Rain | SMV other | P.D. only | Wet | North | Turning left | Pick-up truck | Skidding/sliding | 0 |
| 2020-May-26, Tue,07:41 | Clear | Rear end | P.D. only | Dry | North | Going ahead | Passenger van | Other motor vehicle | 0 |
| | | | | | North | Stopped | Automobile, station wagon | Other motor vehicle | |
| 2020-May-29, Fri,10:52 | Clear | Angle | Non-fatal injury | Dry | North | Going ahead | Truck and trailer | Other motor vehicle | 0 |
| | | | | | West | Turning right | Automobile, station wagon | Other motor vehicle | |
| 2020-Dec-09, Wed,09:15 | Snow | Rear end | P.D. only | Slush | North | Slowing or stopping | Pick-up truck | Other motor vehicle | 0 |
| | | | | | North | Stopped | Pick-up truck | Other motor vehicle | |
| 2022-Feb-10, Thu,22:29 | Freezing Rain | Angle | P.D. only | Ice | West | Turning right | Automobile, station wagon | Other motor vehicle | 0 |
| | | | | | South | Stopped | Pick-up truck | Other motor vehicle | |



Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2018 To: December 31, 2022

Location: CARP RD @ MARCH RD

Traffic Control: Traffic signal

Total Collisions: 17

| Date/Day/Time | Environment | Impact Type | Classification | Surface Cond'n | Veh. Dir | Vehicle Manoeuvre | Vehicle type | First Event | No. Ped |
|------------------------|-------------|------------------|------------------|----------------|----------|-------------------|---------------------------|---------------------|---------|
| 2022-Jul-14, Thu,08:04 | Clear | Angle | Non-fatal injury | Dry | West | Going ahead | Automobile, station wagon | Other motor vehicle | 0 |
| | | | | | South | Going ahead | Automobile, station wagon | Other motor vehicle | |
| 2022-Nov-02, Wed,22:45 | Clear | Turning movement | P.D. only | Dry | West | Going ahead | Automobile, station wagon | Other motor vehicle | 0 |
| | | | | | West | Turning right | Automobile, station wagon | Other motor vehicle | |
| 2022-Nov-09, Wed,16:30 | Clear | Angle | Non-fatal injury | Dry | South | Going ahead | Automobile, station wagon | Other motor vehicle | 0 |
| | | | | | East | Going ahead | Automobile, station wagon | Other motor vehicle | |
| 2022-Dec-20, Tue,22:15 | Clear | Angle | P.D. only | Dry | West | Stopped | Automobile, station wagon | Other motor vehicle | 0 |
| | | | | | North | Turning left | Pick-up truck | Other motor vehicle | |

Location: CARP RD @ MCGEE SIDE RD

Traffic Control: Stop sign

Total Collisions: 4

| Date/Day/Time | Environment | Impact Type | Classification | Surface Cond'n | Veh. Dir | Vehicle Manoeuvre | Vehicle type | First Event | No. Ped |
|------------------------|-------------|------------------|----------------|----------------|----------|---------------------|---------------------------|---------------------|---------|
| 2018-Mar-09, Fri,00:00 | Clear | Sideswipe | P.D. only | Wet | South | Going ahead | Automobile, station wagon | Other motor vehicle | 0 |
| | | | | | South | Going ahead | Automobile, station wagon | Other motor vehicle | |
| 2019-Sep-06, Fri,15:13 | Rain | Rear end | P.D. only | Wet | North | Going ahead | Automobile, station wagon | Other motor vehicle | 0 |
| | | | | | North | Turning left | Automobile, station wagon | Other motor vehicle | |
| 2020-Dec-01, Tue,17:09 | Rain | Turning movement | P.D. only | Wet | North | Turning left | Pick-up truck | Other motor vehicle | 0 |
| | | | | | South | Slowing or stopping | Automobile, station wagon | Other motor vehicle | |
| 2021-Dec-21, Tue,08:43 | Clear | Angle | P.D. only | Wet | East | Going ahead | School bus | Other motor vehicle | 0 |
| | | | | | North | Going ahead | Pick-up truck | Other motor vehicle | |
| | | | | | West | Stopped | Pick-up truck | Other motor vehicle | |

Location: CARP RD btwn JOHN CAVANAUGH DR & MCGEE SIDE RD

Traffic Control: No control

Total Collisions: 1

| Date/Day/Time | Environment | Impact Type | Classification | Surface Cond'n | Veh. Dir | Vehicle Manoeuvre | Vehicle type | First Event | No. Ped |
|---------------|-------------|-------------|----------------|----------------|----------|-------------------|--------------|-------------|---------|
|---------------|-------------|-------------|----------------|----------------|----------|-------------------|--------------|-------------|---------|



Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2018 To: December 31, 2022

Location: CARP RD btwn JOHN CAVANAUGH DR & MCGEE SIDE RD

Traffic Control: No control

Total Collisions: 1

| Date/Day/Time | Environment | Impact Type | Classification | Surface Cond'n | Veh. Dir | Vehicle Manoeuvre | Vehicle type | First Event | No. Ped |
|------------------------|-------------|-------------|----------------|----------------|----------|-------------------|---------------------------|---------------------|---------|
| 2020-Mar-06, Fri,09:12 | Snow | Rear end | P.D. only | Ice | North | Going ahead | Automobile, station wagon | Other motor vehicle | 0 |
| | | | | | North | Stopped | Pick-up truck | Other motor vehicle | |

Location: CARP RD btwn JOHN CAVANAUGH DR & RUSS BRADLEY RD

Traffic Control: No control

Total Collisions: 6

| Date/Day/Time | Environment | Impact Type | Classification | Surface Cond'n | Veh. Dir | Vehicle Manoeuvre | Vehicle type | First Event | No. Ped |
|------------------------|-------------|------------------|------------------|----------------|----------|---------------------|---------------------------|---------------------|---------|
| 2018-Oct-17, Wed,07:58 | Clear | Rear end | P.D. only | Dry | North | Going ahead | Truck - dump | Other motor vehicle | 0 |
| | | | | | North | Going ahead | Automobile, station wagon | Other motor vehicle | |
| 2019-Aug-09, Fri,21:31 | Rain | Turning movement | Non-fatal injury | Wet | South | Overtaking | Automobile, station wagon | Other motor vehicle | 0 |
| | | | | | South | Turning left | Automobile, station wagon | Other motor vehicle | |
| 2020-Jan-20, Mon,09:28 | Clear | Rear end | P.D. only | Ice | South | Going ahead | Automobile, station wagon | Other motor vehicle | 0 |
| | | | | | South | Slowing or stopping | Automobile, station wagon | Other motor vehicle | |
| 2020-Nov-05, Thu,13:06 | Clear | Turning movement | P.D. only | Dry | North | Turning left | Truck and trailer | Other motor vehicle | 0 |
| | | | | | North | Overtaking | Automobile, station wagon | Other motor vehicle | |
| 2021-Jun-07, Mon,08:01 | Clear | Approaching | Non-fatal injury | Dry | South | Going ahead | Pick-up truck | Other motor vehicle | 0 |
| | | | | | North | Going ahead | Truck and trailer | Other motor vehicle | |
| 2022-Jun-15, Wed,13:15 | Clear | Rear end | P.D. only | Dry | South | Going ahead | Automobile, station wagon | Other motor vehicle | 0 |
| | | | | | South | Stopped | Automobile, station wagon | Other motor vehicle | |

Location: CARP RD btwn MARCH RD & RUSS BRADLEY RD

Traffic Control: No control

Total Collisions: 4

| Date/Day/Time | Environment | Impact Type | Classification | Surface Cond'n | Veh. Dir | Vehicle Manoeuvre | Vehicle type | First Event | No. Ped |
|------------------------|-------------|-------------|----------------|----------------|----------|-------------------|---------------------------|---------------|---------|
| 2019-Mar-29, Fri,20:03 | Clear | SMV other | P.D. only | Dry | South | Going ahead | Automobile, station wagon | Animal - wild | 0 |
| 2019-Jul-22, Mon,20:47 | Clear | SMV other | P.D. only | Dry | North | Going ahead | Automobile, station wagon | Ditch | 0 |
| 2019-Aug-24, Sat,09:16 | Clear | SMV other | P.D. only | Dry | North | Going ahead | Automobile, station wagon | Ran off road | 0 |



Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2018 To: December 31, 2022

Location: CARP RD btwn MARCH RD & RUSS BRADLEY RD

Traffic Control: No control

Total Collisions: 4

| Date/Day/Time | Environment | Impact Type | Classification | Surface Cond'n | Veh. Dir | Vehicle Manoeuvre | Vehicle type | First Event | No. Ped |
|------------------------|-------------|-------------|------------------|----------------|----------|-------------------|---------------|-----------------------|---------|
| 2021-Mar-19, Fri,16:03 | Clear | SMV other | Non-fatal injury | Dry | North | Going ahead | Pick-up truck | Pole (utility, power) | 0 |

Location: JOHN CAVANAUGH DR @ CARP RD

Traffic Control: Stop sign

Total Collisions: 1

| Date/Day/Time | Environment | Impact Type | Classification | Surface Cond'n | Veh. Dir | Vehicle Manoeuvre | Vehicle type | First Event | No. Ped |
|------------------------|-------------|------------------|----------------|----------------|----------|-------------------|---------------|---------------------|---------|
| 2020-Jan-26, Sun,08:00 | Snow | Turning movement | P.D. only | Loose snow | South | Turning left | Farm tractor | Other motor vehicle | 0 |
| | | | | | South | Overtaking | Pick-up truck | Other motor vehicle | |

Traffic Signal Timing

City of Ottawa, Public Works Department

Traffic Signal Operations Unit

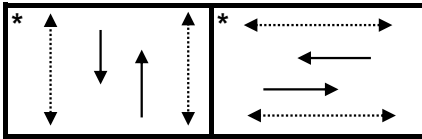
| | | | |
|----------------------|-------------------|--------------|--------------------|
| Intersection: | <u>Main:</u> Carp | <u>Side:</u> | March |
| Controller: | <u>ATC 3</u> | TSD: | <u>6675</u> |
| Author: | <u>Kymen Kwan</u> | Date: | <u>28-Jan-2025</u> |

Existing Timing Plans†

| | Plan | | Ped Minimum Time | | |
|---------------|-----------|-------------|------------------|----|---------|
| | Day 11 | Night 12 | Walk | DW | A+R |
| Cycle | 90 | 90 | | | |
| Offset | 0 | 0 | | | |
| NB Thru | 45 | 45 | 7 | 14 | 4.6+1.8 |
| SB Thru | 45 | 45 | 7 | 14 | 4.6+1.8 |
| EB Thru | 45 | 45 | 7 | 14 | 4.6+2.1 |
| WB Thru | 45 | 45 | 7 | 14 | 4.6+2.1 |

Phasing Sequence‡

Plan: All



- Notes:** 1) For Plan 11 there is a maximum recall for all phases
 2) For Plan 12, there is a minimum recall of 21s green time for the NS Thru movements

Schedule

| Weekday | | Weekend | |
|---------|------|---------|------|
| Time | Plan | Time | Plan |
| 0:05 | 11 | 0:05 | 11 |
| 23:55 | 12 | 23:55 | 12 |

Notes

- †: Time for each direction includes amber and all red intervals
 ‡: Start of first phase should be used as reference point for offset
 Asterisk (*) Indicates actuated phase
 (fp): Fully Protected Left Turn
 ◀.....▶ Pedestrian signal

Cost is \$62.38 (\$55.20 + HST)

APPENDIX C
TRANS O-D Survey Profile – Rural West

Rural West

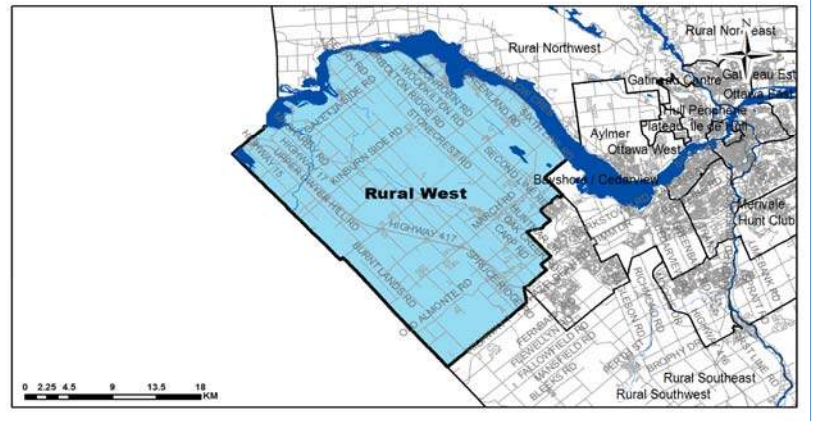
Demographic Characteristics

| | | | |
|---------------------|--------|-------------------------|--------|
| Population | 24,960 | Actively Travelled | 19,280 |
| Employed Population | 12,280 | Number of Vehicles | 18,930 |
| Households | 8,750 | Area (km ²) | 744.4 |

| Occupation Status (age 5+) | Male | Female | Total |
|----------------------------|---------------|---------------|---------------|
| Full Time Employed | 6,190 | 4,610 | 10,800 |
| Part Time Employed | 480 | 990 | 1,470 |
| Student | 2,720 | 2,970 | 5,680 |
| Retiree | 1,920 | 1,900 | 3,820 |
| Unemployed | 300 | 150 | 450 |
| Homemaker | 60 | 970 | 1,030 |
| Other | 260 | 140 | 390 |
| Total: | 11,920 | 11,730 | 23,660 |

| Traveller Characteristics | Male | Female | Total |
|---------------------------|--------|--------|--------|
| Transit Pass Holders | 620 | 550 | 1,170 |
| Licensed Drivers | 9,590 | 9,180 | 18,770 |
| Telecommuters | 90 | 100 | 190 |
| Trips made by residents | 28,240 | 31,610 | 59,850 |

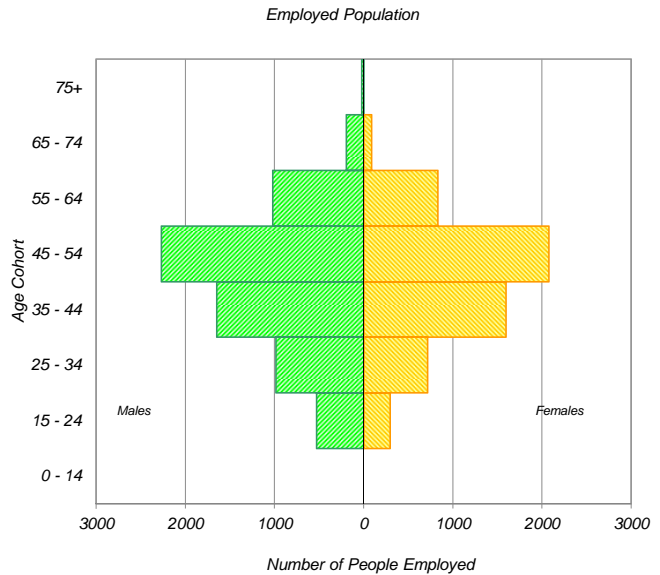
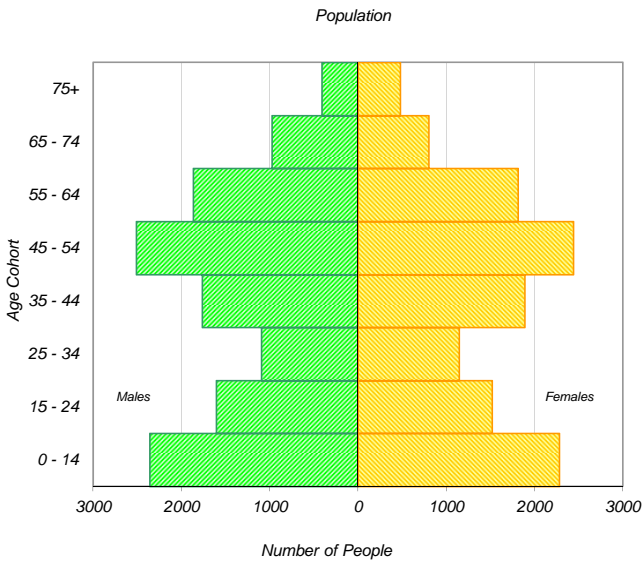
| Selected Indicators | |
|---|------|
| Daily Trips per Person (age 5+) | 2.53 |
| Vehicles per Person | 0.76 |
| Number of Persons per Household | 2.85 |
| Daily Trips per Household | 6.84 |
| Vehicles per Household | 2.16 |
| Workers per Household | 1.40 |
| Population Density (Pop/km ²) | 30 |



| Household Size | | |
|----------------|--------------|-------------|
| 1 person | 1,280 | 15% |
| 2 persons | 3,330 | 38% |
| 3 persons | 1,520 | 17% |
| 4 persons | 1,800 | 21% |
| 5+ persons | 820 | 9% |
| Total: | 8,750 | 100% |

| Households by Vehicle Availability | | |
|------------------------------------|--------------|-------------|
| 0 vehicles | 90 | 1% |
| 1 vehicle | 1,820 | 21% |
| 2 vehicles | 4,540 | 52% |
| 3 vehicles | 1,530 | 17% |
| 4+ vehicles | 770 | 9% |
| Total: | 8,750 | 100% |

| Households by Dwelling Type | | |
|-----------------------------|--------------|-------------|
| Single-detached | 8,330 | 95% |
| Semi-detached | 160 | 2% |
| Townhouse | 170 | 2% |
| Apartment/Condo | 90 | 1% |
| Total: | 8,750 | 100% |

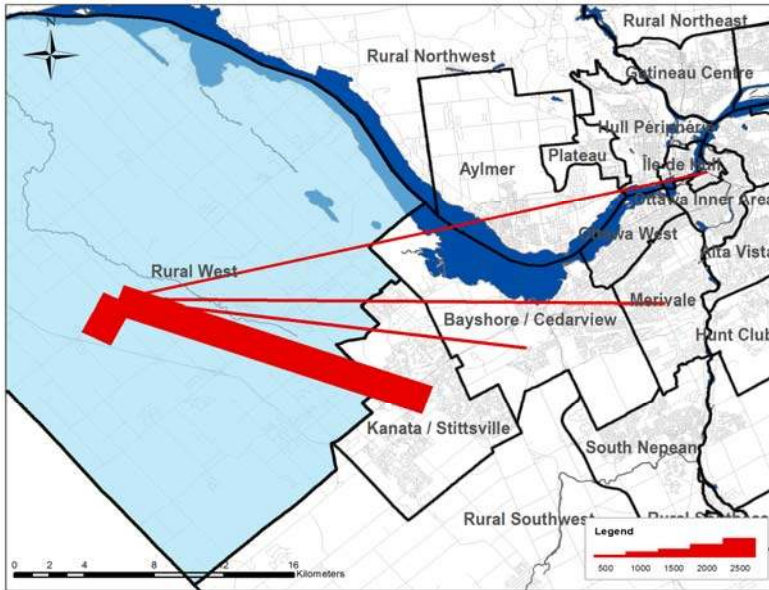


* In 2005 data was only collected for household members aged 11+ therefore these results cannot be compared to the 2011 data.

Travel Patterns

Top Five Destinations of Trips from Rural West

AM Peak Period



Summary of Trips to and from Rural West

AM Peak Period (6:30 - 8:59)

| Districts | Destinations of Trips From | | Origins of Trips To | |
|----------------------------|----------------------------|-------------|---------------------|-------------|
| | District | % Total | District | % Total |
| Ottawa Centre | 430 | 4% | 0 | 0% |
| Ottawa Inner Area | 380 | 4% | 20 | 0% |
| Ottawa East | 80 | 1% | 90 | 1% |
| Beacon Hill | 70 | 1% | 40 | 1% |
| Alta Vista | 180 | 2% | 20 | 0% |
| Hunt Club | 80 | 1% | 60 | 1% |
| Merivale | 720 | 7% | 70 | 1% |
| Ottawa West | 170 | 2% | 70 | 1% |
| Bayshore / Cedarview | 760 | 7% | 380 | 6% |
| Orléans | 0 | 0% | 70 | 1% |
| Rural East | 0 | 0% | 0 | 0% |
| Rural Southeast | 20 | 0% | 0 | 0% |
| South Gloucester / Leitrim | 60 | 1% | 40 | 1% |
| South Nepean | 30 | 0% | 80 | 1% |
| Rural Southwest | 160 | 2% | 80 | 1% |
| Kanata / Stittsville | 3,250 | 31% | 1,050 | 17% |
| Rural West | 4,020 | 38% | 4,020 | 65% |
| Île de Hull | 140 | 1% | 0 | 0% |
| Hull Périphérie | 50 | 0% | 0 | 0% |
| Plateau | 0 | 0% | 0 | 0% |
| Aylmer | 0 | 0% | 50 | 1% |
| Rural Northwest | 10 | 0% | 0 | 0% |
| Pointe Gatineau | 20 | 0% | 10 | 0% |
| Gatineau Est | 0 | 0% | 20 | 0% |
| Rural Northeast | 0 | 0% | 0 | 0% |
| Buckingham / Masson-Angers | 0 | 0% | 0 | 0% |
| Ontario Sub-Total: | 10,410 | 98% | 6,090 | 99% |
| Québec Sub-Total: | 220 | 2% | 80 | 1% |
| Total: | 10,630 | 100% | 6,170 | 100% |

Trips by Trip Purpose

| 24 Hours | From District | | To District | | Within District | |
|---------------------------|---------------|-------------|---------------|-------------|-----------------|-------------|
| Work or related | 6,640 | 32% | 2,300 | 11% | 1,860 | 12% |
| School | 1,930 | 9% | 460 | 2% | 2,220 | 14% |
| Shopping | 2,930 | 14% | 220 | 1% | 750 | 5% |
| Leisure | 2,240 | 11% | 1,440 | 7% | 1,310 | 8% |
| Medical | 680 | 3% | 150 | 1% | 420 | 3% |
| Pick-up / drive passenger | 1,610 | 8% | 800 | 4% | 1,400 | 9% |
| Return Home | 3,570 | 17% | 14,860 | 72% | 6,720 | 43% |
| Other | 1,080 | 5% | 370 | 2% | 880 | 6% |
| Total: | 20,680 | 100% | 20,600 | 100% | 15,560 | 100% |

| AM Peak (06:30 - 08:59) | From District | | To District | | Within District | |
|---------------------------|---------------|-------------|--------------|-------------|-----------------|-------------|
| Work or related | 4,090 | 62% | 1,410 | 65% | 1,140 | 28% |
| School | 1,480 | 22% | 420 | 19% | 2,010 | 50% |
| Shopping | 130 | 2% | 0 | 0% | 90 | 2% |
| Leisure | 110 | 2% | 40 | 2% | 40 | 1% |
| Medical | 120 | 2% | 30 | 1% | 0 | 0% |
| Pick-up / drive passenger | 460 | 7% | 50 | 2% | 430 | 11% |
| Return Home | 0 | 0% | 150 | 7% | 170 | 4% |
| Other | 230 | 3% | 60 | 3% | 140 | 3% |
| Total: | 6,620 | 100% | 2,160 | 100% | 4,020 | 100% |

| PM Peak (15:30 - 17:59) | From District | | To District | | Within District | |
|---------------------------|---------------|-------------|--------------|-------------|-----------------|-------------|
| Work or related | 40 | 1% | 30 | 0% | 50 | 1% |
| School | 40 | 1% | 0 | 0% | 0 | 0% |
| Shopping | 550 | 17% | 30 | 0% | 140 | 4% |
| Leisure | 510 | 16% | 290 | 4% | 510 | 14% |
| Medical | 170 | 5% | 40 | 1% | 0 | 0% |
| Pick-up / drive passenger | 360 | 11% | 360 | 5% | 430 | 12% |
| Return Home | 1,380 | 42% | 5,950 | 88% | 2,310 | 63% |
| Other | 200 | 6% | 40 | 1% | 230 | 6% |
| Total: | 3,250 | 100% | 6,740 | 100% | 3,670 | 100% |

| Peak Period (%) | Total: | % of 24 Hours | Within District (%) |
|-----------------|--------|---------------|---------------------|
| 24 Hours | 56,840 | | 27% |
| AM Peak Period | 12,800 | 23% | 31% |
| PM Peak Period | 13,660 | 24% | 27% |

Trips by Primary Travel Mode

| 24 Hours | From District | | To District | | Within District | |
|----------------|---------------|-------------|---------------|-------------|-----------------|-------------|
| Auto Driver | 15,110 | 73% | 15,000 | 73% | 8,640 | 55% |
| Auto Passenger | 3,170 | 15% | 3,310 | 16% | 2,320 | 15% |
| Transit | 790 | 4% | 680 | 3% | 0 | 0% |
| Bicycle | 190 | 1% | 180 | 1% | 50 | 0% |
| Walk | 0 | 0% | 0 | 0% | 720 | 5% |
| Other | 1,430 | 7% | 1,430 | 7% | 3,840 | 25% |
| Total: | 20,690 | 100% | 20,600 | 100% | 15,570 | 100% |

| AM Peak (06:30 - 08:59) | From District | | To District | | Within District | |
|-------------------------|---------------|-------------|--------------|-------------|-----------------|-------------|
| Auto Driver | 4,400 | 67% | 1,570 | 73% | 1,670 | 42% |
| Auto Passenger | 610 | 9% | 180 | 8% | 490 | 12% |
| Transit | 650 | 10% | 0 | 0% | 0 | 0% |
| Bicycle | 0 | 0% | 0 | 0% | 0 | 0% |
| Walk | 0 | 0% | 0 | 0% | 140 | 3% |
| Other | 950 | 14% | 400 | 19% | 1,720 | 43% |
| Total: | 6,610 | 100% | 2,150 | 100% | 4,020 | 100% |

| PM Peak (15:30 - 17:59) | From District | | To District | | Within District | |
|-------------------------|---------------|-------------|--------------|-------------|-----------------|-------------|
| Auto Driver | 2,590 | 80% | 5,070 | 75% | 1,960 | 54% |
| Auto Passenger | 540 | 17% | 850 | 13% | 870 | 24% |
| Transit | 0 | 0% | 450 | 7% | 0 | 0% |
| Bicycle | 10 | 0% | 0 | 0% | 20 | 1% |
| Walk | 0 | 0% | 0 | 0% | 180 | 5% |
| Other | 100 | 3% | 370 | 5% | 630 | 17% |
| Total: | 3,240 | 100% | 6,740 | 100% | 3,660 | 100% |

| Avg Vehicle Occupancy | From District | | To District | | Within District | |
|-----------------------|---------------|--|-------------|--|-----------------|--|
| 24 Hours | 1.21 | | 1.22 | | 1.27 | |
| AM Peak Period | 1.14 | | 1.11 | | 1.29 | |
| PM Peak Period | 1.21 | | 1.17 | | 1.44 | |

| Transit Modal Split | From District | | To District | | Within District | |
|---------------------|---------------|--|-------------|--|-----------------|--|
| 24 Hours | 4% | | 4% | | 0% | |
| AM Peak Period | 11% | | 0% | | 0% | |
| PM Peak Period | 0% | | 7% | | 0% | |

APPENDIX D
TRANS Model Plots

TRANS Regional Model

Version 1.01 - Assigned December 09, 2024

AM Peak Hour Total Traffic Volume

Carp Road

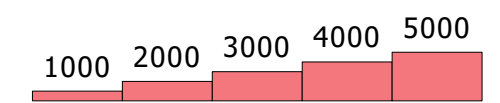
2022 Model

User Initials: AJ
Plot Prepared: January 30, 2025
EMME Scenario: 22002

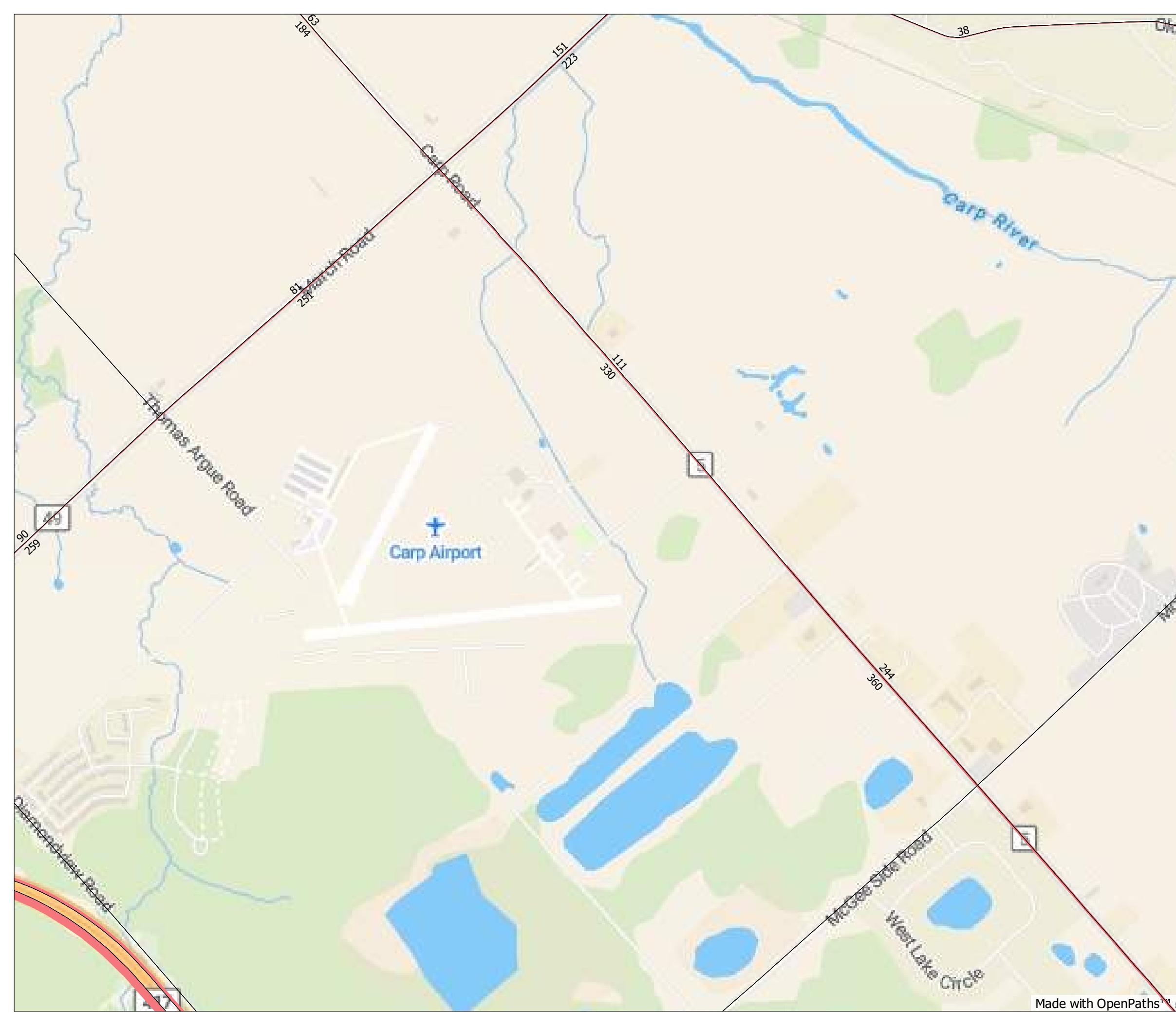


Legend

AM Peak Hour Total Traffic Volume



Distance (m)



The TRANS model is continuously refined & maintained, and all information is provided in good faith. However, model outputs are provided "as is", and no warranty or guarantee is provided as to the accuracy, reliability or reasonableness of the results. In using this data, you agree to accept any and all risks arising from any incorrect, incomplete, or misleading information.

Recipients are required to use caution and professional judgement in using and interpreting model outputs. In particular, caution should be used when focusing on a geographically limited area (such as a single road or intersection), as the model is primarily designed to simulate regional-scale phenomena and has been calibrated at a regional level.

As general good practice, it is recommended that the user confirm the network coding within the area of interest, and compare base year forecasts against traffic count data to assess the extent to which the model may be over- or under-estimating the travel demand.

TRANS Regional Model

Version 1.01 - Assigned December 09, 2024

AM Peak Hour Total Traffic Volume

Carp Road

2046 Model

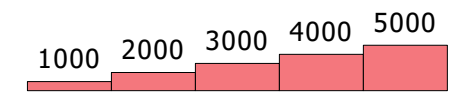
User Initials: AJ

Plot Prepared: January 30, 2025

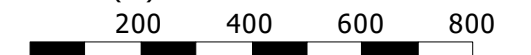
EMME Scenario: 46001

Legend

AM Peak Hour Total Traffic Volume



Distance (m)



The TRANS model is continuously refined & maintained, and all information is provided in good faith. However, model outputs are provided "as is", and no warranty or guarantee is provided as to the accuracy, reliability or reasonableness of the results. In using this data, you agree to accept any and all risks arising from any incorrect, incomplete, or misleading information.

Recipients are required to use caution and professional judgement in using and interpreting model outputs. In particular, caution should be used when focusing on a geographically limited area (such as a single road or intersection), as the model is primarily designed to simulate regional-scale phenomena and has been calibrated at a regional level.

As general good practice, it is recommended that the user confirm the network coding within the area of interest, and compare base year forecasts against traffic count data to assess the extent to which the model may be over- or under-estimating the travel demand.

APPENDIX E
MMLOS Analysis Tables

Multi-Modal Level of Service - Segments Form

Consultant
Scenario
Comments

| |
|---------------------------|
| Robinson Consultants Inc. |
| Existing |
| Carp Road / March Road |
| |

Project
Date

| |
|------------|
| 24105 |
| 2025-02-24 |
| |
| |

| SEGMENTS | | Carp Road | March to McGee Side | |
|---|---|-----------|---------------------|--------------------|
| | | | West (SB) | East (NB) |
| Pedestrian | Sidewalk Width | - | no sidewalk | no sidewalk |
| | Boulevard Width | | n/a | n/a |
| | Avg Daily Curb Lane Traffic Volume | | ≤ 3000 | ≤ 3000 |
| | Operating Speed | | > 60 km/h | > 60 km/h |
| | On-Street Parking | | no | no |
| | Exposure to Traffic PLoS | | F | F |
| | Effective Sidewalk Width | | | |
| | Pedestrian Volume | | 250 ped/hr | 250 ped/hr |
| Crowding PLoS | - | - | | |
| Level of Service | - | - | | |
| Bicycle | Type of Cycling Facility | F | Curbside Bike Lane | Curbside Bike Lane |
| | Number of Travel Lanes | | ≤ 1 each direction | ≤ 1 each direction |
| | Operating Speed | | > 70 km/h | > 70 km/h |
| | # of Lanes & Operating Speed LoS | | E | E |
| | Bike Lane (+ Parking Lane) Width | | <1.2 m | <1.2 m |
| | Bike Lane Width LoS | | F | F |
| | Bike Lane Blockages | | Rare | Rare |
| | Blockage LoS | | A | A |
| | Median Refuge Width (no median = < 1.8 m) | | < 1.8 m refuge | < 1.8 m refuge |
| | No. of Lanes at Unsignalized Crossing | | ≤ 3 lanes | ≤ 3 lanes |
| | Sidestreet Operating Speed | | >60 to <65 km/h | >60 to <65 km/h |
| Unsignalized Crossing - Lowest LoS | D | D | | |
| Level of Service | F | F | | |
| Transit | Facility Type | D | Mixed Traffic | Mixed Traffic |
| | Friction or Ratio Transit:Posted Speed | | Vt/Vp ≥ 0.8 | Vt/Vp ≥ 0.8 |
| | Level of Service | | D | D |
| Truck | Truck Lane Width | C | ≤ 3.5 m | ≤ 3.5 m |
| | Travel Lanes per Direction | | 1 | 1 |
| | Level of Service | | C | C |

Multi-Modal Level of Service - Intersections Form

| | | | |
|------------|----------------------------------|---------|------------------|
| Consultant | Robinson Consultants Inc. | Project | 24105 |
| Scenario | Existing | Date | 24-Feb-25 |
| Comments | Carp Road / March Road | | |

| INTERSECTIONS | | | | | |
|-------------------------|---|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| Carp Road / March Road | | | | | |
| Crossing Side | | NORTH | SOUTH | EAST | WEST |
| Pedestrian | Lanes | 3 | 3 | 3 | 3 |
| | Median | No Median - 2.4 m | No Median - 2.4 m | No Median - 2.4 m | No Median - 2.4 m |
| | Conflicting Left Turns | Permissive | Permissive | Permissive | Permissive |
| | Conflicting Right Turns | Permissive or yield control | Permissive or yield control | Permissive or yield control | Permissive or yield control |
| | Right Turns on Red (RTor) ? | RTOR allowed | RTOR allowed | RTOR allowed | RTOR allowed |
| | Ped Signal Leading Interval? | No | No | No | No |
| | Right Turn Channel | Conv'tl without Receiving Lane | Conv'tl without Receiving Lane | Conv'tl without Receiving Lane | Conv'tl without Receiving Lane |
| | Corner Radius | 10-15m | 10-15m | 10-15m | 10-15m |
| | Crosswalk Type | Std transverse markings | Std transverse markings | Std transverse markings | Std transverse markings |
| | PETSI Score | 74 | 74 | 74 | 74 |
| | Ped. Exposure to Traffic LoS | C | C | C | C |
| | Cycle Length | 90 | 90 | 90 | 90 |
| | Effective Walk Time | 24 | 24 | 24 | 24 |
| | Average Pedestrian Delay | 24 | 24 | 24 | 24 |
| | Pedestrian Delay LoS | C | C | C | C |
| Level of Service | C | C | C | C | |
| Approach From | | NORTH | SOUTH | EAST | WEST |
| Bicycle | Bicycle Lane Arrangement on Approach | Curb Bike Lane, Cycletrack or MUP | Curb Bike Lane, Cycletrack or MUP | Curb Bike Lane, Cycletrack or MUP | Curb Bike Lane, Cycletrack or MUP |
| | IF Dedicated Right Turn Lane, THEN Right Turn Configuration, ELSE <blank> | Not Applicable | Not Applicable | Not Applicable | Not Applicable |
| | Dedicated Right Turning Speed | Not Applicable | Not Applicable | Not Applicable | Not Applicable |
| | Cyclist Through Movement | Not Applicable | Not Applicable | Not Applicable | Not Applicable |
| | Separated or Mixed Traffic | Separated | Separated | Separated | Separated |
| | Left Turn Approach | 1 lane crossed | 1 lane crossed | 1 lane crossed | 1 lane crossed |
| | Operating Speed | ≥ 60 km/h | ≥ 60 km/h | ≥ 60 km/h | ≥ 60 km/h |
| | Left Turning Cyclist | E | E | E | E |
| Level of Service | E | E | E | E | |
| Transit | Average Signal Delay | ≤ 20 sec | ≤ 20 sec | ≤ 20 sec | ≤ 20 sec |
| | Level of Service | C | C | C | C |
| Truck | Effective Corner Radius | 10 - 15 m | 10 - 15 m | 10 - 15 m | 10 - 15 m |
| | Number of Receiving Lanes on Departure from Intersection | 1 | 1 | 1 | 1 |
| | Level of Service | E | E | E | E |
| Auto | Volume to Capacity Ratio | 0.0 - 0.60 | | | |
| | Level of Service | A | | | |

APPENDIX F
TDM-Supportive Development Design and Infrastructure Checklist

TDM-Supportive Development Design and Infrastructure Checklists

Non-Residential Developments (office, institutional, retail or industrial)

TDM Measure Legend:

| | |
|----------|---|
| Required | The Official Plan or Zoning By-law provides related guidance that must be followed. |
| Basic | The measure is generally feasible and effective, and in most cases would benefit the development and its users. |
| Better | The measure could maximize support for users of sustainable modes, and optimize development performance. |

| TDM-supportive design & infrastructure measures <i>Non-residential developments</i> | | Check if completed & add descriptions, explanations or plan/drawing references |
|--|--|---|
| 1 WALKING AND CYCLING: ROUTES | | |
| 1.1 Building Location and Access Points | | |
| Basic | 1.1.1 Locate building close to the street, and do not locate parking areas between the street and building entrances | <input type="checkbox"/> N/A – cannot be evaluated at the plan of subdivision stage – revisit in site plans for individual parcels. |
| Basic | 1.1.2 Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations | <input type="checkbox"/> N/A – cannot be evaluated at the plan of subdivision stage – revisit in site plans for individual parcels. |
| Basic | 1.1.3 Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort | <input type="checkbox"/> N/A – cannot be evaluated at the plan of subdivision stage – revisit in site plans for individual parcels. |
| 1.2 Facilities for Walking and Cycling | | |
| Required | 1.2.1 Provide convenient, direct access to stations or major stops along rapid transit routes within 600 metres; minimize walking distances from buildings to rapid transit; provide pedestrian-friendly, weather-protected (where possible) environment between rapid transit accesses and building entrances; ensure quality linkages from sidewalks through building entrances to integrated stops/stations (see Official Plan policy 4.3.3) | <input type="checkbox"/> N/A. There are no nearby transit stations |
| Required | 1.2.2 Provide safe, direct and attractive pedestrian access from public sidewalks to building entrances through such measures as: reducing distances between public sidewalks and major building entrances; providing walkways from public streets to major building entrances; within a site, providing walkways along the front of adjoining buildings, between adjacent buildings, and connecting areas where people may congregate, such as courtyards and transit stops; and providing weather protection through canopies, colonnades, and other design elements wherever possible (see Official Plan policy 4.3.12) | <input type="checkbox"/> N/A – access road will not include sidewalks, not required in Rural Transect per new OP Policy 4.1.2 (11) |
| Required | 1.2.3 Provide sidewalks of smooth, well-drained walking surfaces of contrasting materials or treatments to differentiate pedestrian areas from vehicle areas, and provide marked pedestrian crosswalks at intersection sidewalks (see Official Plan policy 4.3.10) | <input type="checkbox"/> N/A – access road will not include sidewalks, not required in Rural Transect per new OP Policy 4.1.2 (11) |
| Required | 1.2.4 Make sidewalks and open space areas easily accessible through features such as gradual grade transition, depressed curbs at street corners and convenient access to extra-wide parking spaces and ramps (see Official Plan policy 4.3.10) | <input type="checkbox"/> N/A – access road will not include sidewalks, not required in Rural Transect per new OP Policy 4.1.2 (11) |

| | | TDM-supportive design & infrastructure measures Non-residential developments | Check if completed & add descriptions, explanations or plan/drawing references |
|----------|-------|---|---|
| Required | 1.2.5 | Include adequately spaced inter-block/street cycling and pedestrian connections to facilitate travel by active transportation. Provide links to the existing or planned network of public sidewalks, multi-use pathways and on-road cycle routes. Where public sidewalks and multi-use pathways intersect with roads, consider providing traffic control devices to give priority to cyclists and pedestrians (see Official Plan policy 4.3.11) | <input type="checkbox"/> N/A – access road will not include sidewalks, not required in Rural Transect per new OP Policy 4.1.2 (11) |
| Basic | 1.2.6 | Provide safe, direct and attractive walking routes from building entrances to nearby transit stops | <input type="checkbox"/> N/A, no nearby transit stops |
| Basic | 1.2.7 | Ensure that walking routes to transit stops are secure, visible, lighted, shaded and wind-protected wherever possible | <input type="checkbox"/> N/A, no nearby transit stops |
| Basic | 1.2.8 | Design roads used for access or circulation by cyclists using a target operating speed of no more than 30 km/h, or provide a separated cycling facility | <input checked="" type="checkbox"/> Target operating speed on internal local road of 30 km/h. |
| | | 1.3 Amenities for Walking and Cycling | |
| Basic | 1.3.1 | Provide lighting, landscaping and benches along walking and cycling routes between building entrances and streets, sidewalks and trails | <input type="checkbox"/> N/A – cannot be evaluated at the plan of subdivision stage – revisit in site plans for individual parcels. |
| Basic | 1.3.2 | Provide wayfinding signage for site access (where required, e.g. when multiple buildings or entrances exist) and egress (where warranted, such as when directions to reach transit stops/stations, trails or other common destinations are not obvious) | <input type="checkbox"/> N/A |
| | | 2 WALKING & CYCLING: END-OF-TRIP FACILITIES | |
| | | 2.1 Bicycle Parking | |
| Required | 2.1.1 | Provide bicycle parking in highly visible and lighted areas, sheltered from the weather wherever possible (see Official Plan policy 4.3.6) | <input type="checkbox"/> N/A – cannot be evaluated at the plan of subdivision stage – revisit in site plans for individual parcels. |
| Required | 2.1.2 | Provide the number of bicycle parking spaces specified for various land uses in different parts of Ottawa; provide convenient access to main entrances or well-used areas (see Zoning By-law Section 111) | <input type="checkbox"/> N/A – cannot be evaluated at the plan of subdivision stage – revisit in site plans for individual parcels. |
| Required | 2.1.3 | Ensure that bicycle parking spaces and access aisles meet minimum dimensions; that no more than 50% of spaces are vertical spaces; and that parking racks are securely anchored (see Zoning By-law Section 111) | <input type="checkbox"/> N/A – cannot be evaluated at the plan of subdivision stage – revisit in site plans for individual parcels. |
| Basic | 2.1.4 | Provide bicycle parking spaces equivalent to the expected number of commuter cyclists (assuming the cycling mode share target is met), plus the expected peak number of customer/visitor cyclists | <input type="checkbox"/> N/A – cannot be evaluated at the plan of subdivision stage – revisit in site plans for individual parcels. |
| Better | 2.1.5 | Provide bicycle parking spaces equivalent to the expected number of commuter and customer / visitor cyclists, plus an additional buffer (e.g. 25 percent extra) to encourage other cyclists and ensure adequate capacity in peak cycling season | <input type="checkbox"/> N/A – cannot be evaluated at the plan of subdivision stage – revisit in site plans for individual parcels. |
| | | 2.2 Secure Bicycle Parking | |
| Required | 2.2.1 | Where more than 50 bicycle parking spaces are provided for a single office building, locate at least 25% of spaces within a building/structure, a secure area (e.g. supervised parking lot or enclosure) or bicycle lockers (see Zoning By-law Section 111) | <input type="checkbox"/> N/A – cannot be evaluated at the plan of subdivision stage – revisit in site plans for individual parcels. |
| Better | 2.2.2 | Provide secure bicycle parking spaces equivalent to the expected number of commuter cyclists (assuming the cycling mode share target is met) | <input type="checkbox"/> N/A – cannot be evaluated at the plan of subdivision stage – revisit in site plans for individual parcels. |
| | | 2.3 Shower and Change Facilities | |

| | | TDM-supportive design & infrastructure measures Non-residential developments | Check if completed & add descriptions, explanations or plan/drawing references |
|--------|-------|---|---|
| Basic | 2.3.1 | Provide shower and change facilities for the use of active commuters | <input type="checkbox"/> N/A – cannot be evaluated at the plan of subdivision stage – revisit in site plans for individual parcels. |
| Better | 2.3.2 | In addition to shower and change facilities, provide dedicated lockers, grooming stations, drying racks and laundry facilities for the use of active commuters | <input type="checkbox"/> N/A – cannot be evaluated at the plan of subdivision stage – revisit in site plans for individual parcels. |
| | 2.4 | Bicycle Repair Station | |
| Better | 2.4.1 | Provide a permanent bike repair station, with commonly used tools and an air pump, adjacent to the main bicycle parking area (or secure bicycle parking area, if provided) | <input type="checkbox"/> N/A – cannot be evaluated at the plan of subdivision stage – revisit in site plans for individual parcels. |
| | 3 | TRANSIT | |
| | 3.1 | Customer Amenities | |
| Basic | 3.1.1 | Provide shelters, lighting and benches at any on-site transit stops | <input type="checkbox"/> N/A |
| Basic | 3.1.2 | Where the site abuts an off-site transit stop and insufficient space exists for a transit shelter in the public right-of-way, protect land for a shelter and/or install a shelter | <input type="checkbox"/> N/A |
| Better | 3.1.3 | Provide a secure and comfortable interior waiting area by integrating any on-site transit stops into the building | <input type="checkbox"/> N/A |
| | 4 | RIDESHARING | |
| | 4.1 | Pick-up and Drop-off Facilities | |
| Basic | 4.1.1 | Provide a designated area for carpool drivers (plus taxis and ride-hailing services) to drop off or pick up passengers without using fire lanes or other no-stopping zones | <input type="checkbox"/> N/A – cannot be evaluated at the plan of subdivision stage – revisit in site plans for individual parcels. |
| | 4.2 | Carpool Parking | |
| Basic | 4.2.1 | Provide signed parking spaces for carpools in a priority location close to a major building entrance, sufficient in number to accommodate the mode share target for carpools | <input type="checkbox"/> N/A – cannot be evaluated at the plan of subdivision stage – revisit in site plans for individual parcels. |
| Better | 4.2.2 | At large developments, provide spaces for carpools in a separate, access-controlled parking area to simplify enforcement | <input type="checkbox"/> N/A – cannot be evaluated at the plan of subdivision stage – revisit in site plans for individual parcels. |
| | 5 | CARSHARING AND BIKESHARING | |
| | 5.1 | Carshare Parking Spaces | |
| Better | 5.1.1 | Provide carshare parking spaces in permitted non-residential zones, occupying either required or provided parking spaces (see Zoning By-law Section 94) | <input type="checkbox"/> N/A – cannot be evaluated at the plan of subdivision stage – revisit in site plans for individual parcels. |
| | 5.2 | Bikeshare Station Location | |
| Better | 5.2.1 | Provide a designated bikeshare station area near a major building entrance, preferably lighted and sheltered with a direct walkway connection | <input type="checkbox"/> N/A – cannot be evaluated at the plan of subdivision stage – revisit in site plans for individual parcels. |

| TDM-supportive design & infrastructure measures Non-residential developments | | Check if completed & add descriptions, explanations or plan/drawing references |
|---|-------|--|
| 6 PARKING | | |
| 6.1 Number of Parking Spaces | | |
| Required | 6.1.1 | Do not provide more parking than permitted by zoning, nor less than required by zoning, unless a variance is being applied for |
| Basic | 6.1.2 | Provide parking for long-term and short-term users that is consistent with mode share targets, considering the potential for visitors to use off-site public parking |
| Basic | 6.1.3 | Where a site features more than one use, provide shared parking and reduce the cumulative number of parking spaces accordingly (see Zoning By-law Section 104) |
| Better | 6.1.4 | Reduce the minimum number of parking spaces required by zoning by one space for each 13 square metres of gross floor area provided as shower rooms, change rooms, locker rooms and other facilities for cyclists in conjunction with bicycle parking (see Zoning By-law Section 111) |
| 6.2 Separate Long-Term and Short-Term Parking Areas | | |
| Better | 6.2.1 | Separate short-term and long-term parking areas using signage or physical barriers, to permit access controls and simplify enforcement (i.e. to discourage employees from parking in visitor spaces, and vice versa) |
| 7 OTHER | | |
| 7.1 On-site Amenities to Minimize Off-Site Trips | | |
| Better | 7.1.1 | Provide on-site amenities to minimize mid-day or mid-commute errands |

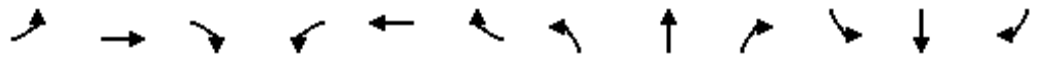
Adopted from City of Ottawa TIA Guidelines TDM Supportive Development Design and Infrastructure Checklist:

https://documents.ottawa.ca/sites/documents/files/+tdm_infra_design_checklist_en.pdf

APPENDIX G
Traffic Operations Analysis Output

Lanes, Volumes, Timings
8: Carp Rd & March Rd

Existing AM
02-24-2025

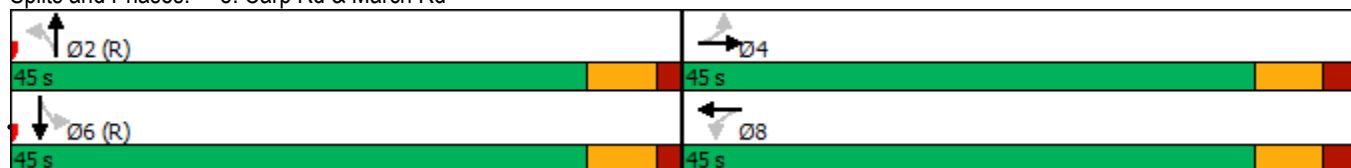


| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|------|-------|-------|------|-------|--------|------|-------|-------|------|
| Lane Configurations | ↖ | ↗ | | ↖ | ↗ | | ↖ | ↗ | | ↖ | ↗ | |
| Traffic Volume (vph) | 56 | 265 | 86 | 60 | 54 | 2 | 16 | 99 | 35 | 11 | 181 | 15 |
| Future Volume (vph) | 56 | 265 | 86 | 60 | 54 | 2 | 16 | 99 | 35 | 11 | 181 | 15 |
| Satd. Flow (prot) | 1597 | 1799 | 0 | 1687 | 1820 | 0 | 1378 | 1571 | 0 | 1805 | 1744 | 0 |
| Flt Permitted | 0.719 | | | 0.447 | | | 0.624 | | | 0.667 | | |
| Satd. Flow (perm) | 1209 | 1799 | 0 | 794 | 1820 | 0 | 905 | 1571 | 0 | 1267 | 1744 | 0 |
| Satd. Flow (RTOR) | | 23 | | | 2 | | | 25 | | | 6 | |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Heavy Vehicles (%) | 13% | 0% | 7% | 7% | 4% | 0% | 31% | 17% | 14% | 0% | 6% | 27% |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 59 | 370 | 0 | 63 | 59 | 0 | 17 | 141 | 0 | 12 | 207 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | 6 |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Total Split (s) | 45.0 | 45.0 | | 45.0 | 45.0 | | 45.0 | 45.0 | | 45.0 | 45.0 | |
| Total Lost Time (s) | 6.7 | 6.7 | | 6.7 | 6.7 | | 6.4 | 6.4 | | 6.4 | 6.4 | |
| Act Effct Green (s) | 38.3 | 38.3 | | 38.3 | 38.3 | | 38.6 | 38.6 | | 38.6 | 38.6 | |
| Actuated g/C Ratio | 0.43 | 0.43 | | 0.43 | 0.43 | | 0.43 | 0.43 | | 0.43 | 0.43 | |
| v/c Ratio | 0.11 | 0.48 | | 0.19 | 0.08 | | 0.04 | 0.20 | | 0.02 | 0.28 | |
| Control Delay | 16.5 | 19.9 | | 18.1 | 15.4 | | 15.5 | 14.1 | | 15.1 | 17.4 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 16.5 | 19.9 | | 18.1 | 15.4 | | 15.5 | 14.1 | | 15.1 | 17.4 | |
| LOS | B | B | | B | B | | B | B | | B | B | |
| Approach Delay | | 19.4 | | | 16.8 | | | 14.2 | | | 17.3 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Queue Length 50th (m) | 6.3 | 44.0 | | 7.0 | 6.0 | | 1.8 | 12.6 | | 1.2 | 22.9 | |
| Queue Length 95th (m) | 14.2 | 69.1 | | 16.0 | 13.4 | | 5.8 | 25.1 | | 4.5 | 38.9 | |
| Internal Link Dist (m) | | 289.3 | | | 294.7 | | | 2114.6 | | | 217.4 | |
| Turn Bay Length (m) | 215.0 | | | 185.0 | | | 215.0 | | | 195.0 | | |
| Base Capacity (vph) | 514 | 778 | | 337 | 775 | | 388 | 688 | | 543 | 751 | |
| Starvation Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Spillback Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Reduced v/c Ratio | 0.11 | 0.48 | | 0.19 | 0.08 | | 0.04 | 0.20 | | 0.02 | 0.28 | |

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Control Type: Pretimed
 Maximum v/c Ratio: 0.48
 Intersection Signal Delay: 17.7
 Intersection LOS: B
 Intersection Capacity Utilization 57.3%
 ICU Level of Service B
 Analysis Period (min) 15

















Splits and Phases: 8: Carp Rd & March Rd



HCM Unsignalized Intersection Capacity Analysis

3: Carp Rd & McGee Side Rd

02-24-2025

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Traffic Volume (veh/h) | 17 | 4 | 33 | 1 | 2 | 4 | 11 | 215 | 9 | 2 | 315 | 2 |
| Future Volume (Veh/h) | 17 | 4 | 33 | 1 | 2 | 4 | 11 | 215 | 9 | 2 | 315 | 2 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Hourly flow rate (vph) | 18 | 4 | 35 | 1 | 2 | 4 | 12 | 229 | 10 | 2 | 335 | 2 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (m) | | | | | | | | | | | | |
| Walking Speed (m/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | | | | | |
| | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 603 | 603 | 336 | 635 | 599 | 234 | 337 | | | 239 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 603 | 603 | 336 | 635 | 599 | 234 | 337 | | | 239 | | |
| tC, single (s) | 7.3 | 6.5 | 6.3 | 7.1 | 7.0 | 6.2 | 4.5 | | | 4.6 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.7 | 4.0 | 3.4 | 3.5 | 4.5 | 3.3 | 2.6 | | | 2.7 | | |
| p0 queue free % | 95 | 99 | 95 | 100 | 99 | 100 | 99 | | | 100 | | |
| cM capacity (veh/h) | 373 | 410 | 690 | 367 | 352 | 810 | 1017 | | | 1092 | | |
| Direction, Lane # | | | | | | | | | | | | |
| | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 57 | 7 | 251 | 339 | | | | | | | | |
| Volume Left | 18 | 1 | 12 | 2 | | | | | | | | |
| Volume Right | 35 | 4 | 10 | 2 | | | | | | | | |
| cSH | 524 | 525 | 1017 | 1092 | | | | | | | | |
| Volume to Capacity | 0.11 | 0.01 | 0.01 | 0.00 | | | | | | | | |
| Queue Length 95th (m) | 2.9 | 0.3 | 0.3 | 0.0 | | | | | | | | |
| Control Delay (s) | 12.7 | 12.0 | 0.5 | 0.1 | | | | | | | | |
| Lane LOS | B | B | A | A | | | | | | | | |
| Approach Delay (s) | 12.7 | 12.0 | 0.5 | 0.1 | | | | | | | | |
| Approach LOS | B | B | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 1.5 | | | | | | | | | |
| Intersection Capacity Utilization | | | 32.2% | ICU Level of Service | | A | | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

11: Carp Rd & Site Access 1

02-24-2025



| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|-----------------------------------|-------------|-------------|-------------|----------------------|------|------|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 0 | 0 | 236 | 0 | 0 | 327 |
| Future Volume (Veh/h) | 0 | 0 | 236 | 0 | 0 | 327 |
| Sign Control | Stop | | Free | | Free | |
| Grade | 0% | | 0% | | 0% | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Hourly flow rate (vph) | 0 | 0 | 251 | 0 | 0 | 348 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 599 | 251 | | | 251 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 599 | 251 | | | 251 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 100 | 100 | | | 100 | |
| cM capacity (veh/h) | 468 | 793 | | | 1326 | |
| Direction, Lane # | WB 1 | NB 1 | SB 1 | | | |
| Volume Total | 0 | 251 | 348 | | | |
| Volume Left | 0 | 0 | 0 | | | |
| Volume Right | 0 | 0 | 0 | | | |
| cSH | 1700 | 1700 | 1326 | | | |
| Volume to Capacity | 0.00 | 0.15 | 0.00 | | | |
| Queue Length 95th (m) | 0.0 | 0.0 | 0.0 | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | | | |
| Lane LOS | A | | | | | |
| Approach Delay (s) | 0.0 | 0.0 | 0.0 | | | |
| Approach LOS | A | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.0 | | | |
| Intersection Capacity Utilization | | | 20.5% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis

13: Carp Rd & Site Access 2

02-24-2025



| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|-----------------------------------|-------------|-------------|-------------|----------------------|------|------|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 0 | 0 | 236 | 0 | 0 | 327 |
| Future Volume (Veh/h) | 0 | 0 | 236 | 0 | 0 | 327 |
| Sign Control | Stop | | Free | | Free | |
| Grade | 0% | | 0% | | 0% | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Hourly flow rate (vph) | 0 | 0 | 251 | 0 | 0 | 348 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage (veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 599 | 251 | | | 251 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 599 | 251 | | | 251 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 100 | 100 | | | 100 | |
| cM capacity (veh/h) | 468 | 793 | | | 1326 | |
| Direction, Lane # | WB 1 | NB 1 | SB 1 | | | |
| Volume Total | 0 | 251 | 348 | | | |
| Volume Left | 0 | 0 | 0 | | | |
| Volume Right | 0 | 0 | 0 | | | |
| cSH | 1700 | 1700 | 1326 | | | |
| Volume to Capacity | 0.00 | 0.15 | 0.00 | | | |
| Queue Length 95th (m) | 0.0 | 0.0 | 0.0 | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | | | |
| Lane LOS | A | | | | | |
| Approach Delay (s) | 0.0 | 0.0 | 0.0 | | | |
| Approach LOS | A | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.0 | | | |
| Intersection Capacity Utilization | | | 20.5% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |

Lanes, Volumes, Timings
8: Carp Rd & March Rd

Existing PM
02-24-2025

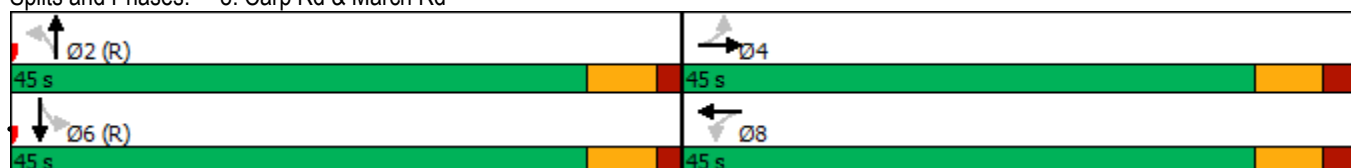


| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|------|-------|-------|------|-------|--------|------|-------|-------|------|
| Lane Configurations | ↖ | ↗ | | ↖ | ↗ | | ↖ | ↗ | | ↖ | ↗ | |
| Traffic Volume (vph) | 38 | 55 | 25 | 39 | 277 | 5 | 147 | 245 | 44 | 11 | 138 | 48 |
| Future Volume (vph) | 38 | 55 | 25 | 39 | 277 | 5 | 147 | 245 | 44 | 11 | 138 | 48 |
| Satd. Flow (prot) | 1805 | 1724 | 0 | 1530 | 1858 | 0 | 1770 | 1790 | 0 | 1805 | 1680 | 0 |
| Flt Permitted | 0.522 | | | 0.701 | | | 0.633 | | | 0.510 | | |
| Satd. Flow (perm) | 992 | 1724 | 0 | 1129 | 1858 | 0 | 1179 | 1790 | 0 | 969 | 1680 | 0 |
| Satd. Flow (RTOR) | | 27 | | | 1 | | | 13 | | | 24 | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Heavy Vehicles (%) | 0% | 0% | 16% | 18% | 2% | 0% | 2% | 4% | 2% | 0% | 11% | 2% |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 40 | 86 | 0 | 41 | 300 | 0 | 156 | 308 | 0 | 12 | 198 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | | 6 |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Total Split (s) | 45.0 | 45.0 | | 45.0 | 45.0 | | 45.0 | 45.0 | | 45.0 | 45.0 | |
| Total Lost Time (s) | 6.7 | 6.7 | | 6.7 | 6.7 | | 6.4 | 6.4 | | 6.4 | 6.4 | |
| Act Effct Green (s) | 38.3 | 38.3 | | 38.3 | 38.3 | | 38.6 | 38.6 | | 38.6 | 38.6 | |
| Actuated g/C Ratio | 0.43 | 0.43 | | 0.43 | 0.43 | | 0.43 | 0.43 | | 0.43 | 0.43 | |
| v/c Ratio | 0.09 | 0.11 | | 0.09 | 0.38 | | 0.31 | 0.40 | | 0.03 | 0.27 | |
| Control Delay | 16.4 | 11.7 | | 16.2 | 19.4 | | 19.1 | 18.8 | | 15.3 | 15.7 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 16.4 | 11.7 | | 16.2 | 19.4 | | 19.1 | 18.8 | | 15.3 | 15.7 | |
| LOS | B | B | | B | B | | B | B | | B | B | |
| Approach Delay | | 13.2 | | | 19.0 | | | 18.9 | | | 15.7 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Queue Length 50th (m) | 4.2 | 6.2 | | 4.3 | 36.3 | | 18.2 | 35.8 | | 1.2 | 19.6 | |
| Queue Length 95th (m) | 10.7 | 15.1 | | 10.8 | 57.1 | | 33.2 | 57.2 | | 4.6 | 35.1 | |
| Internal Link Dist (m) | | 289.3 | | | 294.7 | | | 2114.6 | | | 217.4 | |
| Turn Bay Length (m) | 215.0 | | | 185.0 | | | 215.0 | | | 195.0 | | |
| Base Capacity (vph) | 422 | 749 | | 480 | 791 | | 505 | 775 | | 415 | 734 | |
| Starvation Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Spillback Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Reduced v/c Ratio | 0.09 | 0.11 | | 0.09 | 0.38 | | 0.31 | 0.40 | | 0.03 | 0.27 | |

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Control Type: Pretimed
 Maximum v/c Ratio: 0.40
 Intersection Signal Delay: 17.7
 Intersection Capacity Utilization 68.9%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service C

















Splits and Phases: 8: Carp Rd & March Rd



HCM Unsignalized Intersection Capacity Analysis

3: Carp Rd & McGee Side Rd

02-24-2025

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Traffic Volume (veh/h) | 10 | 0 | 13 | 4 | 2 | 6 | 28 | 308 | 6 | 5 | 208 | 17 |
| Future Volume (Veh/h) | 10 | 0 | 13 | 4 | 2 | 6 | 28 | 308 | 6 | 5 | 208 | 17 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Hourly flow rate (vph) | 11 | 0 | 14 | 4 | 2 | 7 | 31 | 338 | 7 | 5 | 229 | 19 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (m) | | | | | | | | | | | | |
| Walking Speed (m/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 660 | 656 | 238 | 666 | 662 | 342 | 248 | | | 345 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 660 | 656 | 238 | 666 | 662 | 342 | 248 | | | 345 | | |
| tC, single (s) | 7.3 | 6.5 | 6.5 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.7 | 4.0 | 3.6 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 97 | 100 | 98 | 99 | 99 | 99 | 98 | | | 100 | | |
| cM capacity (veh/h) | 341 | 377 | 734 | 361 | 374 | 706 | 1330 | | | 1225 | | |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 25 | 13 | 376 | 253 | | | | | | | | |
| Volume Left | 11 | 4 | 31 | 5 | | | | | | | | |
| Volume Right | 14 | 7 | 7 | 19 | | | | | | | | |
| cSH | 487 | 493 | 1330 | 1225 | | | | | | | | |
| Volume to Capacity | 0.05 | 0.03 | 0.02 | 0.00 | | | | | | | | |
| Queue Length 95th (m) | 1.3 | 0.6 | 0.6 | 0.1 | | | | | | | | |
| Control Delay (s) | 12.8 | 12.5 | 0.8 | 0.2 | | | | | | | | |
| Lane LOS | B | B | A | A | | | | | | | | |
| Approach Delay (s) | 12.8 | 12.5 | 0.8 | 0.2 | | | | | | | | |
| Approach LOS | B | B | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 1.3 | | | | | | | | | |
| Intersection Capacity Utilization | | | 41.1% | | ICU Level of Service | | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis
 11: Carp Rd & Site Access 1










02-24-2025



| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|-----------------------------------|------|------|-------|----------------------|------|------|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 0 | 0 | 324 | 0 | 0 | 202 |
| Future Volume (Veh/h) | 0 | 0 | 324 | 0 | 0 | 202 |
| Sign Control | Stop | | Free | | Free | |
| Grade | 0% | | 0% | | 0% | |
| Peak Hour Factor | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Hourly flow rate (vph) | 0 | 0 | 356 | 0 | 0 | 222 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | None | None | | |
| Median storage veh | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 578 | 356 | | | 356 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 578 | 356 | | | 356 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 100 | 100 | | | 100 | |
| cM capacity (veh/h) | 481 | 693 | | | 1214 | |
| Direction, Lane # | | | | | | |
| | WB 1 | NB 1 | SB 1 | | | |
| Volume Total | 0 | 356 | 222 | | | |
| Volume Left | 0 | 0 | 0 | | | |
| Volume Right | 0 | 0 | 0 | | | |
| cSH | 1700 | 1700 | 1214 | | | |
| Volume to Capacity | 0.00 | 0.21 | 0.00 | | | |
| Queue Length 95th (m) | 0.0 | 0.0 | 0.0 | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | | | |
| Lane LOS | A | | | | | |
| Approach Delay (s) | 0.0 | 0.0 | 0.0 | | | |
| Approach LOS | A | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.0 | | | |
| Intersection Capacity Utilization | | | 20.4% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |

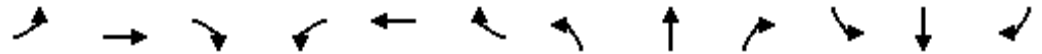
HCM Unsignalized Intersection Capacity Analysis
 13: Carp Rd & Site Access 2

02-24-2025

| |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations |  | |  | | |  |
| Traffic Volume (veh/h) | 0 | 0 | 324 | 0 | 0 | 202 |
| Future Volume (Veh/h) | 0 | 0 | 324 | 0 | 0 | 202 |
| Sign Control | Stop | | Free | | Free | |
| Grade | 0% | | 0% | | 0% | |
| Peak Hour Factor | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Hourly flow rate (vph) | 0 | 0 | 356 | 0 | 0 | 222 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage (veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 578 | 356 | | | 356 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 578 | 356 | | | 356 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 100 | 100 | | | 100 | |
| cM capacity (veh/h) | 481 | 693 | | | 1214 | |
| Direction, Lane # | WB 1 | NB 1 | SB 1 | | | |
| Volume Total | 0 | 356 | 222 | | | |
| Volume Left | 0 | 0 | 0 | | | |
| Volume Right | 0 | 0 | 0 | | | |
| cSH | 1700 | 1700 | 1214 | | | |
| Volume to Capacity | 0.00 | 0.21 | 0.00 | | | |
| Queue Length 95th (m) | 0.0 | 0.0 | 0.0 | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | | | |
| Lane LOS | A | | | | | |
| Approach Delay (s) | 0.0 | 0.0 | 0.0 | | | |
| Approach LOS | A | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.0 | | | |
| Intersection Capacity Utilization | | | 20.4% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |

Lanes, Volumes, Timings
8: Carp Rd & March Rd

FBG 2029 AM
02-24-2025

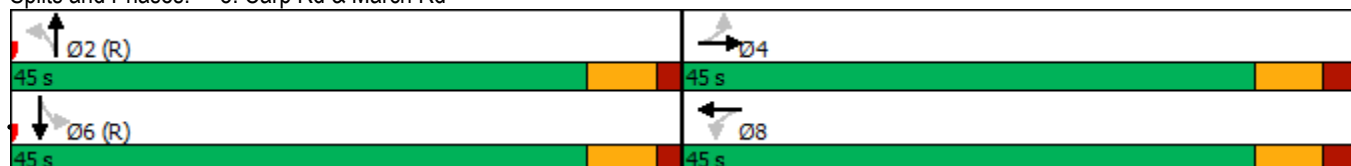


| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|------|-------|-------|------|-------|--------|------|-------|-------|------|
| Lane Configurations | ↖ | ↗ | | ↖ | ↗ | | ↖ | ↗ | | ↖ | ↗ | |
| Traffic Volume (vph) | 59 | 281 | 91 | 64 | 57 | 2 | 17 | 105 | 37 | 12 | 192 | 16 |
| Future Volume (vph) | 59 | 281 | 91 | 64 | 57 | 2 | 17 | 105 | 37 | 12 | 192 | 16 |
| Satd. Flow (prot) | 1597 | 1799 | 0 | 1687 | 1820 | 0 | 1378 | 1571 | 0 | 1805 | 1744 | 0 |
| Flt Permitted | 0.717 | | | 0.424 | | | 0.610 | | | 0.662 | | |
| Satd. Flow (perm) | 1206 | 1799 | 0 | 753 | 1820 | 0 | 885 | 1571 | 0 | 1258 | 1744 | 0 |
| Satd. Flow (RTOR) | | 23 | | | 2 | | | 25 | | | 6 | |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Heavy Vehicles (%) | 13% | 0% | 7% | 7% | 4% | 0% | 31% | 17% | 14% | 0% | 6% | 27% |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 62 | 392 | 0 | 67 | 62 | 0 | 18 | 150 | 0 | 13 | 219 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Total Split (s) | 45.0 | 45.0 | | 45.0 | 45.0 | | 45.0 | 45.0 | | 45.0 | 45.0 | |
| Total Lost Time (s) | 6.7 | 6.7 | | 6.7 | 6.7 | | 6.4 | 6.4 | | 6.4 | 6.4 | |
| Act Effct Green (s) | 38.3 | 38.3 | | 38.3 | 38.3 | | 38.6 | 38.6 | | 38.6 | 38.6 | |
| Actuated g/C Ratio | 0.43 | 0.43 | | 0.43 | 0.43 | | 0.43 | 0.43 | | 0.43 | 0.43 | |
| v/c Ratio | 0.12 | 0.50 | | 0.21 | 0.08 | | 0.05 | 0.22 | | 0.02 | 0.29 | |
| Control Delay | 16.6 | 20.5 | | 18.6 | 15.4 | | 15.6 | 14.4 | | 15.2 | 17.6 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 16.6 | 20.5 | | 18.6 | 15.4 | | 15.6 | 14.4 | | 15.2 | 17.6 | |
| LOS | B | C | | B | B | | B | B | | B | B | |
| Approach Delay | | 19.9 | | | 17.0 | | | 14.5 | | | 17.5 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Queue Length 50th (m) | 6.7 | 47.6 | | 7.5 | 6.3 | | 1.9 | 13.7 | | 1.3 | 24.5 | |
| Queue Length 95th (m) | 14.8 | 74.3 | | 17.0 | 14.0 | | 6.0 | 26.5 | | 4.8 | 41.2 | |
| Internal Link Dist (m) | | 289.3 | | | 294.7 | | | 2114.6 | | | 217.4 | |
| Turn Bay Length (m) | 215.0 | | | 185.0 | | | 215.0 | | | 195.0 | | |
| Base Capacity (vph) | 513 | 778 | | 320 | 775 | | 379 | 688 | | 539 | 751 | |
| Starvation Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Spillback Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Reduced v/c Ratio | 0.12 | 0.50 | | 0.21 | 0.08 | | 0.05 | 0.22 | | 0.02 | 0.29 | |

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Control Type: Pretimed
 Maximum v/c Ratio: 0.50
 Intersection Signal Delay: 18.1
 Intersection Capacity Utilization 59.3%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service B

















Splits and Phases: 8: Carp Rd & March Rd



HCM Unsignalized Intersection Capacity Analysis

3: Carp Rd & McGee Side Rd

02-24-2025

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Traffic Volume (veh/h) | 18 | 4 | 35 | 1 | 2 | 4 | 12 | 228 | 10 | 2 | 334 | 2 |
| Future Volume (Veh/h) | 18 | 4 | 35 | 1 | 2 | 4 | 12 | 228 | 10 | 2 | 334 | 2 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Hourly flow rate (vph) | 19 | 4 | 37 | 1 | 2 | 4 | 13 | 243 | 11 | 2 | 355 | 2 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (m) | | | | | | | | | | | | |
| Walking Speed (m/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | | | | | |
| Median storage veh | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 640 | 640 | 356 | 674 | 636 | 248 | 357 | | | 254 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 640 | 640 | 356 | 674 | 636 | 248 | 357 | | | 254 | | |
| tC, single (s) | 7.3 | 6.5 | 6.3 | 7.1 | 7.0 | 6.2 | 4.5 | | | 4.6 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.7 | 4.0 | 3.4 | 3.5 | 4.5 | 3.3 | 2.6 | | | 2.7 | | |
| p0 queue free % | 95 | 99 | 94 | 100 | 99 | 99 | 99 | | | 100 | | |
| cM capacity (veh/h) | 352 | 390 | 673 | 344 | 334 | 795 | 999 | | | 1077 | | |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 60 | 7 | 267 | 359 | | | | | | | | |
| Volume Left | 19 | 1 | 13 | 2 | | | | | | | | |
| Volume Right | 37 | 4 | 11 | 2 | | | | | | | | |
| cSH | 503 | 503 | 999 | 1077 | | | | | | | | |
| Volume to Capacity | 0.12 | 0.01 | 0.01 | 0.00 | | | | | | | | |
| Queue Length 95th (m) | 3.2 | 0.3 | 0.3 | 0.0 | | | | | | | | |
| Control Delay (s) | 13.1 | 12.3 | 0.5 | 0.1 | | | | | | | | |
| Lane LOS | B | B | A | A | | | | | | | | |
| Approach Delay (s) | 13.1 | 12.3 | 0.5 | 0.1 | | | | | | | | |
| Approach LOS | B | B | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 1.5 | | | | | | | | | |
| Intersection Capacity Utilization | | | 34.1% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

11: Carp Rd & Site Access 1

02-24-2025



| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|-----------------------------------|-------------|-------------|-------------|----------------------|------|------|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 0 | 0 | 251 | 0 | 0 | 347 |
| Future Volume (Veh/h) | 0 | 0 | 251 | 0 | 0 | 347 |
| Sign Control | Stop | | Free | | Free | |
| Grade | 0% | | 0% | | 0% | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Hourly flow rate (vph) | 0 | 0 | 267 | 0 | 0 | 369 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage (veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 636 | 267 | | | 267 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 636 | 267 | | | 267 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 100 | 100 | | | 100 | |
| cM capacity (veh/h) | 445 | 777 | | | 1308 | |
| Direction, Lane # | WB 1 | NB 1 | SB 1 | | | |
| Volume Total | 0 | 267 | 369 | | | |
| Volume Left | 0 | 0 | 0 | | | |
| Volume Right | 0 | 0 | 0 | | | |
| cSH | 1700 | 1700 | 1308 | | | |
| Volume to Capacity | 0.00 | 0.16 | 0.00 | | | |
| Queue Length 95th (m) | 0.0 | 0.0 | 0.0 | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | | | |
| Lane LOS | A | | | | | |
| Approach Delay (s) | 0.0 | 0.0 | 0.0 | | | |
| Approach LOS | A | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.0 | | | |
| Intersection Capacity Utilization | | | 21.6% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis

13: Carp Rd & Site Access 2

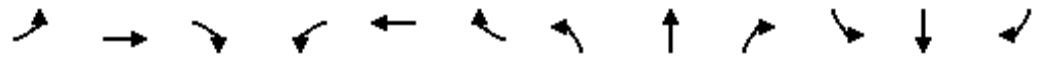
02-24-2025



| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|-----------------------------------|-------------|-------------|-------------|----------------------|------|------|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 0 | 0 | 251 | 0 | 0 | 347 |
| Future Volume (Veh/h) | 0 | 0 | 251 | 0 | 0 | 347 |
| Sign Control | Stop | | Free | | Free | |
| Grade | 0% | | 0% | | 0% | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Hourly flow rate (vph) | 0 | 0 | 267 | 0 | 0 | 369 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage (veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 636 | 267 | | | 267 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 636 | 267 | | | 267 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 100 | 100 | | | 100 | |
| cM capacity (veh/h) | 445 | 777 | | | 1308 | |
| Direction, Lane # | WB 1 | NB 1 | SB 1 | | | |
| Volume Total | 0 | 267 | 369 | | | |
| Volume Left | 0 | 0 | 0 | | | |
| Volume Right | 0 | 0 | 0 | | | |
| cSH | 1700 | 1700 | 1308 | | | |
| Volume to Capacity | 0.00 | 0.16 | 0.00 | | | |
| Queue Length 95th (m) | 0.0 | 0.0 | 0.0 | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | | | |
| Lane LOS | A | | | | | |
| Approach Delay (s) | 0.0 | 0.0 | 0.0 | | | |
| Approach LOS | A | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.0 | | | |
| Intersection Capacity Utilization | | | 21.6% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |

Lanes, Volumes, Timings
8: Carp Rd & March Rd

FBG 2029 PM
02-24-2025

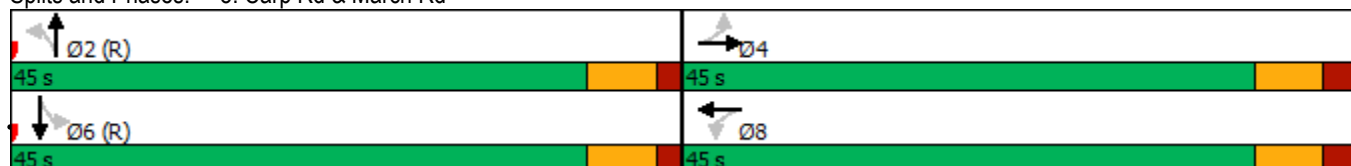


| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|------|-------|-------|------|-------|--------|------|-------|-------|------|
| Lane Configurations | ↖ | ↗ | | ↖ | ↗ | | ↖ | ↗ | | ↖ | ↗ | |
| Traffic Volume (vph) | 40 | 58 | 27 | 41 | 294 | 5 | 156 | 260 | 47 | 12 | 146 | 51 |
| Future Volume (vph) | 40 | 58 | 27 | 41 | 294 | 5 | 156 | 260 | 47 | 12 | 146 | 51 |
| Satd. Flow (prot) | 1805 | 1721 | 0 | 1530 | 1860 | 0 | 1770 | 1790 | 0 | 1805 | 1680 | 0 |
| Flt Permitted | 0.502 | | | 0.698 | | | 0.621 | | | 0.490 | | |
| Satd. Flow (perm) | 954 | 1721 | 0 | 1124 | 1860 | 0 | 1157 | 1790 | 0 | 931 | 1680 | 0 |
| Satd. Flow (RTOR) | | 29 | | | 1 | | | 13 | | | 24 | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Heavy Vehicles (%) | 0% | 0% | 16% | 18% | 2% | 0% | 2% | 4% | 2% | 0% | 11% | 2% |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 43 | 91 | 0 | 44 | 318 | 0 | 166 | 327 | 0 | 13 | 209 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Total Split (s) | 45.0 | 45.0 | | 45.0 | 45.0 | | 45.0 | 45.0 | | 45.0 | 45.0 | |
| Total Lost Time (s) | 6.7 | 6.7 | | 6.7 | 6.7 | | 6.4 | 6.4 | | 6.4 | 6.4 | |
| Act Effct Green (s) | 38.3 | 38.3 | | 38.3 | 38.3 | | 38.6 | 38.6 | | 38.6 | 38.6 | |
| Actuated g/C Ratio | 0.43 | 0.43 | | 0.43 | 0.43 | | 0.43 | 0.43 | | 0.43 | 0.43 | |
| v/c Ratio | 0.11 | 0.12 | | 0.09 | 0.40 | | 0.33 | 0.42 | | 0.03 | 0.28 | |
| Control Delay | 16.6 | 11.6 | | 16.2 | 19.8 | | 19.6 | 19.3 | | 15.3 | 16.0 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 16.6 | 11.6 | | 16.2 | 19.8 | | 19.6 | 19.3 | | 15.3 | 16.0 | |
| LOS | B | B | | B | B | | B | B | | B | B | |
| Approach Delay | | 13.2 | | | 19.4 | | | 19.4 | | | 15.9 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Queue Length 50th (m) | 4.6 | 6.5 | | 4.7 | 38.9 | | 19.6 | 38.6 | | 1.3 | 21.0 | |
| Queue Length 95th (m) | 11.4 | 15.7 | | 11.4 | 60.9 | | 35.6 | 61.2 | | 4.9 | 37.0 | |
| Internal Link Dist (m) | | 289.3 | | | 294.7 | | | 2114.6 | | | 217.4 | |
| Turn Bay Length (m) | 215.0 | | | 185.0 | | | 215.0 | | | 195.0 | | |
| Base Capacity (vph) | 405 | 749 | | 478 | 792 | | 496 | 775 | | 399 | 734 | |
| Starvation Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Spillback Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Reduced v/c Ratio | 0.11 | 0.12 | | 0.09 | 0.40 | | 0.33 | 0.42 | | 0.03 | 0.28 | |

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Control Type: Pretimed
 Maximum v/c Ratio: 0.42
 Intersection Signal Delay: 18.0
 Intersection LOS: B
 Intersection Capacity Utilization 70.8%
 ICU Level of Service C
 Analysis Period (min) 15

















Splits and Phases: 8: Carp Rd & March Rd



HCM Unsignalized Intersection Capacity Analysis

3: Carp Rd & McGee Side Rd

02-24-2025

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Traffic Volume (veh/h) | 11 | 0 | 14 | 4 | 2 | 6 | 30 | 327 | 6 | 5 | 221 | 18 |
| Future Volume (Veh/h) | 11 | 0 | 14 | 4 | 2 | 6 | 30 | 327 | 6 | 5 | 221 | 18 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Hourly flow rate (vph) | 12 | 0 | 15 | 4 | 2 | 7 | 33 | 359 | 7 | 5 | 243 | 20 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (m) | | | | | | | | | | | | |
| Walking Speed (m/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 700 | 695 | 253 | 706 | 702 | 362 | 263 | | | 366 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 700 | 695 | 253 | 706 | 702 | 362 | 263 | | | 366 | | |
| tC, single (s) | 7.3 | 6.5 | 6.5 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.7 | 4.0 | 3.6 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 96 | 100 | 98 | 99 | 99 | 99 | 97 | | | 100 | | |
| cM capacity (veh/h) | 319 | 358 | 720 | 338 | 355 | 687 | 1313 | | | 1204 | | |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 27 | 13 | 399 | 268 | | | | | | | | |
| Volume Left | 12 | 4 | 33 | 5 | | | | | | | | |
| Volume Right | 15 | 7 | 7 | 20 | | | | | | | | |
| cSH | 462 | 470 | 1313 | 1204 | | | | | | | | |
| Volume to Capacity | 0.06 | 0.03 | 0.03 | 0.00 | | | | | | | | |
| Queue Length 95th (m) | 1.5 | 0.7 | 0.6 | 0.1 | | | | | | | | |
| Control Delay (s) | 13.3 | 12.9 | 0.9 | 0.2 | | | | | | | | |
| Lane LOS | B | B | A | A | | | | | | | | |
| Approach Delay (s) | 13.3 | 12.9 | 0.9 | 0.2 | | | | | | | | |
| Approach LOS | B | B | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 1.3 | | | | | | | | | |
| Intersection Capacity Utilization | | | 43.5% | | ICU Level of Service | | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

11: Carp Rd & Site Access 1

02-24-2025



| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|-----------------------------------|------|-------|------|----------------------|------|------|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 0 | 0 | 344 | 0 | 0 | 214 |
| Future Volume (Veh/h) | 0 | 0 | 344 | 0 | 0 | 214 |
| Sign Control | Stop | | Free | | Free | |
| Grade | 0% | | 0% | | 0% | |
| Peak Hour Factor | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Hourly flow rate (vph) | 0 | 0 | 378 | 0 | 0 | 235 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | None | None | | |
| Median storage veh | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 613 | 378 | | | 378 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 613 | 378 | | | 378 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 100 | 100 | | | 100 | |
| cM capacity (veh/h) | 459 | 673 | | | 1192 | |
| Direction, Lane # | | | | | | |
| | WB 1 | NB 1 | SB 1 | | | |
| Volume Total | 0 | 378 | 235 | | | |
| Volume Left | 0 | 0 | 0 | | | |
| Volume Right | 0 | 0 | 0 | | | |
| cSH | 1700 | 1700 | 1192 | | | |
| Volume to Capacity | 0.00 | 0.22 | 0.00 | | | |
| Queue Length 95th (m) | 0.0 | 0.0 | 0.0 | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | | | |
| Lane LOS | A | | | | | |
| Approach Delay (s) | 0.0 | 0.0 | 0.0 | | | |
| Approach LOS | A | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.0 | | | |
| Intersection Capacity Utilization | | 21.4% | | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis
 13: Carp Rd & Site Access 2

02-24-2025



| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|-----------------------------------|------|------|-------|----------------------|------|------|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 0 | 0 | 344 | 0 | 0 | 214 |
| Future Volume (Veh/h) | 0 | 0 | 344 | 0 | 0 | 214 |
| Sign Control | Stop | | Free | | Free | |
| Grade | 0% | | 0% | | 0% | |
| Peak Hour Factor | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Hourly flow rate (vph) | 0 | 0 | 378 | 0 | 0 | 235 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | None | None | | |
| Median storage (veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 613 | 378 | | | 378 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 613 | 378 | | | 378 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 100 | 100 | | | 100 | |
| cM capacity (veh/h) | 459 | 673 | | | 1192 | |
| Direction, Lane # | | | | | | |
| | WB 1 | NB 1 | SB 1 | | | |
| Volume Total | 0 | 378 | 235 | | | |
| Volume Left | 0 | 0 | 0 | | | |
| Volume Right | 0 | 0 | 0 | | | |
| cSH | 1700 | 1700 | 1192 | | | |
| Volume to Capacity | 0.00 | 0.22 | 0.00 | | | |
| Queue Length 95th (m) | 0.0 | 0.0 | 0.0 | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | | | |
| Lane LOS | A | | | | | |
| Approach Delay (s) | 0.0 | 0.0 | 0.0 | | | |
| Approach LOS | A | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.0 | | | |
| Intersection Capacity Utilization | | | 21.4% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |

Lanes, Volumes, Timings
8: Carp Rd & March Rd

FBG 2034 AM
02-24-2025

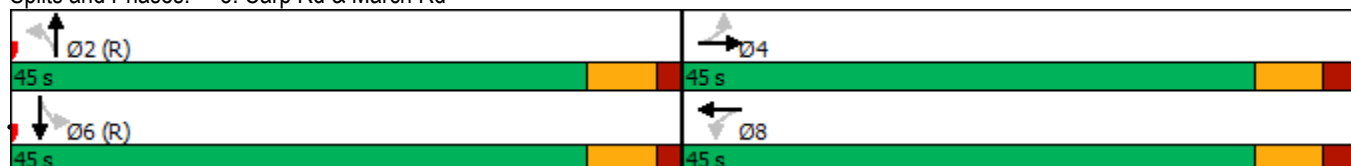


| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|------|-------|-------|------|-------|--------|------|-------|-------|------|
| Lane Configurations | ↖ | ↗ | | ↖ | ↗ | | ↖ | ↗ | | ↖ | ↗ | |
| Traffic Volume (vph) | 62 | 296 | 96 | 67 | 60 | 2 | 18 | 110 | 39 | 12 | 202 | 17 |
| Future Volume (vph) | 62 | 296 | 96 | 67 | 60 | 2 | 18 | 110 | 39 | 12 | 202 | 17 |
| Satd. Flow (prot) | 1597 | 1799 | 0 | 1687 | 1820 | 0 | 1378 | 1571 | 0 | 1805 | 1744 | 0 |
| Flt Permitted | 0.715 | | | 0.402 | | | 0.596 | | | 0.657 | | |
| Satd. Flow (perm) | 1202 | 1799 | 0 | 714 | 1820 | 0 | 864 | 1571 | 0 | 1248 | 1744 | 0 |
| Satd. Flow (RTOR) | | 23 | | | 2 | | | 25 | | | 6 | |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Heavy Vehicles (%) | 13% | 0% | 7% | 7% | 4% | 0% | 31% | 17% | 14% | 0% | 6% | 27% |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 65 | 413 | 0 | 71 | 65 | 0 | 19 | 157 | 0 | 13 | 231 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Total Split (s) | 45.0 | 45.0 | | 45.0 | 45.0 | | 45.0 | 45.0 | | 45.0 | 45.0 | |
| Total Lost Time (s) | 6.7 | 6.7 | | 6.7 | 6.7 | | 6.4 | 6.4 | | 6.4 | 6.4 | |
| Act Effct Green (s) | 38.3 | 38.3 | | 38.3 | 38.3 | | 38.6 | 38.6 | | 38.6 | 38.6 | |
| Actuated g/C Ratio | 0.43 | 0.43 | | 0.43 | 0.43 | | 0.43 | 0.43 | | 0.43 | 0.43 | |
| v/c Ratio | 0.13 | 0.53 | | 0.23 | 0.08 | | 0.05 | 0.23 | | 0.02 | 0.31 | |
| Control Delay | 16.6 | 21.1 | | 19.2 | 15.5 | | 15.7 | 14.6 | | 15.2 | 17.9 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 16.6 | 21.1 | | 19.2 | 15.5 | | 15.7 | 14.6 | | 15.2 | 17.9 | |
| LOS | B | C | | B | B | | B | B | | B | B | |
| Approach Delay | | 20.5 | | | 17.4 | | | 14.7 | | | 17.7 | |
| Approach LOS | | C | | | B | | | B | | | B | |
| Queue Length 50th (m) | 7.0 | 51.0 | | 8.0 | 6.6 | | 2.0 | 14.5 | | 1.3 | 26.1 | |
| Queue Length 95th (m) | 15.3 | 79.2 | | 18.2 | 14.5 | | 6.3 | 27.7 | | 4.8 | 43.3 | |
| Internal Link Dist (m) | | 289.3 | | | 294.7 | | | 2114.6 | | | 217.4 | |
| Turn Bay Length (m) | 215.0 | | | 185.0 | | | 215.0 | | | 195.0 | | |
| Base Capacity (vph) | 511 | 778 | | 303 | 775 | | 370 | 688 | | 535 | 751 | |
| Starvation Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Spillback Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Reduced v/c Ratio | 0.13 | 0.53 | | 0.23 | 0.08 | | 0.05 | 0.23 | | 0.02 | 0.31 | |

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Control Type: Pretimed
 Maximum v/c Ratio: 0.53
 Intersection Signal Delay: 18.5
 Intersection LOS: B
 Intersection Capacity Utilization 61.2%
 ICU Level of Service B
 Analysis Period (min) 15

















Splits and Phases: 8: Carp Rd & March Rd



HCM Unsignalized Intersection Capacity Analysis

3: Carp Rd & McGee Side Rd










02-24-2025

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Traffic Volume (veh/h) | 19 | 4 | 37 | 1 | 2 | 4 | 12 | 240 | 10 | 2 | 351 | 2 |
| Future Volume (Veh/h) | 19 | 4 | 37 | 1 | 2 | 4 | 12 | 240 | 10 | 2 | 351 | 2 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Hourly flow rate (vph) | 20 | 4 | 39 | 1 | 2 | 4 | 13 | 255 | 11 | 2 | 373 | 2 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (m) | | | | | | | | | | | | |
| Walking Speed (m/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | | | | | |
| | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 670 | 670 | 374 | 706 | 666 | 260 | 375 | | | 266 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 670 | 670 | 374 | 706 | 666 | 260 | 375 | | | 266 | | |
| tC, single (s) | 7.3 | 6.5 | 6.3 | 7.1 | 7.0 | 6.2 | 4.5 | | | 4.6 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.7 | 4.0 | 3.4 | 3.5 | 4.5 | 3.3 | 2.6 | | | 2.7 | | |
| p0 queue free % | 94 | 99 | 94 | 100 | 99 | 99 | 99 | | | 100 | | |
| cM capacity (veh/h) | 335 | 375 | 657 | 326 | 320 | 783 | 982 | | | 1065 | | |
| Direction, Lane # | | | | | | | | | | | | |
| | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 63 | 7 | 279 | 377 | | | | | | | | |
| Volume Left | 20 | 1 | 13 | 2 | | | | | | | | |
| Volume Right | 39 | 4 | 11 | 2 | | | | | | | | |
| cSH | 486 | 486 | 982 | 1065 | | | | | | | | |
| Volume to Capacity | 0.13 | 0.01 | 0.01 | 0.00 | | | | | | | | |
| Queue Length 95th (m) | 3.5 | 0.4 | 0.3 | 0.0 | | | | | | | | |
| Control Delay (s) | 13.5 | 12.5 | 0.5 | 0.1 | | | | | | | | |
| Lane LOS | B | B | A | A | | | | | | | | |
| Approach Delay (s) | 13.5 | 12.5 | 0.5 | 0.1 | | | | | | | | |
| Approach LOS | B | B | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 1.5 | | | | | | | | | |
| Intersection Capacity Utilization | | | 35.1% | ICU Level of Service | A | | | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis










11: Carp Rd & Site Access 1

02-24-2025

| |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations |  | |  | | |  |
| Traffic Volume (veh/h) | 0 | 0 | 263 | 0 | 0 | 365 |
| Future Volume (Veh/h) | 0 | 0 | 263 | 0 | 0 | 365 |
| Sign Control | Stop | | Free | | Free | |
| Grade | 0% | | 0% | | 0% | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Hourly flow rate (vph) | 0 | 0 | 280 | 0 | 0 | 388 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage (veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 668 | 280 | | | 280 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 668 | 280 | | | 280 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 100 | 100 | | | 100 | |
| cM capacity (veh/h) | 426 | 764 | | | 1294 | |
| Direction, Lane # | WB 1 | NB 1 | SB 1 | | | |
| Volume Total | 0 | 280 | 388 | | | |
| Volume Left | 0 | 0 | 0 | | | |
| Volume Right | 0 | 0 | 0 | | | |
| cSH | 1700 | 1700 | 1294 | | | |
| Volume to Capacity | 0.00 | 0.16 | 0.00 | | | |
| Queue Length 95th (m) | 0.0 | 0.0 | 0.0 | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | | | |
| Lane LOS | A | | | | | |
| Approach Delay (s) | 0.0 | 0.0 | 0.0 | | | |
| Approach LOS | A | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.0 | | | |
| Intersection Capacity Utilization | | | 22.5% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |

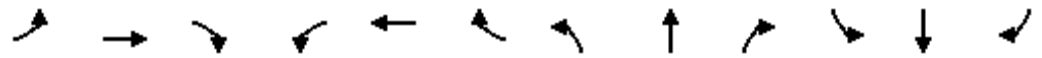
HCM Unsignalized Intersection Capacity Analysis
 13: Carp Rd & Site Access 2

02-24-2025

| |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations |  | |  | | |  |
| Traffic Volume (veh/h) | 0 | 0 | 263 | 0 | 0 | 365 |
| Future Volume (Veh/h) | 0 | 0 | 263 | 0 | 0 | 365 |
| Sign Control | Stop | | Free | | Free | |
| Grade | 0% | | 0% | | 0% | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Hourly flow rate (vph) | 0 | 0 | 280 | 0 | 0 | 388 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage (veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 668 | 280 | | | 280 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 668 | 280 | | | 280 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 100 | 100 | | | 100 | |
| cM capacity (veh/h) | 426 | 764 | | | 1294 | |
| Direction, Lane # | WB 1 | NB 1 | SB 1 | | | |
| Volume Total | 0 | 280 | 388 | | | |
| Volume Left | 0 | 0 | 0 | | | |
| Volume Right | 0 | 0 | 0 | | | |
| cSH | 1700 | 1700 | 1294 | | | |
| Volume to Capacity | 0.00 | 0.16 | 0.00 | | | |
| Queue Length 95th (m) | 0.0 | 0.0 | 0.0 | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | | | |
| Lane LOS | A | | | | | |
| Approach Delay (s) | 0.0 | 0.0 | 0.0 | | | |
| Approach LOS | A | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.0 | | | |
| Intersection Capacity Utilization | | | 22.5% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |

Lanes, Volumes, Timings
8: Carp Rd & March Rd

FBG 2034 PM
02-24-2025

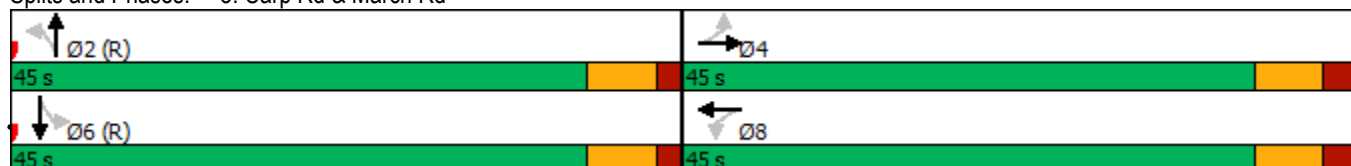


| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|------|-------|-------|------|-------|--------|------|-------|-------|------|
| Lane Configurations | ↖ | ↗ | | ↖ | ↗ | | ↖ | ↗ | | ↖ | ↗ | |
| Traffic Volume (vph) | 42 | 61 | 28 | 44 | 309 | 6 | 164 | 273 | 49 | 12 | 154 | 54 |
| Future Volume (vph) | 42 | 61 | 28 | 44 | 309 | 6 | 164 | 273 | 49 | 12 | 154 | 54 |
| Satd. Flow (prot) | 1805 | 1724 | 0 | 1530 | 1858 | 0 | 1770 | 1790 | 0 | 1805 | 1680 | 0 |
| Flt Permitted | 0.484 | | | 0.695 | | | 0.607 | | | 0.474 | | |
| Satd. Flow (perm) | 920 | 1724 | 0 | 1119 | 1858 | 0 | 1131 | 1790 | 0 | 901 | 1680 | 0 |
| Satd. Flow (RTOR) | | 30 | | | 1 | | | 13 | | | 24 | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Heavy Vehicles (%) | 0% | 0% | 16% | 18% | 2% | 0% | 2% | 4% | 2% | 0% | 11% | 2% |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 45 | 95 | 0 | 47 | 335 | 0 | 174 | 342 | 0 | 13 | 221 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Total Split (s) | 45.0 | 45.0 | | 45.0 | 45.0 | | 45.0 | 45.0 | | 45.0 | 45.0 | |
| Total Lost Time (s) | 6.7 | 6.7 | | 6.7 | 6.7 | | 6.4 | 6.4 | | 6.4 | 6.4 | |
| Act Effct Green (s) | 38.3 | 38.3 | | 38.3 | 38.3 | | 38.6 | 38.6 | | 38.6 | 38.6 | |
| Actuated g/C Ratio | 0.43 | 0.43 | | 0.43 | 0.43 | | 0.43 | 0.43 | | 0.43 | 0.43 | |
| v/c Ratio | 0.12 | 0.13 | | 0.10 | 0.42 | | 0.36 | 0.44 | | 0.03 | 0.30 | |
| Control Delay | 16.7 | 11.7 | | 16.3 | 20.1 | | 20.1 | 19.6 | | 15.3 | 16.3 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 16.7 | 11.7 | | 16.3 | 20.1 | | 20.1 | 19.6 | | 15.3 | 16.3 | |
| LOS | B | B | | B | C | | C | B | | B | B | |
| Approach Delay | | 13.3 | | | 19.7 | | | 19.8 | | | 16.2 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Queue Length 50th (m) | 4.8 | 6.9 | | 5.0 | 41.4 | | 20.8 | 40.8 | | 1.3 | 22.5 | |
| Queue Length 95th (m) | 11.9 | 16.2 | | 11.9 | 64.4 | | 37.6 | 64.3 | | 4.9 | 39.3 | |
| Internal Link Dist (m) | | 289.3 | | | 294.7 | | | 2114.6 | | | 217.4 | |
| Turn Bay Length (m) | 215.0 | | | 185.0 | | | 215.0 | | | 195.0 | | |
| Base Capacity (vph) | 391 | 750 | | 476 | 791 | | 485 | 775 | | 386 | 734 | |
| Starvation Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Spillback Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Reduced v/c Ratio | 0.12 | 0.13 | | 0.10 | 0.42 | | 0.36 | 0.44 | | 0.03 | 0.30 | |

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Control Type: Pretimed
 Maximum v/c Ratio: 0.44
 Intersection Signal Delay: 18.4
 Intersection Capacity Utilization 72.5%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service C

















Splits and Phases: 8: Carp Rd & March Rd



HCM Unsignalized Intersection Capacity Analysis

3: Carp Rd & McGee Side Rd










02-24-2025

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Traffic Volume (veh/h) | 11 | 0 | 15 | 4 | 2 | 7 | 31 | 344 | 7 | 6 | 232 | 19 |
| Future Volume (Veh/h) | 11 | 0 | 15 | 4 | 2 | 7 | 31 | 344 | 7 | 6 | 232 | 19 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Hourly flow rate (vph) | 12 | 0 | 16 | 4 | 2 | 8 | 34 | 378 | 8 | 7 | 255 | 21 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (m) | | | | | | | | | | | | |
| Walking Speed (m/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | | | | | |
| Median storage veh | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 738 | 734 | 266 | 746 | 740 | 382 | 276 | | | 386 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 738 | 734 | 266 | 746 | 740 | 382 | 276 | | | 386 | | |
| tC, single (s) | 7.3 | 6.5 | 6.5 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.7 | 4.0 | 3.6 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 96 | 100 | 98 | 99 | 99 | 99 | 97 | | | 99 | | |
| cM capacity (veh/h) | 299 | 339 | 708 | 317 | 336 | 670 | 1299 | | | 1184 | | |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 28 | 14 | 420 | 283 | | | | | | | | |
| Volume Left | 12 | 4 | 34 | 7 | | | | | | | | |
| Volume Right | 16 | 8 | 8 | 21 | | | | | | | | |
| cSH | 446 | 459 | 1299 | 1184 | | | | | | | | |
| Volume to Capacity | 0.06 | 0.03 | 0.03 | 0.01 | | | | | | | | |
| Queue Length 95th (m) | 1.6 | 0.8 | 0.6 | 0.1 | | | | | | | | |
| Control Delay (s) | 13.6 | 13.1 | 0.9 | 0.3 | | | | | | | | |
| Lane LOS | B | B | A | A | | | | | | | | |
| Approach Delay (s) | 13.6 | 13.1 | 0.9 | 0.3 | | | | | | | | |
| Approach LOS | B | B | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 1.3 | | | | | | | | | |
| Intersection Capacity Utilization | | | 44.2% | | ICU Level of Service | | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

11: Carp Rd & Site Access 1

02-24-2025

| |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations |  | |  | | |  |
| Traffic Volume (veh/h) | 0 | 0 | 361 | 0 | 0 | 225 |
| Future Volume (Veh/h) | 0 | 0 | 361 | 0 | 0 | 225 |
| Sign Control | Stop | | Free | | | Free |
| Grade | 0% | | 0% | | | 0% |
| Peak Hour Factor | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Hourly flow rate (vph) | 0 | 0 | 397 | 0 | 0 | 247 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | None | | | None |
| Median storage (veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 644 | 397 | | | 397 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 644 | 397 | | | 397 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 100 | 100 | | | 100 | |
| cM capacity (veh/h) | 440 | 657 | | | 1173 | |
| Direction, Lane # | WB 1 | NB 1 | SB 1 | | | |
| Volume Total | 0 | 397 | 247 | | | |
| Volume Left | 0 | 0 | 0 | | | |
| Volume Right | 0 | 0 | 0 | | | |
| cSH | 1700 | 1700 | 1173 | | | |
| Volume to Capacity | 0.00 | 0.23 | 0.00 | | | |
| Queue Length 95th (m) | 0.0 | 0.0 | 0.0 | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | | | |
| Lane LOS | A | | | | | |
| Approach Delay (s) | 0.0 | 0.0 | 0.0 | | | |
| Approach LOS | A | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.0 | | | |
| Intersection Capacity Utilization | | | 22.3% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis
 13: Carp Rd & Site Access 2

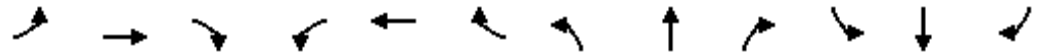
02-24-2025



| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|-----------------------------------|------|-------|------|----------------------|------|------|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 0 | 0 | 361 | 0 | 0 | 225 |
| Future Volume (Veh/h) | 0 | 0 | 361 | 0 | 0 | 225 |
| Sign Control | Stop | | Free | | Free | |
| Grade | 0% | | 0% | | 0% | |
| Peak Hour Factor | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Hourly flow rate (vph) | 0 | 0 | 397 | 0 | 0 | 247 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | None | None | | |
| Median storage veh | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 644 | 397 | | | 397 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 644 | 397 | | | 397 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 100 | 100 | | | 100 | |
| cM capacity (veh/h) | 440 | 657 | | | 1173 | |
| Direction, Lane # | | | | | | |
| | WB 1 | NB 1 | SB 1 | | | |
| Volume Total | 0 | 397 | 247 | | | |
| Volume Left | 0 | 0 | 0 | | | |
| Volume Right | 0 | 0 | 0 | | | |
| cSH | 1700 | 1700 | 1173 | | | |
| Volume to Capacity | 0.00 | 0.23 | 0.00 | | | |
| Queue Length 95th (m) | 0.0 | 0.0 | 0.0 | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | | | |
| Lane LOS | A | | | | | |
| Approach Delay (s) | 0.0 | 0.0 | 0.0 | | | |
| Approach LOS | A | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.0 | | | |
| Intersection Capacity Utilization | | 22.3% | | ICU Level of Service | | A |
| Analysis Period (min) | | 15 | | | | |

Lanes, Volumes, Timings
8: Carp Rd & March Rd

Total 2029 AM
02-24-2025

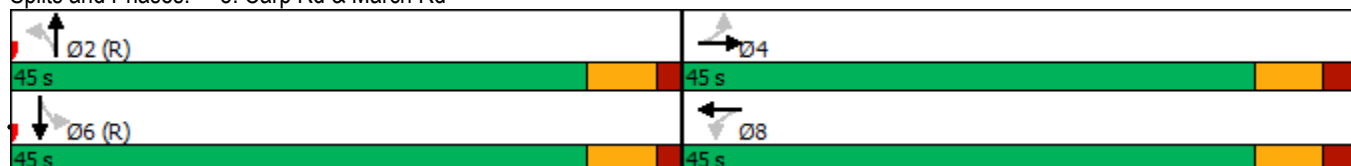


| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|------|-------|-------|------|-------|--------|------|-------|-------|------|
| Lane Configurations | ↖ | ↗ | | ↖ | ↗ | | ↖ | ↗ | | ↖ | ↗ | |
| Traffic Volume (vph) | 59 | 281 | 97 | 68 | 57 | 2 | 17 | 107 | 38 | 12 | 204 | 16 |
| Future Volume (vph) | 59 | 281 | 97 | 68 | 57 | 2 | 17 | 107 | 38 | 12 | 204 | 16 |
| Satd. Flow (prot) | 1597 | 1796 | 0 | 1687 | 1820 | 0 | 1378 | 1571 | 0 | 1805 | 1747 | 0 |
| Flt Permitted | 0.717 | | | 0.418 | | | 0.595 | | | 0.660 | | |
| Satd. Flow (perm) | 1206 | 1796 | 0 | 742 | 1820 | 0 | 863 | 1571 | 0 | 1254 | 1747 | 0 |
| Satd. Flow (RTOR) | | 24 | | | 2 | | | 25 | | | 6 | |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Heavy Vehicles (%) | 13% | 0% | 7% | 7% | 4% | 0% | 31% | 17% | 14% | 0% | 6% | 27% |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 62 | 398 | 0 | 72 | 62 | 0 | 18 | 153 | 0 | 13 | 232 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Total Split (s) | 45.0 | 45.0 | | 45.0 | 45.0 | | 45.0 | 45.0 | | 45.0 | 45.0 | |
| Total Lost Time (s) | 6.7 | 6.7 | | 6.7 | 6.7 | | 6.4 | 6.4 | | 6.4 | 6.4 | |
| Act Effct Green (s) | 38.3 | 38.3 | | 38.3 | 38.3 | | 38.6 | 38.6 | | 38.6 | 38.6 | |
| Actuated g/C Ratio | 0.43 | 0.43 | | 0.43 | 0.43 | | 0.43 | 0.43 | | 0.43 | 0.43 | |
| v/c Ratio | 0.12 | 0.51 | | 0.23 | 0.08 | | 0.05 | 0.22 | | 0.02 | 0.31 | |
| Control Delay | 16.6 | 20.6 | | 19.0 | 15.4 | | 15.6 | 14.5 | | 15.2 | 17.9 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 16.6 | 20.6 | | 19.0 | 15.4 | | 15.6 | 14.5 | | 15.2 | 17.9 | |
| LOS | B | C | | B | B | | B | B | | B | B | |
| Approach Delay | | 20.1 | | | 17.3 | | | 14.6 | | | 17.7 | |
| Approach LOS | | C | | | B | | | B | | | B | |
| Queue Length 50th (m) | 6.7 | 48.4 | | 8.1 | 6.3 | | 1.9 | 14.1 | | 1.3 | 26.2 | |
| Queue Length 95th (m) | 14.8 | 75.6 | | 18.2 | 14.0 | | 6.1 | 27.2 | | 4.8 | 43.5 | |
| Internal Link Dist (m) | | 289.3 | | | 294.7 | | | 2114.6 | | | 217.4 | |
| Turn Bay Length (m) | 215.0 | | | 185.0 | | | 215.0 | | | 195.0 | | |
| Base Capacity (vph) | 513 | 778 | | 315 | 775 | | 370 | 688 | | 537 | 752 | |
| Starvation Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Spillback Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Reduced v/c Ratio | 0.12 | 0.51 | | 0.23 | 0.08 | | 0.05 | 0.22 | | 0.02 | 0.31 | |

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Control Type: Pretimed
 Maximum v/c Ratio: 0.51
 Intersection Signal Delay: 18.2
 Intersection Capacity Utilization 59.7%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service B

















Splits and Phases: 8: Carp Rd & March Rd



HCM Unsignalized Intersection Capacity Analysis

3: Carp Rd & McGee Side Rd

02-24-2025

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Traffic Volume (veh/h) | 20 | 4 | 35 | 1 | 2 | 5 | 12 | 315 | 10 | 2 | 347 | 2 |
| Future Volume (Veh/h) | 20 | 4 | 35 | 1 | 2 | 5 | 12 | 315 | 10 | 2 | 347 | 2 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Hourly flow rate (vph) | 21 | 4 | 37 | 1 | 2 | 5 | 13 | 335 | 11 | 2 | 369 | 2 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (m) | | | | | | | | | | | | |
| Walking Speed (m/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 746 | 746 | 370 | 780 | 742 | 340 | 371 | | | 346 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 746 | 746 | 370 | 780 | 742 | 340 | 371 | | | 346 | | |
| tC, single (s) | 7.3 | 6.5 | 6.3 | 7.1 | 7.0 | 6.2 | 4.5 | | | 4.6 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.7 | 4.0 | 3.4 | 3.5 | 4.5 | 3.3 | 2.6 | | | 2.7 | | |
| p0 queue free % | 93 | 99 | 94 | 100 | 99 | 99 | 99 | | | 100 | | |
| cM capacity (veh/h) | 296 | 339 | 660 | 292 | 288 | 707 | 986 | | | 989 | | |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 62 | 8 | 359 | 373 | | | | | | | | |
| Volume Left | 21 | 1 | 13 | 2 | | | | | | | | |
| Volume Right | 37 | 5 | 11 | 2 | | | | | | | | |
| cSH | 447 | 458 | 986 | 989 | | | | | | | | |
| Volume to Capacity | 0.14 | 0.02 | 0.01 | 0.00 | | | | | | | | |
| Queue Length 95th (m) | 3.8 | 0.4 | 0.3 | 0.0 | | | | | | | | |
| Control Delay (s) | 14.4 | 13.0 | 0.5 | 0.1 | | | | | | | | |
| Lane LOS | B | B | A | A | | | | | | | | |
| Approach Delay (s) | 14.4 | 13.0 | 0.5 | 0.1 | | | | | | | | |
| Approach LOS | B | B | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 1.5 | | | | | | | | | |
| Intersection Capacity Utilization | | | 39.6% | | ICU Level of Service | | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

11: Carp Rd & Site Access 1

02-24-2025



| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|-----------------------------------|------|-------|------|----------------------|------|------|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 6 | 2 | 295 | 44 | 11 | 353 |
| Future Volume (Veh/h) | 6 | 2 | 295 | 44 | 11 | 353 |
| Sign Control | Stop | | Free | | Free | |
| Grade | 0% | | 0% | | 0% | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Hourly flow rate (vph) | 6 | 2 | 314 | 47 | 12 | 376 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | None | | None | |
| Median storage (veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 738 | 338 | | | 361 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 738 | 338 | | | 361 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 98 | 100 | | | 99 | |
| cM capacity (veh/h) | 385 | 709 | | | 1209 | |
| Direction, Lane # | | | | | | |
| | WB 1 | NB 1 | SB 1 | | | |
| Volume Total | 8 | 361 | 388 | | | |
| Volume Left | 6 | 0 | 12 | | | |
| Volume Right | 2 | 47 | 0 | | | |
| cSH | 434 | 1700 | 1209 | | | |
| Volume to Capacity | 0.02 | 0.21 | 0.01 | | | |
| Queue Length 95th (m) | 0.4 | 0.0 | 0.2 | | | |
| Control Delay (s) | 13.4 | 0.0 | 0.3 | | | |
| Lane LOS | B | | A | | | |
| Approach Delay (s) | 13.4 | 0.0 | 0.3 | | | |
| Approach LOS | B | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.3 | | | |
| Intersection Capacity Utilization | | 37.5% | | ICU Level of Service | | A |
| Analysis Period (min) | | 15 | | | | |

HCM Unsignalized Intersection Capacity Analysis

13: Carp Rd & Site Access 2

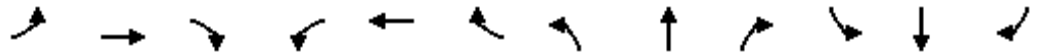
02-24-2025



| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|-----------------------------------|-------------|-------------|-------------|----------------------|------|------|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 6 | 2 | 252 | 44 | 11 | 358 |
| Future Volume (Veh/h) | 6 | 2 | 252 | 44 | 11 | 358 |
| Sign Control | Stop | | Free | | Free | |
| Grade | 0% | | 0% | | 0% | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Hourly flow rate (vph) | 6 | 2 | 268 | 47 | 12 | 381 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage (veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 696 | 292 | | | 315 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 696 | 292 | | | 315 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 99 | 100 | | | 99 | |
| cM capacity (veh/h) | 407 | 752 | | | 1257 | |
| Direction, Lane # | WB 1 | NB 1 | SB 1 | | | |
| Volume Total | 8 | 315 | 393 | | | |
| Volume Left | 6 | 0 | 12 | | | |
| Volume Right | 2 | 47 | 0 | | | |
| cSH | 459 | 1700 | 1257 | | | |
| Volume to Capacity | 0.02 | 0.19 | 0.01 | | | |
| Queue Length 95th (m) | 0.4 | 0.0 | 0.2 | | | |
| Control Delay (s) | 13.0 | 0.0 | 0.3 | | | |
| Lane LOS | B | | A | | | |
| Approach Delay (s) | 13.0 | 0.0 | 0.3 | | | |
| Approach LOS | B | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.3 | | | |
| Intersection Capacity Utilization | | | 37.7% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |

Lanes, Volumes, Timings
8: Carp Rd & March Rd

Total 2029 PM
02-24-2025

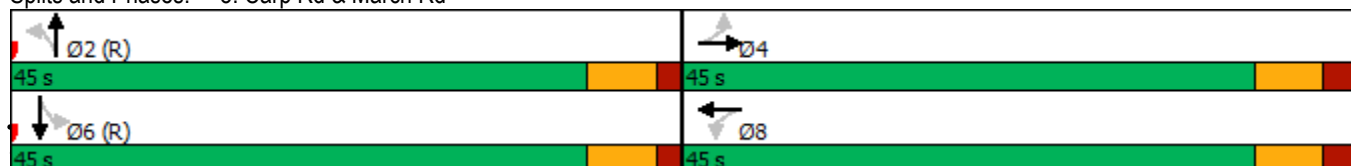


| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|------|-------|-------|------|-------|--------|------|-------|-------|------|
| Lane Configurations | ↖ | ↗ | | ↖ | ↗ | | ↖ | ↗ | | ↖ | ↗ | |
| Traffic Volume (vph) | 40 | 58 | 27 | 42 | 294 | 5 | 163 | 272 | 49 | 12 | 150 | 51 |
| Future Volume (vph) | 40 | 58 | 27 | 42 | 294 | 5 | 163 | 272 | 49 | 12 | 150 | 51 |
| Satd. Flow (prot) | 1805 | 1721 | 0 | 1530 | 1860 | 0 | 1770 | 1790 | 0 | 1805 | 1681 | 0 |
| Flt Permitted | 0.502 | | | 0.698 | | | 0.616 | | | 0.475 | | |
| Satd. Flow (perm) | 954 | 1721 | 0 | 1124 | 1860 | 0 | 1147 | 1790 | 0 | 902 | 1681 | 0 |
| Satd. Flow (RTOR) | | 29 | | | 1 | | | 13 | | | 24 | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Heavy Vehicles (%) | 0% | 0% | 16% | 18% | 2% | 0% | 2% | 4% | 2% | 0% | 11% | 2% |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 43 | 91 | 0 | 45 | 318 | 0 | 173 | 341 | 0 | 13 | 214 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Total Split (s) | 45.0 | 45.0 | | 45.0 | 45.0 | | 45.0 | 45.0 | | 45.0 | 45.0 | |
| Total Lost Time (s) | 6.7 | 6.7 | | 6.7 | 6.7 | | 6.4 | 6.4 | | 6.4 | 6.4 | |
| Act Effct Green (s) | 38.3 | 38.3 | | 38.3 | 38.3 | | 38.6 | 38.6 | | 38.6 | 38.6 | |
| Actuated g/C Ratio | 0.43 | 0.43 | | 0.43 | 0.43 | | 0.43 | 0.43 | | 0.43 | 0.43 | |
| v/c Ratio | 0.11 | 0.12 | | 0.09 | 0.40 | | 0.35 | 0.44 | | 0.03 | 0.29 | |
| Control Delay | 16.6 | 11.6 | | 16.2 | 19.8 | | 19.9 | 19.6 | | 15.3 | 16.1 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 16.6 | 11.6 | | 16.2 | 19.8 | | 19.9 | 19.6 | | 15.3 | 16.1 | |
| LOS | B | B | | B | B | | B | B | | B | B | |
| Approach Delay | | 13.2 | | | 19.3 | | | 19.7 | | | 16.1 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Queue Length 50th (m) | 4.6 | 6.5 | | 4.8 | 38.9 | | 20.6 | 40.7 | | 1.3 | 21.6 | |
| Queue Length 95th (m) | 11.4 | 15.7 | | 11.6 | 60.9 | | 37.2 | 64.2 | | 4.9 | 37.9 | |
| Internal Link Dist (m) | | 289.3 | | | 294.7 | | | 2114.6 | | | 217.4 | |
| Turn Bay Length (m) | 215.0 | | | 185.0 | | | 215.0 | | | 195.0 | | |
| Base Capacity (vph) | 405 | 749 | | 478 | 792 | | 491 | 775 | | 386 | 734 | |
| Starvation Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Spillback Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Reduced v/c Ratio | 0.11 | 0.12 | | 0.09 | 0.40 | | 0.35 | 0.44 | | 0.03 | 0.29 | |

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Control Type: Pretimed
 Maximum v/c Ratio: 0.44
 Intersection Signal Delay: 18.2
 Intersection LOS: B
 Intersection Capacity Utilization 71.6%
 ICU Level of Service C
 Analysis Period (min) 15

















Splits and Phases: 8: Carp Rd & March Rd



HCM Unsignalized Intersection Capacity Analysis










3: Carp Rd & McGee Side Rd

02-24-2025

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Traffic Volume (veh/h) | 11 | 0 | 14 | 4 | 2 | 6 | 30 | 346 | 6 | 6 | 301 | 20 |
| Future Volume (Veh/h) | 11 | 0 | 14 | 4 | 2 | 6 | 30 | 346 | 6 | 6 | 301 | 20 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Hourly flow rate (vph) | 12 | 0 | 15 | 4 | 2 | 7 | 33 | 380 | 7 | 7 | 331 | 22 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (m) | | | | | | | | | | | | |
| Walking Speed (m/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 814 | 809 | 342 | 820 | 816 | 384 | 353 | | | 387 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 814 | 809 | 342 | 820 | 816 | 384 | 353 | | | 387 | | |
| tC, single (s) | 7.3 | 6.5 | 6.5 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.7 | 4.0 | 3.6 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 95 | 100 | 98 | 99 | 99 | 99 | 97 | | | 99 | | |
| cM capacity (veh/h) | 266 | 306 | 639 | 282 | 303 | 668 | 1217 | | | 1183 | | |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 27 | 13 | 420 | 360 | | | | | | | | |
| Volume Left | 12 | 4 | 33 | 7 | | | | | | | | |
| Volume Right | 15 | 7 | 7 | 22 | | | | | | | | |
| cSH | 393 | 416 | 1217 | 1183 | | | | | | | | |
| Volume to Capacity | 0.07 | 0.03 | 0.03 | 0.01 | | | | | | | | |
| Queue Length 95th (m) | 1.8 | 0.8 | 0.7 | 0.1 | | | | | | | | |
| Control Delay (s) | 14.8 | 13.9 | 0.9 | 0.2 | | | | | | | | |
| Lane LOS | B | B | A | A | | | | | | | | |
| Approach Delay (s) | 14.8 | 13.9 | 0.9 | 0.2 | | | | | | | | |
| Approach LOS | B | B | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 1.3 | | | | | | | | | |
| Intersection Capacity Utilization | | | 45.1% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis
 11: Carp Rd & Site Access 1

02-24-2025

| |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations |  | |  | | |  |
| Traffic Volume (veh/h) | 41 | 10 | 353 | 10 | 2 | 256 |
| Future Volume (Veh/h) | 41 | 10 | 353 | 10 | 2 | 256 |
| Sign Control | Stop | | Free | | Free | |
| Grade | 0% | | 0% | | 0% | |
| Peak Hour Factor | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Hourly flow rate (vph) | 45 | 11 | 388 | 11 | 2 | 281 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage (veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 678 | 394 | | | 399 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 678 | 394 | | | 399 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 89 | 98 | | | 100 | |
| cM capacity (veh/h) | 420 | 660 | | | 1171 | |
| Direction, Lane # | WB 1 | NB 1 | SB 1 | | | |
| Volume Total | 56 | 399 | 283 | | | |
| Volume Left | 45 | 0 | 2 | | | |
| Volume Right | 11 | 11 | 0 | | | |
| cSH | 452 | 1700 | 1171 | | | |
| Volume to Capacity | 0.12 | 0.23 | 0.00 | | | |
| Queue Length 95th (m) | 3.4 | 0.0 | 0.0 | | | |
| Control Delay (s) | 14.1 | 0.0 | 0.1 | | | |
| Lane LOS | B | | A | | | |
| Approach Delay (s) | 14.1 | 0.0 | 0.1 | | | |
| Approach LOS | B | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 1.1 | | | |
| Intersection Capacity Utilization | | | 29.2% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis
 13: Carp Rd & Site Access 2

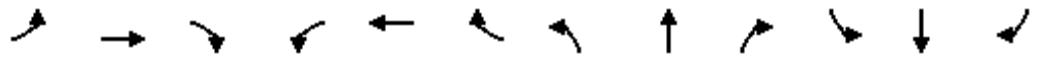
02-24-2025



| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|-----------------------------------|------|------|-------|------|----------------------|------|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 41 | 10 | 354 | 10 | 2 | 217 |
| Future Volume (Veh/h) | 41 | 10 | 354 | 10 | 2 | 217 |
| Sign Control | Stop | | Free | | Free | |
| Grade | 0% | | 0% | | 0% | |
| Peak Hour Factor | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Hourly flow rate (vph) | 45 | 11 | 389 | 11 | 2 | 238 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 636 | 394 | | | 400 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 636 | 394 | | | 400 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 90 | 98 | | | 100 | |
| cM capacity (veh/h) | 444 | 659 | | | 1170 | |
| Direction, Lane # | WB 1 | NB 1 | SB 1 | | | |
| Volume Total | 56 | 400 | 240 | | | |
| Volume Left | 45 | 0 | 2 | | | |
| Volume Right | 11 | 11 | 0 | | | |
| cSH | 475 | 1700 | 1170 | | | |
| Volume to Capacity | 0.12 | 0.24 | 0.00 | | | |
| Queue Length 95th (m) | 3.2 | 0.0 | 0.0 | | | |
| Control Delay (s) | 13.6 | 0.0 | 0.1 | | | |
| Lane LOS | B | | A | | | |
| Approach Delay (s) | 13.6 | 0.0 | 0.1 | | | |
| Approach LOS | B | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 1.1 | | | |
| Intersection Capacity Utilization | | | 29.2% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |

Lanes, Volumes, Timings
8: Carp Rd & March Rd

Total 2034 AM
02-24-2025

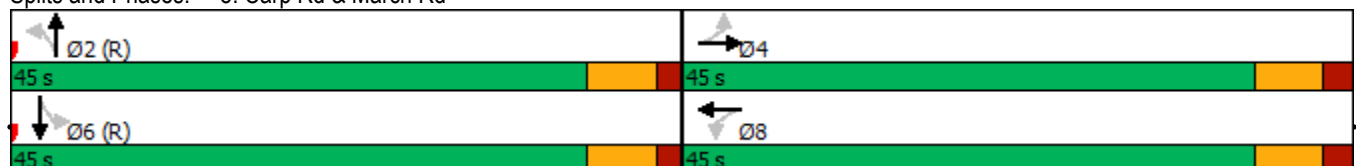


| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|------|-------|-------|------|-------|--------|------|-------|-------|------|
| Lane Configurations | ↖ | ↗ | | ↖ | ↗ | | ↖ | ↗ | | ↖ | ↗ | |
| Traffic Volume (vph) | 62 | 296 | 102 | 71 | 60 | 2 | 18 | 113 | 40 | 12 | 214 | 17 |
| Future Volume (vph) | 62 | 296 | 102 | 71 | 60 | 2 | 18 | 113 | 40 | 12 | 214 | 17 |
| Satd. Flow (prot) | 1597 | 1796 | 0 | 1687 | 1820 | 0 | 1378 | 1571 | 0 | 1805 | 1747 | 0 |
| Flt Permitted | 0.715 | | | 0.396 | | | 0.582 | | | 0.655 | | |
| Satd. Flow (perm) | 1202 | 1796 | 0 | 703 | 1820 | 0 | 844 | 1571 | 0 | 1244 | 1747 | 0 |
| Satd. Flow (RTOR) | | 24 | | | 2 | | | 25 | | | 6 | |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Heavy Vehicles (%) | 13% | 0% | 7% | 7% | 4% | 0% | 31% | 17% | 14% | 0% | 6% | 27% |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 65 | 419 | 0 | 75 | 65 | 0 | 19 | 161 | 0 | 13 | 243 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Total Split (s) | 45.0 | 45.0 | | 45.0 | 45.0 | | 45.0 | 45.0 | | 45.0 | 45.0 | |
| Total Lost Time (s) | 6.7 | 6.7 | | 6.7 | 6.7 | | 6.4 | 6.4 | | 6.4 | 6.4 | |
| Act Effct Green (s) | 38.3 | 38.3 | | 38.3 | 38.3 | | 38.6 | 38.6 | | 38.6 | 38.6 | |
| Actuated g/C Ratio | 0.43 | 0.43 | | 0.43 | 0.43 | | 0.43 | 0.43 | | 0.43 | 0.43 | |
| v/c Ratio | 0.13 | 0.54 | | 0.25 | 0.08 | | 0.05 | 0.23 | | 0.02 | 0.32 | |
| Control Delay | 16.6 | 21.2 | | 19.5 | 15.5 | | 15.7 | 14.8 | | 15.2 | 18.1 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 16.6 | 21.2 | | 19.5 | 15.5 | | 15.7 | 14.8 | | 15.2 | 18.1 | |
| LOS | B | C | | B | B | | B | B | | B | B | |
| Approach Delay | | 20.6 | | | 17.7 | | | 14.9 | | | 18.0 | |
| Approach LOS | | C | | | B | | | B | | | B | |
| Queue Length 50th (m) | 7.0 | 52.0 | | 8.5 | 6.6 | | 2.0 | 15.0 | | 1.3 | 27.7 | |
| Queue Length 95th (m) | 15.3 | 80.5 | | 19.2 | 14.5 | | 6.3 | 28.6 | | 4.8 | 45.7 | |
| Internal Link Dist (m) | | 289.3 | | | 294.7 | | | 2114.6 | | | 217.4 | |
| Turn Bay Length (m) | 215.0 | | | 185.0 | | | 215.0 | | | 195.0 | | |
| Base Capacity (vph) | 511 | 778 | | 299 | 775 | | 361 | 688 | | 533 | 752 | |
| Starvation Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Spillback Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Reduced v/c Ratio | 0.13 | 0.54 | | 0.25 | 0.08 | | 0.05 | 0.23 | | 0.02 | 0.32 | |

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Control Type: Pretimed
 Maximum v/c Ratio: 0.54
 Intersection Signal Delay: 18.6
 Intersection Capacity Utilization 61.6%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service B

















Splits and Phases: 8: Carp Rd & March Rd



HCM Unsignalized Intersection Capacity Analysis










3: Carp Rd & McGee Side Rd

02-24-2025

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Traffic Volume (veh/h) | 21 | 4 | 37 | 1 | 2 | 5 | 12 | 326 | 10 | 2 | 364 | 2 |
| Future Volume (Veh/h) | 21 | 4 | 37 | 1 | 2 | 5 | 12 | 326 | 10 | 2 | 364 | 2 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Hourly flow rate (vph) | 22 | 4 | 39 | 1 | 2 | 5 | 13 | 347 | 11 | 2 | 387 | 2 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (m) | | | | | | | | | | | | |
| Walking Speed (m/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 776 | 776 | 388 | 812 | 772 | 352 | 389 | | | 358 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 776 | 776 | 388 | 812 | 772 | 352 | 389 | | | 358 | | |
| tC, single (s) | 7.3 | 6.5 | 6.3 | 7.1 | 7.0 | 6.2 | 4.5 | | | 4.6 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.7 | 4.0 | 3.4 | 3.5 | 4.5 | 3.3 | 2.6 | | | 2.7 | | |
| p0 queue free % | 92 | 99 | 94 | 100 | 99 | 99 | 99 | | | 100 | | |
| cM capacity (veh/h) | 282 | 326 | 645 | 276 | 276 | 696 | 970 | | | 978 | | |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 65 | 8 | 371 | 391 | | | | | | | | |
| Volume Left | 22 | 1 | 13 | 2 | | | | | | | | |
| Volume Right | 39 | 5 | 11 | 2 | | | | | | | | |
| cSH | 431 | 443 | 970 | 978 | | | | | | | | |
| Volume to Capacity | 0.15 | 0.02 | 0.01 | 0.00 | | | | | | | | |
| Queue Length 95th (m) | 4.2 | 0.4 | 0.3 | 0.0 | | | | | | | | |
| Control Delay (s) | 14.8 | 13.3 | 0.5 | 0.1 | | | | | | | | |
| Lane LOS | B | B | A | A | | | | | | | | |
| Approach Delay (s) | 14.8 | 13.3 | 0.5 | 0.1 | | | | | | | | |
| Approach LOS | B | B | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 1.5 | | | | | | | | | |
| Intersection Capacity Utilization | | | 40.6% | | ICU Level of Service | | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis
 11: Carp Rd & Site Access 1

02-24-2025

| |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations |  | |  | | |  |
| Traffic Volume (veh/h) | 6 | 2 | 308 | 44 | 11 | 371 |
| Future Volume (Veh/h) | 6 | 2 | 308 | 44 | 11 | 371 |
| Sign Control | Stop | | Free | | Free | |
| Grade | 0% | | 0% | | 0% | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Hourly flow rate (vph) | 6 | 2 | 328 | 47 | 12 | 395 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 770 | 352 | | | 375 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 770 | 352 | | | 375 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 98 | 100 | | | 99 | |
| cM capacity (veh/h) | 368 | 697 | | | 1195 | |
| Direction, Lane # | WB 1 | NB 1 | SB 1 | | | |
| Volume Total | 8 | 375 | 407 | | | |
| Volume Left | 6 | 0 | 12 | | | |
| Volume Right | 2 | 47 | 0 | | | |
| cSH | 417 | 1700 | 1195 | | | |
| Volume to Capacity | 0.02 | 0.22 | 0.01 | | | |
| Queue Length 95th (m) | 0.5 | 0.0 | 0.2 | | | |
| Control Delay (s) | 13.8 | 0.0 | 0.3 | | | |
| Lane LOS | B | | A | | | |
| Approach Delay (s) | 13.8 | 0.0 | 0.3 | | | |
| Approach LOS | B | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.3 | | | |
| Intersection Capacity Utilization | | | 38.4% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis
 13: Carp Rd & Site Access 2

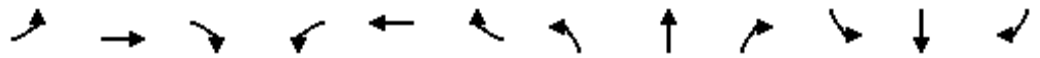
02-24-2025



| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|-----------------------------------|------|-------|------|----------------------|------|------|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 6 | 2 | 265 | 44 | 11 | 376 |
| Future Volume (Veh/h) | 6 | 2 | 265 | 44 | 11 | 376 |
| Sign Control | Stop | | Free | | Free | |
| Grade | 0% | | 0% | | 0% | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Hourly flow rate (vph) | 6 | 2 | 282 | 47 | 12 | 400 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | None | | None | |
| Median storage veh | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 730 | 306 | | | 329 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 730 | 306 | | | 329 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 98 | 100 | | | 99 | |
| cM capacity (veh/h) | 389 | 739 | | | 1242 | |
| Direction, Lane # | | | | | | |
| | WB 1 | NB 1 | SB 1 | | | |
| Volume Total | 8 | 329 | 412 | | | |
| Volume Left | 6 | 0 | 12 | | | |
| Volume Right | 2 | 47 | 0 | | | |
| cSH | 441 | 1700 | 1242 | | | |
| Volume to Capacity | 0.02 | 0.19 | 0.01 | | | |
| Queue Length 95th (m) | 0.4 | 0.0 | 0.2 | | | |
| Control Delay (s) | 13.3 | 0.0 | 0.3 | | | |
| Lane LOS | B | | A | | | |
| Approach Delay (s) | 13.3 | 0.0 | 0.3 | | | |
| Approach LOS | B | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.3 | | | |
| Intersection Capacity Utilization | | 38.7% | | ICU Level of Service | | A |
| Analysis Period (min) | | 15 | | | | |

Lanes, Volumes, Timings
8: Carp Rd & March Rd

Total 2034 PM
02-24-2025

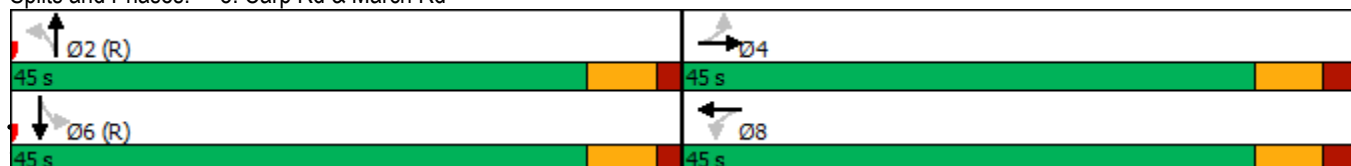


| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|------|-------|-------|------|-------|--------|------|-------|-------|------|
| Lane Configurations | ↖ | ↗ | | ↖ | ↗ | | ↖ | ↗ | | ↖ | ↗ | |
| Traffic Volume (vph) | 42 | 61 | 28 | 44 | 309 | 6 | 171 | 285 | 51 | 12 | 157 | 54 |
| Future Volume (vph) | 42 | 61 | 28 | 44 | 309 | 6 | 171 | 285 | 51 | 12 | 157 | 54 |
| Satd. Flow (prot) | 1805 | 1724 | 0 | 1530 | 1858 | 0 | 1770 | 1790 | 0 | 1805 | 1681 | 0 |
| Flt Permitted | 0.484 | | | 0.695 | | | 0.604 | | | 0.458 | | |
| Satd. Flow (perm) | 920 | 1724 | 0 | 1119 | 1858 | 0 | 1125 | 1790 | 0 | 870 | 1681 | 0 |
| Satd. Flow (RTOR) | | 30 | | | 1 | | | 12 | | | 24 | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Heavy Vehicles (%) | 0% | 0% | 16% | 18% | 2% | 0% | 2% | 4% | 2% | 0% | 11% | 2% |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 45 | 95 | 0 | 47 | 335 | 0 | 182 | 357 | 0 | 13 | 224 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Total Split (s) | 45.0 | 45.0 | | 45.0 | 45.0 | | 45.0 | 45.0 | | 45.0 | 45.0 | |
| Total Lost Time (s) | 6.7 | 6.7 | | 6.7 | 6.7 | | 6.4 | 6.4 | | 6.4 | 6.4 | |
| Act Effct Green (s) | 38.3 | 38.3 | | 38.3 | 38.3 | | 38.6 | 38.6 | | 38.6 | 38.6 | |
| Actuated g/C Ratio | 0.43 | 0.43 | | 0.43 | 0.43 | | 0.43 | 0.43 | | 0.43 | 0.43 | |
| v/c Ratio | 0.12 | 0.13 | | 0.10 | 0.42 | | 0.38 | 0.46 | | 0.03 | 0.31 | |
| Control Delay | 16.7 | 11.7 | | 16.3 | 20.1 | | 20.4 | 20.0 | | 15.4 | 16.4 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 16.7 | 11.7 | | 16.3 | 20.1 | | 20.4 | 20.0 | | 15.4 | 16.4 | |
| LOS | B | B | | B | C | | C | C | | B | B | |
| Approach Delay | | 13.3 | | | 19.7 | | | 20.2 | | | 16.3 | |
| Approach LOS | | B | | | B | | | C | | | B | |
| Queue Length 50th (m) | 4.8 | 6.9 | | 5.0 | 41.4 | | 21.9 | 43.3 | | 1.3 | 22.9 | |
| Queue Length 95th (m) | 11.9 | 16.2 | | 11.9 | 64.4 | | 39.5 | 67.9 | | 4.9 | 39.9 | |
| Internal Link Dist (m) | | 289.3 | | | 294.7 | | | 2114.6 | | | 217.4 | |
| Turn Bay Length (m) | 215.0 | | | 185.0 | | | 215.0 | | | 195.0 | | |
| Base Capacity (vph) | 391 | 750 | | 476 | 791 | | 482 | 774 | | 373 | 734 | |
| Starvation Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Spillback Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Reduced v/c Ratio | 0.12 | 0.13 | | 0.10 | 0.42 | | 0.38 | 0.46 | | 0.03 | 0.31 | |

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Control Type: Pretimed
 Maximum v/c Ratio: 0.46
 Intersection Signal Delay: 18.6
 Intersection LOS: B
 Intersection Capacity Utilization 73.2%
 ICU Level of Service D
 Analysis Period (min) 15

















Splits and Phases: 8: Carp Rd & March Rd



HCM Unsignalized Intersection Capacity Analysis

3: Carp Rd & McGee Side Rd










02-24-2025

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Traffic Volume (veh/h) | 11 | 0 | 15 | 4 | 2 | 7 | 31 | 362 | 7 | 6 | 313 | 20 |
| Future Volume (Veh/h) | 11 | 0 | 15 | 4 | 2 | 7 | 31 | 362 | 7 | 6 | 313 | 20 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Hourly flow rate (vph) | 12 | 0 | 16 | 4 | 2 | 8 | 34 | 398 | 8 | 7 | 344 | 22 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (m) | | | | | | | | | | | | |
| Walking Speed (m/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | | | | | |
| Median storage veh | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 848 | 843 | 355 | 855 | 850 | 402 | 366 | | | 406 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 848 | 843 | 355 | 855 | 850 | 402 | 366 | | | 406 | | |
| tC, single (s) | 7.3 | 6.5 | 6.5 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.7 | 4.0 | 3.6 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 95 | 100 | 97 | 98 | 99 | 99 | 97 | | | 99 | | |
| cM capacity (veh/h) | 251 | 292 | 628 | 266 | 290 | 653 | 1204 | | | 1164 | | |
| Direction, Lane # | | | | | | | | | | | | |
| | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 28 | 14 | 440 | 373 | | | | | | | | |
| Volume Left | 12 | 4 | 34 | 7 | | | | | | | | |
| Volume Right | 16 | 8 | 8 | 22 | | | | | | | | |
| cSH | 382 | 410 | 1204 | 1164 | | | | | | | | |
| Volume to Capacity | 0.07 | 0.03 | 0.03 | 0.01 | | | | | | | | |
| Queue Length 95th (m) | 1.9 | 0.8 | 0.7 | 0.1 | | | | | | | | |
| Control Delay (s) | 15.2 | 14.1 | 0.9 | 0.2 | | | | | | | | |
| Lane LOS | C | B | A | A | | | | | | | | |
| Approach Delay (s) | 15.2 | 14.1 | 0.9 | 0.2 | | | | | | | | |
| Approach LOS | C | B | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 1.3 | | | | | | | | | |
| Intersection Capacity Utilization | | | 46.7% | ICU Level of Service | A | | | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

11: Carp Rd & Site Access 1

02-24-2025

| |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations |  | |  | | |  |
| Traffic Volume (veh/h) | 41 | 10 | 371 | 10 | 2 | 267 |
| Future Volume (Veh/h) | 41 | 10 | 371 | 10 | 2 | 267 |
| Sign Control | Stop | | Free | | | Free |
| Grade | 0% | | 0% | | | 0% |
| Peak Hour Factor | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Hourly flow rate (vph) | 45 | 11 | 408 | 11 | 2 | 293 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | None | | | None |
| Median storage (veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 710 | 414 | | | 419 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 710 | 414 | | | 419 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 89 | 98 | | | 100 | |
| cM capacity (veh/h) | 402 | 643 | | | 1151 | |
| Direction, Lane # | WB 1 | NB 1 | SB 1 | | | |
| Volume Total | 56 | 419 | 295 | | | |
| Volume Left | 45 | 0 | 2 | | | |
| Volume Right | 11 | 11 | 0 | | | |
| cSH | 434 | 1700 | 1151 | | | |
| Volume to Capacity | 0.13 | 0.25 | 0.00 | | | |
| Queue Length 95th (m) | 3.5 | 0.0 | 0.0 | | | |
| Control Delay (s) | 14.5 | 0.0 | 0.1 | | | |
| Lane LOS | B | | A | | | |
| Approach Delay (s) | 14.5 | 0.0 | 0.1 | | | |
| Approach LOS | B | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 1.1 | | | |
| Intersection Capacity Utilization | | | 30.1% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis

13: Carp Rd & Site Access 2

02-24-2025



| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|-----------------------------------|-------------|-------------|-------------|----------------------|------|------|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 41 | 10 | 372 | 10 | 2 | 228 |
| Future Volume (Veh/h) | 41 | 10 | 372 | 10 | 2 | 228 |
| Sign Control | Stop | | Free | | | Free |
| Grade | 0% | | 0% | | | 0% |
| Peak Hour Factor | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Hourly flow rate (vph) | 45 | 11 | 409 | 11 | 2 | 251 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage (veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 670 | 414 | | | 420 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 670 | 414 | | | 420 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 89 | 98 | | | 100 | |
| cM capacity (veh/h) | 425 | 642 | | | 1150 | |
| Direction, Lane # | WB 1 | NB 1 | SB 1 | | | |
| Volume Total | 56 | 420 | 253 | | | |
| Volume Left | 45 | 0 | 2 | | | |
| Volume Right | 11 | 11 | 0 | | | |
| cSH | 455 | 1700 | 1150 | | | |
| Volume to Capacity | 0.12 | 0.25 | 0.00 | | | |
| Queue Length 95th (m) | 3.3 | 0.0 | 0.0 | | | |
| Control Delay (s) | 14.0 | 0.0 | 0.1 | | | |
| Lane LOS | B | | A | | | |
| Approach Delay (s) | 14.0 | 0.0 | 0.1 | | | |
| Approach LOS | B | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 1.1 | | | |
| Intersection Capacity Utilization | | | 30.2% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |