



**217-227 Cross Avenue and 571-595
Argus Road, Oakville
Transportation Impact Assessment
& Parking Study**

Paradigm Transportation Solutions Limited
BA Consulting Group Ltd.

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Executive Summary

Content

Paradigm Transportation Solutions Limited (Paradigm) was retained in collaboration with BA Consulting Group Ltd. to conduct this Transportation Impact Study (TIS) and Parking Study (PS) for a mixed-use development located at 217-227 Cross Avenue and 571-595 Argus Road in the Town of Oakville, Ontario.

The study aims to assess current traffic and the additional traffic that the proposed development will generate, analyze the traffic's impact on the adjacent roadway network, and provide the municipality and owner required to mitigate the identified effects of the site-generated traffic.

The development proposal for the site envisions a large-scale development of three towers. Tower A and B are proposed to be 58 and 49 storeys, respectively, on a mutual 6-storey podium. Tower C is proposed to be 44 storeys on top of a 7-storey podium. A total of 1,748 residential units are proposed. The proposed site also includes a total of 1,457m² (15,683 sq. ft) of retail space, a 442m² (4,758 sq.ft) daycare, a 918m² (9,881 sq.ft.) urban supermarket, and 2,269m² (24,423 sq.ft) for office space. The site will be developed in two phases:

- ▶ Phase 1 will open in 2027 and will include Tower A and B
- ▶ Phase 2 will open in 2032 and consist of Tower C.

Vehicle access will be provided through two driveway connections: one to Argus Road and one to a new north-south local road connecting to Cross Avenue. The timing of the north-south local route between Cross Avenue and Argus Road is currently a long-term plan. For this analysis, it is assumed to only connect to Cross Avenue.



Conclusions

Development Concept Review

A review of the proposed Development Concept plans was undertaken with the following conclusions reached:

- ▶ Pedestrian, bicycle, and vehicular access to the Site provides appropriate mobility opportunities for all modes.
- ▶ The proposed Development Concept is consistent and compatible with both short-term (prior to the development of adjacent properties) and long-term (with the fulfillment of the Mid-Town Oakville streets and blocks plan) Mid-Town Oakville conditions.

Parking Supply

- ▶ Adoption of reduced minimum resident and non-residential parking supply standards is appropriate based on the following considerations:
 - ▶ The proposed parking reduction is consistent with Provincial, Regional & Local Mobility and Parking Policy;
 - ▶ The parking supply strategy is in conformance with Ontario's current vision for transit nodes;
 - ▶ The area transportation context and proposed TDM framework supports multi-modal travel;
 - ▶ The provision of an enhanced TDM plan was determined as a proactive method of reducing the proposed resident parking supply; and,
 - ▶ The parking supply reduction significantly reduces the cost of construction of the project, which can improve the initial proposed housing along with ongoing life-cycle maintenance and property tax costs, further enhancing the affordability of the project for the residents in the long-term and,
- ▶ The proposed reduction in parking supply has regard to matters of Provincial interest; they are consistent with the Provincial Policy Statement. They conform with the Growth Plan and the Region of Halton Official Plan, and the Livable Oakville Plan Mid-Town Oakville provisions.
- ▶ While a reduction to the minimum resident and commercial parking requirements under Zoning By-Law 2014-014 is proposed, the resulting vehicular parking supply will meet the development's needs regarding the existing /planned transit infrastructure in the immediate area, including higher-order transit.



- ▶ A reduced resident parking supply ratio of 0.50 parking spaces per residential unit and office and retail and day care parking rates of 1.08 parking spaces per 100 m² is considered appropriate.
- ▶ The proposed development incorporates a total of six (6) loading spaces. The proposed loading arrangements are functionally and operationally appropriate and will facilitate the loading/unloading, moving, delivery and refuse collection needs of the proposed development
- ▶ The proposed bicycle parking supply of 1,754 bicycle parking spaces is considered appropriate and will accommodate the bicycle parking demands of the proposed development.

Transportation Impact Study

The proposed development will generate approximately 512 new vehicle trips during the weekday AM peak hour and 414 new vehicle trips during the weekday PM peak hour.

Detailed traffic analysis was conducted for each study area intersections under Base conditions, 2027, 2032 and 2037 Background and Total conditions.

To avoid situations where drivers along a stop-controlled minor approach experience significant delays, the intersections of South Service Road and Argus Road and the Cross Avenue and the East Driveway Access are recommended to be restricted to right-in/out operations. As the development provides two access points through a unified underground parking garage, limiting movements to right-in/right-out is not expected to impact site-generated traffic circulation significantly.

It is acknowledged that deficiencies currently exist at specific locations, primarily along the Trafalgar Road corridor within the study area. They can be expected to persist in the future with anticipated growth in traffic, independent of the development.

For clarification, delays at the study area intersection have been previously documented as a foreseeable issue without the proposed development in the Midtown Oakville EA. The EA identified several roadway improvements to address traffic growth's existing and long-term impacts. The construction of new direct off-ramps for the QEW at Trafalgar Road, a revised local road network for Midtown Oakville, an extension of Cross Avenue and a variety of intersection improvements are proposed. It is understood that these improvements will provide some relief to operational issues. However, vehicle capacity constraints will persist for the overall transportation network.



As the EA recognized capacity constraints, further remedial measures to improve intersection capacity are not likely to be implemented. Instead, future improvements to the transportation network are expected to primarily focus on sustainable forms of transportation, including an improved transit network through the addition of BRT along Trafalgar Road.

By focusing on shifting commuter travel to public transit, intersection operations could be expected to maintain the status quo (at capacity condition during peak hours) or improve if fewer vehicles transverse the intersections during the peak hours of a typical weekday. The Town of Oakville's Urban Mobility & Transportation Strategy¹ echoes this sentiment:

“The Town of Oakville and Halton Region must accept a crucial point: they will never solve congestion. There will always be someone new who fills up space on the road, regardless of whether that space was created by paving a new lane or having some drivers switch to buses. It is well established that the expansion of congested roadways does not reduce congestion – it just increases the number of people on those roadways. This is called induced demand.”

“Due to the principle of induced demand, vehicular congestion can never be solved completely, and Oakville should not fall into the trap of trying to prove otherwise. Oakville's current methodology for assessing traffic (and the impacts to traffic from new developments) fails to capture this fact, biases suburban developments over urban ones, and does not assess other modes such as walking, cycling and transit.”

Transportation Demand Management

The proposed development proposes active mitigation by implementing several measures for transportation demand management (TDM). To complement and build upon the location and accessibility of the development and enhance the non-auto-dependent mobility of prospective residents, the development will consider adopting the following TDM measures to reduce the dependency on vehicular travel. These measures seek to accomplish the following:

- ▶ Facilitation of Reduced Car Ownership and Usage;
- ▶ Vehicular Parking Supply and Management;
- ▶ Encourage Transit Use;

¹ Oakville Urban Mobility & Transportation Strategy, Steer, November 2021



- ▶ Encourage and Facilitate Bicycle Use;
- ▶ Enhance Pedestrian Access and Walkability;
- ▶ Land Use and Building Infrastructure; and
- ▶ Coordination, Communication, and Promotion

A limited parking supply is one of the most essential TDM measures. Research conducted focused on whether a relationship exists between the provision of off-street parking and the choice to drive among individuals travelling to or from the site. Following data collection and an empirical review of the data, this research found that reductions in off-street vehicular parking for office, residential, and retail developments reduce the overall automobile mode share associated with those developments relative to projects with the same land uses in similar contexts that provide more off-street vehicular parking.

The role of parking management is a crucial element in helping Oakville meet its trip reduction goals. If free and unregulated parking is provided, there is little incentive for many residents and visitors to use alternative modes of transportation. The Town of Oakville's Urban Mobility & Transportation Strategy echoes this sentiment:

“The provision of free parking is a subsidy to drivers, and its removal or reduction can serve as an encouragement to switch to other modes of transport.”



Recommendations

Based on the findings of this study, the following recommendations are identified:

- ▶ South Service Road and Argus Road be restricted to right-in/right-out only
- ▶ Cross Avenue at East Site Driveway be limited to right-in/right-out only
- ▶ On-site pedestrian sidewalks are recommended to be well-lit and conform to the Town of Oakville's design standards and the Accessibility for Ontarians with Disabilities Act (AODA) design standards.
- ▶ Implement reduced vehicular parking rates to serve as a critical TDM measure to reduce vehicular travel to and from the Project and provide support for reduced environmental and project cost impacts on the delivery of residential, retail, office and day care land uses within the Mid-Town Oakville context.
- ▶ Applicant implements unbundling resident parking where parking spaces are provided as a separate cost to residents.
- ▶ Provide a comprehensive TDM plan to maximize alternative mobility opportunities for residents, visitors and employees of the Project.



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1 Introduction

1.1 Overview

Paradigm Transportation Solutions Limited (Paradigm) was retained in collaboration with BA Consulting Group Ltd. (BA) to conduct this Transportation Impact Assessment (TIA) for a mixed-use development located at 217-227 Cross Avenue and 571-595 Argus Road in the Town of Oakville, Ontario. **Figure 1.1** details the location of the subject development.

The study aims to assess current traffic and the additional traffic that the proposed development will generate, analyze the traffic's impact on the adjacent roadway network, and provide the municipality and owner required to mitigate the identified effects of the site-generated traffic.

More specifically, the scope of this study is to:

- ▶ Forecast traffic from the proposed development;
- ▶ Assign the projected volumes to the surrounding road network based on the existing traffic patterns at the driveway connection;
- ▶ Assess total future traffic within the study area. The following horizons have been considered: Opening Year (2027), five years from Opening Year (2032), and ten years from Opening Year (2037);
- ▶ Identify operational or safety concerns and any mitigation measures that may be required to improve operations;
- ▶ Review and identify potential Transportation Demand Management (TDM) measures that can be implemented for the proposed development; and
- ▶ Review the proposed vehicular and bicycle parking supply, and determine its adequacy compared to estimated parking demands
- ▶ Review the proposed Site Plan concerning vehicular Site access and circulation, vehicular and cycling parking layout, and the service vehicle loading provisions of the Project.

This report adheres to the terms of reference developed by Paradigm and agreed upon by the Town of Oakville, Region of Halton, and the Ministry of Transportation, Ontario (MTO). The correspondence is provided in **Appendix A**.



1.2 Study Area

The study area intersections assessed in this study include:

- ▶ Trafalgar Road and QEW Westbound Off-Ramp / North Service Road (Signalized);
- ▶ Trafalgar Road and QEW Eastbound Off-Ramp (Signalized);
- ▶ Trafalgar Road and Cross Avenue / South Service Road (Signalized);
- ▶ Trafalgar Road and Cornwall Road (Signalized);
- ▶ Cross Avenue and Argus Road / GO Station Driveway (Signalized);
- ▶ Trafalgar Road and Argus Road (Unsignalized);
- ▶ Argus Road and South Service Road; and
- ▶ Two site driveways.





NTS
Image Source: OpenStreet Map

● Study Area Intersections

Subject Site

Location of Subject Site

Figure 1.1



571 Argus Road, Oakville
210403

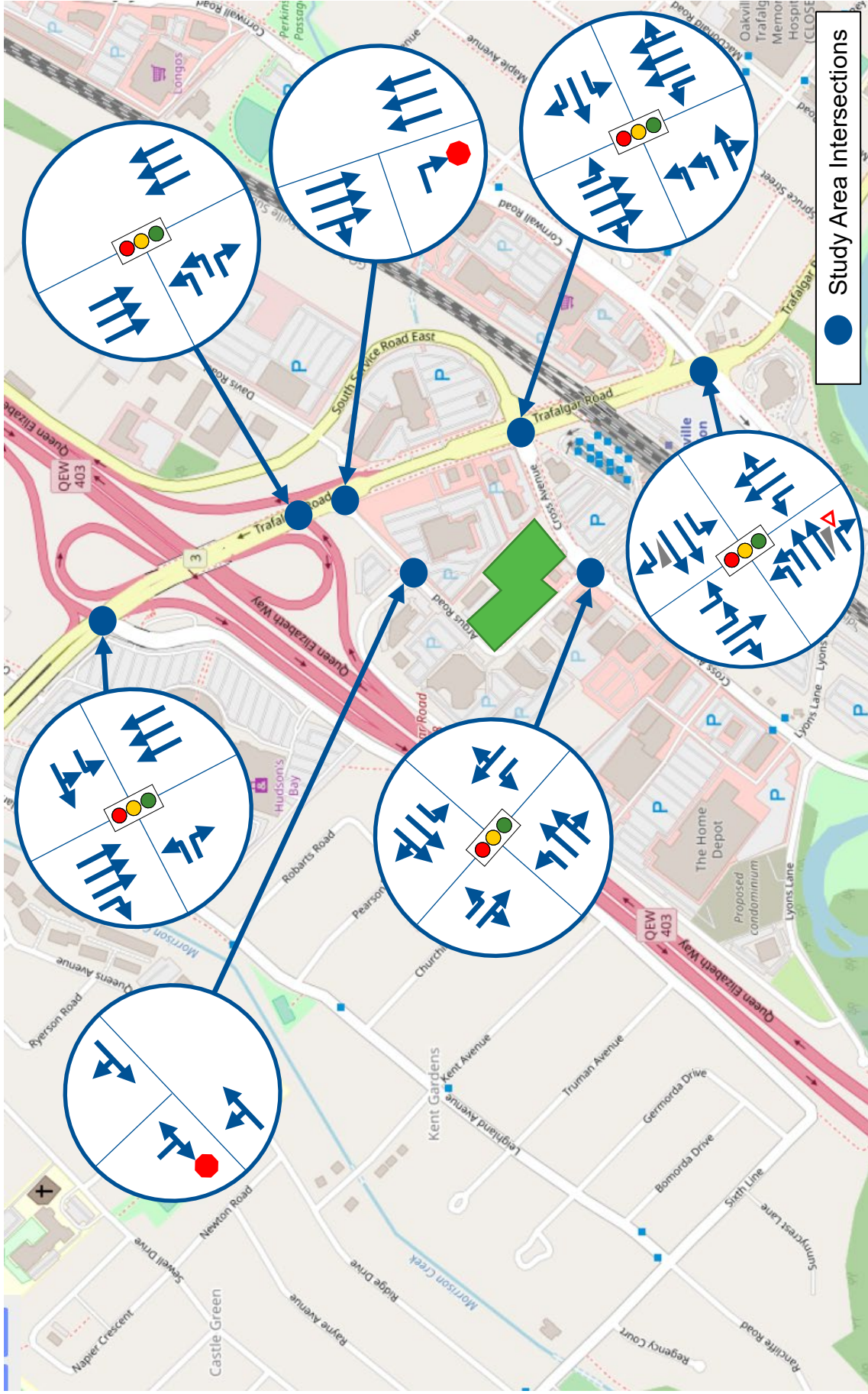
2 Existing Mobility Conditions

2.1 Roadway Characteristics

The roadways of interest within the study area include:

- ▶ **Trafalgar Road** (Halton Region Road 3) is an urban major arterial road from Cornwall Road northwards and an urban minor arterial road southward from Cornwall Road. The roadway consists of a six-lane cross-section from Cornwall Road northwards and tapers down to a two-lane cross-section southward. The posted speed limit along Trafalgar Road is 50 kilometres per hour. Pedestrian facilities are provided along both sides of the road in the study area.
- ▶ **Cross Avenue** is an urban minor arterial road from Trafalgar Road to Cornwall Road. It provides access to the Oakville GO Station and the station's commercial businesses. East of Trafalgar Road, Cross Avenue continues as South Service Road, eastwards towards Royal Windsor Drive. The assumed speed limit of Cross Avenue is 50 kilometres per hour. Pedestrian facilities are provided along both sides of the road in the study area.
- ▶ **Cornwall Road** is a four-lane east-west minor arterial. The posted speed limit is 60 kilometres per hour. There is a sidewalk on the north and south sides of the roadway.
- ▶ **Lyons Lane** is a two-lane local road north of Cross Avenue. Lyons Lane terminates as a cul-de-sac west of its intersection with South Service Road. There is a sidewalk on the east side of Lyons Lane. The assumed speed limit of Lyons Lane is 50 kilometres per hour.
- ▶ **South Service Road East** is a two-lane local road that fronts the QEW and provides additional access to the existing built lands. From its west end of Lyons Lane, it runs east parallel to the QEW, turning south to intersect with Argus Road. The assumed speed limit of South Service Road is 50 kilometres per hour. There are no pedestrian facilities along South Service Road.
- ▶ **Argus Road** is a two-lane local road that connects Trafalgar Road to Cross Avenue. There is a sidewalk on the south and east side of the roadway. The assumed speed limit of Argus Road is 50 kilometres per hour.





Existing Lane Configuration & Traffic Control

Figure 2.1

2.2 Existing Transit Service

2.2.1 Oakville Transit

Oakville Transit owns and operates the public transit system in Oakville. The subject site is located within the Midtown Oakville Urban Growth Area, one of the most transit-accessible locations within the Town. The subject site is approximately 250 metres from the Oakville GO Station, currently serviced by 16 out of 22 Oakville Transit Routes. The majority of the transit routes which provide access to all of the Town of Oakville operate seven days a week from early morning to late evening, with headways generally between 10 and 30 minutes depending on the day of week and time of day.

Figure 2.2 illustrates the existing Oakville Transit network

2.2.2 GO Inter-Regional Transit

The proposed development is located approximately 250 metres from the Oakville GO Station. This station is located along the Lakeshore West Line, which currently operates a two-way all-day train service seven days a week and GO Bus connections to Hamilton and Sheridan College and York University via Highway 407.

Figure 2.3 illustrates the GO Network's relation to the site.



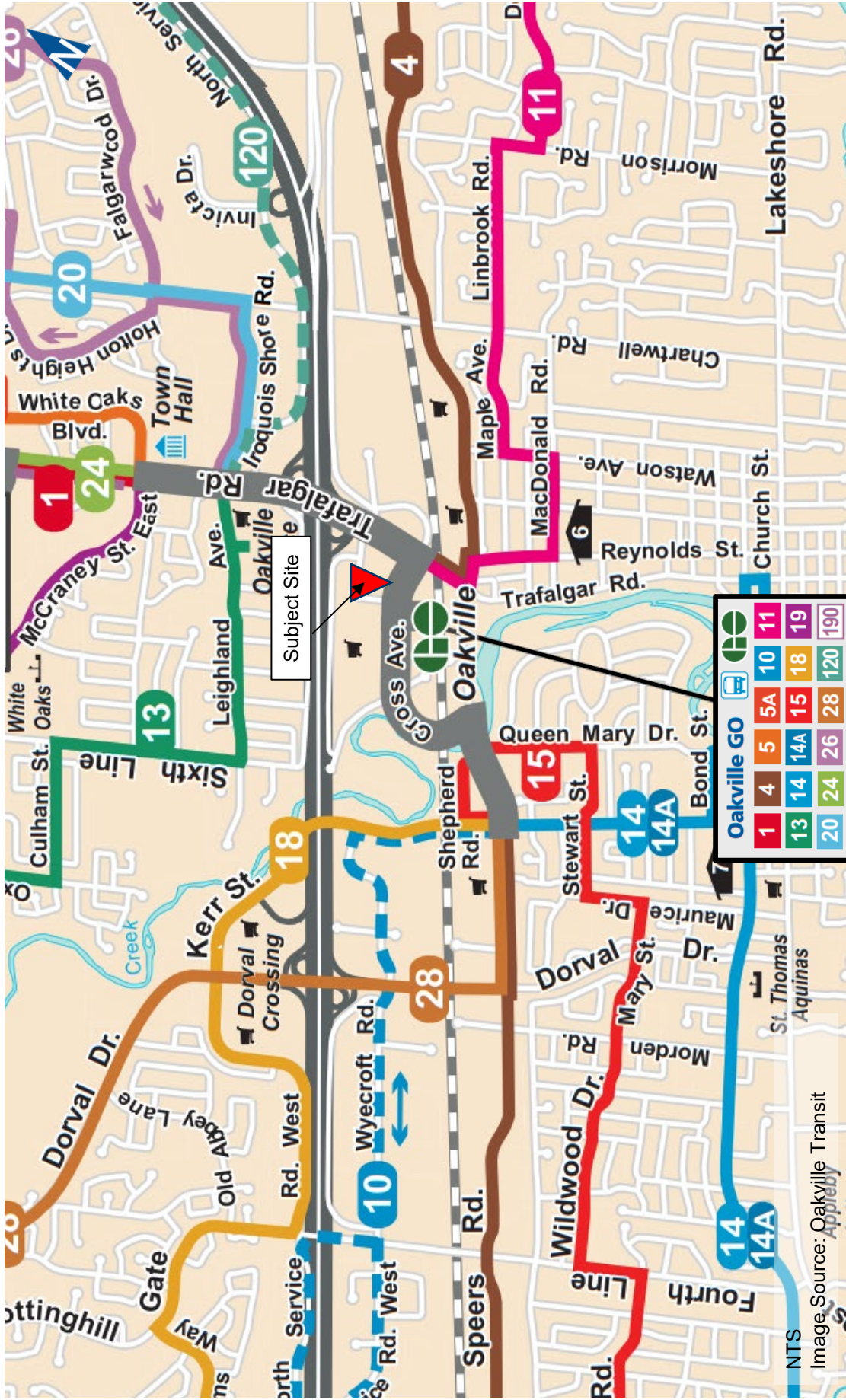


Image Source: Oakville Transit

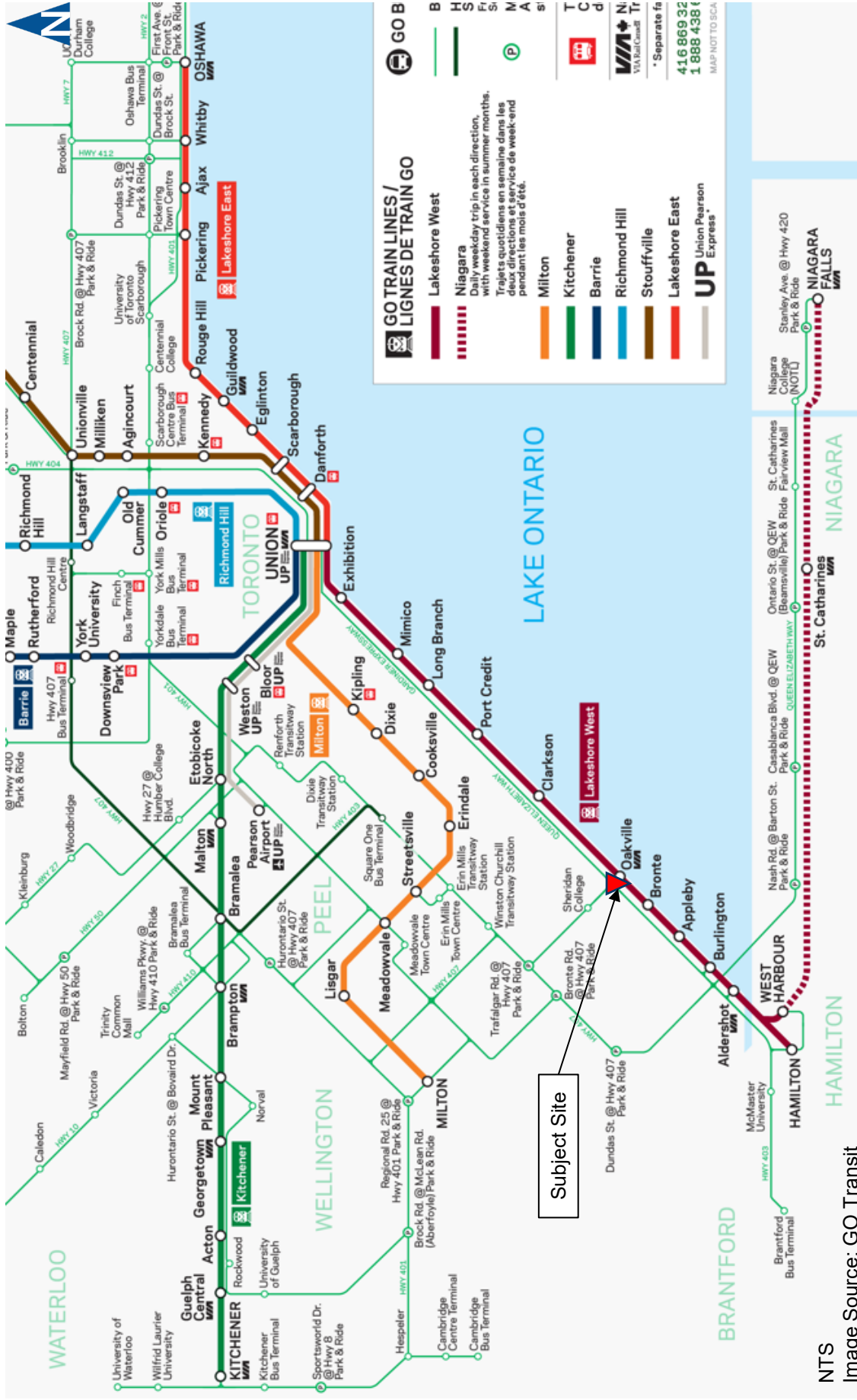


Existing Oakville Transit Network

571 Argus Road, Oakville
210403

Figure 2.2





NTS
 Image Source: GO Transit



Existing GO Transit Network

Figure 2.3



571 Argus Road, Oakville
 210403

2.3 Active Transportation

2.3.1 Pedestrians

The site is within walking distance of several retail opportunities providing a range of destinations for prospective residents of the proposed development that can be readily accessed without using a vehicle.

Pedestrian sidewalks are provided on at least one side of streets through most study areas. Crosswalks, pedestrian pushbuttons, and indicators are provided for all approaches at the signalized intersections within the study area.

The proximity of the site to such a range of amenities and destinations within walking distance reduces the need for residents to travel regularly using a car and own a vehicle.

2.3.2 Cycling

On-road cycling lanes are not currently provided on the streets in the study area. However, the Town of Oakville's Active Transportation Master Plan identifies that Trafalgar Road and Cross Avenue are proposed to be reconstructed with on-street cycle lanes, as indicated in **Figure 2.4**.

In addition, as cyclists are permitted to ride on most roads except controlled-access highways, the lack of separate bicycle lanes on all other local and collector roadways will not prohibit this type of travel.

2.3.3 Travel Characteristics

A review of existing modes of transportation by area residents has been completed. Data on primary modes of transportation for all trips within Ward 3 was extracted from the 2016 Transportation Tomorrow Survey (TTS)². The TTS data indicates that during the AM peak hour, the automobile accounts for 71 percent of trips made by residents, while transit accounts for 13 percent (one percent for local transit and 12 percent for GO Train). Walking and cycling (8 percent) and other modes (8 percent) account for the remaining percentages.

² Transportation Tomorrow Survey 2016, Regional Municipality of Halton Summary by Ward, March 2018, Malatest





Proposed Cycle & Trail Network

Figure 2.4



2.4 Traffic Volumes

To assess intersection operation, turning movement counts are used to quantify the movement of vehicles through the area. Existing traffic data at an intersection or on a road section forms the foundation for analysis. The counts are usually taken during peak periods at an intersection to complete the level of service analysis. **Appendix B** contains the traffic data.

The Region's Traffic Impact Study Guidelines indicate the requirement for collecting new data for counts three years or older. Acknowledging this requirement and the current situation related to COVID-19, the ability to conduct up-to-date data collection is impacted.

The GO Station primarily drives the traffic volumes along the study area roadways during weekday peak hours. Since transit usage has been significantly hampered due to reduced demand, the ability to collect new traffic count data was not feasible as the volumes may not be representative of typical traffic volumes. As a result, relying on historical traffic count data was supported by the transportation profession³ and review agencies with appropriate adjustment factors incorporated.

Historic TMC data has been used and adjusted to provide reasonable traffic volumes for the baseline horizon (2022), using a growth rate of 2% per annum.

2.4.1 Traffic Data

Existing historical traffic counts were obtained from the Region of Halton, MTO, and collected by Paradigm. **Table 2.1** provides a summary of traffic count locations and sources.

TABLE 2.1: TRAFFIC COUNT SUMMARY

	Intersection	Date	Source
Trafalgar Road	QEW Westbound Off-Ramp/North Service Road	June 1, 2017	Region
	QEW Eastbound Off-Ramp	June 1, 2017	Region
	Argus Road	June 1, 2017	Region
	Cross Avenue/South Service Road	June 1, 2017	Region
	Cornwall Road	June 1, 2017	Region
Cross Avenue	Argus Road/GO Station Driveway	January 10, 2019	Paradigm
South Service Road	Argus Road	January 10, 2019	Paradigm

³ Keep The Momentum – Advancing Projects During COVID-19 (Adam J. Makarewicz) Canadian Institute of Transportation Engineers, Transportation Talk, Spring 2020

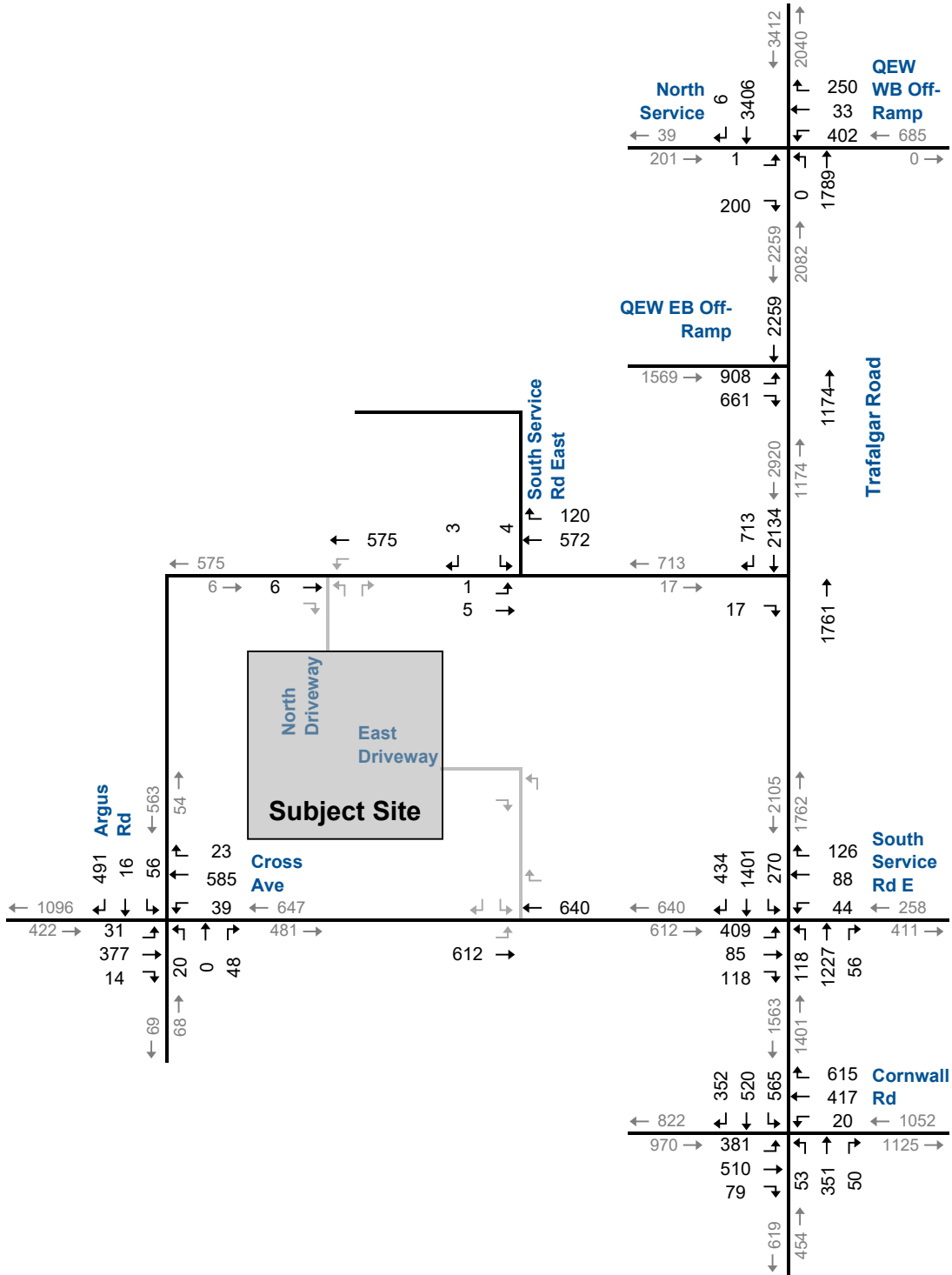


2.4.2 Volume Balancing

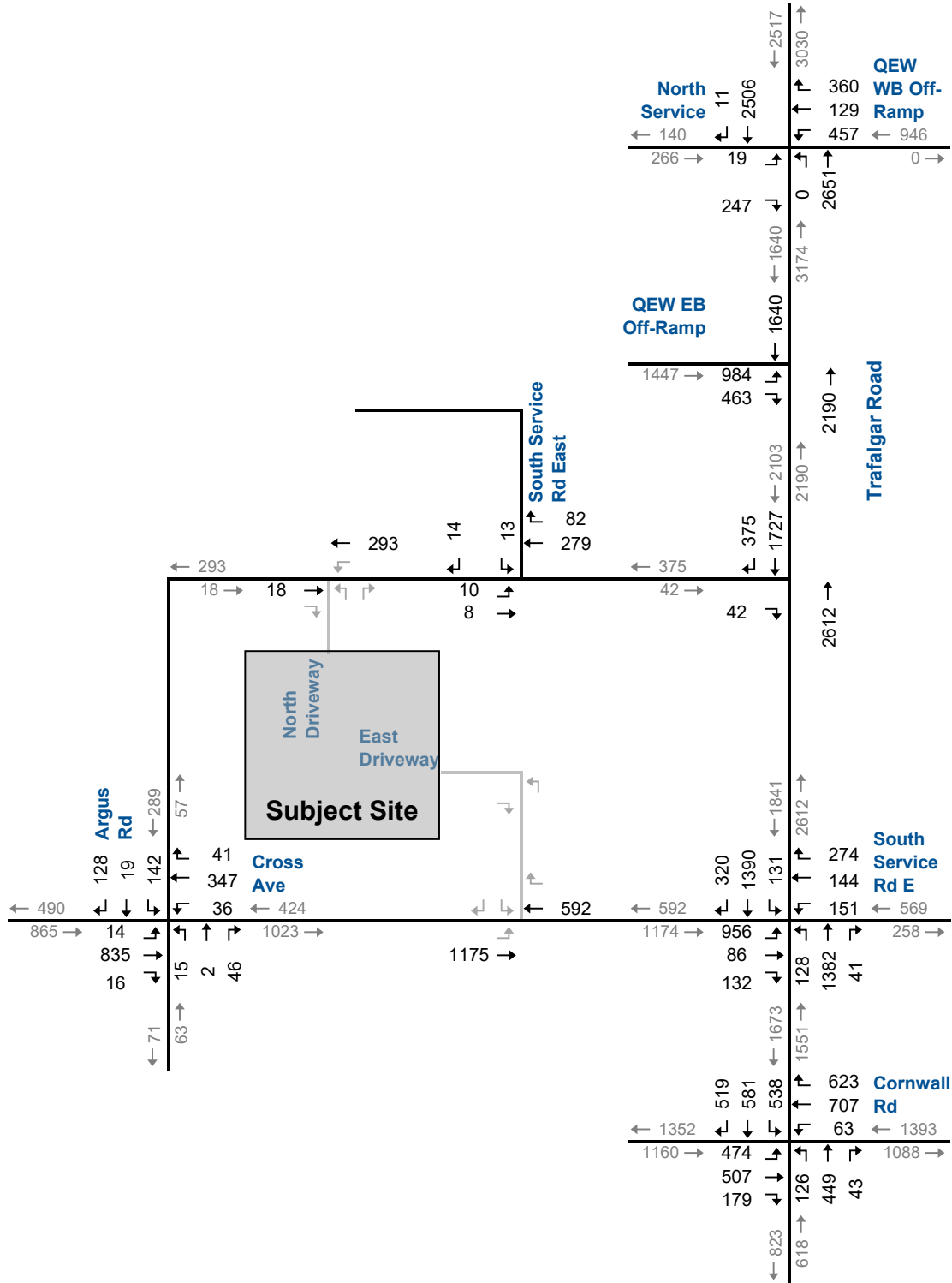
Volume balancing along Trafalgar Road has also been applied to ensure that the corridor maintains reasonable upstream and downstream flow. No balancing occurred on Cross Avenue west of Argus Road to account for the GO Station and commercial driveways.

Figures 2.5A and **2.5B** illustrate the adjusted base year traffic volumes during the weekday AM and PM peak hours.





Base Year Traffic Volumes AM Peak Hour



Base Year Traffic Volumes PM Peak Hour

3 Development Proposal Review

3.1 Proposed Development Programme Elements

The following provides an overview of the programme elements for the Proposed Development. The proposed development's reduced-scale architectural plans are provided in **Appendix C. Figure 3.1** illustrates the proposed concept.

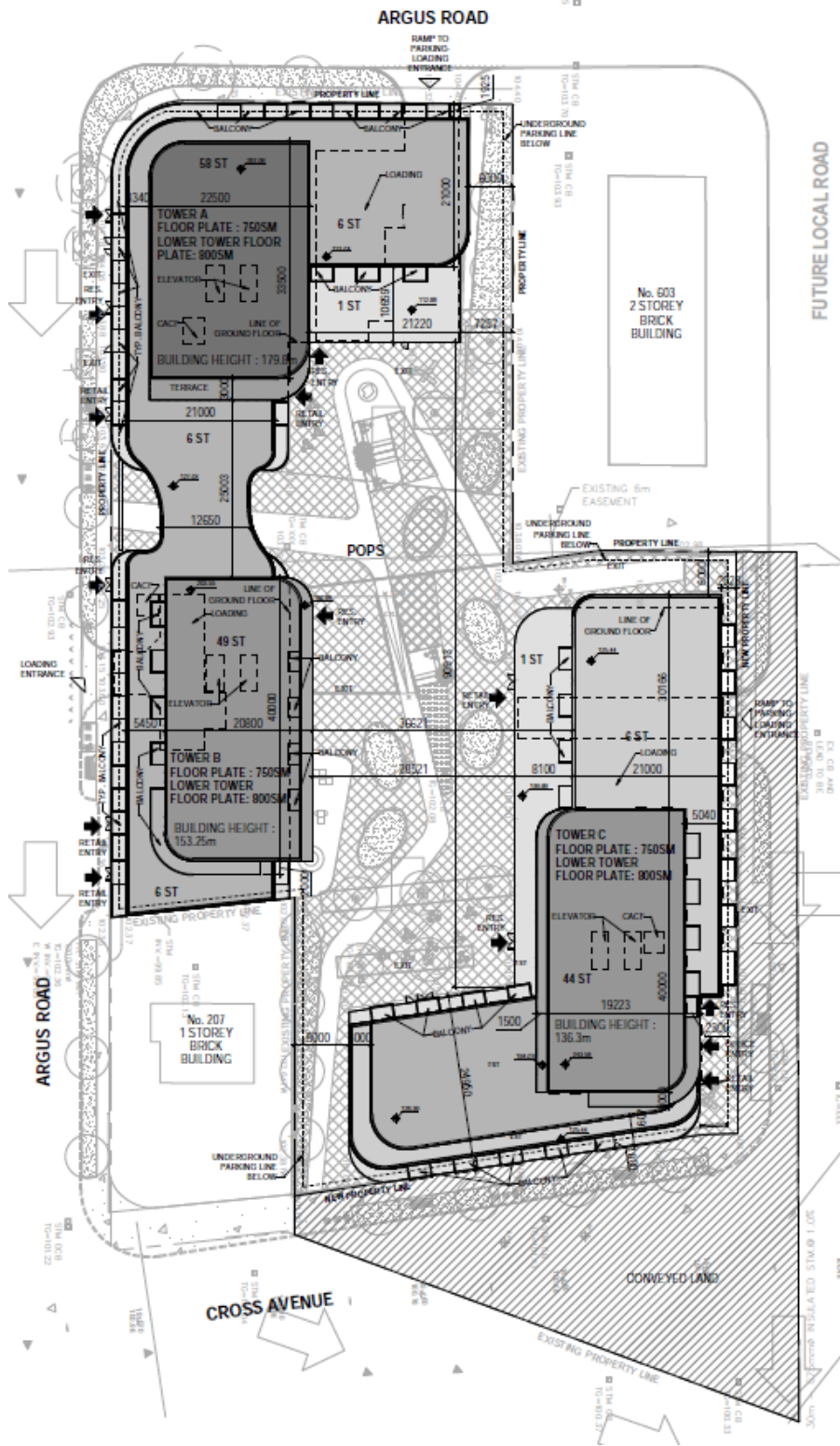
The Proposed Development includes a mixed-use programme composed of 1,748 residential units, approximately 2,596 square metres (27.943 square feet) of retail Net Floor Area (NFA), about 2,329 square metres (25,069 square feet) of office NFA and approximately 495 square metres (5,328 square feet) of day care NFA uses. A summary of the development programme is provided in **Table 3.1**.

The development programme is configured within three buildings across the development block; Tower A (the north tower), Tower B (the central tower) and Tower C (the south tower). Tower A and Tower B are linked from the second level to the sixth level. A POPS area (Private Open Publicly accessible Space) is situated within the central portion of the development.

TABLE 3.1: DEVELOPMENT PROGRAMME

Land Use		Unit / GFA
Residential Uses	< 75 m / unit	1,678 units
	> 75 m / unit	70 units
	Total Res. Units	1,748 units
Non-Residential Uses	Retail	2,375 sq. metres NFA
	Office	2,269 sq. metres NFA
	Day Care	442 sq. metres NFA
Transportation Services	Parking Supply	1,285 parking spaces (including 876 residential sps, 350 residential vis. sps, & 59 commercial sps)
	Loading Supply	6 loading spaces (incl. 2 Refuse Collection Loading spaces)
	Bicycle Parking Supply	1,754 Bike parking spaces (including 1,317 long-term sps & 437 short-term sps)





3.2 Site Access Description

3.2.1 Pedestrian Access

The Proposed Development occupies the majority of an entire block within the Mid-Town area of the Town of Oakville. As such, it is bounded by existing or proposed public streets on all four sides; Cross Avenue (both the existing and future alignments) on the south side, the current alignment of Argus Road on the west and north sides, and a new future Local public street on the east side. In the interim condition, before adjacent properties to the northeast of the Site and east of the Site, the east side of the development will be accessed via what will be a private driveway extending north from the existing/future Cross Avenue ROW and terminating at the northern limit of the Site property. As land from adjacent properties is acquired by the Town of Oakville, the future Local public street on the east side of the Site will be implemented.

Pedestrian access will be well served with pedestrian sidewalks within the municipal rights-of-way (ROW) that will at least meet the Town's minimum standards. Given the layout of the proposed buildings on the Site, the proposed Development will have direct access to the adjacent public streets to the front doors of all buildings.

Furthermore, given the configuration of POPS within the central area of the Site, access will also be afforded to residents, visitors, and depending on the layout of the commercial space/day care space, employees, customers, and children of the non-residential floor space the buildings from the central POPS area. Circulation "through" the Site will also be afforded to all of the users mentioned above without any vehicular conflicts, given all vehicular access is direct from the adjacent public streets to at-grade loading areas and below-grade passenger vehicle parking.

The context of the Proposed Development and its relationship to the surrounding public streets is illustrated in Drawing A201.S (left side) in **Appendix C**.



3.2.2 Bicycle Access

Bicycle parking is primarily provided below grade to facilitate centralized storage rooms and secure, weather-protected bike parking. Short-term bike parking is generally situated on the P1 and P2 levels below grade and accessed either via elevator access adjacent to the bike storage rooms or a short distance from the elevator access. The elevator egress is the most convenient way to exit the Short-term parking storage areas. Cyclists could also ride down the vehicular ramps to access the short-term parking.

Long-term bike parking is located on the P3/P4 levels of the below-grade parking garage. Again, access to the project's long-term bicycle parking facilities is via elevator access adjacent to the bike storage rooms or a short distance from the elevator access. Cyclists could also ride down the vehicular ramps to access the short-term parking. The elevator egress is the most convenient way to exit the Short-term parking storage areas. A small amount of short-term bike parking will be located at grade for convenience purposes to serve the more transient nature of bike use associated with the retail and office uses. This will be situated around the perimeter of the buildings on-site and, where possible, located beneath overhangs to offer some measure of weather protection.

3.2.3 Vehicular Access

The project's vehicular and loading access is provided directly from three development sides. Access to the below-grade parking garage will occur from the north and east sides of the Project, from the east-west portion of Argus Road and the future Local public street. These two vehicular access points will also provide vehicular access to two of the three loading areas provided for the Project.

These access driveways are configured to minimize the width of the driveways across the public boulevards to reduce the exposure of pedestrians using the adjacent public ROW sidewalk facilities to vehicular traffic. Sidewalks would be extended through the driveways to emphasize the pedestrian realm further and remind both pedestrians and motorists that pedestrians have the right-of-way when crossing the driveways. Once on-site, loading vehicles will immediately enter the enclosed loading areas. Passenger vehicles accessing the underground parking garage would continue past the access to the loading area and down the ramps to the P1 parking level. Since the below-grade garage is a continuous plate across the entire Site, motorists can enter and exit the garage at either driveway. This allows motorists to select the most convenient route relative to their origin or



destination routings and minimize the amount of unnecessary routing across the public street network.

A third vehicular driveway is incorporated into the central building, Tower B. This driveway leads to a dedicated loading area for Tower B and is intended to serve the small amount of non-residential floor space that is likely to be configured for retail and daycare uses. The loading area also facilitates residential move-in/move-out operations associated with Tower B. Like the other two driveways, the pedestrian sidewalk will be continuous through the driveway to further emphasize the pedestrian realm and remind pedestrians and motorists that pedestrians have the right of way when crossing the driveways.

As noted above, during an interim condition, before adjacent properties to the northeast of the Site and east of the Site, the east side of the development will be accessed via what will be a private driveway extending north from the existing/future Cross Avenue ROW and terminating at the northern limit of the Site property. In due course, as land from adjacent properties are acquired by the Town of Oakville, the future Local public street on the east side of the Site will be implemented, and access to the east driveway will be afforded not only from Cross Avenue but also from Argus Road. This condition is illustrated in Drawing A201.S (hatched area) in **Appendix C**.

A description of the operating conditions associated with the vehicular project driveways and on-site vehicular circulation, both Interim and ultimate, is provided in more detail in **Section 4.4.3**.



3.3 Vehicle Parking Provisions

Parking for the Project will be provided entirely below grade within the Site's footprint. A 6-level underground parking garage is provided to accommodate all vehicular parking, estimated to serve the project's needs adequately. Justification for the proposed vehicular parking supply is set out in **Chapter 4** of this report separately.

A total of 876 parking spaces are provided for the residents of the Project. These are situated on levels 3 through 6 of the below-grade garage. At the top of the inter-floor ramp, an overhead door between levels P2 and P3 provides a physical separation between the resident parking and the non-resident (visitor and commercial use) parking spaces. Access to the resident portion of the garage would be accomplished via a proximity card system within the residents' vehicles.

Four hundred twenty-one (421) non-resident parking spaces are provided on levels P1 and P2 of the underground parking garage. This accommodates the allocation of the resident visitor parking (350 spaces) and commercial-use parking (59 spaces). It is planned that the commercial use parking spaces would be allocated only to the commercial uses themselves, i.e., sold to the purchasers of the retail floor area for their customers and employees. The residential visitor parking would be allocated to the residential uses for their visitor parking demands. The nature of the residential visitor parking (i.e., time of use patterns) would make these spaces functionally available to accommodate other users during the daytime periods, with the approval of the residential condominium boards. This shared parking condition would efficiently use the non-resident parking spaces within the overall garage.

As noted in the Transportation Demand Management (TDM) section of this report (**Chapter 5.0**), a fee is recommended for using the non-resident parking spaces to encourage visitors and others who travel to the Site to consider alternative modes of travel.

The applicable Zoning Bylaw requires 32 barrier-free parking spaces to meet the needs of the Project. This breaks down into nine (9) Accessible Parking spaces for the Residential Visitor segment of the garage, three (3) Accessible Parking spaces for the garage's commercial-use component, and 20 Accessible Parking spaces for the Resident segment of the garage.

This requirement is being met within the proposed parking garage. It should be noted that typically an even number of Type A (the more expansive Accessible Parking space) and Type B (the smaller



Accessible parking space) are provided. Where an odd number of Accessible Parking spaces are required, the additional Accessible Parking spaces should be configured as a Type B Accessible Parking space.

3.4 Loading Facilities Provided

A total of six (6) formal loading spaces are proposed on the ground floor levels of the three Towers that make up the Project.

The **Tower A** building will contain two (2) loading spaces configured as follows:

- ▶ Refuse Collection loading space capable of accommodating an overhead front-loading refuse collection vehicle or a sizeable Single Unit delivery vehicle for the non-residential floor space; and,
- ▶ Single Unit vehicle that can accommodate small delivery vehicles or household moving vehicles.

Combining these two (2) loading spaces would adequately serve Tower A residential and non-residential requirements.

The loading area has the requisite internal manoeuvring and refuse bin staging areas. The entry into the loading area would be equipped with a signalling and signage system to ensure that when loading vehicles are manoeuvring into or out of the loading area, vehicles entering or exiting the parking garage and using the driveway in the vicinity of the loading area would be aware of the potential for truck manoeuvring occurring.

The **Tower B** building will contain one (1) loading space configured as follows:

- ▶ Single Unit vehicle that can accommodate small delivery vehicles or household moving vehicles.

This loading space would adequately serve Tower B's non-residential requirements. Tower B residential refuse collection operations would be accommodated using the Tower A refuse collection loading space. Internal means of conveying Tower B refuse bins to the Tower C loading area have been built into the Project's logistical systems.

The loading area has the requisite internal manoeuvring and refuse bin staging areas. The entry into the loading area would be equipped with a signalling and signage system to ensure that pedestrians walking along Argus Road are aware of the potential for truck manoeuvring.



The **Tower C** building will contain three (3) loading spaces, and one (1) refuse compactor, configured as follows:

- ▶ Refuse Collection loading space capable of accommodating an overhead front loading refuse collection vehicle or a sizeable Single Unit delivery vehicle for the non-residential floor space;
- ▶ A second full-sized loading space capable of accommodating a large single unit delivery vehicle;
- ▶ Single Unit loading space that can accommodate small delivery vehicles or household moving vehicles; and,
- ▶ A compactor bin mounted dock height to facilitate waste collection from the non-residential uses.

Combining these three formal and one compactor loading spaces would adequately serve the Tower C residential and non-residential requirements. As noted above, Tower C would also accommodate the residential refuse collection associated with Tower B. This creates a substantially more efficient “back-of-house” operating condition for Tower B.

The loading area has the requisite internal manoeuvring and refuse bin staging areas. The entry into the loading area would be equipped with a signalling and signage system to ensure that when loading vehicles are manoeuvring into or out of the loading area, vehicles entering or exiting the parking garage and using the driveway in the vicinity of the loading area would be aware of the potential for truck manoeuvring occurring.

The proposed loading facilities and bin staging areas facilitate residential garbage and recycling collection by the Region of Halton, residential moving activities, retail waste collection, and delivery activities.

Manoeuvring characteristics associated with the loading facilities are reviewed in **Section 4.4** herein.



3.5 Bicycle Parking Provisions

A bicycle strategy has been developed and is proposed as part of the site to enable and encourage bicycle usage by residents, employees and visitors to the site.

A total of 1,754 bicycle parking spaces are proposed across the Project. Long-term bike parking is located on the P3/P4 levels of the below-grade parking garage. Again, access to the project's long-term bicycle parking facilities is via elevator access adjacent to the bike storage rooms or a short distance from the elevator access. Cyclists could also ride down the vehicular ramps to access the short-term parking. The elevator egress is the most convenient way to exit the Short-term parking storage areas. A small amount of short-term bike parking will be located at grade for convenience purposes to serve the more transient nature of bike use associated with the retail and office uses. This will be situated around the perimeter of the buildings on-site and, where possible, located beneath overhangs to offer some measure of weather protection.



4 Vehicular Parking Supply Review

BA Group has undertaken a review of the vehicular parking aspects of the proposed development recognizing the area transportation context, the nature of the proposed mixed-use building, prevailing Zoning Bylaw requirements, a review of broad mobility policy at various levels of government and demands seen in comparable environments in the Greater Toronto Area (GTA) and the Transportation Demand Management (TDM) context of the Project.

4.1 Zoning Bylaw Requirements (2014-014)

The site is currently subject to the “Mixed Use Zones” parking standards under the Town of Oakville Zoning By-law 2014-014. The minimum parking supply standards that apply to the site are summarized in **Table 4.1**.

TABLE 4.1: ZONING BY-LAW PARKING REQUIREMENTS

Use	Units / Floor Area	Rate (Minimum)	Requirement (Minimum)
Resident			
1- Bedroom ³	1,223 units	0.80 spaces / unit ⁴	979 spaces
2-Bedroom ³	455 units	0.80 spaces / unit ⁴	364 spaces
3-Bedroom	70 units	1.05 spaces / unit ⁴	74 spaces
SUBTOTAL	1,748 units	0.81 spaces / unit	1,417 spaces
Non-Resident			
Residential Visitors	1,748 units	0.2 spaces / unit	350 spaces
Retail	2,375 m ²	1.0 spaces / 18 m ² GFA	132 spaces
Office	2,269 m ²	1.0 spaces / 35 m ² GFA	65 spaces
Day Care	442 m ²	1.0 spaces / 40 m ² GFA	11 spaces
SUBTOTAL			558 spaces
TOTAL²			1,975 spaces

Notes:

- 1 Based upon site statistics provided by Quadrangle Architects April 21, 2022.
- 2 In accordance with Zoning By-law 2014-014, if the calculation of a parking requirement results in a fraction less than 0.25, it shall be rounded down to the nearest whole number.
- 3 1-Bedroom and 2-Bedroom units have a net floor area less than 75 m².
- 4 Residential rates incorporate a 0.20 visitor ratio



Application of the supply requirements of Zoning-By-law 2014-014 to the proposed development would require the provision of a minimum of 1,975 parking spaces, including 1,417 resident spaces (effective rate of 0.81), 350 resident visitor spaces, 132 retail parking spaces, 65 Office parking spaces and 11 Day Care parking spaces.

4.2 Proposed Parking Supply

It is our opinion that the above-noted parking standards summarized in **Table 4.1**. overstate the site's parking demands by some margin, given the excellent existing and future transit and pedestrian/cycling nature of the proposed development and future Mid-Town Oakville environs.

It is proposed to provide a total of 1,285 total parking spaces to meet the needs of the Project. This includes 876 resident parking spaces (adequate parking supply of 0.50 parking spaces per unit), 350 residential visitor parking spaces (effectively ratio of 0.20 parking spaces per unit), and 59 non-resident parking spaces (1.08 spaces per 100 square metres of NFA for the retail, office and day care uses).

It is also important to note that the total supply of non-resident parking – residential visitor and non-residential land uses – could potentially be shared during certain times given the favourable (compatible) temporal patterns exhibited by the office/residential visitor parking demands.

Although the current plan is to sell the retail and office parking spaces to those who would be purchasing the floor area, the residential visitor parking will not be fully utilized during the daytime hours throughout the week (likely between 20% and 50% utilization or equivalent to approximately 175 to 280 vacant resident visitor vehicle parking spaces during those times of the day).

There would be an opportunity, assuming an agreement between the residential condominiums and the commercial floor space purchasers, to share on a paid parking basis the residential visitor parking supply during daytime hours when office, retail and day care parking demands are highest – yet even when combined their estimated parking demand of approximately 50 to 100 (conservatively high) vehicles would total less than the available resident visitor supply during the daytime periods. This would create an efficient urban parking condition. This approach would be pursued further through the detailed Site Plan stages of development and the leasing and sales process of the overall Project.



4.3 Appropriateness of the Proposed Resident Parking Standards

Adoption of reduced parking minimum standards is considered appropriate based upon the following considerations:

- ▶ Provincial and local policy/plan that direct municipalities to reduce or eliminate minimum parking requirements;
- ▶ High-level justification for Intensification within Mid-Town Oakville;
- ▶ Zoning By-laws from other areas of the Town of Oakville recognize a variation in parking requirements for differing conditions across the Town, including lower minimum parking requirements and accommodation of context-specific parking requirements;
- ▶ The Site's proximity to current and future transit services, cycling networks, and on-Site transportation incentives;
- ▶ A review of standards applicable to comparable uses and contexts in adjacent Ontario municipalities and industry standards; and,
- ▶ The TDM measures for the Site will influence parking demand on-Site and in the broader area.

The following provides an overview of the contextual factors influencing parking demand at residential developments in the Mid-Town Oakville area and the appropriateness of the proposed reduced parking supply in this instance.

4.3.1 Provincial, Regional & Local Policy

Many provincial plans and local policies provide a framework to guide development in Ontario municipalities. These plans and policies often contain direction regarding development along transit corridors, commenting on parking standards and the future regulations of parking minimums. A brief overview of the provincial and local plans and policies that support a reduced parking minimum and multi-modal lifestyle is outlined below.



4.3.2 Ontario's Five Year Climate Change Action Plan

Ontario's Five Year Climate Change Action Plan was announced in June 2016 (herein referred to as "the Plan"). The Plan emphasizes the importance of addressing climate change at the municipal level. Some of the critical transportation and land-use planning actions outlined in the Plan are as follows:

- ▶ **Support cycling and walking:** Commuter cycling networks will be established across Ontario, targeting routes with high-commuting volumes, such as between residential communities, major transit stations and employment areas. More cycling facilities will be in urban areas, including grade-separated routes and cycling signals. More bicycle parking will be at transit stations and provincially owned, publicly accessible facilities. Ontario will revise provincial road and highway standards to require commuter cycling infrastructure to be considered for all road and highway construction projects where it is safe and feasible. Ontario will do the same for major transit corridors.
- ▶ **Reduce single-passenger vehicle trips:** Ontario will provide grants to municipalities and large private employers to implement Transportation Demand Management (TDM) Plans. The plans will help increase walking, cycling, carpooling, telecommuting and flex-work schedules, reducing overall fossil fuel consumption, traffic congestion and transportation emissions.
- ▶ **Eliminate minimum parking requirements:** Minimum parking requirements will be eliminated over the next five years for municipal zoning by-laws, especially in transit corridors and other high-density, highly walkable communities. Minimum parking requirements are a barrier to creating complete, compact and mixed-use communities. Instead, by-laws will encourage bike lanes, larger sidewalks, and enhanced tree canopies.

Eliminating minimum parking requirements in transit-accessible areas is not new in North America. Residential developments with lower parking requirements are being promoted, approved, and developed in Vaughan, Toronto, Calgary, Vancouver and other cities. This shift away from providing excess residential parking highlights a changing perspective. A reduced minimum parking supply requirement for the subject site would conform with Ontario's current vision for transit corridors.



4.3.3 Planning Act

The Planning Act directs municipalities to have regard to matters of provincial interest set out in Section 2 of the Planning Act, including:

(q) the promotion of development that is designed to be sustainable, to support public transit and to be oriented to pedestrians;

(s) the mitigation of greenhouse gas emissions and adaptation to a changing climate.

The proposed parking supply will promote sustainable, transit-supportive development and mitigate greenhouse gas emissions. The proposed reduction in the parking supply will support and encourage the use of existing higher-order public transit by discouraging automobile ownership and demand for single-occupant vehicle trips. The proposed reduction to resident parking supply has regard to the matters of Provincial interest.

4.3.4 Provincial Policy Statement (2020)

The Provincial Policy Statement (2020) (the “PPS”) contains several policies which promote efficient development and the optimization of land and infrastructure.

Specifically, policy 1.1.1 e) states that healthy, liveable and safe communities are sustained by:

“e) promoting the integration of land use planning, growth management, transit-supportive development, intensification and infrastructure planning to achieve cost-effective development patterns, optimization of transit investments, and standards to minimize land consumption and servicing costs;”

Policy 1.1.3.2 states that “Land use patterns within settlement areas shall be based on densities and a mix of land uses which:

a) efficiently use land and resources;

b) are appropriate for, and efficiently use, the infrastructure and public service facilities which are planned or available, and avoid the need for their unjustified and/or uneconomical expansion;

c) minimize negative impacts to air quality and climate change, and promote energy efficiency;

d) prepare for the impacts of a changing climate;



e) support active transportation;

f) are transit-supportive, where transit is planned, exists or may be developed;

Policy 1.1.3.4. states that “Appropriate development standards should be promoted which facilitate intensification, redevelopment and compact form, while avoiding or mitigating risks to public health and safety.”

Policy 1.6.7.2. states that “Efficient use should be made of existing and planned infrastructure, including through the use of transportation demand management strategies, where feasible.”

The proposed reduction in residential parking rates associated with the development is an appropriate development standard to facilitate intensification and transit-supportive development as planned for the area. The proposed parking supply is part of the overall transportation demand management strategy for the Proposed Development to support the use of transit infrastructure.

The proposed reduction to resident parking supply is consistent with the PPS.

4.3.5 Ontario’s Growth Plan

Ontario’s most recent *A Place to Grow – Growth Plan for the Greater Golden Horseshoe* (the ‘Growth Plan’) was published in May 2019, outlining requirements for accommodating growth to 2041. The plan covers a wide range of areas and topics, many of which apply to this development.

- ▶ **Transportation and Moving People** – Public transit will be the priority for significant transportation investment. Transit growth will focus on increasing the capacity of existing transit systems while also expanding transit services to connect nearby neighbourhoods with urban growth centres and major transit station areas. These goals should increase the modal share of transit and reduce greenhouse gas emissions.
- ▶ **Active Transportation** – To reduce single-occupant vehicle trips and address climate change, municipalities should encourage and include the growth plan guidelines for active transportation networks. These networks provide sidewalks, bicycle lanes, and easy access to surrounding major transit station areas.
- ▶ **Reduce single-passenger vehicle trips** – The Growth Plan calls for municipalities to develop and implement local TDM



policies and active transportation strategies to reduce single-occupant automobile trips. This will aid in shifting trip demand from the automobile to the strengthened multi-modal networks also proposed in the plan to reduce the need for individual automobile ownership.

The policies in the Growth Plan support the Proposed Development intention to reduce reliance on automobiles by encouraging transit use and active transportation through the proposed TDM measures, including a reduced vehicle parking supply.

4.3.6 Halton Region Official Plan

The 2021 Halton Region Official Plan sets the framework for growth and development in the region, including the Town of Oakville. As the region grows, the plan emphasizes the need for sustainable communities and proper intensification in growth areas. The plan includes policies and objectives outlined below that encourage safe, convenient, accessible, affordable and efficient transportation systems and support TDM and parking management to achieve these goals.

Policy 172. (2) states the OP Objective....” To develop a balanced transportation system that:

- a) reduces dependency on automobile use;*
- b) includes a safe, convenient, accessible, affordable and efficient public transit system that is competitive with the private automobile; and*
- c) promotes active transportation.*

Policy 172. (4) states the OP objective....” To improve transportation network efficiency through both travel demand management and transportation supply management strategies.”

Policy 172. (10) states the OP objective....” To promote land use patterns and densities that foster strong live-work relationships and can be easily and effectively served by public transit and active transportation.”

The proposed (reduced) parking supply is encouraged by the Official Plan, as it is a TDM measure aimed at lowering single-occupancy automobile use, and the reduced supply acknowledges the walking distance to transit (in this case, the proximity to the Oakville GO Rail Hub within the MTSA) and complementary uses.



4.3.7 Livable Oakville – Growth Areas – Mid-Town Oakville

The Mid-Town Oakville District is envisioned as a higher density, transit-supportive, mixed-use area and a strategic location to accommodate population and employment growth. This district will include gateway features, an urban park with pedestrian midblock connections and establish a mix of commercial and residential uses.

Livable Oakville describes the Mid-Town and its attributes as follows...

” The Oakville GO/VIA Station is the Town’s primary hub for current and planned transit and is a major transit station. Rail and bus connections currently service the area and major improvements to the local and inter-regional transit network are planned. In addition to improvements to the local bus network, there will be express commuter rail service and bus rapid transit corridors along Trafalgar Road and Highway 403. The bus rapid transit systems will originate in Midtown Oakville and connect with the broader Greater Toronto and Hamilton Area transportation network.”

Within Livable Oakville, Part E – Growth Areas, Mid-Town Oakville, several relevant policies support the Mid-Town area's intensification and speak directly to the mobility needs and requirements, supporting land-use policies (internalization of trip making) and phasing necessary to fulfill those goals and objectives. These characteristics are consistent with reducing the reliance on the private automobile to support that intensification.

Policy 20.1 states that:

Goal

Midtown Oakville will be a vibrant, transit-supportive, mixed use urban community and employment area.

Policy 20.2.1 state that:

Objectives

To create transit-supportive development by:

- a) ensuring the entire area is developed as a pedestrian-oriented environment focused on access to, and from, transit;*



b) improving internal road circulation and connections to, and through, Midtown Oakville for public transit, pedestrians, cyclists and vehicles; and,

c) promoting a compact urban form with higher density and higher intensity land uses.

Policy 20.4.1 states that:

Transportation

e) Development shall promote safe, convenient and attractive pedestrian access to transit stops or stations. Barriers, such as boundary fences, shall be discouraged.

4.3.8 Town of Oakville Zoning Bylaws

It is worth noting that the Town of Oakville’s Zoning Bylaws that govern the provision of vehicular parking recognize, in some instances, a variety of requirements to describe how parking must be provided for land use similar to those proposed within the Proposed Development.

Residential “Apartment – More than four storeys” as set out in the North Oakville Zoning Bylaw 2009-189 Section 5 has a “maximum” parking rate expressed but no minimum parking rate. Similarly, in Zoning Bylaw 2014—014, within Section 5.2.2 Minimum Number of Parking Spaces in Mixed-Use Zones, non-residential uses within the Downtown Oakville area have no minimum requirement.

These Zoning standards recognize that contextual differences across the Town should be incorporated into the development and intensification of lands.

The Mid-Town Oakville area is an excellent example of where parking requirements should support the area’s goal and objectives as set out in the Livable Oakville document while consistent with Provincial and Regional policy. As noted in the TDM section to follow, reduced parking standards are one of the most effective ways to reduce the reliance upon the private automobile and encourage alternative forms of mobility.



4.3.9 Urban Mobility and Transportation Strategy Report

The Town of Oakville recently commissioned, received, and endorsed the above-noted transportation strategy. A series of key “takeaways” were noted throughout the report in the supporting technical documentation and recommendations. As those takeaways relate to the issue of vehicles parking and goals associated with improved alternative mobility choices, the following was noted:

End of Section 2.4 (Existing Planning Guidance)

“Auto-oriented tall buildings will create the same problems that single-family subdivisions have to date. Oakville must therefore ensure controls on new developments so that their strategic aims are met while still ensuring that livable, walkable communities are being produced.”

Section 3.4 (Goals)

“To get people out of their cars, Oakville needs to create environments that are pleasant to traverse without one. While this does require improved transportation infrastructure for walking, cycling and transit, the more important element is an improved link between the transportation network and the Town of Oakville’s land use policies, because no matter how wide the sidewalks, few people will choose to walk to or between strip malls and office parks surrounded by a sea of parking.”

End of Section 5.2.5 (Parking)

“Parking is one of the greatest obstacles to Oakville’s strategic aims. Excessive parking results in spread out urban landscapes where the only practical way to get around is by car. Suburban municipalities often struggle to separate themselves from parking. However, nobody goes to a city because it has great parking. The parking is just a means to an end. By reallocating space away from parking, Oakville can create spaces people actually want to travel to and spend time in, where other modes such as walking, cycling and transit are actually viable. Therefore, Oakville should abolish all parking minimums. If developers believe they can sell properties without parking, they should be allowed to. Frankly, Oakville should want them to, as it forwards the Town’s own strategic aims for modal shift. To that end, parking maximums should be considered. Cars will always be a part of Oakville’s story, and so parking will be too. However, Oakville can utilize new technologies to “right size” their parking and manage demand through other means beyond supply. The parking that does exist should be out of sight, and out of mind.”



The message within the recommended strategy is clear that providing vehicular parking in a “business as usual” way is counter-productive towards achieving the objectives of the Province’s, Region’s and the Town’s Official Plan policies and the functional operating conditions required to support future mobility within Oakville.

4.3.10 Mid-Town Oakville Transportation Context

Mid-Town Oakville is at the nexus of multi-modal transportation within the Town. When combined with the growth potential for the Town, the existing and planned transportation context within and around Mid-Town is highly supportive of and complimentary to reduced parking supply standards.

Substantial Municipal/Regional/Provincial mobility infrastructure investment within Mid-Town is planned. This includes:

- ▶ The Mid-Town EA public street network improvements – substantially improved multi-modal connectivity within and beyond Mid-Town;
- ▶ Regional investments along Trafalgar and Dundas involve BRT corridors that establish foundational network elements of higher-order transit systems. Trafalgar Road is identified as Transit Priority Corridor – from Mid-Town Oakville to Georgetown;
- ▶ At the Provincial scale, Metrolinx has planned investment in Mid-Town, referred to as an Anchor Hub or Mobility Hub. This involves improvements to Regional Express Rail (RER) service / Regional Rail service (All-day 15 minutes two-way service or better), GO Bus service and Integration with Local Oakville Transit and recognizing that Mid-Town is the busiest Transit Hub in the Town of Oakville.

In addition to the investments being made in the Mid-Town area at various levels of government, the proximity of Mid-Town to existing and planned multi-modal infrastructure makes it an exceptional framework upon which to enshrine lower parking standards. The reasons include:

- ▶ Mid-Town’s compact area and supporting (existing and proposed) public street network provides a dense, urban street grid suited for pedestrian and cycling travel modes.
- ▶ This proposed street grid will facilitate intra-Mid-Town mobility and will prioritize non-auto travel within the area;
- ▶ The mixed-use “complete community” within Mid-Town is an excellent basis for intensification, serving the day-to-day needs of residents, employees, visitors, and commuters; and,



- ▶ Internalization /efficiency of trip making is maximized.

Lastly, intensifying the residential population of Mid-Town will increase and encourage non-auto trip making for commuters and internalized O-D trips. Reducing parking supply standards within Mid-Town reinforces the multi-modal nature of Mid-Town. It promotes the mobility outcomes needed to support the Official Plan objectives and functional outcomes associated with intensification. Furthermore:

- ▶ The level of transit service serving trips destined **TO** Mid-Town from elsewhere in the Town of Oakville serves as an excellent “built-in” contra-flow transit capacity for trips **FROM** Mid-Town to other areas of the Town. No additional transit capacity is required to deliver this contra-flow capacity.
- ▶ Existing ‘On-demand’ transit services could be further enhanced given the concentrated “origins” within Mid-Town when paired with “popular destinations” in the Town of Oakville; and,
- ▶ Micro-mobility provides an excellent option to exploit short-travel distances within Mid-Town Oakville.

4.3.11 Review of Recent Municipal Zoning Bylaw Updates

The City of Toronto and Vaughan completed two notable municipal parking review processes (within the past year).

Both cities have refined their policies related to parking provision across their municipalities.

The City of Toronto took the most aggressive step and eliminated vehicle parking for most land uses in most areas of the entire City. A set of “maximums” were instituted, which used to be the minimums” across the various areas of the City. The City of Toronto cited many reasons for their policy shift, many of which had been underlying reasons for urban intensification but had never been institutionalized into the Zoning regime of the City. Environmental, economic, functional, urban design, housing affordability, encouraging transit, walking and cycling were important reasons the parking standards were modified.

Admittedly, the City of Toronto has significantly more transit, cycling and other mobility options; however, the reasons for and rationale behind the parking supply rate reduction within their Zoning Bylaw point to a need to better accommodate developments that can be successfully marketed with the support from a robust set of TDM measures and underlying municipal/regional/provincial non-auto infrastructure.



The other City is the City of Vaughan. Recently, City-wide, Vaughan reduced its parking supply rates and recognized that there are supporting reasons why that was both necessary and desirable.

In the Vaughan Metropolitan Centre (VMC), where the TTC's recent expansion of the Yonge/University/Spadina Subway line now terminates, the area's parking rates were reduced significantly relative to previous standards. Although the new Comprehensive Zoning Bylaw's parking rates for the VMC now reflect 0.4 spaces per residential unit, parking rates below that value are regularly approved by City Transportation staff. The VMC and the surrounding area are being intensified significantly. The nature of the area is planned as a mixed-use centre that is intended to benefit from a "15 minute City" type of built environment, like other urban centres and in downtown Toronto. The need to own a private vehicle is not essential from a day-to-day activity perspective. Supporting TDM measures compliment the transit availability and make owning a vehicle in that area non-essential.

The Mid-Town of Oakville has similar designs and visions of providing a mixed-use environment. A key ingredient to the success of that plan is multi-modal mobility support. Initially, that will be augmented through TDM measures offered by the individual developments but will gradually be extended to the critical mass of population and employment, creating origins and destinations that support the array of mobility options required to support the reduced parking requirements. The mobility options are sufficient to support day-to-day activity without owning a private automobile.



4.3.12 Maintain Sales/Leasing Viability with Proposed Parking Rates

Reducing parking rates is an essential measure in trying to reduce the reliance upon the private automobile and to reduce the unnecessary infrastructure that the development must:

- ▶ Build upfront and reflect in both the cost to purchasers and the impact on the environment (the initial carbon footprint of an extensive development is substantial), and,
- ▶ Maintain on an ongoing basis for the life cycle of the building (which includes maintenance, repair, and high municipal taxes) as well as the lasting environmental impacts of a larger parking garage.

It is also important to ensure that the parking supply provided is supportable from a residential sales perspective (that there is a market for the units sold without parking over the long term) and from a commercial leasing/business operations perspective. A parking rate that contributes to a poor leasing/sales outcome does not produce a viable development for the long-term condition.

The rates proposed herein have been vetted by the applicant's leasing and sales advisors, and from a business perspective, the proposed parking supply is considered viable. The non-residential rates proposed are in-line with parking rate ranges contemplated within the applicable Zoning Bylaw (2014-014) for the range of Mixed-Use Zones within the Town of Oakville (i.e., greater than "No Minimum" and less than 1.00 space per 35 to 40 square metres of NFA). The proposed non-residential parking rates also consider the scale of the proposed non-residential NFA. A substantial element of the "market" is anticipated to be derived from the Project and future intensification surrounding the Project.



4.3.13 Transportation Demand Management Measures

Several TDM measures are being contemplated as part of the development proposal to support a reduced parking supply. While a reduced parking supply is a direct incentive to reduce automobile use and ownership, additional TDM measures are proposed to complement and work with the reduced parking supply. These include:

- ▶ Facilitation of Reduced Car Ownership and Usage;
- ▶ Vehicular Parking Supply and Management;
- ▶ Encourage Transit Use;
- ▶ Encourage and Facilitate Bicycle Use;
- ▶ Enhance Pedestrian Access and Walkability;
- ▶ Land Use and Building Infrastructure; and
- ▶ Coordination, Communication, and Promotion.

Finding the right balance needed to support the Towns' goals is critical, mainly because parking is an expensive resource. Sufficient automobile parking is necessary for the development to be successful. However, too much parking can encourage traffic congestion, limit the ability to meet trip reduction goals, increase project costs, and impact site design and aesthetics.

Research conducted focused on whether or not a relationship exists between the provision of off-street parking and the choice to drive among individuals travelling to or from the site:

- ▶ A New York City study of three boroughs showed a clear relationship between guaranteed vehicular parking at home and a greater tendency to use the automobile for trips made to and from work, even when both work and home are well served by transit. The study infers that driving to other non-work activities is also likely to be higher for households with guaranteed vehicular parking⁴.
- ▶ A study of households within a two-mile radius of ten rail stations in New Jersey was completed. The study concluded that if development near transit stations is developed with a high parking supply, those developments will not reduce automobile use compared to developments located further

⁴ Rachel Weinberger, Death by a thousand curb-cuts: Evidence on the effect of minimum parking requirements on the choice to drive. Transport Policy, 20, March 2012.



away from transit stations. The parking supply can undermine the incentive to use transit that proximity to transit provides⁵.

- ▶ A study of nine cities across the United States looked at whether citywide changes in vehicular parking cause automobile use to increase or whether minimum parking requirements are an appropriate response to the already rising automobile use. The study concluded that: “parking provision in cities is a likely cause of increased driving among residents and employees in those places.”⁶

Based on recent research, a reduced Parking Supply is one of the most effective TDM measures available to reduce vehicle travel⁷. This research found that reductions in off-street vehicular parking for office, residential, and retail developments reduce the overall automobile mode share associated with those developments relative to projects with the same land uses in similar contexts that provide more off-street vehicular parking. In other words, more off-street vehicular parking is linked to more driving, and people without dedicated parking spaces are less likely to drive.

If free and unregulated parking is provided, there is little incentive for many residents and visitors to use alternative modes of transportation. Free and abundant parking encourages people to drive alone rather than car or vanpool, drop off or pick up, walk, cycle, or take transit. Excessive free parking for the user places a significant disadvantage on sustainable modes.

As the development promotes the use of other modes of transportation through limited on-site parking to meet the projected demand, the development plays a significant role in setting an example for residents and visitors to consider non-automotive travel.

These TDM measures are outlined in more detail within **Chapter 5.0**, Transportation Demand Management (TDM).

⁵ Daniel Chatman, Does Transit-Oriented Development Need the Transit? Access, Fall 2015.

⁶ Chris McCahill, et al., Effects of Parking Provision on Automobile Use in Cities: Inferring Causality, Transportation Research Board, November 13, 2015.

⁷ Transportation Demand Management Technical Justification, City and County of San Francisco, June 2018.



4.3.14 Overall Vehicular Parking Supply Conclusions

Adoption of reduced minimum resident and non-residential parking supply standards is appropriate based on the following considerations:

- ▶ The proposed parking reduction is consistent with Provincial, Regional & Local Mobility and Parking Policy;
- ▶ The parking supply strategy is in conformance with Ontario's current vision for transit nodes;
- ▶ The area transportation context and proposed TDM framework supports multi-modal travel;
 - The provision of an enhanced TDM plan was determined as a proactive method of reducing the proposed resident parking supply; and,
- ▶ The parking supply reduction significantly reduces the cost of construction of the project, which can improve the initial proposed housing along with ongoing life-cycle maintenance and property tax costs, further enhancing the affordability of the project for the residents in the long-term and,

The proposed reduction in parking supply has regard to matters of Provincial interest; they are consistent with the Provincial Policy Statement. They conform with the Growth Plan and the Region of Halton Official Plan, and the Livable Oakville Plan Mid-Town Oakville provisions.

While a reduction to the minimum resident and commercial parking requirements under Zoning By-Law 2014-014 is proposed, the resulting vehicular parking supply will meet the development's needs regarding the existing /planned transit infrastructure in the immediate area, including higher-order transit.

A resident parking supply ratio of 0.50 parking spaces per residential unit and office and retail and daycare parking rates of 1.08 parking spaces per 100 m² is considered appropriate.

4.4 Loading Supply Review

4.4.1 Loading Supply / Facilities Requirements

The prevailing (Zoning By-law-2014-014) loading standard for the proposed development does not require loading spaces. However, given the proposed uses for the site, it is suggested to provide six (6) loading spaces and one (1) refuse compactor across the three buildings within the Project.



4.4.2 Loading Supply / Servicing Arrangements

The **Tower A** building will contain two loading spaces configured as follows:

- ▶ Refuse Collection loading space capable of accommodating an overhead front loading refuse collection vehicle or a sizeable Single Unit delivery vehicle for the non-residential floor space; and,
- ▶ Single Unit vehicle that can accommodate small delivery vehicles or household moving vehicles.

Combining these two loading spaces would adequately serve Tower A residential and non-residential requirements.

The loading area has the requisite internal manoeuvring and refuse bin staging areas. The entry into the loading area would be equipped with a signalling and signage system to ensure that when loading vehicles are manoeuvring into or out of the loading area, vehicles entering or exiting the parking garage and using the driveway in the vicinity of the loading area would be aware of the potential for truck manoeuvring occurring.

The **Tower B** building will contain one (1) loading space configured as follows:

- ▶ Single Unit vehicle that can accommodate small delivery vehicles or household moving vehicles.

This loading space would adequately serve Tower B's non-residential requirements. Tower B residential refuse collection operations would be accommodated using the Tower A refuse collection loading space. Internal means of conveying Tower B refuse bins to the Tower C loading area have been built into the Project's logistical systems.

The loading area has the requisite internal manoeuvring and refuse bin staging areas. The entry into the loading area would be equipped with a signalling and signage system to ensure that pedestrians walking along Argus Road are aware of the potential for truck manoeuvring.

The **Tower C** building will contain three (3) loading spaces, and one (1) refuse compactor configured as follows:

- ▶ Refuse Collection loading space capable of accommodating an overhead front loading refuse collection vehicle or a sizeable Single Unit delivery vehicle for the non-residential floor space;



- ▶ A second full-sized loading space capable of accommodating a large single unit delivery vehicle;
- ▶ Single Unit loading space that can accommodate small delivery vehicles or household moving vehicles; and,
- ▶ A compactor bin mounted dock height to facilitate waste collection from the non-residential uses.

Combining these three loading spaces and one (1) compactor space would adequately serve the Tower C residential and non-residential requirements. As noted above, Tower C would also accommodate the residential refuse collection associated with Tower B. This creates a substantially more efficient “back-of-house” operating condition for Tower B.

4.4.3 Operations and Manoeuvring

The proposed access and driveway configuration associated with the three Towers within the Project, combined with the loading area layouts, can appropriately accommodate forward in and forward out manoeuvring for each loading area.

Vehicular manoeuvring diagrams (VMDs) have been developed, demonstrating the ability of service and delivery vehicles to manoeuvre within the site when entering/exiting the loading area. The design vehicles used to assess the proposed loading space configuration are the Halton Region front-loading overhead refuse collection vehicle, a single-unit truck (TAC SU), and a heavy single unit truck (TAC HSU). Each vehicle enters and leaves the site via the driveways in a forward motion.

Functional Drawings (illustrating the below-grade and at-grade functional design characteristics) are shown in drawings SPR-01 through SPR-05 and contained in **Appendix D**. Vehicular Manoeuvring Diagrams (VMDs) illustrating the service vehicle manoeuvring attributes across the various loading areas are illustrated in drawings VMD-01 through VMD-08 and are found in **Appendix D**. These vehicular manoeuvring diagrams confirm that the proposed loading arrangements are appropriate and will facilitate the manoeuvring requirements of the vehicles that are expected to access the site.

It should be noted that the Tower C loading area, during the interim Project conditions (i.e., before adjacent properties to the northeast of the Site and east of the Site), will be accessed via what will be a private driveway extending north from the existing/future Cross Avenue ROW and terminating at the northern limit of the Site property. As land



from adjacent properties is acquired by the Town of Oakville, the future Local public street on the east side of the Site will be implemented.

During this condition, access to and from the Tower C loading area will occur using only the portion of the future North-South Local Street on the east side of the Project within the lands controlled by the Applicant. This is essentially a 6.0-metre wide driveway adjacent to the Tower 3 building face. Service vehicles entering the loading area will require correction manoeuvres to either drive-in/drive-out or reverse-in/reverse-out of the loading area. Both sets of manoeuvres would be accomplished at very low speed. The signalling systems and warning lights proposed for the loading area would be operational because the route into the Tower C loading areas would be a private driveway during this period. This condition is considered appropriate for temporary (i.e., Interim) conditions, given the slow operating conditions. The long-term conditions associated with a Local public street along the east frontage of the Project would be functional without any such restrictions or limitations. These Interim conditions are illustrated in Drawing SPR-01 (**Appendix D**), and the corresponding Vehicle Manoeuvring Diagrams are illustrated in VMD-01a, VMD-01b, VMD-02a, VMD-02b, VMD-03a and VMD-03b in **Appendix D**.

4.4.4 Height Clearances

A minimum height clearance of 4.5 metres is maintained throughout the entire loading area, and 6.1 metres for the loading space satisfying the minimum practical height clearance requirements associated with front-loading overhead refuse collection vehicles.

4.4.5 Loading Summary

The proposed development incorporates a total of six (6) loading spaces. The proposed loading arrangements are functionally and operationally appropriate and will facilitate the loading/unloading, moving, delivery and refuse collection needs of the proposed development.



4.6 Bicycle Parking Supply Review

4.6.1 Zoning Bylaw Bicycle Requirements

The bicycle parking standards outlined in the Town of Oakville Zoning By-law 2014-014 require a minimum of 1,754 bicycle parking spaces (1,317 long-term and 437 short-term bicycle parking spaces). A detailed summary of these requirements is provided in **Table 4.2**.

TABLE 4.2: ZONING BY-LAW BICYCLE PARKING REQUIREMENTS

Use		Units/IFA	Minimum Parking Rate ¹	Minimum Parking Required ²
Residential	Long-term	1,748 units	0.75 sps / unit	1,311 spaces
	Short-Term		0.25 sps / unit	437 spaces
	Sub-Total	1,748 units	-	1,748 spaces
Non-Residential	Retail (incl. Day Care NFA) Long-term	2,817 m ²	Greater of 2 or 1 sps / 1000 m ²	3 spaces
	Office Long Term	2,269 m ²	Greater of 2 or 1 sps / 1000 m ²	3 spaces
	Sub-Total	-	--	6 spaces
Long-Term				1,317 spaces
Short-Term				437 spaces
Total				1,754 spaces

Notes:

¹ Interior Floor Area (IFA) is assumed to be equal to Gross Floor Area (GFA).

² Zoning By-law 2014-014 specifies that if the calculation of the number of required bicycle parking spaces results in a number with a fraction greater than 0.25, the number is rounded up to the nearest whole number.



4.6.2 Bicycle Parking Supply and Facilities

A total of 1,754 bicycle parking spaces are proposed across the Project. Long-term bike parking is located on the P3/P4 levels of the below-grade parking garage. Again, access to the project's long-term bicycle parking facilities is via elevator access adjacent to the bike storage rooms or a short distance from the elevator access. Cyclists could also ride down the vehicular ramps to access the short-term parking. The elevator egress is the most convenient way to exit the Short-term parking storage areas. A small amount of short-term bike parking will be located at grade for convenience purposes to serve the more transient nature of bike use associated with the retail and office uses. This will be situated around the perimeter of the buildings on-site and, where possible, located beneath overhangs to offer some measure of weather protection.

4.6.3 Bicycle Parking Summary

The proposed bicycle parking supply of 1,754 bicycle parking spaces is considered appropriate and will accommodate the bicycle parking demands of the proposed development.



5 Transportation Demand Management

The Town of Oakville is actively engaging the development community to integrate Travel Demand Management (TDM) in all current and future development applications. A TDM Study aims to outline a straightforward process for selecting and implementing TDM measures.

5.1 Area Opportunities

5.1.1 Pedestrians

This existing area in the Town of Oakville is primarily commercial and within proximity of the Oakville GO Station; therefore, pedestrian facilities are limited to the sidewalk network along the east side of Lyons Lane. Directly to the west of the subject property, a pedestrian path leads under the Queen Elizabeth Way/Highway 403 to enable pedestrians to safely cross the highway to the residential area to the north. There are no pedestrian facilities along South Service Road.

The site is within walking distance of numerous and significant retail and transportation opportunities providing a range of destinations for prospective residents of the proposed building that can be readily accessed without using a car.

Existing pedestrian sidewalks are provided on a least one side of streets throughout most of the study area. Crosswalks, pedestrian pushbuttons, and indicators are provided for all approaches at the signalized intersections within the study area. These facilities will further help foster and promote walking trips to/from the development.

Furthermore, MOEA identified additional future links for pedestrians and cyclists are recommended by two grade-separated, active transportation crossings of the QEW. The crossing proposed on the west side of Trafalgar Road is located approximately 200 metres from the proposed development. This crossing will encourage the development and general area residents to explore active transportation mode choices and improve access to transit, area retail, and employment opportunities.

5.1.2 Cycling

On-road cycling lanes are not currently provided on the streets in the study area. However, as cyclists are permitted to ride on most roads except controlled-access highways, the lack of a separate bicycle lane will not prohibit this type of travel, particularly for this development.



Reviewing the Town of Oakville's Active Transportation Master Plan (ATPM) document for cycling network plans and existing facilities within the proposed development indicates that there are currently no cycling facilities present. However, within the ATMP, on-street bike lanes are proposed along Lyons Lane and are proposed to be completed in the Long-Term Phase (11-20+ years), and Cross Avenue to be completed in 2020.

5.1.3 Oakville Transit

Oakville Transit owns and operates the public transit system in Oakville. The subject site is located within the Midtown Oakville Urban Growth Area, the most transit-accessible location within the Town. The subject site is approximately 150 metres from the Oakville GO Station, currently serviced by 16 out of 22 Oakville Transit Routes. The majority of the transit routes which provide access to all of the Town of Oakville operate seven days a week from early morning to late evening, with headways generally between 10 and 30 minutes depending on the day of week and time of day.

The Trafalgar Road Class EA recommended that the curb lane of Trafalgar Road be converted to a high occupancy vehicle (HOV) or bus rapid transit (BRT) lane. With a BRT line along Trafalgar Road, ridership in the service area typically increases by 50%. This future transit line provides a further incentive for residents of the development to choose transit as a primary commuting option.

5.1.4 GO Inter-Regional Transit

The proposed development is located approximately 150 metres from the Oakville GO Station. This station is located along the Lakeshore West Line, which currently operates a two-way all-day train service seven days a week plus GO Bus connections to Hamilton, Sheridan College and York University via Highway 407.

Future GO Rail service along the Lakeshore West corridor will be improved to two-way, All-day service with 15-minute service or better. This level of service will facilitate increased flexibility and reliability relative to the GO Transit network of services and destinations throughout the Lakeshore West (and East) service corridors.

5.1.5 Ride-Hailing & Car Services

Ride-hailing car services in the Town of Oakville include Oakville Taxi, Oakville United Taxi, A1 Oakville Taxi, Halton Taxi Svc, Blue Line Taxi, Oakville Para-transit and Uber/Lyft. These services offer on-demand private car services. Their increasing share of the mobility markets offers added flexibility and reliability to residents, visitors, and



employees and supports travel opportunities other than the private automobile.

5.2 Mobility Choice Travel Plan

The Mobility Choice Travel Plan is proposed to guide the provision of viable alternative personal transportation options beyond the single-occupant, private automobile. This plan intends to support the development plan by outlining TDM measures and the suite of strategies under consideration to promote more active and sustainable transportation modes, respond to the mobility needs of residents, employees, and patrons to the site, and reduce dependence on the private automobile.

Four (4) specific objectives define the policy framework for the Mobility Choice Travel Plan:

- ▶ Encourage the use of alternate travel modes (transit, cycling, walking);
- ▶ Increase vehicle occupancy;
- ▶ Shift travel to off-peak periods; and
- ▶ Reduce vehicle kilometres travelled.

A comprehensive framework has been developed that will serve as a guideline for implementing effective TDM strategies during the site design stage and its operations following the complete redevelopment of the property.

5.3 Organizational Framework

The four (4) broader objectives can be organized within the following categories:

- ▶ Facilitation of Reduced Car Ownership and Usage;
- ▶ Vehicular Parking Supply and Management;
- ▶ Encourage Transit Use;
- ▶ Encourage and Facilitate Bicycle Use;
- ▶ Enhance Pedestrian Access and Walkability;
- ▶ Land Use and Building Infrastructure; and
- ▶ Coordination, Communication, and Promotion



Within each of the seven (7) categories, interventions considered for application may be further organized by the buildings of their implementation as the development progresses:

- ▶ **Infrastructure** (external links and facilities): Measures to improve the active transportation realm along the site's boundaries and to facilitate the integration of pedestrian, cycling and transit infrastructure Facilities and features of the site plan and design. Physical aspects of the internal layout of the development, including its buildings, open spaces and circulation routings to promote alternative transportation modes
- ▶ **Building operations/property management:** User-focused programs & policies enacted once the site is operational to encourage alternative transportation modes
- ▶ **Monitoring:** Post-occupancy data collection programs are used to assess travel patterns and gauge the effectiveness of TDM strategies and the Mobility Choice Travel Plan.

5.4 Mobility Plan Strategies

While substantial opportunities exist in the area's infrastructure to accommodate sustainable transportation practices, the ability to fully leverage these opportunities ensures the success of the Mobility Plan strategies. To this end, Mobility Plan strategies are presented with targeted "intents" (i.e. what it is trying to achieve and for whom), accompanied by implementation methods. Potential strategies or measures are framed in the development context, and the most appropriate approach for application is proposed.

A summary of the mobility travel plan (MTP) strategy is outlined in **Tables 5.1 – 5.3**. These TDM strategies will be refined throughout the future Site Plan Approval application process.



TABLE 5.1: POTENTIAL MTP – REDUCE SINGLE-OCCUPANT VEHICLES



	Intent	Possible Measures	Development Plan Measures
Vehicle parking supply & management	<p>Reduce the attractiveness of private vehicle use for residents, employees and visitors</p> <p>Reduce car ownership needs</p> <p>Encourage higher vehicle occupancy</p> <p>Encourage the use of other travel modes</p>	<p>Building, Planning & Design</p> <p>Establish appropriate minimum parking supply standards for the proposed land uses and buildings that may be reduced to compare to the existing Zoning By-law</p> <p>Provide reduced retail, office and day care parking to maximize the efficient use of the supply</p> <p>Ensure that leasing opportunities associated with the parking supply are not compromised.</p> <p>Operational / Management</p> <p>Operate the majority of the site parking supply as paid parking for non-residents</p> <p>Offer parking to building residents “unbundled” from unit purchase</p> <p>Adjust parking fee structure, operations and parking allocations to support non-automobile usage goals and to accommodate changing parking needs</p> <p>To the extent possible, adopt a shared parking operations management that make most efficient use of on-site parking supply and temporal parking patterns.</p>	<p>The proposed parking supply for the site is provided at a reduced rate of 0.5 parking spaces / residential unit unbundled from the purchase of a residential unit.</p> <p>The visitor parking supply - 0.20 spaces per unit and</p> <p>Office and Retail parking - 1.08 parking spaces / 100 m2 of NFA.</p> <p>Ensure leasing is not compromised</p> <p>Explore ways to “share” resident visitor parking with Day Care/office /retail parking demands.</p>
Facilitation of reduced car ownership & usage	<p>Reduce the need for residents and employees to own a car for occasional travel</p> <p>Reduce the likelihood of privately-owned car use for general travel, particularly during peak periods</p>	<p>Operational / Management</p> <p>Operate a car-share program on-Site that members can access “on demand”</p> <p>Consider membership in the local SmartCommute transportation management association to facilitate economical delivery and area wide TDM measures such as a carpool / ride-matching and guaranteed ride home programme for residents and employees.</p> <p>Coordination with building employers to offer flexible work hours and compressed work week opportunities for staff</p> <p>Provide information and communication items that outline the availability of the on-Site services as well as broader taxi and ridesharing services</p> <p>Provide incentive programs design to encourage the use of on-Site services including corporate or private membership to car-share / car-pool services</p> <p>Monitoring</p> <p>Monitor car-share program membership and usage, and adjust car deployment to respond to demands</p> <p>Monitor carpool and ride-matching programs, and adjust to suit needs of residents, employees and visitors</p>	<p>Explore membership in the local SmartCommute transportation management association to deliver efficient TDM programme elements.</p> <p>Explore the provisions of between 5 to 10 car share vehicles on-site through a Car-Share provider.</p> <p>Consider offering Car-Share Memberships to all new unit purchasers for a 2 year period.</p> <p>Provide an “information package” to be distributed to new unit purchasers and resale purchasers on mobility options in the area.</p>



TABLE 5.2: POTENTIAL MTP – TRANSIT, CYCLING AND WALKING



	Intent	Possible Measures	Development Plan Measures
Encourage transit use	<p>Increase awareness and viability of transit travel options for commuter and recreational travel purposes</p> <p>Capitalize on the improving transit context</p> <p>Support the use of transit</p> <p>Capitalize on the improving transit context</p> <p>Support the use of transit</p>	<p>Building, Planning & Design</p> <p>Provide accessible and high-quality pedestrian connections towards transit from the site</p> <p>Provide facilities that support transit passenger travel including weather protection and amenities along key travel paths within the site</p> <p>Provide facilities that support transit passenger travel including weather protection and amenities along key travel paths within the site</p> <p>Facilitation of accessible transit services</p> <p>Operational / Management</p> <p>Provide transit service information for Site users</p> <p>Offer transit promotion programmes</p> <p>Consider involving On-Demand transit service to link the Mid-Town or other key destinations / origins in the Town.</p>	<p>Adjacent to existing Oakville GO Rail Transit Hub.</p> <p>Provide enhanced pedestrian connections to the abutting public streets;</p> <p>Provide transit service information on-site</p> <p>Site design measures that enhance pedestrian comfort.</p>
Encourage bicycle use	<p>Provide physical and operational infrastructure on-Site</p> <p>Cooperate with the Town to enhance bicycle connectivity within the area to the broader network</p>	<p>External Infrastructure</p> <p>Work with the Town to improve existing facilities and provide new connections in the site area</p> <p>Building, Planning & Design</p> <p>Provide secure long-term bicycle parking in convenient and accessible locations</p> <p>Provide short-term bicycle parking distributed across the site in accessible locations</p> <p>Meet or exceed the minimum requirements of the Town of Oakville</p> <p>Provide shower and change facilities within office buildings for staff and visitor use</p> <p>Operational / Management</p> <p>Consider private bike share stations within the site at convenient locations or work with the Town to facilitate public stations</p> <p>Encourage an on-Site bicycle repair / maintenance centre</p>	<p>Proposed bicycle parking supply meets the Town standards</p> <p>Consider providing two private bike share stations supporting 25 bicycles total for residents</p> <p>Providing a bike repair station and cleaning station on-site to support bicycle use.</p>
Enhance access & walkability	<p>Enhance the walkability of the site at-grade and create a pedestrian-scaled neighbourhood</p> <p>Assist in creating high-quality, safe pedestrian linkages to the site and wider network</p> <p>Improve the quality of the public realm and accessibility of the area</p> <p>Enhance ability to travel to transit focal points without a vehicle</p>	<p>External Infrastructure</p> <p>Work with the Town towards realizing improvements to area pedestrian infrastructure quality of the public realm and the convenience of pedestrian linkages / road crossings along the site boundaries and in the site area</p> <p>Building, Planning & Design</p> <p>Provide high-quality, safe pedestrian-scale connections from the site property to the surrounding public street network</p> <p>Facilitate convenient building access and connectivity</p> <p>Provide accessible and universal connectivity throughout the site, meeting appropriate accessibility codes and guidelines</p> <p>Operational / Management</p> <p>Maintain on-Site pedestrian facilities to enable year-round pedestrian access and usage</p>	<p>Pedestrian access to the new residential, office and retail uses are provided along the existing and future public streets surrounding the Site</p> <p>Loading and parking operations will be conducted within the site so as not to conflict with pedestrian movement</p>



TABLE 5.3: POTENTIAL MTP – LAND USE & COMMUNICATION



	Intent	Possible Measures	Development Plan Measures
Land use & building infrastructure	<p>Offer a variety of residential and non-residential uses on-Site</p> <p>Reduce the need for residents, employees and visitors to travel off-Site to address daily needs</p> <p>Shorten travel distances</p> <p>Support residents that work from home</p>	<p>Building, Planning & Design</p> <p>Offer a variety of residential and non-residential uses on-Site</p> <p>Reduce the need for residents, employees and visitors to travel off-Site to address daily needs</p> <p>Shorten travel distances</p> <p>Support residents that work from home</p>	<p>The proposed development offers a variety of uses that allow people to live and work on the site, reducing the number of vehicles trips generated from the site</p> <p>The potential for a day care would eliminate / shorten trips for many residents of the development.</p>
Coordination, communication & promotion	<p>Inform and raise awareness of non-automobile travel options for the site</p> <p>Actively promote non-automobile travel options and services</p> <p>Introduce, develop and coordinate TDM programs / initiatives with the employment tenants within the context of the broader strategies in place</p> <p>Ability to adapt the strategy based on changing demand and special circumstances as they may arise</p>	<p>Operational / Management</p> <p>Consider membership in the local SmartCommute organization to play the role of a TDM Coordinator Office that supports activities and advances TDM strategies, programs and implementation protocols for the site</p> <p>Establish a consultative framework to liaise and empower building tenants, businesses and residents to engage in dialogue with the Town, transit providers, and other service providers to advance the needs of the development and surrounding area</p> <p>Use of wayfinding and multi-modal navigation tools to augment the TDM services provided on-Site</p> <p>The active marketing, branding and promotion of non-automobile travel options (i.e. fairs, events and other incentive programs)</p> <p>Monitoring</p> <p>Monitor the success of programming by the TDM Coordinator Office</p> <p>Measure the site's modal split over time to examine the effectiveness of TDM interventions</p> <p>Refine programming on an ongoing and coordinated basis</p>	<p>Consider membership in the local SmartCommute organization</p> <p>Scheduled days to promote the existing transit services and active transportation facilities on-Site and in proximity to the site will be completed to inform residents and retail workers.</p> <p>The use of sustainable transportation modes will be supported and promoted by building management and operations</p> <p>Yearly evaluations of the TDM provisions</p>



5.5 Site Specific Monitoring

5.5.1 Walking Infrastructure Monitoring

It is recommended that the site operator monitor the long-term desired lines created by the erosion caused by pedestrians crossing the site's landscaped areas. Should desire lines form, there may be an opportunity to adjust the site's landscaping to encourage the use of the designated on-site pedestrian sidewalks.

5.5.2 Cycling Infrastructure Monitoring

It is recommended that the site operator monitor the on-site bicycle storage usage and the need for parking spaces to ensure demand matches supply. An indicator to suggest that the site's bicycle parking demand exceeds supply is observing bicycles locked to the street furniture on-site or immediately adjacent to the subject site.

Should the site's bicycle parking demand regularly exceed the supply, consideration should be given to expanding the amount of on-site bicycle parking provided.



6 Development Concept Travel Forecasts

The development proposal for the site envisions a large-scale development of three towers. Tower A and B are proposed to be 58 and 49 storeys, respectively, on a mutual 6-storey podium. Tower C is proposed to be 44 storeys on top of a 7-storey podium. A total of 1,748 residential units are proposed. The proposed site also includes a total of 1,457m² (15,683 sq. ft) of retail space, a 442m² (4,758 sq.ft) daycare, a 918m² (9,881 sq.ft.) urban supermarket, and 2,269m² (24,423 sq.ft) for office space.

Vehicle access will be provided through two driveway connections: one to Argus Road and one to a new north-south local road connecting to Cross Avenue. The timing of the north-south local route between Cross Avenue and Argus Road is currently a long-term plan. For this analysis, it is assumed to only connect to Cross Avenue.

It is assumed that the site will be developed in two phases:

- ▶ Phase 1 will open in 2027 and will include Tower A and B, while
- ▶ Phase 2 will open in 2032 and will consist of Tower C.

Table 6.1 summarizes the development land uses for each tower.

TABLE 6.1: DEVELOPMENT LAND USES

Tower	Units	Retail (m ²)	Daycare (m ²)	Supermarket (m ²)	Office (m ²)
A + B	1,196.0	1,117	442	918	--
C	552.0	340	--	--	2,269
Total	1,748.0	1,457	442	918	2,269



6.1 Development Trip Generation

The following land use codes from the Institute of Transportation Engineers (ITE) Trip Generation 10th Edition⁸ were used to estimate the weekday AM and PM peak hour traffic volumes that the development will generate:

- ▶ Multifamily Housing (High-Rise) (LUC 222);
- ▶ Shopping Centre (LUC 822);
- ▶ Daycare (LUC 565);
- ▶ Supermarket (LUC 850); and
- ▶ Office (LUC 710).

Data for the peak hour of adjacent street traffic were used to estimate trip generation. The average rates were utilized to provide a conservative estimate, given that the unit count is considerably higher than the sites surveyed by ITE.

The resulting summation is the “raw” trip generation – unadjusted for modal split credits. The effects of these other factors on the actual net new trip generation on the local roadway system are discussed in detail in the following sections.

The trip generation rates used for the Multifamily Housing trips are for urban, multi-use developments nearby rail transit. The trip generation rates consider lower auto mode shares typically seen in high-density, multi-modal areas. Additionally, through previous development applications within the study area, the MTO has previously advised that mode share should not be considered to provide for a conservative approach. As such, no mode share reductions were applied to the trip generation.

6.1.1 Internal Capture

The ITE Trip Generation Handbook describes a multi-use development as a single project that consists of two or more ITE land use classifications in which trips can be made between land uses without using the off-site roadway system. This sharing of trips between compatible land uses is classified as an internal capture (i.e. trips not travelling off-site).

Based on this information, the proposed development is considered a multi-use development with compatible commercial land, uses that are

⁸ Trip Generation Manual 10th Edition + Supplement Institute of Transportation Engineers Washington DC 2020



likely to share – or capture – trips that do not require vehicular travel outside the site.

By way of example, some portion of the traffic destined to and from the retail uses located within the site will likely originate from the on-site residential units, requiring only a walking trip. The ITE Trip Generation Handbook has been utilized to account for the development's internal trips. The detailed calculations are provided in **Appendix E**.

ITE data suggests an internal capture rate of 2% - 29% for the respective peak hours.

6.1.2 Pass-By Trips

Pass-by trips are a subset of a trip generation that only applies to commercial/retail developments. These trips are already present on the roadway in which businesses attract them to their site as they pass by. The estimates of pass-by trips were derived using the Trip Generation Handbook published by ITE⁹.

An example of a pass-by trip is a vehicle driving from home to work and stopping for coffee. It is noted that pass-by trips are already included in the background traffic stream and do not load additional traffic onto the road network. The ITE Trip Generation Handbook provides a 34% pass-by trip rate for LUC 820 and 36% for LUC 850 during weekday PM peak hours. No information is available for a pass-by rate during the weekday AM peak hour.

6.1.3 Net Trip Generations Estimates

Tables 6.2 and 6.3 summarize the projected trip generation associated with the build-out of the development. As noted earlier, these estimates were based on the standardized ITE rates with internal and pass-by credits.

The estimated trip generation for the development indicates that 512 new trips are forecasted to be generated during the AM peak hour and 414 new trips during the PM peak hour.

⁹ Institute of Transportation Engineers. Trip Generation Handbook, 2nd Edition. Washington D.C. 2004.



TABLE 6.2: TRIP GENERATION – PHASE 1 (TOWER A + B)

ITE Land Use Code / Number of Units	Trips	AM Peak Hour			PM Peak Hour				
		Rate	In	Out	Sum	Rate	In	Out	Sum
222 - Multifamily Housing (High-Rise) 1,196 Units	Total	0.22	29	235	264	0.19	157	70	227
	Internal	2%	1	4	5	10%	15	8	23
	New	98%	28	231	259		142	62	204
820 - Shopping Centre 12,023 sq.ft	Total	2.36	17	11	28	6.59	40	40	80
	Internal	21%	4	2	6	30%	9	15	24
	Pass-by	--	0	0	0	34%	19	19	38
	New	79%	13	9	22	23%	12	6	18
565 - Daycare 4,758 sq.ft	Total	11	28	24	52	11.12	25	28	53
	New	--	28	24	52	--	25	28	53
Total	Total	--	74	270	344	--	222	138	360
	Internal	3%	5	6	11	40%	24	23	47
	Pass-by	0%	0	0	0	11%	19	19	38
	New	97%	69	264	333	76%	179	96	275

TABLE 6.3: TRIP GENERATION – FULL BUILD-OUT

ITE Land Use Code / Number of Units	Trips	AM Peak Hour			PM Peak Hour				
		Rate	In	Out	Sum	Rate	In	Out	Sum
222 - Multifamily Housing (High-Rise) 1,748 Units	Total	0.22	42	343	385	0.19	229	103	332
	Internal	1%	1	4	5	7%	15	8	23
	New	99%	41	339	380		214	95	309
822 - Shopping Centre 15,683 sq.ft	Total	2.36	22	15	37	6.59	52	52	104
	Internal	16%	4	2	6	23%	9	15	24
	Pass-by	--	0	0	0	34%	27	27	54
	New	84%	18	13	31	25%	16	10	26
565 - Daycare 4,758 sq.ft	Total	11	28	24	52	11.12	25	28	53
	New	--	28	24	52	--	25	28	53
850 - Supermarket 9,881 sq.ft	Total	4.99	27	22	49	9.32	46	46	92
	Pass-by	--	0	0	0	36%	33	33	66
	New	--	27	22	49	--	13	13	26
710 - General Office 24,423 sq.ft	Total	1.52	33	4	37	1.44	6	29	35
	Internal	8%	2	1	3	26%	4	5	9
	New	92%	31	3	34	74%	2	24	26
Total	Total	--	119	404	523	--	352	229	581
	Internal	2%	7	7	11	30%	28	28	47
	Pass-by	0%	0	0	0	21%	60	60	120
	New	98%	112	397	512	71%	264	141	414



6.1.4 Trip Distribution and Assignment

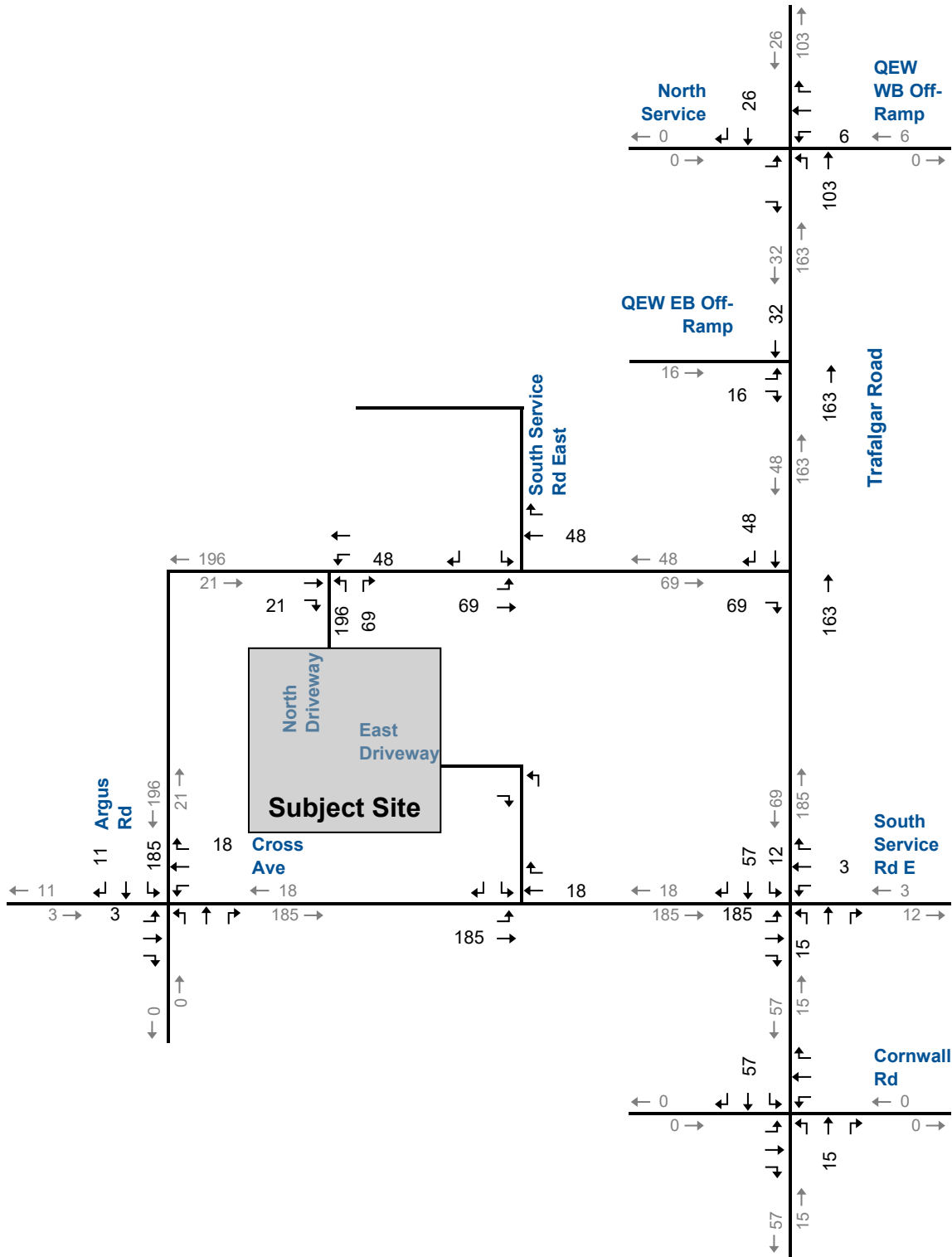
The area lends itself to commuter travel patterns, similar to what the development would exhibit. The site-generated trips were assigned to the road network based on the existing distribution of traffic at the study area intersections. The distribution is summarized in **Table 6.4**.

Figures 6.1 and 6.2 display the resulting Phase 1 and Full Build-Out AM and PM peak hour total generated trip assignments, including pass-by trips. A detailed breakdown of new and pass-by site trips can be found in **Appendix F**.

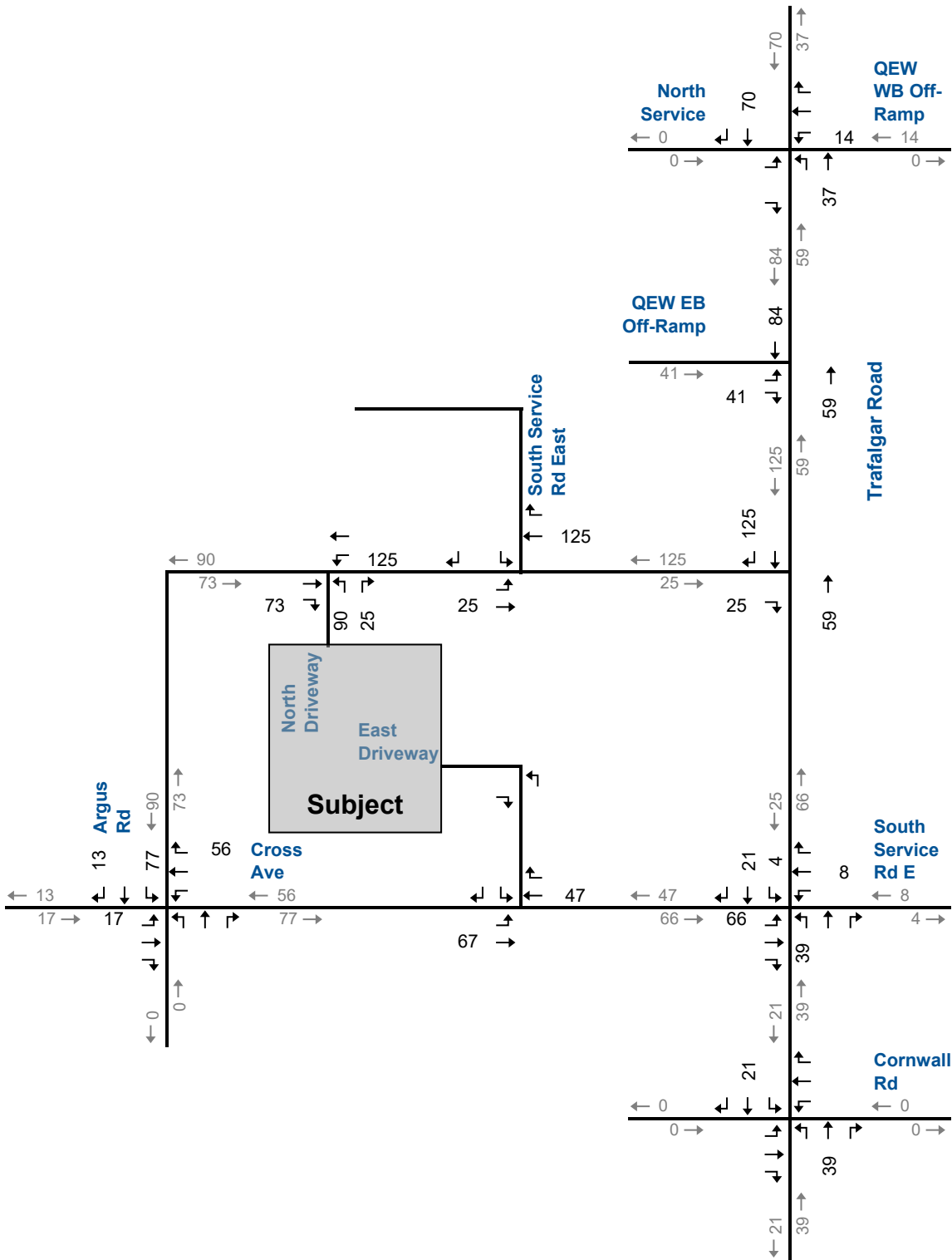
TABLE 6.4: TRIP DISTRIBUTION

Direction	Route	AM Peak Hour	PM Peak Hour
North	Trafalgar Road	39%	38%
South	Trafalgar Road	22%	24%
East	QEW	8%	9%
	South Service Road	5%	5%
West	QEW	23%	19%
	Cross Avenue	4%	5%
Total		100%	100%

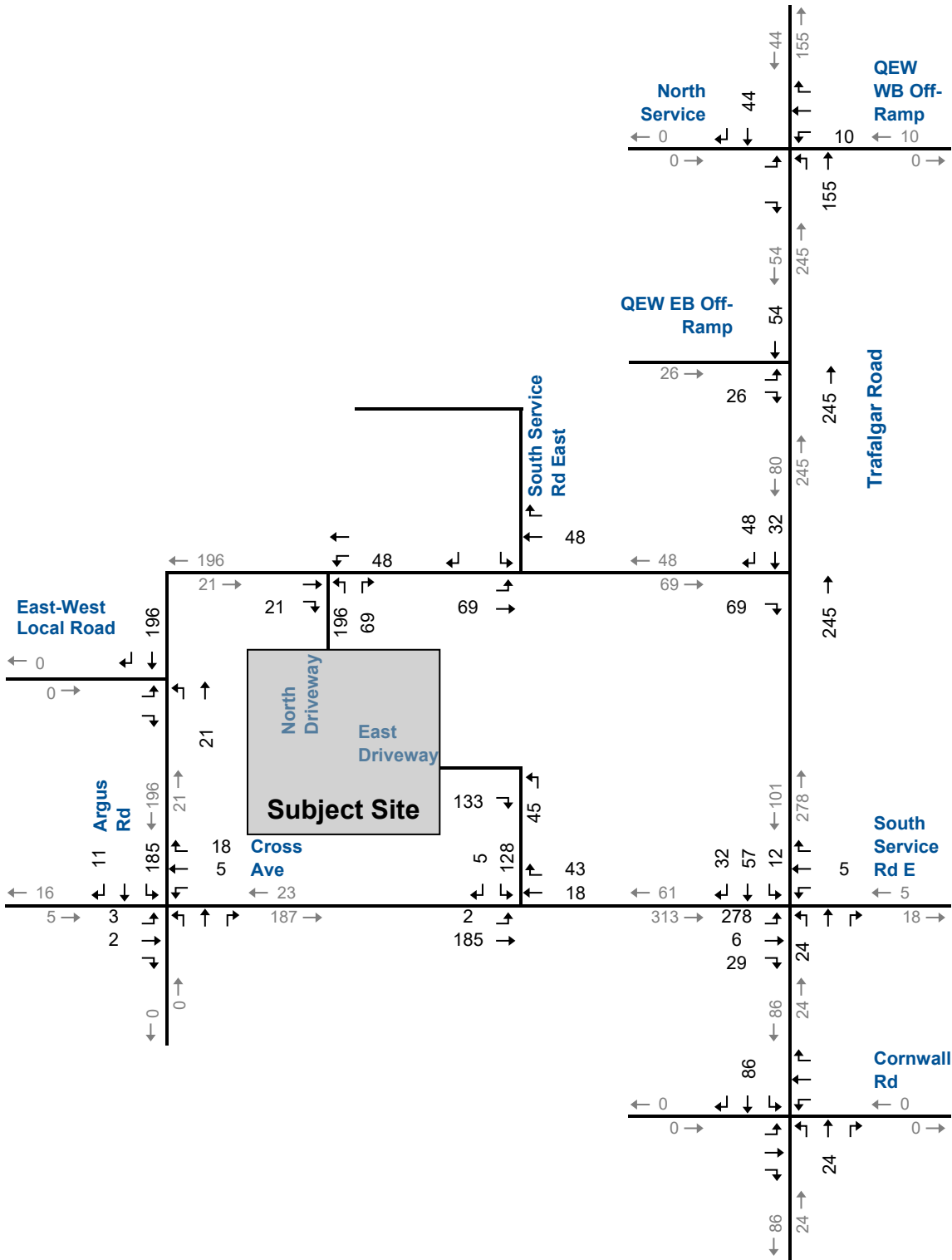




Site Generated Traffic Volumes Phase 1 – AM Peak Hour

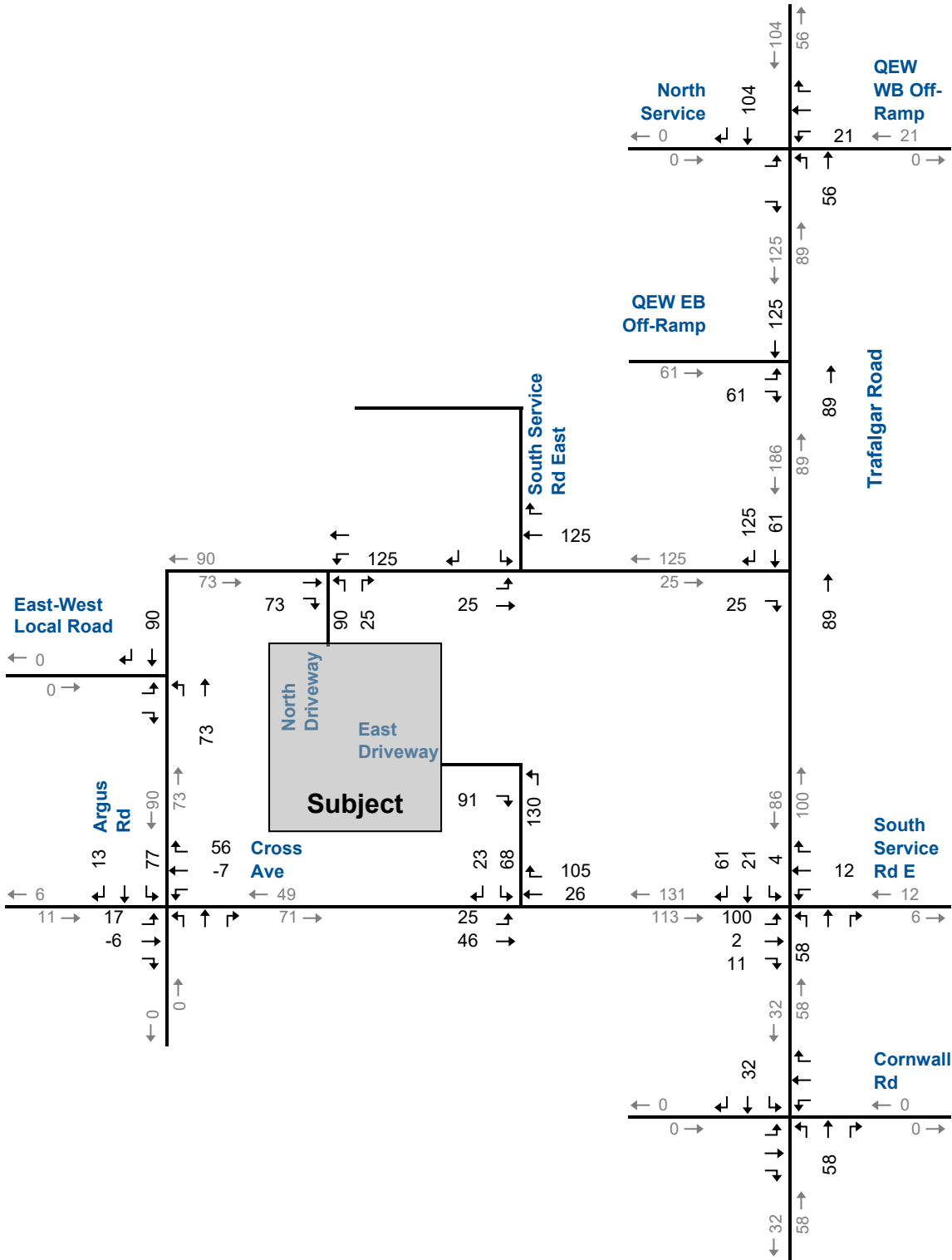


Site Generated Traffic Volumes Phase 1 – PM Peak Hour



Site Generated Traffic Volumes Full Build-Out – AM Peak Hour





Site Generated Traffic Volumes Full Build-Out – PM Peak Hour

7 Future Conditions

Horizon years of 2027 (Opening Date), 2032 (5 years from opening) and 2037 (10 years from opening) have been utilized for analysis of future traffic conditions to remain consistent with MTO and Region traffic impact study guidelines,

7.1 Trafalgar EA

The Trafalgar Road (Regional Road 3)¹⁰ Improvements Class Environmental Assessment Study from Cornwall Road to Highway 407 was completed in May 2015. It was recommended that Trafalgar Road be widened from four (4) to six (6) lanes and potentially converted the curb lanes to high occupancy vehicle (HOV) or bus rapid transit (BRT) lanes after completion of the road widening.

For the 2032 and 2037 future horizons, it is assumed the Trafalgar corridor will operate as a six-lane corridor with HOV curb lanes. Trafalgar Road is currently a six-lane cross-section plus exclusive left-turn lanes within the study area. The only modification to the road network for future analyses is removing the eastbound channelized right turn at Trafalgar Road and Cornwall Road to be consistent with the preferred design. Additionally, it is estimated that 20% of lane capacity is assigned to HOV usage based on the previous direction provided by the Region regarding the modelling of HOV lanes. The lane utilization factor in Synchro has been adjusted to 0.80 for the through lanes to reflect a 20% HOV usage

7.2 Midtown Oakville EA

The Town of Oakville completed a Class Environmental Assessment (EA) for Midtown Oakville (MOEA)¹¹ to guide the development of the transportation and municipal stormwater network needed to accommodate the planned growth in Midtown Oakville. The MOEA identified critical changes to the existing and planned road network that would be required to support intentional growth.

In addition, other master plans have been updated and technical studies completed, including the Halton Region Transportation Master Plan, the Town of Oakville Transportation Master Plan – Switching Gears, the Midtown Parking Strategy (2014), and Designing Midtown Oakville (2014). As a result, the Town has proposed an Official Plan

¹⁰ Trafalgar Road Improvements Class Environmental Assessment Study From Cornwall Road to Highway 407, Town of Oakville, AECOM, April 2015.

¹¹ Midtown Oakville Transportation and Stormwater Municipal Class Environmental Assessment, Cole Engineering, June 2015.



Amendment (OPA) that would incorporate the results of these studies into the Official Plan and bring the policies and Schedules into alignment with the most current source documents.

The changes to the Midtown-related transportation network include modifications designed to the broader area network and changes to the local road network within Midtown Oakville. To accommodate traffic to and from Midtown Oakville and to provide an alternative to Trafalgar Road, several improvements are provided, including direct off-ramps from eastbound QEW at Trafalgar Road and new ramps to/from the QEW at Royal Windsor Drive;

- ▶ A direct route from eastbound QEW to Midtown Oakville is provided via a new off-ramp that crosses under Trafalgar Road. This reduces the impacts of future traffic demand on the existing constrained intersections along Trafalgar Road at the off-ramp and Cross Avenue. The underpass of Trafalgar Road also provides the opportunity for improved active transportation connections into Midtown Oakville.
- ▶ A direct route from eastbound QEW to Midtown Oakville is provided via a new off-ramp to Cross Avenue at the Royal Windsor Drive interchange. A direct route from Midtown Oakville to eastbound QEW is provided via a new on-ramp at Royal Windsor Drive opposite Cross Avenue. A new westbound QEW off-ramp at Royal Windsor Drive will offer an alternative route to Midtown Oakville and surrounding areas.
- ▶ Cross Avenue is extended from Trafalgar Road to Royal Windsor Drive, connecting with the enhanced QEW interchange. Cross Avenue will provide accessible facilities for pedestrians and cyclists to travel safely, on-street parking where appropriate and four vehicular travel lanes.
- ▶ For access and circulation within Midtown Oakville, a revised local road network for Midtown Oakville is designed to support and align with the broader transportation network determined through the MOEA. As part of the revised road network, Lyons Lane at Cross Avenue is proposed to be realigned to form a four-way signalized intersection. Other local road network changes include a north-south local road connecting South Service Road East and Cross Avenue at the GO Station West Access and a new east-west road connecting to Argus Road. For this study, the east-west local road is only assumed to extend between Argus Road and the new north-south local road.

The proposed improvements are not expected to significantly impact the QEW mainline operations with the refinements to the design to accommodate weaving and merging better. The new ramps at Royal



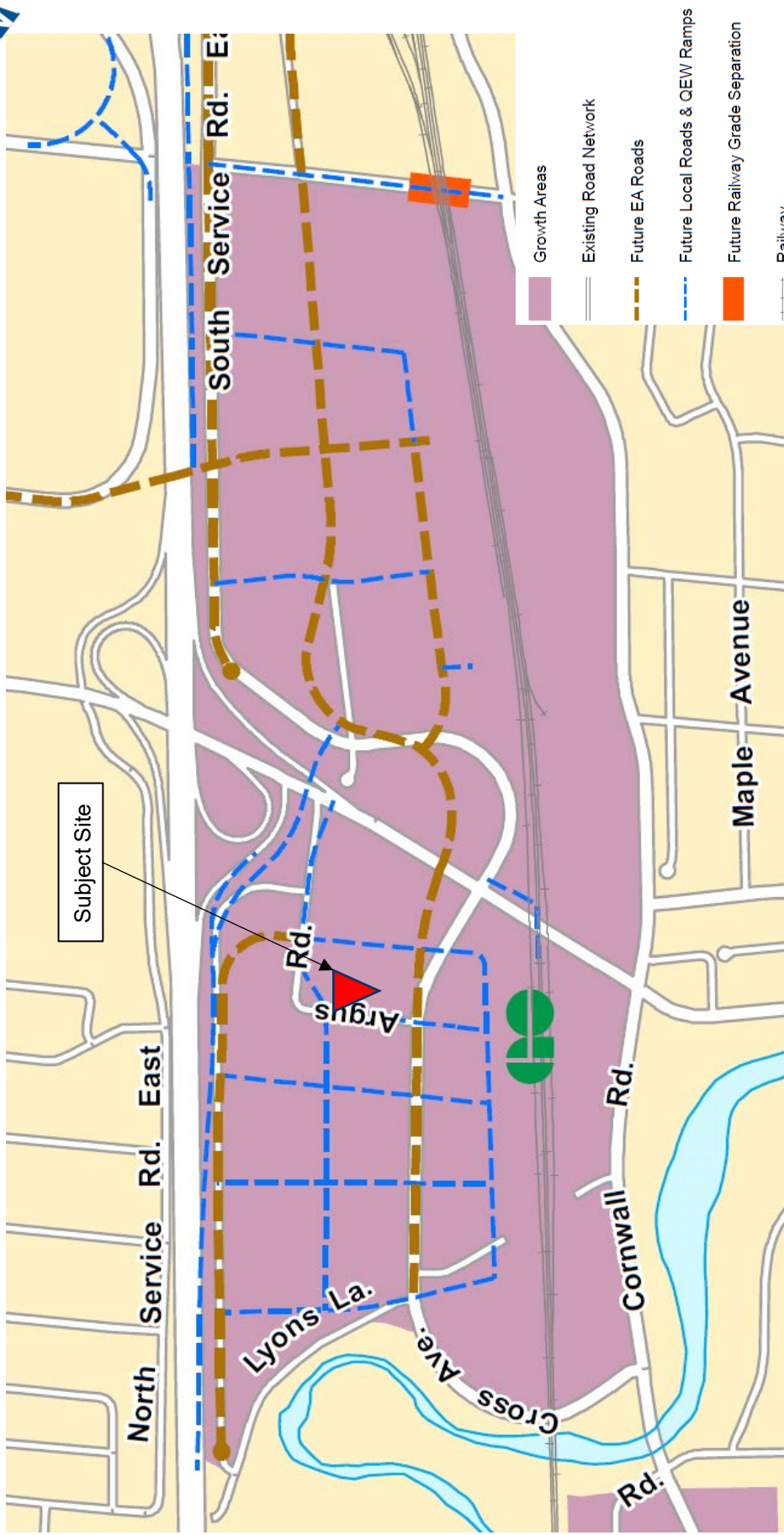
Windsor Drive and Trafalgar Road will accommodate the additional travel demand from Midtown Oakville's planned intensification, relieving the existing Trafalgar Road interchange.

Ramp network improvements are assumed to be in place for 2027, 2032 and 2037 horizons to assess the long-term impacts for the area. The new north-south local road connecting South Service Road East to Cross Avenue at the GO Station West Access and a new east-west local road connecting Argus Road to the north-south local road are assumed to be in place for 2037.

Figures 7.1 illustrate the proposed transportation network for Midtown Oakville.

The MOEA recognized that the roadway improvements identified herein would provide some relief to operational issues; however, capacity constraints will persist for the overall vehicle transportation network.





NTS
Image Source: OPA 14



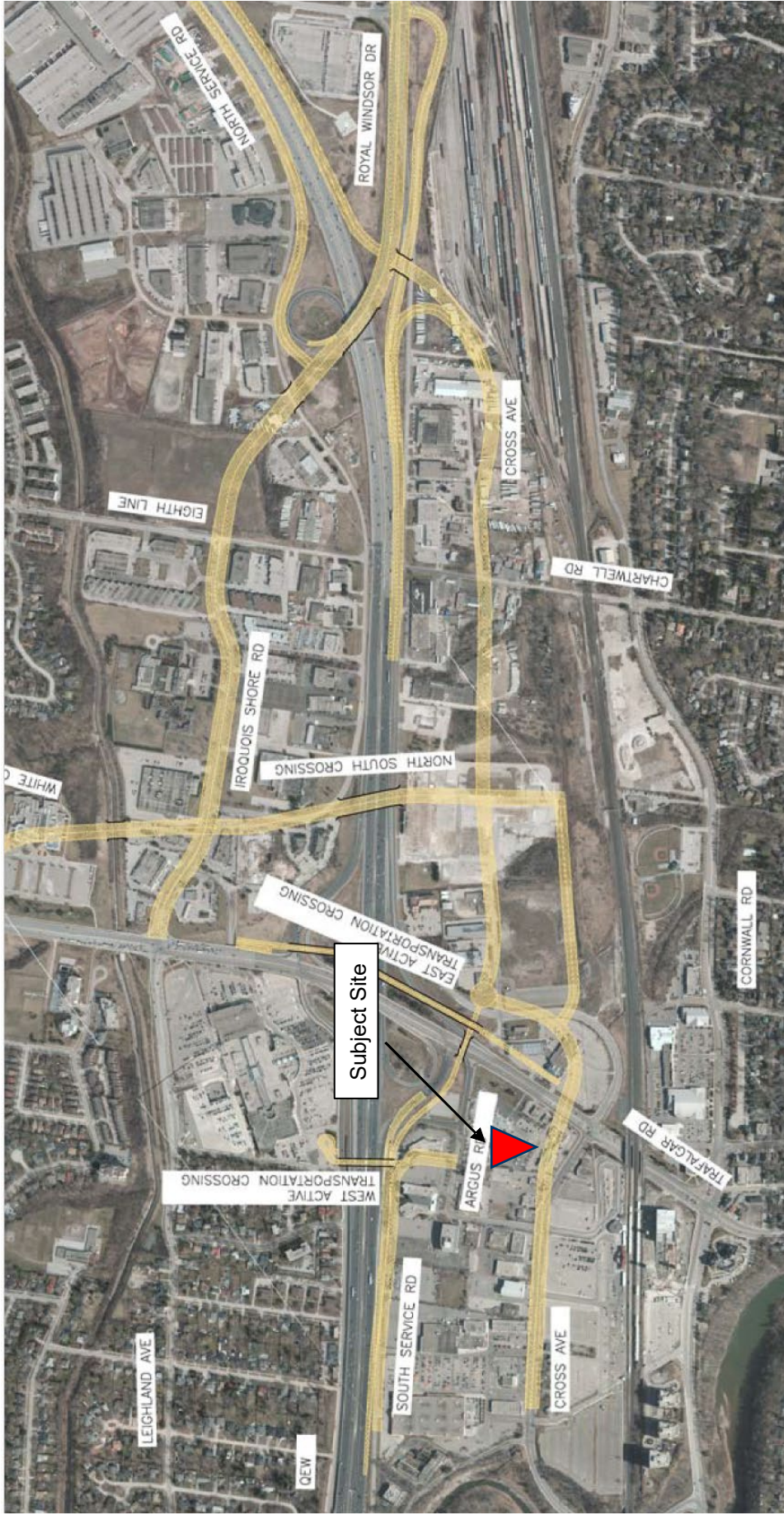
Midtown Oakville Proposed Road Network

571 Argus Road, Oakville
210403



BA Group

Figure 7.1A



NTS
Image Source: Midtown Oakville Class EA



Midtown Oakville Broader Area Improvements

571 Argus Road, Oakville
210403



Figure 7.1B

7.3 Argus Road Realignment

A new local street network is proposed to support the development and intensification of the area (as shown in **Figure 7.1A**). The goal of the network is to create a transit-supportive and pedestrian-friendly environment while improving connections to and through Midtown Oakville.

As part of the new local street network, Argus Road has been proposed to be realigned to create a cohesive east-west local road parallel to Cross Avenue through Midtown Oakville. In theory, it makes sense to provide for an unobstructed east-west roadway; however, the realignment would offer an alternative route for vehicles travelling to the GO Station during the morning rush hour, impacting the future Midtown Oakville community.

As the future road network proposed for Midtown Oakville is proposed as local roadways, the network should cater to the local traffic instead of further facilitating external vehicle trips to/from the community. As outlined through Livable Oakville, local roads shall not accommodate through traffic and shall be designed to serve only the properties that abut the roadways. The realignment as currently proposed does not endorse the Town's policy for local roads. Further, if realignment were to occur, the quality of life of the future Midtown Oakville residents would likely be impacted by additional pollution, increased traffic, and reduced community satisfaction.

Based on these factors and the potential to derail the people-centric approach to the overall community, the realignment of Argus Road has not been contemplated for this report.



7.4 Future Forecasts

Traffic growth on area roadways is a function of the expected land development, economic activity, and changes in demographics. A frequently used procedure estimates an annual percentage increase and applies that increase to the study area traffic volumes. An alternative approach is to identify estimated traffic generated by specific planned significant developments that would be expected to affect the project study area roadways. For this assessment, both methods were utilized.

Based on discussions with Region of Halton staff, a general growth rate of 2.0% was applied to the area roadways to account for population and employment growth.

In addition to the general traffic growth, it is assumed that a portion of Midtown Oakville's redevelopment will occur in the 2032 and 2037 horizons. The MOEA¹² provides the best source for the overall development context and traffic growth expectations for the immediate study area. This report provides a traffic forecast for a 17-year horizon with a development assumption of 5,960 residential units, 370,000 square feet of retail uses, and 1.4 million square feet of office spaces with supporting institutional and recreational uses. This report assumes 20% to 40% build-out for the 2032 and 2037 horizons.

Given that the MOEA most closely models the overall redevelopment plans, traffic projections contained within the MOEA were the primary source for developing background development projections. Adjustments were made to the traffic forecasts extracted from this study to account solely for site-specific growth. Specifically, as a 2% per annum growth rate was most likely utilized in the MOEA forecast, this growth has been factored out of the projections.

In the 2037 horizon year, the new local road network will cause a portion of the Argus Road traffic to the unique east-west local road to access the GO Station. Based on existing volumes along Cross Avenue, it is assumed that approximately 70% of westbound vehicles in the AM peak hour (30% in the PM peak hour) are going to the GO Station. It is assumed that an equal portion of the vehicles along Argus Road are going to the GO station and would take the new local road network.

Appendix G provides traffic projections related to site-specific growth.

¹² Midtown Oakville Transportation and Stormwater Municipal Class Environmental Assessment, Cole Engineering, June 2015.



7.4.1 Background Developments

A large-scale mixed-use residential development is proposed at 166 South Service Road¹³. The proposed development includes three towers comprised of residential units, office space, and commercial space. The development will be phased with Phase 1 open in 2032 and full build-out by 2037.

This development is planned to access the new north-south local road connecting South Service Road East to Cross Avenue. For this assessment, it has been assumed a portion of the traffic will travel across South Service Road East to Argus Road in the 2032 horizon but then will mainly use the north-south local road in 2037.

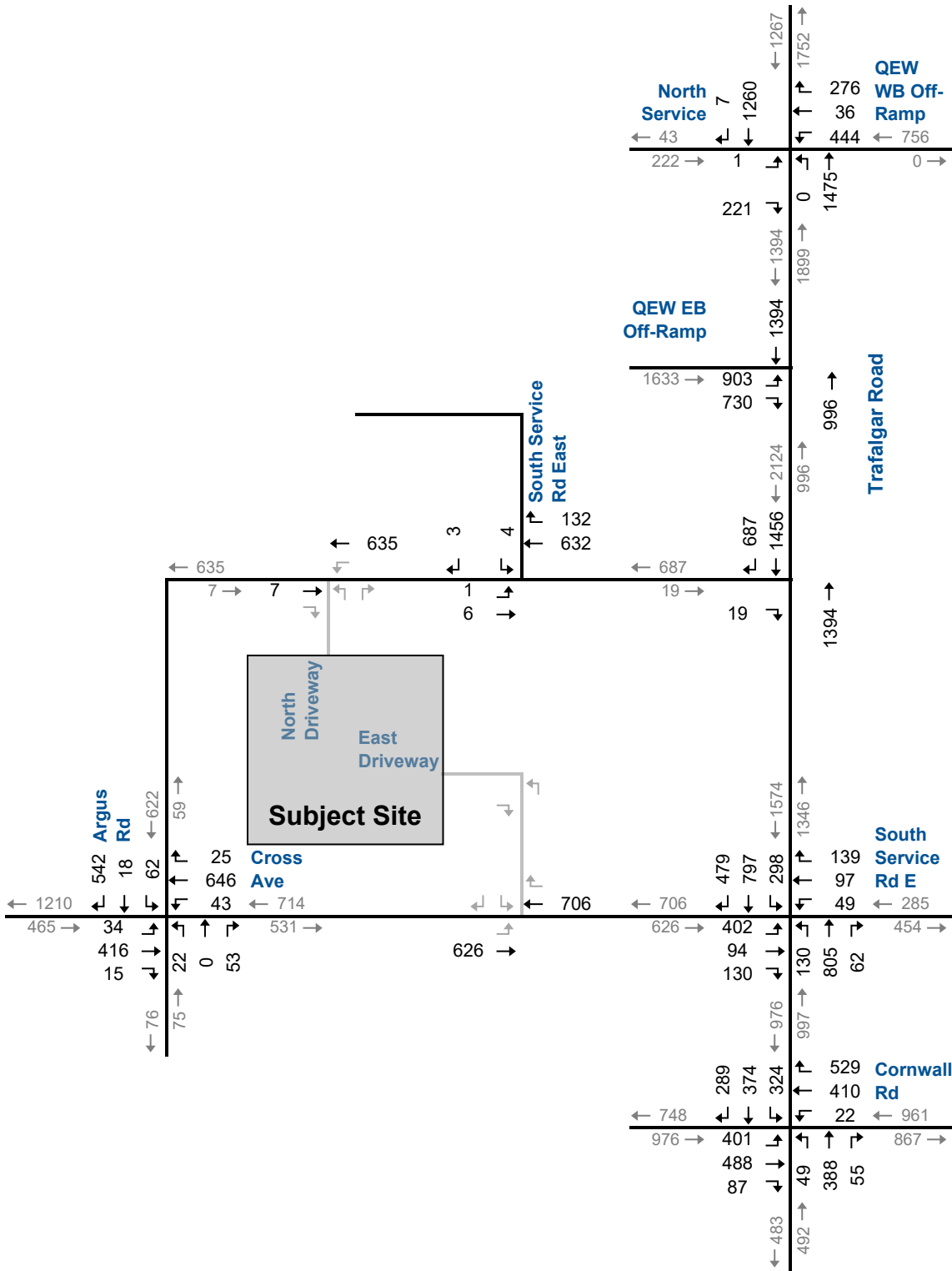
The Background traffic volumes for 2027, 2032 and 2037 are illustrated in **Figures 7.2 to 7.4**.

7.4.2 Total Projections

The projected site-generated traffic volumes were added to the Background projections to develop the Total traffic volumes. The weekday AM and PM peak hours Total traffic volumes for 2027, 2032 and 2037 are illustrated in **Figures 7.5 to 7.7**.

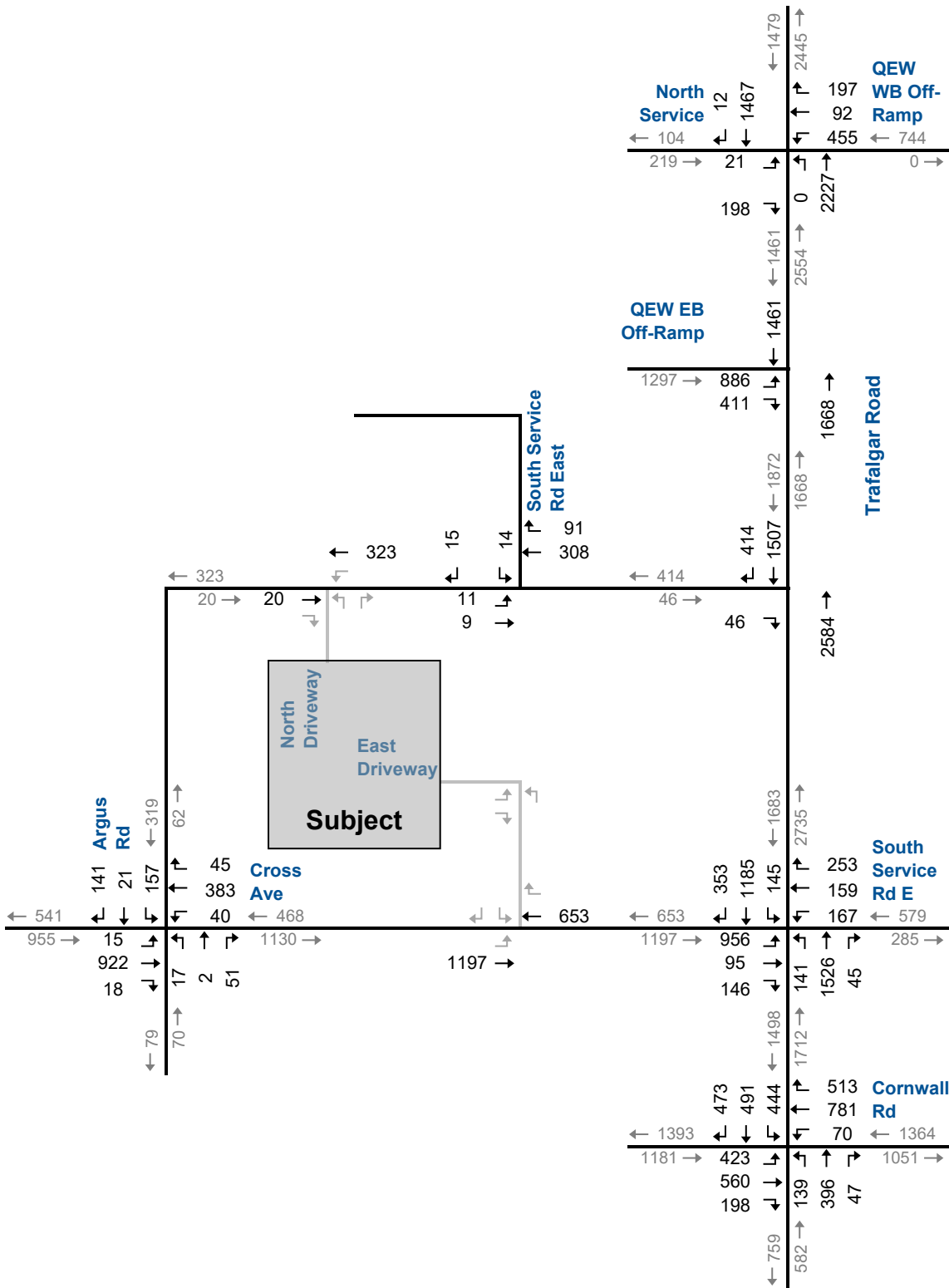
¹³ 210590 - 166 South Service Road, Oakville, Transportation Impact Study & Parking Study, Paradigm, May 2022 DRAFT





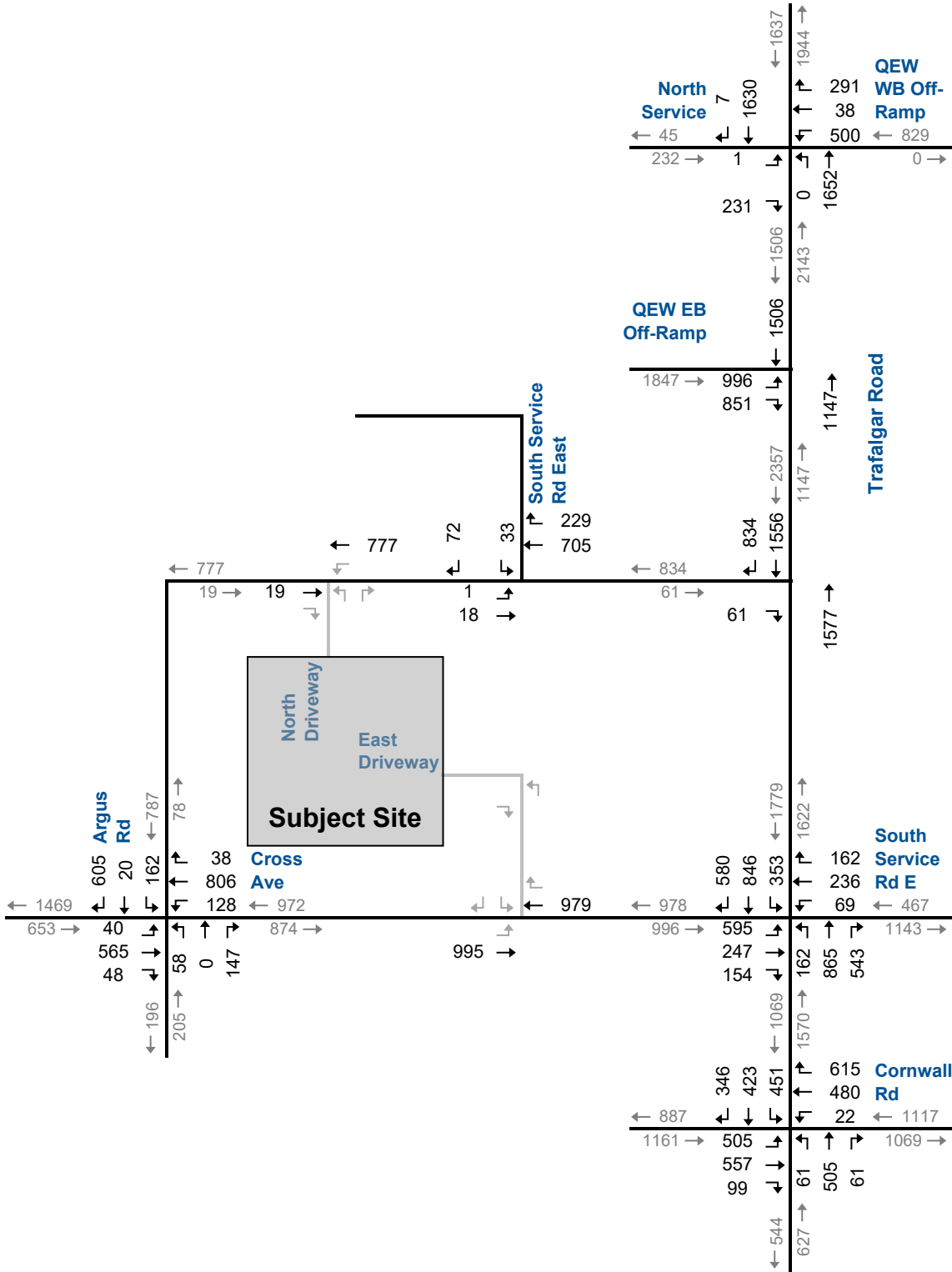
2027 Background Traffic Volumes AM Peak Hour



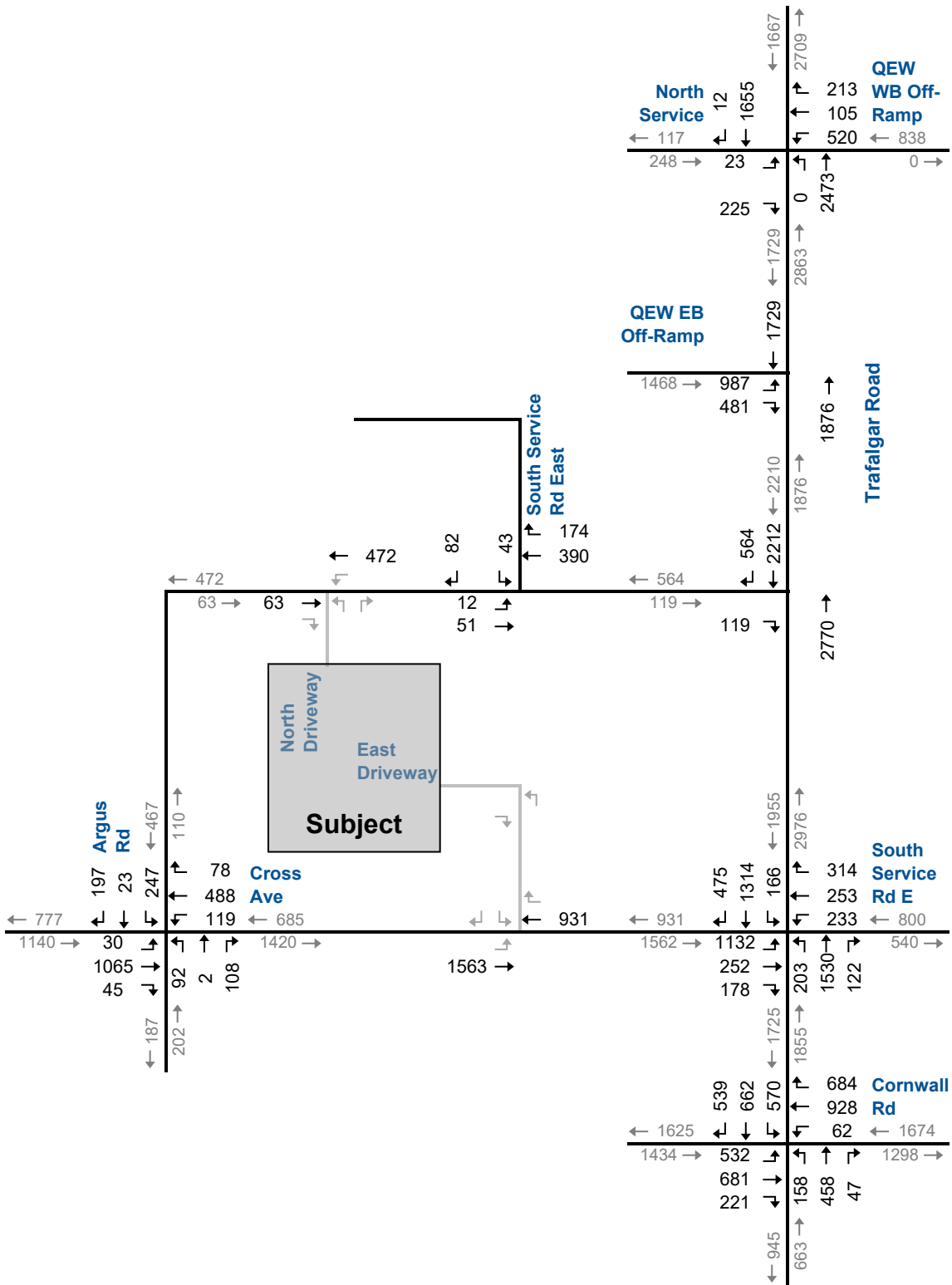


2027 Background Traffic Volumes PM Peak Hour



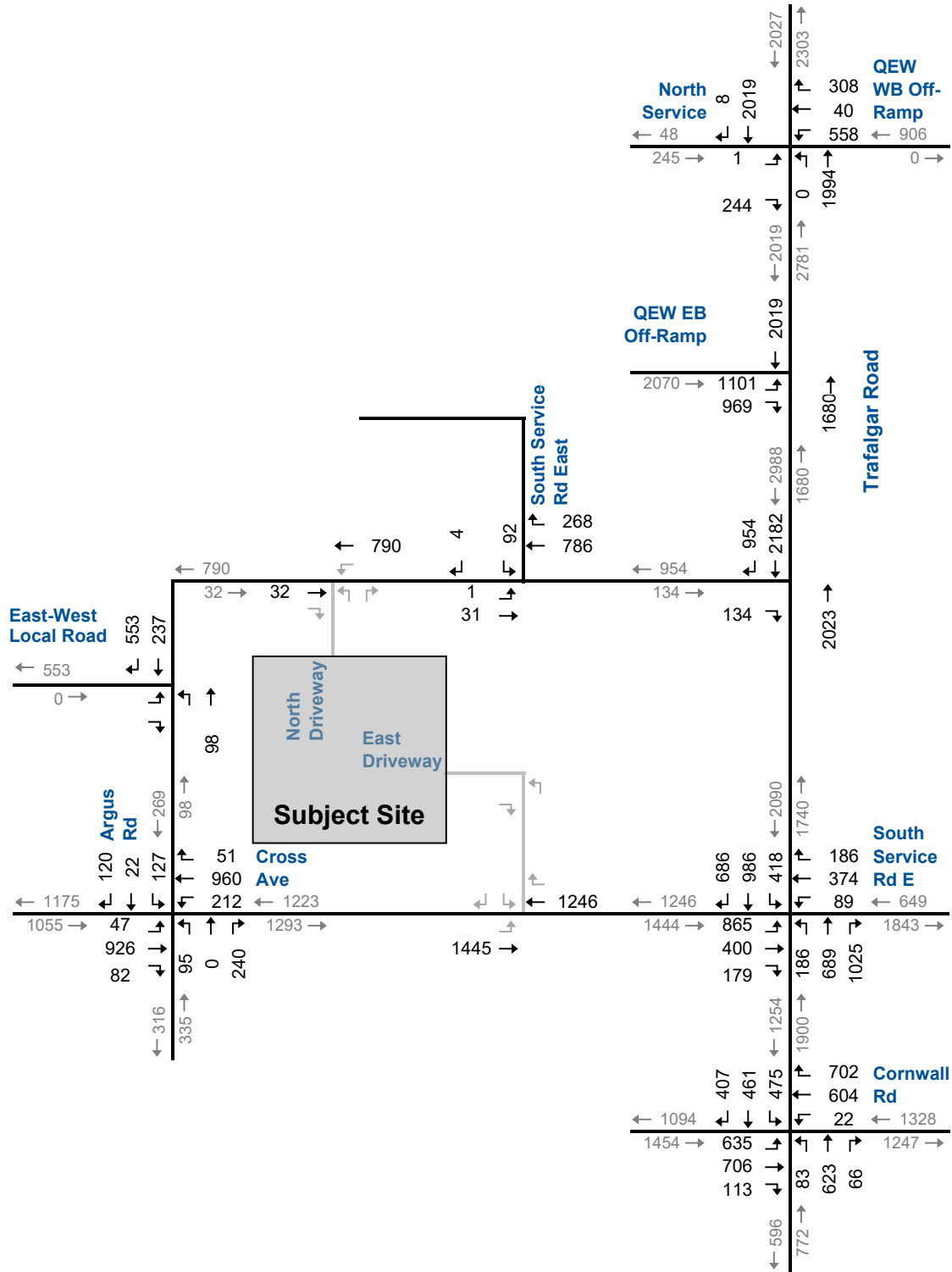


2032 Background Traffic Volumes AM Peak Hour

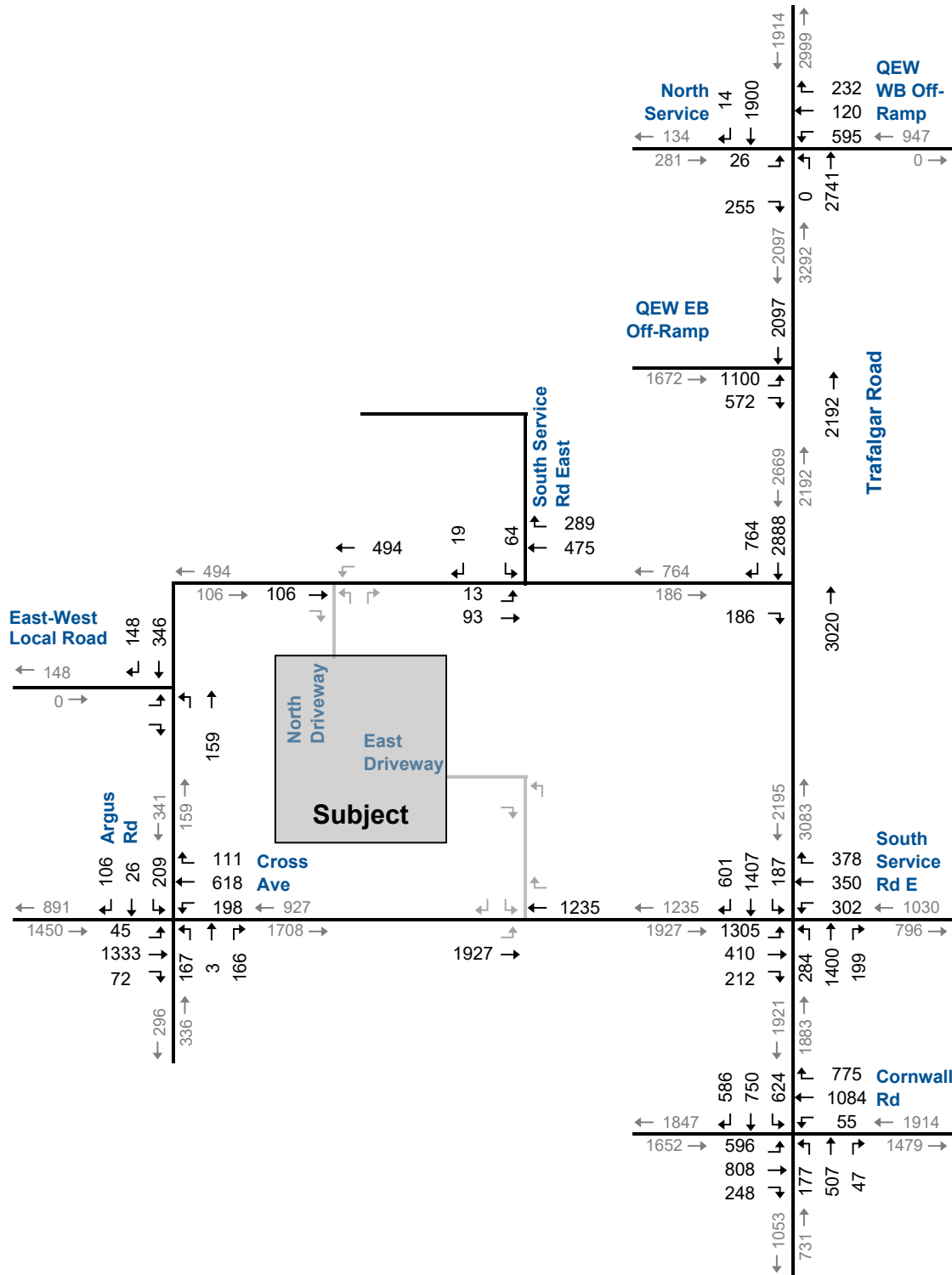


2032 Background Traffic Volumes PM Peak Hour

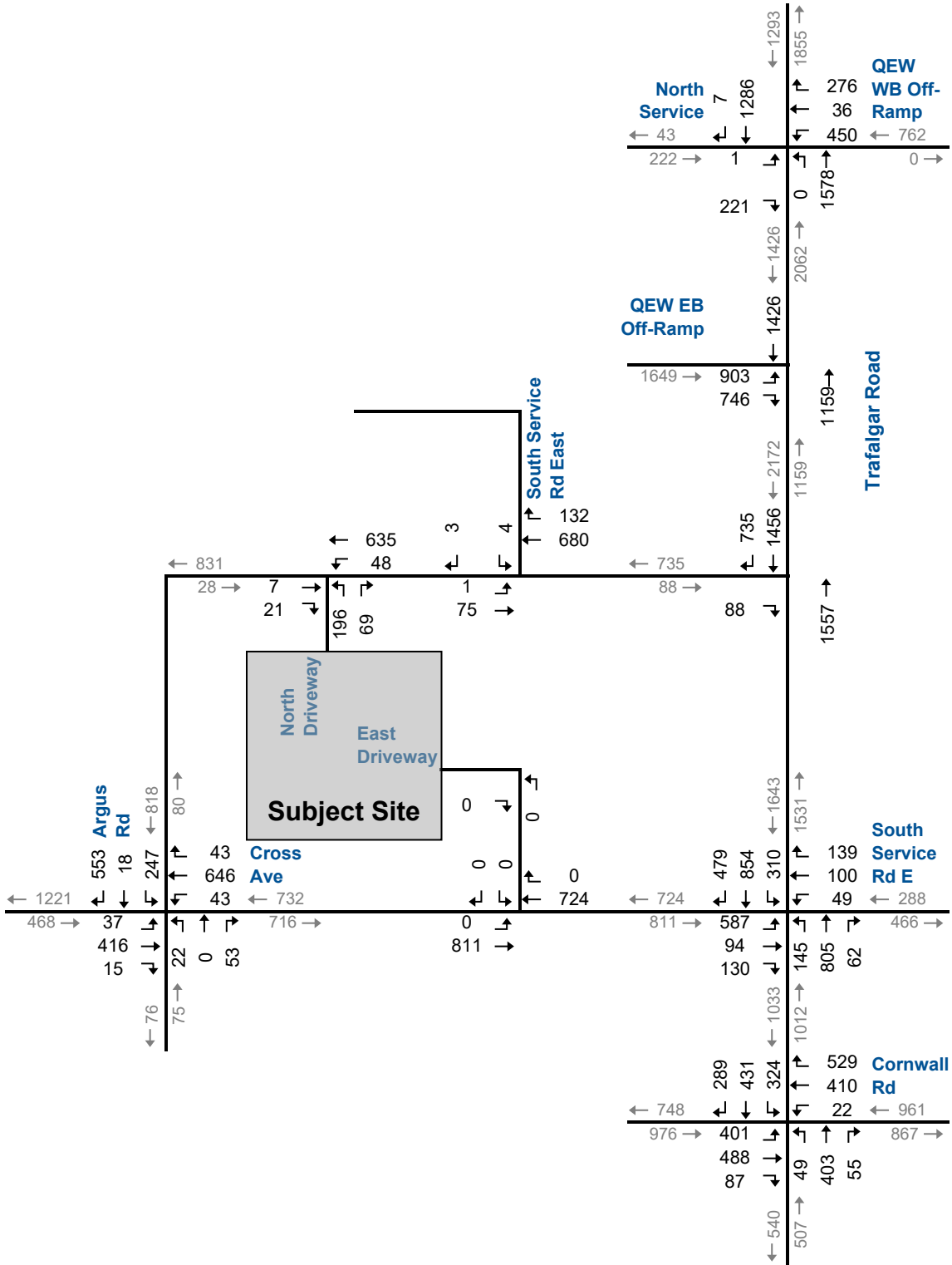




2037 Background Traffic Volumes AM Peak Hour

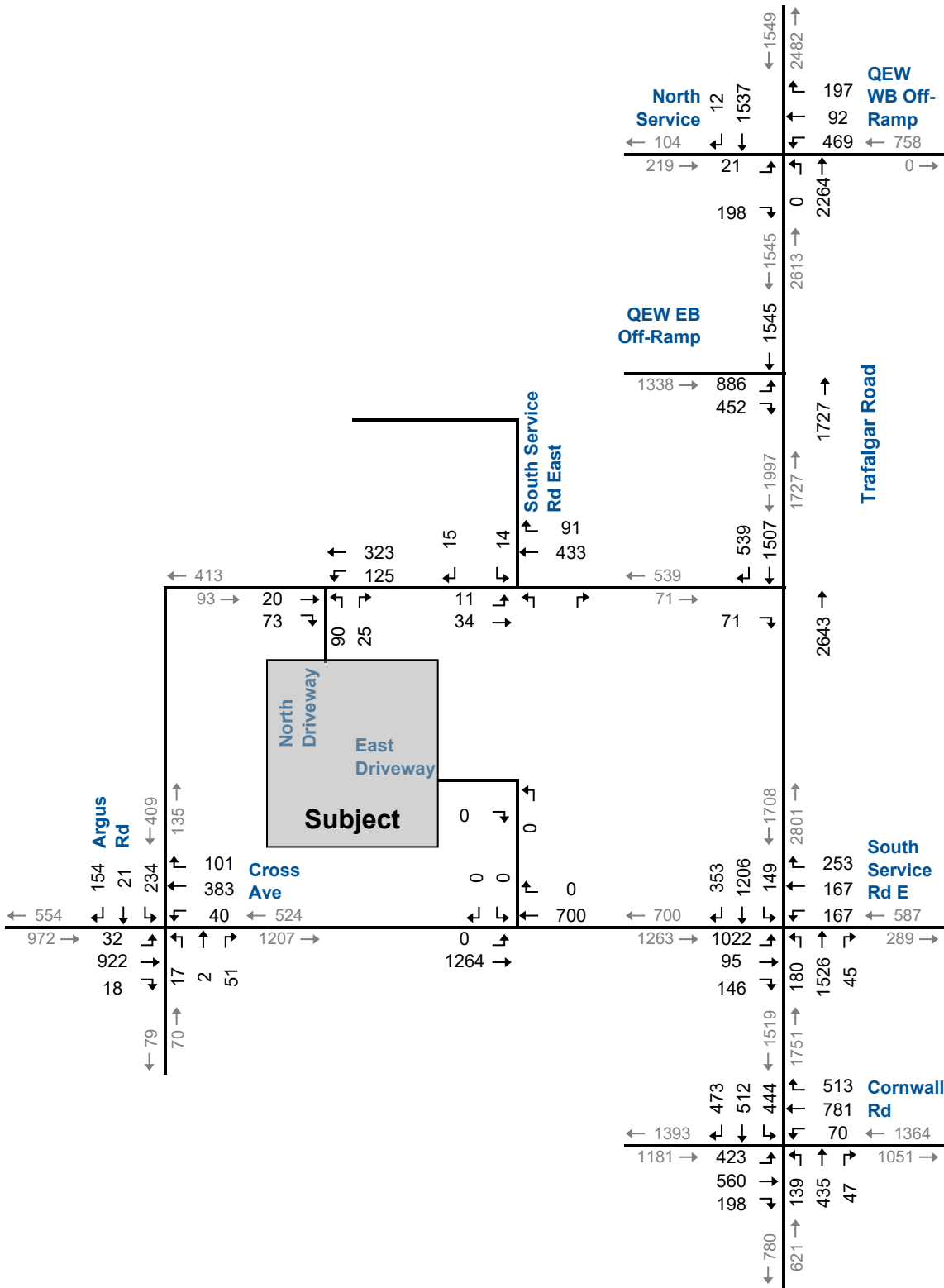


2037 Background Traffic Volumes PM Peak Hour

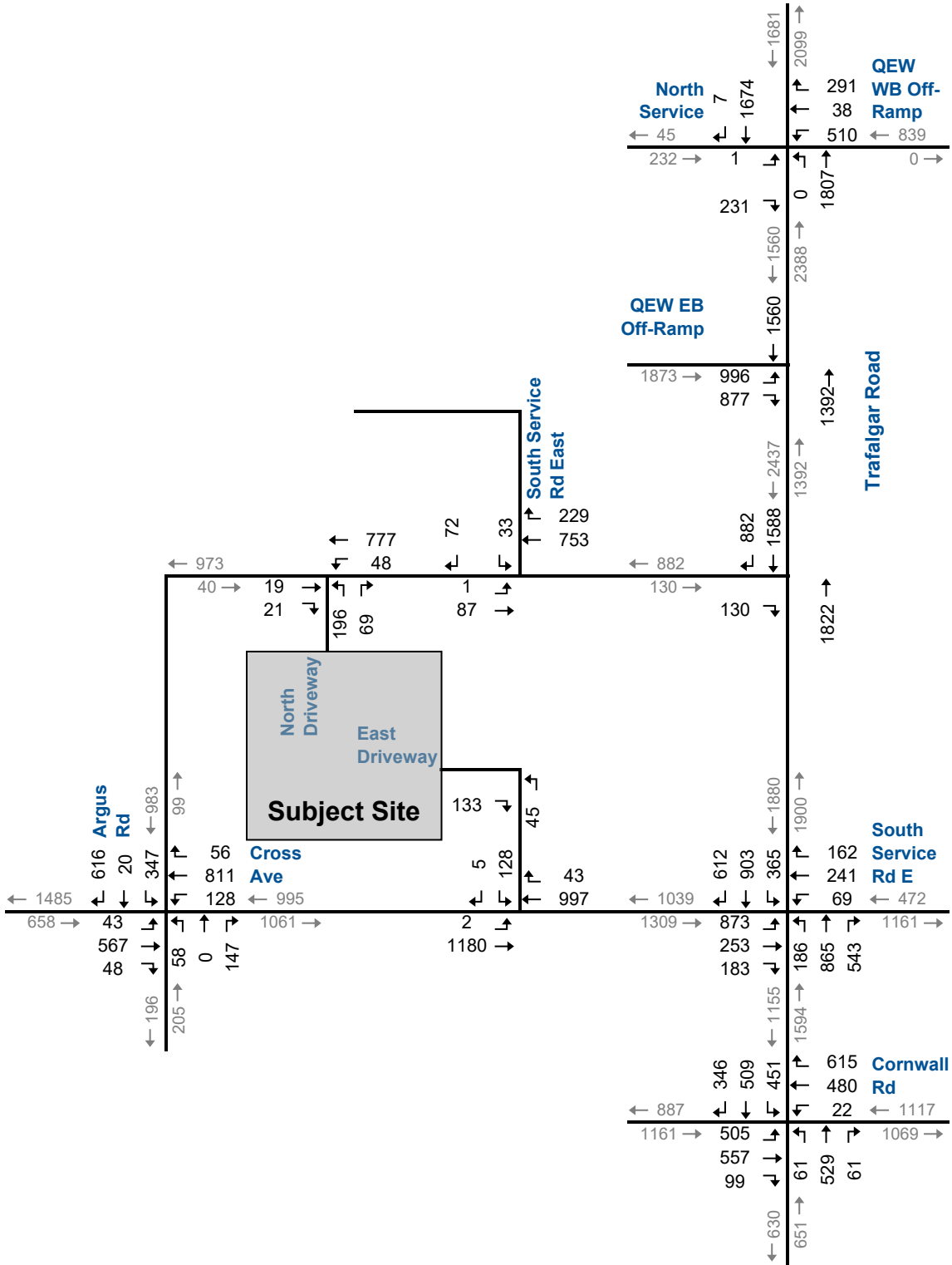


2027 Total Traffic Volumes AM Peak Hour



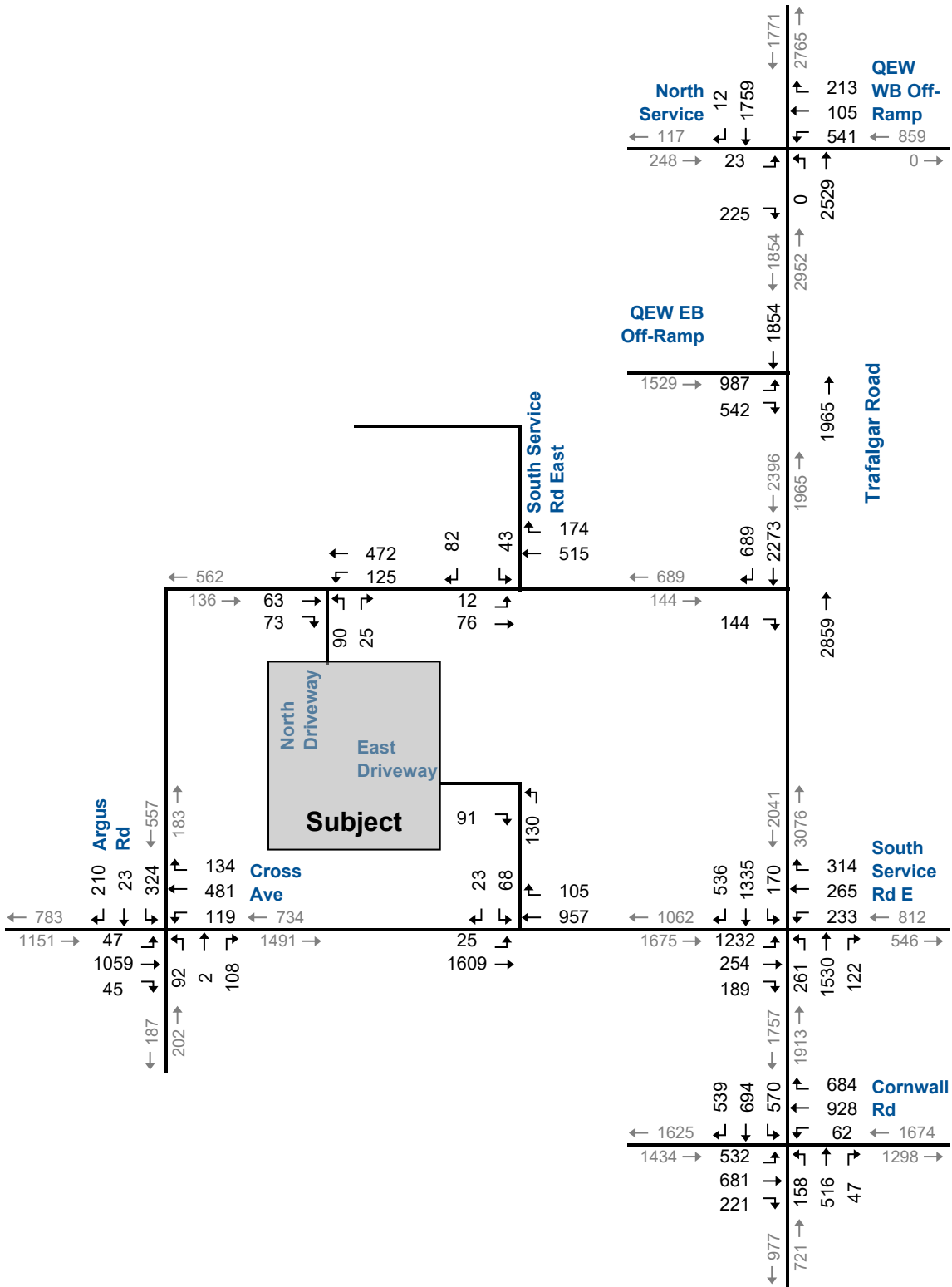


2027 Total Traffic Volumes PM Peak Hour

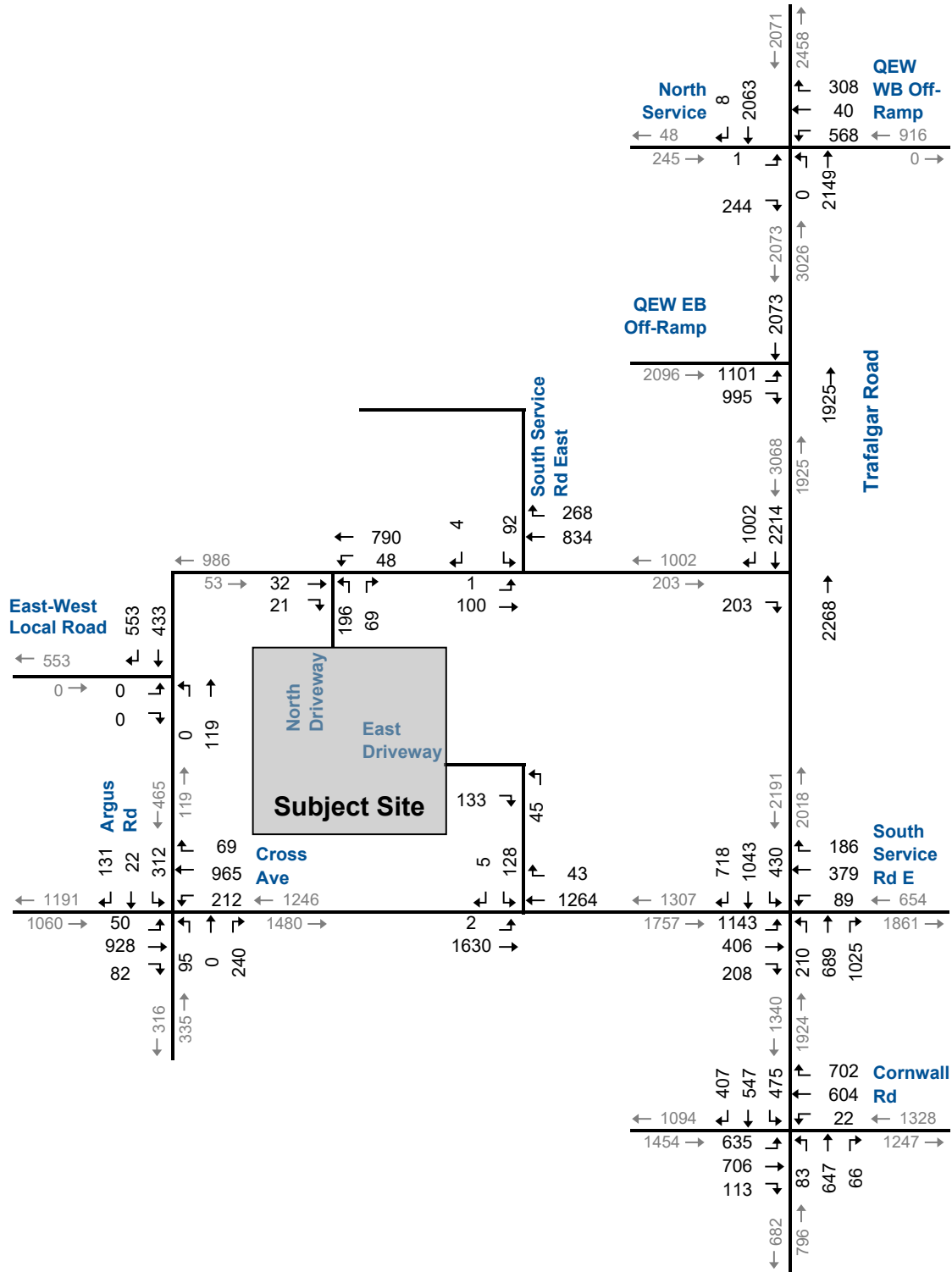


2032 Total Traffic Volumes AM Peak Hour



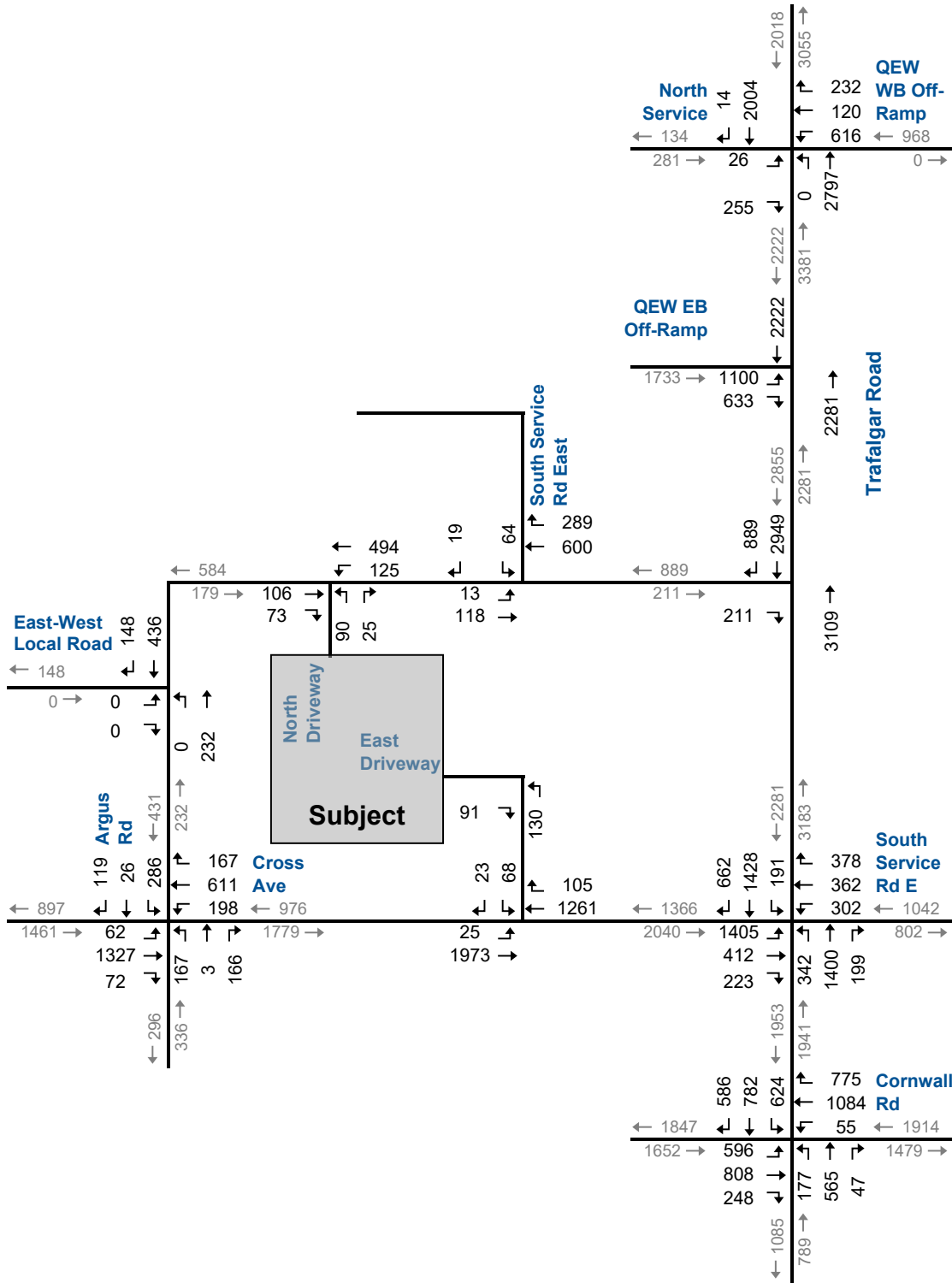


2032 Total Traffic Volumes PM Peak Hour



2037 Total Traffic Volumes AM Peak Hour





2037 Total Traffic Volumes PM Peak Hour

8 Operational Assessment

8.1 Level of Service Criteria

Level of service (LOS) is the term used to denote the different operating conditions that occur on a given roadway segment under various traffic volume loads. It is a qualitative measure that provides an index to the operational qualities of a roadway segment or an intersection with designations that range from A to F, with LOS A representing the acceptable conditions and LOS F representing increased congestion.

For signalized intersections, the analysis considered the operation of each lane or lane group entering the intersection and the level of service for the overall conditions at the intersection.

For unsignalized intersections, the analysis assumes that traffic on the mainline is not affected by the traffic on the side streets. The level of service is only determined for left turns from the main street and all movements from the minor street.

The evaluation criteria used to analyze intersections are based on the 2000 Highway Capacity Manual (HCM)¹⁴.

¹⁴ Transportation Research Board, Highway Capacity Manual, Washing, D.C. 2003.



8.2 Intersection Capacity Analysis

Intersection capacity analyses were conducted at all intersections in the study area. Analyses were conducted for the Base Conditions and 2027, 2032 and 2037 Background and Total Conditions.

Tables 8.1 to 8.6 summarize the capacity analyses for the study area intersections, respectively. The capacity analysis results are included in **Appendix H**. The following sub-sections outline the operations of the study area intersections.

8.2.1 Trafalgar Road at QEW Westbound Ramp/North Service Road

At the intersection of Trafalgar Road and QEW Westbound Ramp, the southbound through movement along Trafalgar Road presently operates at LOS F, while several overall movements are noted to be operating at LOS E during the weekday peak hours.

Under the 2027 and 2032 Background conditions, southbound conditions are forecast to improve with the addition of direct off-ramps from eastbound QEW at Trafalgar Road and new ramps to/from the QEW at Royal Windsor Drive. The westbound approach is projected to degrade from LOS E to LOS F during the weekday PM peak hour.

Under the 2037 Background conditions, the southbound through movement and eastbound approaches are projected to degrade in operation to LOS E or better during the weekday peak hours. The westbound approach will operate at LOS F during the weekday PM peak hour.

In terms of development traffic implications, similar levels of operation are expected under the Total conditions with only minor increases in delay resulting from site-generated traffic volumes.

8.2.2 Trafalgar Road at QEW Eastbound Ramp

At the intersection of Trafalgar Road at QEW Eastbound Ramp, the eastbound right turn movement presently operates at LOS F during the weekday AM peak hour. The southbound through movement currently operates at LOS B during the weekday AM peak hour and is expected to degrade to LOS F under the 2032 and 2037 Background conditions.

The southbound movement currently operates at LOS C or better during the weekday peak hours. It is expected to degrade to the LOS E-F range under the 2037 Background conditions.

Under the Total conditions, the additional traffic generated by the site is forecasted to be relatively minor. However, with background



operations, specific movements will operate in the LOS E-F range and v/c ratios above 1.00, and the additional site traffic is forecast to result in moderate increases in delay. Overall, the increases in delay resulting from site-generated traffic volumes are predicted to be under 45 seconds.

8.2.3 Trafalgar Road at Argus Road

Individual movements at the unsignalized intersection of Trafalgar Road and Argus Road presently operate at LOS B or better during the weekday peak hours. Similar levels of operation are expected under future Background and Total traffic conditions with only a minor increase in delay resulting from site-generated traffic volumes.

8.2.4 Trafalgar Road at Cross Avenue/South Service Road

The intersection of Trafalgar Road and Cross Avenue/South Service Road presently operates at a LOS F overall during the weekday PM peak hour. Several movements operate at LOS E during the weekday AM peak hour and LOS E and F during the PM peak hour.

Under 2027 Background traffic conditions, a significant number of movements are projected to continue to operate with high levels of delay during the weekday peak hours.

Under the 2032 and 2037 horizons, increased congestion and delay are projected for several movements degrading to LOS E and F during the weekday peak hours.

In terms of development traffic implications, similar levels of operation are expected under the Total conditions with site-generated traffic volumes. However, due to the highly congested forecasted operations, additional traffic significantly increases in delay.



8.2.5 Trafalgar Road at Cornwall Road

The intersection of Trafalgar Road and Cornwall Road presently operates at a LOS F overall during the weekday peak hours. Several movements are operating at LOS E and F during the weekday peak hours.

Under 2027, 2032 and 2037 Background traffic conditions, a significant number of movements are projected to continue to operate with high levels of delay during the weekday peak hours.

In terms of development traffic implications, similar levels of operation are expected under the Total conditions with site-generated traffic volumes.

8.2.6 Cross Avenue at Argus Road/GO Station Driveway

Individual movements at Cross Avenue and Argus Road/GO Station Driveway's signalized intersection presently operate at LOS D or better during the weekday peak hours. The exception is the northbound left-turn movement which operates at a LOS F in the weekday AM peak hour.

Similar levels of operation are expected under the 2027 Background conditions.

Under 2032 Background conditions, the southbound through/right turn movement is projected to degrade to LOS F, and the westbound left-turn movement is forecast to degrade to LOS E-F range during the weekday peak hours.

With traffic growth under the 2037 Background conditions, the westbound movement is expected to operate with increased delay and congestion during the weekday peak hours. The southbound through/right turn movement will likely improve to LOS C due to the new local road network diverting traffic away from this intersection.

In terms of development traffic implications, similar levels of operation are expected under the Total conditions with only minor increases in delay resulting from site-generated traffic volumes. The exception is the southbound left-turn movement which is forecast to have a significant influx of site-generated traffic.



8.2.7 Argus Road at South Service Road East

Individual movements at the unsignalized intersection of Argus Road and South Service Road East presently operate at LOS C or better during the weekday peak hours. Similar levels of operation are expected under future 2027 Background and Total traffic conditions with only a minor increase in delay resulting from site-generated traffic volumes.

Under the 2032 conditions, growth in traffic along Argus Road and southbound movements from background developments are forecast to result in the southbound approach degrading to LOS F in the weekday peak hours.

Under the 2037 conditions, the southbound approach is forecast to operate at LOS F. While the new local road network is expected to divert background development traffic away from this intersection, the high volumes of east-west traffic along Argus Road are forecast to leave few gaps for southbound stop-controlled movements.

In terms of development traffic implications, similar levels of operation are expected under the Total conditions with site-generated traffic volumes.

8.2.8 Cross Avenue at East Driveway Access

This access is not forecast to be used until full build-out in 2032.

Under the 2032 Total conditions, southbound movements are forecast to operate in the LOS F range due to high volumes along Cross Avenue.

Under the 2037 Total conditions, the southbound approach is forecast to operate at LOS F with Synchro outputting delay and queue measurements error values due to extensive congestion. This is due to high volumes of east-west traffic along Cross Avenue, leaving few gaps for southbound stop-controlled movements.

8.2.9 Argus Road at North Driveway

Under 2027 opening year conditions, the new driveway is forecast to operate at LOS E in the weekday AM peak hour.

Under the future traffic conditions with full-build out of the development, the new driveway connection is expected to operate at LOS F during the weekday AM peak hour under the Total conditions.



TABLE 8.1: AM PEAK HOUR OPERATIONS – 2022-2037 (1/3)

Analysis Period	Intersection	Horizon	Control Type	MOE	Direction / Movement / Approach																
					Eastbound				Westbound				Northbound				Southbound				Overall
					Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Trafalgar Road & QEW Westbound Off-Ramp / North Service Road	Base Year	TCS	LOS Delay V/C Q	E 63 0.04 1	D 38 0.43 61	D 38	E 56 0.73 92	E 56 0.73 92	D 48 0.54 36	D 53	C 20	C 20	F 191 1.36 587	B 11 0.01 0	F 191	F 120 1.14				
		2027 Background	TCS	LOS Delay V/C Q	E 63 0.04 1	D 36 0.46 66	D 37	E 56 0.75 101	E 55 0.74 72	D 47 0.56 37	D 52	C 25	C 25	B 17 0.52 116	B 12 0.01 0	B 17	C 29 0.64				
		2027 Total	TCS	LOS Delay V/C Q	E 63 0.04 1	D 36 0.46 66	D 37	E 56 0.75 101	E 55 0.74 72	D 47 0.57 38	D 52	C 25	C 25	B 18 0.53 120	B 12 0.01 0	B 18	C 29 0.67				
		2032 Background	TCS	LOS Delay V/C Q	E 63 0.04 1	C 34 0.45 68	C 34	D 54 0.77 112	D 53 0.76 79	D 46 0.61 46	D 51	C 27	C 27	C 27 0.80 223	B 13 0.01 0	C 27	C 32 0.77				
		2032 Total	TCS	LOS Delay V/C Q	E 63 0.04 1	C 33 0.44 71	C 34	D 53 0.76 119	D 52 0.75 84	D 46 0.62 51	D 50	C 31	C 31	C 29 0.83 223	B 13 0.01 0	C 29	C 34 0.82				
		2037 Background	TCS	LOS Delay V/C Q	E 63 0.04 1	C 31 0.44 77	C 31	D 50 0.76 131	D 50 0.76 94	D 44 0.64 60	D 48	D 49 1.83	D 49	E 65 1.05 329	C 15 0.01 0	E 65	D 54 0.91				
		2037 Total	TCS	LOS Delay V/C Q	E 63 0.04 1	C 31 0.44 77	C 31	D 50 0.76 134	D 50 0.77 96	D 44 0.64 60	D 48	F 81 1.10 167	F 81	E 76 1.07 342	C 15 0.01 0	E 76	E 70 0.95				
AM Peak Hour	Trafalgar Road & QEW Eastbound Off-Ramp	Base Year	TCS	LOS Delay V/C Q	D 44 0.82 153	F 201 1.32 351	F 113					B 11	B 11	B 19 1.00 37	B 19	B 45 1.13					
		2027 Background	TCS	LOS Delay V/C Q	B 19 0.55 102	D 55 0.98 314	D 36					C 33	C 33	D 51 0.93 192	D 51	D 41 0.96					
		2027 Total	TCS	LOS Delay V/C Q	B 20 0.55 104	E 65 1.01 329	D 41					D 36	D 36	D 50 0.93 196	D 50	D 43 0.98					
		2032 Background	TCS	LOS Delay V/C Q	C 22 0.62 124	F 126 1.18 407	E 72					D 44	D 44	F 81 1.08 260	F 81	E 68 1.14					
		2032 Total	TCS	LOS Delay V/C Q	C 22 0.62 124	F 141 1.22 425	E 80					E 59	E 59	F 95 1.12 276	F 95	E 79 1.18					
		2037 Background	TCS	LOS Delay V/C Q	C 29 0.74 157	F 240 1.44 503	F 131					F 104	F 104	F 182 1.33 344	F 182	F 141 1.39					
		2037 Total	TCS	LOS Delay V/C Q	C 29 0.74 157	F 257 1.48 520	F 141					F 181	F 181	F 198 1.36 347	F 198	F 174 1.43					
AM Peak Hour	Trafalgar Road & Argus Road	Base Year	TWSC	LOS Delay V/C Q	B 13 0.07 2	B 13					A 0	A 0	A 0 0.38 0	A 0	A 0						
		2027 Background	TWSC	LOS Delay V/C Q	B 10 0.05 1	B 10					A 0	A 0	A 0 0.30 0	A 0	A 0						
		2027 Total	TWSC	LOS Delay V/C Q	B 12 0.23 7	B 12					A 0	A 0	A 0 0.33 0	A 0	A 0						
		2032 Background	TWSC	LOS Delay V/C Q	B 12 0.17 5	B 12					A 0	A 0	A 0 0.34 0	A 0	A 0						
		2032 Total	TWSC	LOS Delay V/C Q	B 14 0.37 14	B 14					A 0	A 0	A 0 0.39 0	A 0	A 0						
		2037 Background	TWSC	LOS Delay V/C Q	B 15 0.40 16	B 15					A 0	A 0	A 0 0.43 0	A 0	A 0						
		2037 Total	TWSC	LOS Delay V/C Q	C 20 0.61 33	C 20					A 0	A 0	A 0 0.48 0	A 0	A 0						



TABLE 8.2: AM PEAK HOUR OPERATIONS – 2022-2037 (2/3)

Analysis Period	Intersection	Horizon	Control Type	MOE	Direction / Movement / Approach																Overall
					Eastbound				Westbound				Northbound				Southbound				
					Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Trafalgar Road & Cross Avenue / South Service Road	Base Year	TCS	LOS Delay V/C Q	E 64 0.84 85	E 57 0.73 78	> > >	E 61	D 48 0.25 17	E 61 0.55 44	D 54 0.12 8	E 55	D 43 0.86 32	D 49 0.91 122	> > >	D 49	E 60 0.94 83	F 80 1.07 233	> > >	E 77	E 65 0.98
		2027 Background	TCS	LOS Delay V/C Q	E 69 0.87 90	E 65 0.82 89	> > >	E 68	D 47 0.30 19	E 59 0.56 47	D 53 0.13 12	D 54	D 38 0.81 38	D 53 0.67 112	> > >	D 51	E 51 0.86 91	D 46 0.77 142	> > >	D 47	D 53 0.87
		2027 Total	TCS	LOS Delay V/C Q	E 78 0.97 133	D 48 0.68 82	> > >	E 68	D 47 0.27 18	E 63 0.61 49	D 54 0.13 12	E 56	E 55 0.90 48	D 63 0.80 113	> > >	E 61	E 75 0.97 113	D 60 0.92 156	> > >	E 63	E 63 0.94
		2032 Background	TCS	LOS Delay V/C Q	F 237 1.37 167	F 209 1.32 220	> > >	F 224	D 45 0.50 25	F 109 1.00 118	D 47 0.15 11	F 78	E 75 1.06 42	F 180 1.45 203	> > >	F 169	F 272 1.47 146	F 84 1.29 153	> > >	F 121	F 154 1.44
		2032 Total	TCS	LOS Delay V/C Q	F 320 1.58 245	F 205 1.31 236	> > >	F 277	D 47 0.50 23	F 161 1.15 133	D 50 0.15 11	F 106	F 220 1.39 60	F 207 1.50 198	> > >	F 209	F 352 1.65 157	F 129 1.39 204	> > >	F 172	F 203 1.59
		2037 Background	TCS	LOS Delay V/C Q	F 444 1.84 257	F 372 1.70 338	> > >	F 412	D 49 0.64 30	F 290 1.49 213	D 49 0.35 29	F 188	F 259 1.48 48	F 366 2.35 213	> > >	F 355	F 489 1.98 148	F 173 1.53 144	> > >	F 236	F 310 1.91
		2037 Total	TCS	LOS Delay V/C Q	F 568 2.13 342	F 373 1.71 356	> > >	F 491	D 50 0.64 30	F 322 1.56 219	D 49 0.36 29	F 207	F 342 1.67 63	F 379 2.35 197	> > >	F 375	F 596 2.22 162	F 241 1.68 202	> > >	F 311	F 367 2.11
AM Peak Hour	Trafalgar Road & Cornwall Road	Base Year	TCS	LOS Delay V/C Q	F 119 1.05 101	D 46 0.70 114	> > >	E 73	E 71 0.30 15	F 242 1.40 229		F 238	F 136 0.94 32	D 48 0.57 77	> > >	E 62	F 84 0.95 102	C 28 0.82 78	> > >	D 50	F 106 1.07
		2027 Background	TCS	LOS Delay V/C Q	F 84 0.92 96	C 31 0.51 92	> > >	D 51	E 74 0.35 16	E 71 0.98 168		E 71	F 94 0.79 28	D 50 0.64 86	> > >	E 56	F 93 0.92 77	D 37 0.78 119	> > >	D 47	E 56 0.92
		2027 Total	TCS	LOS Delay V/C Q	F 84 0.92 96	C 32 0.52 93	> > >	D 52	E 74 0.35 16	E 77 1.00 171		E 77	F 138 0.93 31	D 49 0.64 88	> > >	E 61	F 100 0.92 66	C 34 0.86 107	> > >	D 47	E 58 0.95
		2032 Background	TCS	LOS Delay V/C Q	F 174 1.21 137	D 35 0.62 113	> > >	F 92	E 74 0.35 16	F 158 1.22 229		F 156	F 211 0.41 41	E 69 0.92 149	> > >	F 87	F 183 1.22 91	E 63 1.01 138	> > >	F 98	F 110 1.17
		2032 Total	TCS	LOS Delay V/C Q	F 201 1.27 140	D 38 0.65 118	> > >	F 105	E 74 0.35 16	F 184 1.28 236		F 182	F 211 0.41 41	E 75 0.96 160	> > >	F 92	F 111 1.07 75	F 106 1.15 171	> > >	F 86	F 117 1.22
		2037 Background	TCS	LOS Delay V/C Q	F 342 1.60 186	D 38 0.74 148	> > >	F 164	E 74 0.35 16	F 236 1.41 298		F 233	F 234 1.25 53	F 111 1.09 200	> > >	F 129	F 307 1.50 83	F 129 1.19 129	> > >	F 161	F 176 1.41
		2037 Total	TCS	LOS Delay V/C Q	F 380 1.69 190	D 43 0.80 156	> > >	F 183	E 74 0.35 16	F 280 1.50 308		F 276	F 234 1.25 53	E 79 1.00 192	> > >	F 101	F 346 1.59 74	F 173 1.31 128	> > >	F 186	F 194 1.5
AM Peak Hour	Cross Avenue & Argus Road / GO Station Driveway	Base Year	TCS	LOS Delay V/C Q	B 18 0.27 8	B 18 0.42 35	> > >	B 18	B 10 0.22 7	B 10 0.41 38	> > >	B 10	F 81 0.79 10	B 15 0.09 0	> > >	D 38	B 15 0.17 13	C 30 0.80 31	> > >	C 28	B 19 0.61
		2027 Background	TCS	LOS Delay V/C Q	B 20 0.32 9	B 20 0.48 41	> > >	B 20	B 12 0.26 9	B 12 0.47 47	> > >	B 12	F 122 0.91 12	B 15 0.10 0	> > >	D 53	B 15 0.18 15	D 48 0.95 52	> > >	D 44	C 27 0.72
		2027 Total	TCS	LOS Delay V/C Q	C 20 0.36 10	B 20 0.48 41	> > >	B 20	B 12 0.26 9	B 12 0.48 48	> > >	B 12	F 122 0.91 13	B 15 0.10 0	> > >	D 53	C 26 0.72 60	D 54 0.97 55	> > >	D 45	C 28 0.74
		2032 Background	TCS	LOS Delay V/C Q	C 21 0.41 10	C 22 0.64 61	> > >	C 22	E 56 0.90 36	B 13 0.55 61	> > >	B 18	F 808 2.60 37	B 19 0.29 0	> > >	F 289	C 26 0.64 50	F 158 1.26 114	> > >	F 128	E 79 1.61
		2032 Total	TCS	LOS Delay V/C Q	C 22 0.45 11	C 22 0.64 61	> > >	C 22	E 56 0.90 36	B 13 0.57 63	> > >	B 18	F 808 2.60 37	B 19 0.29 0	> > >	F 289	F 214 1.38 144	F 171 1.29 118	> > >	F 187	F 102 1.61
		2037 Background	TCS	LOS Delay V/C Q	C 21 0.48 12	C 30 0.89 124	> > >	C 30	F 406 1.79 100	B 10 0.57 71	> > >	F 81	F 213 1.31 39	B 88 0.98 0	> > >	F 131	F 159 1.16 62	C 26 0.26 11	> > >	F 91	E 71 1.64
		2037 Total	TCS	LOS Delay V/C Q	C 23 0.55 13	C 30 0.89 125	> > >	C 30	F 530 2.07 103	B 12 0.61 80	> > >	F 103	F 182 1.23 37	F 91 1.00 0	> > >	F 122	F 700 2.45 150	C 25 0.29 14	> > >	F 489	F 140 2.21



TABLE 8.3: AM PEAK HOUR OPERATIONS – 2022-2037 (3/3)

Analysis Period	Intersection	Horizon	Control Type	MOE	Direction / Movement / Approach																Overall
					Eastbound				Westbound				Northbound				Southbound				
					Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Argus Road & South Service Road	Base Year	TWSC	LOS Delay V/C Q	< A < 3 < 0.01 < 0	> > > 3 > 0	A 3	< A < 0 < 0.01 < 0	> > > 0 > 0.57 > 0	A 0	< A < 0 < 0.01 < 0	> > > 0 > 0.57 > 0	A 0	< A < 0 < 0.01 < 0	> > > 0 > 0.10 > 3	C 15	< C < 15 < 0.07 < 2	> > > > > > > >	C 15		
		2027 Background	TWSC	LOS Delay V/C Q	< A < 3 < 0.01 < 0	> > > 3 > 0	A 3	< A < 0 < 0.01 < 0	> > > 0 > 0.54 > 0	A 0	< A < 0 < 0.01 < 0	> > > 0 > 0.67 > 0	A 0	< A < 0 < 0.01 < 0	> > > 0 > 1.46 > 187	C 16	< C < 16 < 0.08 < 2	> > > > > > > >	C 16		
		2027 Total	TWSC	LOS Delay V/C Q	< A < 0 < 0.01 < 0	> > > 0 > 0.01 > 0	A 0	< A < 0 < 0.01 < 0	> > > 0 > 0.57 > 0	A 0	< A < 0 < 0.01 < 0	> > > 0 > 0.67 > 0	A 0	< A < 0 < 0.01 < 0	> > > 0 > 0.10 > 3	C 20	< C < 20 < 0.10 < 3	> > > > > > > >	C 20		
		2032 Background	TWSC	LOS Delay V/C Q	< A < 1 < 0.01 < 0	> > > 1 > 0	A 1	< A < 0 < 0.01 < 0	> > > 0 > 0.67 > 0	A 0	< A < 0 < 0.01 < 0	> > > 0 > 0.76 > 0	A 0	< A < 0 < 0.01 < 0	> > > 0 > 1.85 > 218	F 260	< F < 260 < 1.46 < 187	> > > > > > > >	F 260		
		2032 Total	TWSC	LOS Delay V/C Q	< A < 1 < 0.01 < 0	> > > 1 > 0	A 1	< A < 0 < 0.01 < 0	> > > 0 > 0.70 > 0	A 0	< A < 0 < 0.01 < 0	> > > 0 > 0.76 > 0	A 0	< A < 0 < 0.01 < 0	> > > 0 > 1.73 > 222	F 379	< F < 379 < 1.73 < 222	> > > > > > > >	F 379		
		2037 Background	TWSC	LOS Delay V/C Q	< A < 1 < 0.01 < 0	> > > 1 > 0	A 1	< A < 0 < 0.01 < 0	> > > 0 > 0.76 > 0	A 0	< A < 0 < 0.01 < 0	> > > 0 > 0.76 > 0	A 0	< A < 0 < 0.01 < 0	> > > 0 > 1.85 > 218	F 438	< F < 438 < 1.85 < 218	> > > > > > > >	F 438		
		2037 Total	TWSC	LOS Delay V/C Q	< A < 1 < 0.01 < 0	> > > 1 > 0	A 1	< A < 0 < 0.01 < 0	> > > 0 > 0.79 > 0	A 0	< A < 0 < 0.01 < 0	> > > 0 > 0.79 > 0	A 0	< A < 0 < 0.01 < 0	> > > 0 > 2.50 > 265	F 742	< F < 742 < 2.50 < 265	> > > > > > > >	F 742		
AM Peak Hour	Cross Ave & East Driveway Access	2027 Total	TWSC	LOS Delay V/C Q	< A < 0 < 0.35 < 0	> > > 0 > 0	A 0	< A < 0 < 0.35 < 0	> > > 0 > 0.31 > 0	A 0	< A < 0 < 0.35 < 0	> > > 0 > 0.43 > 0	A 0	< A < 0 < 0.35 < 0	> > > 0 > 1.49 > 87	F 345	< F < 345 < 1.49 < 87	> > > > > > > >	F 345		
		2032 Total	TWSC	LOS Delay V/C Q	< A < 0 < 0.50 < 0	> > > 0 > 0	A 0	< A < 0 < 0.50 < 0	> > > 0 > 0.43 > 0	A 0	< A < 0 < 0.50 < 0	> > > 0 > 0.43 > 0	A 0	< A < 0 < 0.50 < 0	> > > 0 > 3.55 > Err	F Err	< F < Err < 3.55 < Err	> > > > > > > >	F Err		
		2037 Total	TWSC	LOS Delay V/C Q	< A < 0 < 0.70 < 0	> > > 0 > 0	A 0	< A < 0 < 0.70 < 0	> > > 0 > 0.54 > 0	A 0	< A < 0 < 0.70 < 0	> > > 0 > 0.54 > 0	A 0	< A < 0 < 0.70 < 0	> > > 0 > 3.55 > Err	F Err	< F < Err < 3.55 < Err	> > > > > > > >	F Err		
AM Peak Hour	North Driveway & Argus Road	2027 Total	TWSC	LOS Delay V/C Q	< A < 0 < 0.02 < 0	> > > 0 > 0	A 0	< A < 0 < 0.03 < 1	> > > 1 > 0.03 > 1	A 1	< A < 0 < 0.03 < 1	> > > 1 > 0.03 > 1	A 1	< A < 0 < 0.03 < 1	> > > 1 > 0.88 > 66	F 33	< F < 33 < 0.71 < 43	> > > > > > > >	F 33		
		2032 Total	TWSC	LOS Delay V/C Q	< A < 0 < 0.03 < 0	> > > 0 > 0	A 0	< A < 0 < 0.03 < 1	> > > 1 > 0.03 > 1	A 1	< A < 0 < 0.03 < 1	> > > 1 > 0.88 > 66	F 59	< F < 59 < 0.88 < 66	> > > > > > > >	F 59					
		2037 Total	TWSC	LOS Delay V/C Q	< A < 0 < 0.03 < 0	> > > 0 > 0	A 0	< A < 0 < 0.03 < 1	> > > 1 > 0.03 > 1	A 1	< A < 0 < 0.03 < 1	> > > 1 > 0.91 > 70	F 67	< F < 67 < 0.91 < 70	> > > > > > > >	F 67					

MOE - Measure of Effectiveness
 LOS - Level of Service
 Delay - Average Delay per Vehicle in Seconds

Q - 95th Percentile Queue Length (m)
 TCS - Traffic Control Signal
 TWSC - Two-Way Stop Control

< - Shared Left-Turn
 > - Shared Right-Turn



TABLE 8.4: PM PEAK HOUR OPERATIONS – 2022-2037 (1/3)

Analysis Period	Intersection	Horizon	Control Type	MOE	Direction / Movement / Approach																Overall
					Eastbound				Westbound				Northbound				Southbound				
					Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	Trafalgar Road & QEW Westbound Off-Ramp / North Service Road	Base Year	TCS	LOS Delay V/C Q	E 64 0.52 10	C 31 0.45 78	D 38	E 64 0.86 170	E 74 0.91 115	F 119 1.08 149	F 89	F 123 1.20 393	F 123	F 104 1.15 374	B 15 0.01 0	F 104	F 106 1.09				
		2027 Background	TCS	LOS Delay V/C Q	E 64 0.55 11	C 30 0.36 60	D 40	E 63 0.84 154	E 68 0.87 100	D 45 0.54 54	E 60	D 42 0.99 293	D 42	C 24 0.66 140	B 15 0.01 0	C 24	D 39 0.91				
		2027 Total	TCS	LOS Delay V/C Q	E 64 0.55 11	C 30 0.36 60	D 39	E 64 0.85 160	E 68 0.88 103	D 45 0.53 54	E 60	D 48 1.01 302	D 48	C 25 0.70 150	B 15 0.01 0	C 25	D 42 0.92				
		2032 Background	TCS	LOS Delay V/C Q	E 65 0.57 11	C 30 0.40 69	D 39	E 79 0.93 185	F 89 0.98 126	D 47 0.60 64	F 74	F 155 1.27 437	F 155	C 33 0.86 214	C 15 0.01 0	C 33	F 96 1.1				
		2032 Total	TCS	LOS Delay V/C Q	E 65 0.57 11	C 30 0.40 69	D 39	F 88 0.97 195	F 96 1.00 130	D 47 0.60 64	E 80	F 170 1.30 425	F 170	D 37 0.92 241	C 15 0.01 0	D 37	F 104 1.13				
		2037 Background	TCS	LOS Delay V/C Q	E 66 0.62 12	C 29 0.44 78	D 39	F 96 1.01 211	F 110 1.06 145	D 47 0.65 73	F 88	F 246 1.47 443	F 246	E 62 1.03 308	C 17 0.02 0	E 62	F 147 1.23				
		2037 Total	TCS	LOS Delay V/C Q	E 66 0.62 12	C 29 0.44 78	D 39	F 106 1.05 221	F 117 1.08 149	D 47 0.65 73	F 94	F 261 1.50 429	F 261	F 82 1.09 337	C 17 0.02 0	F 82	F 160 1.26				
PM Peak Hour	Trafalgar Road & QEW Eastbound Off-Ramp	Base Year	TCS	LOS Delay V/C Q	E 55 0.92 184	E 69 0.95 211	E 60					C 26 0.95 91	C 26	A 8 0.71 43	A 8	C 29 0.95					
		2027 Background	TCS	LOS Delay V/C Q	D 43 0.81 136	D 48 0.81 148	D 45						C 20 0.74 69	C 20	B 14 0.64 125	B 14	C 25 0.77				
		2027 Total	TCS	LOS Delay V/C Q	D 40 0.77 134	D 52 0.86 169	D 44						C 24 0.79 76	C 24	B 16 0.70 138	B 16	C 27 0.82				
		2032 Background	TCS	LOS Delay V/C Q	D 50 0.89 172	E 69 0.95 220	E 56						C 26 0.95 67	C 26	B 19 0.87 181	B 19	C 32 0.95				
		2032 Total	TCS	LOS Delay V/C Q	D 46 0.87 169	F 94 1.05 261	E 64						D 38 1.01 71	D 38	C 24 0.95 232	C 24	D 40 1.03				
		2037 Background	TCS	LOS Delay V/C Q	E 71 1.00 219	F 132 1.15 290	F 93						E 74 1.10 55	E 74	D 44 1.05 297	D 44	E 68 1.12				
		2037 Total	TCS	LOS Delay V/C Q	E 56 0.95 209	F 151 1.21 323	F 92						F 118 1.19 65	F 118	F 88 1.15 311	F 88	F 100 1.2				
PM Peak Hour	Trafalgar Road & Argus Road	Base Year	TWSC	LOS Delay V/C Q	B 10 0.10 3	B 10						A 0 0.56 0	A 0	A > 0 > 0.48 >	A > 0 > 0 >	A > 0 > 0 >					
		2027 Background	TWSC	LOS Delay V/C Q	A 10 0.11 3	A 10						A 0 0.55 0	A 0	A > 0 > 0.48 >	A > 0 > 0 >	A > 0 > 0 >					
		2027 Total	TWSC	LOS Delay V/C Q	B 11 0.17 5	B 11						A 0 0.56 0	A 0	A > 0 > 0.57 >	A > 0 > 0 >	A > 0 > 0 >					
		2032 Background	TWSC	LOS Delay V/C Q	B 14 0.35 13	B 14						A 0 0.59 0	A 0	A > 0 > 0.67 >	A > 0 > 0 >	A > 0 > 0 >					
		2032 Total	TWSC	LOS Delay V/C Q	C 18 0.49 22	C 18						A 0 0.61 0	A 0	A > 0 > 0.77 >	A > 0 > 0 >	A > 0 > 0 >					
		2037 Background	TWSC	LOS Delay V/C Q	D 30 0.73 47	D 30						A 0 0.64 0	A 0	A > 0 > 0.90 >	A > 0 > 0 >	A > 0 > 0 >					
		2037 Total	TWSC	LOS Delay V/C Q	D 35 0.79 58	D 35						A 0 0.66 0	A 0	A > 0 > 1.00 >	A > 0 > 0 >	A > 0 > 0 >					



TABLE 8.5: PM PEAK HOUR OPERATIONS – 2022-2037 (2/3)

Analysis Period	Intersection	Horizon	Control Type	MOE	Direction / Movement / Approach																Overall			
					Eastbound				Westbound				Northbound				Southbound							
					Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach				
					F	C	>	F	F	E	E	F	E	D	>	D	D	E	>	E				
PM Peak Hour	Trafalgar Road & Cross Avenue / South Service Road	Base Year	TCS	LOS Delay V/C Q	468 1.90 283	34 0.51 67	>	370	F	406 1.69 111	E 74 0.79 68	E 74 0.77 52	F 162	F	E 64 1.01 30	D 46 0.85 112	>	D 47	F	D 50 0.76 47	E 65 1.03 204	>	E 64	F 142 1.3
		2027 Background	TCS	LOS Delay V/C Q	261 1.45 255	22 0.43 54	>	203	F	F 222 1.28 107	D 53 0.61 69	E 69 0.81 78	F 109	F	F 206 1.30 52	F 136 1.19 187	>	F 143	F	F 191 1.21 86	F 157 1.24 236	>	F 160	F 158 1.28
		2027 Total	TCS	LOS Delay V/C Q	306 1.55 279	23 0.44 57	>	241	F	F 268 1.39 111	E 59 0.69 78	E 79 0.87 82	F 127	F	F 261 1.43 72	F 117 1.14 179	>	F 133	F	F 202 1.25 88	F 166 1.25 241	>	F 170	F 170 1.41
		2032 Background	TCS	LOS Delay V/C Q	590 2.18 341	36 0.80 144	>	414	F	F 458 1.85 159	E 61 0.81 103	E 77 0.91 103	F 183	F	F 372 1.73 65	F 225 1.39 182	>	F 243	F	F 245 1.38 84	F 331 1.61 359	>	F 324	F 304 1.8
		2032 Total	TCS	LOS Delay V/C Q	642 2.29 373	40 0.85 154	>	458	F	F 530 2.01 163	E 74 0.90 112	E 90 0.96 112	F 211	F	F 471 1.95 91	F 214 1.36 172	>	F 251	F	F 261 1.43 78	F 383 1.73 381	>	F 373	F 339 1.99
		2037 Background	TCS	LOS Delay V/C Q	966 3.01 417	86 1.07 268	>	644	F	F 2432 6.22 225	E 60 0.88 138	E 68 0.93 123	F 758	F	F 693 2.44 90	F 278 1.50 145	>	F 344	F	F 384 1.69 88	F 524 2.03 418	>	F 512	F 544 3.77
		2037 Total	TCS	LOS Delay V/C Q	1014 3.12 448	95 1.10 278	>	690	F	F 3098 7.69 233	E 69 0.93 145	E 72 0.93 124	F 948	F	F 822 2.72 117	F 279 1.50 148	>	F 380	F	F 397 1.72 84	F 587 2.17 410	>	F 571	F 613 4.38
PM Peak Hour	Trafalgar Road & Cornwall Road	Base Year	TCS	LOS Delay V/C Q	707 2.39 162	111 1.08 181	>	333	F	E 58 0.38 33	F 266 1.48 319	F 255	F	F 506 1.91 87	D 50 0.67 94	>	F 171	F	F 102 1.03 97	D 38 0.98 121	>	E 58	F 195 1.37	
		2027 Background	TCS	LOS Delay V/C Q	231 1.33 124	43 0.78 146	>	104	F	F 94 0.74 40	F 209 1.35 306	F 202	F	F 239 1.32 77	D 44 0.56 81	>	F 104	F	F 302 1.49 87	F 102 1.14 101	>	F 163	F 151 1.29	
		2027 Total	TCS	LOS Delay V/C Q	231 1.33 124	45 0.80 148	>	105	F	F 94 0.74 40	F 222 1.38 309	F 215	F	F 239 1.32 77	D 51 0.68 93	>	F 105	F	F 148 1.15 71	F 116 1.16 100	>	F 118	F 141 1.28	
		2032 Background	TCS	LOS Delay V/C Q	489 1.92 170	61 0.96 208	>	206	F	F 161 0.99 46	F 408 1.79 421	F 398	F	F 537 1.99 105	D 42 0.65 110	>	F 194	F	F 604 2.17 98	F 289 1.58 206	>	F 334	F 302 1.78	
		2032 Total	TCS	LOS Delay V/C Q	555 2.06 173	65 0.98 211	>	231	F	F 161 0.99 46	F 408 1.79 421	F 398	F	F 537 1.99 105	D 44 0.71 123	>	F 184	F	F 604 2.17 91	F 306 1.62 201	>	F 339	F 307 1.81	
		2037 Background	TCS	LOS Delay V/C Q	666 2.31 196	111 1.12 269	>	294	F	F 132 0.87 40	F 519 2.04 504	F 506	F	F 565 2.06 116	D 45 0.71 122	>	F 207	F	F 696 2.37 71	F 395 1.82 80	>	F 426	F 387 2.04	
		2037 Total	TCS	LOS Delay V/C Q	666 2.31 196	120 1.15 272	>	301	F	F 132 0.87 40	F 539 2.09 507	F 525	F	F 643 2.23 119	D 47 0.77 137	>	F 220	F	F 696 2.37 64	F 392 1.83 61	>	F 416	F 392 2.06	
PM Peak Hour	Cross Avenue & Argus Road / GO Station Driveway	Base Year	TCS	LOS Delay V/C Q	11 0.07 4	B 17 83	>	B 17	F	A 9 0.27 6	A 6 0.22 21	>	A 6	C	C 23 0.22 6	C 22 0.12 0	>	C 22	C	C 29 0.61 42	C 22 0.21 7	>	C 26	B 16 0.6
		2027 Background	TCS	LOS Delay V/C Q	11 0.08 4	B 19 99	>	B 18	B	B 10 0.33 7	A 6 0.24 24	>	A 7	C	C 25 0.27 7	C 23 0.13 0	>	C 23	C	C 33 0.67 47	C 23 0.23 7	>	C 28	B 18 0.66
		2027 Total	TCS	LOS Delay V/C Q	15 0.19 8	C 23 103	>	C 22	B	B 13 0.37 8	A 9 0.29 28	>	A 9	C	C 23 0.23 7	C 21 0.13 0	>	C 22	D	D 23 0.85 76	C 22 0.22 6	>	C 36	C 22 0.75
		2032 Background	TCS	LOS Delay V/C Q	15 0.19 7	C 32 149	>	C 31	F	F 168 1.19 55	A 9 0.34 35	>	D 37	F	F 302 1.51 41	C 25 0.24 0	>	F 168	F	F 109 1.09 94	F 25 0.27 6	>	E 71	E 55 1.31
		2032 Total	TCS	LOS Delay V/C Q	17 0.31 11	C 33 149	>	C 32	F	F 184 1.23 56	A 10 0.37 38	>	D 38	F	F 296 1.50 41	C 24 0.24 0	>	F 165	F	F 216 1.37 129	C 24 0.27 5	>	F 140	E 70 1.34
		2037 Background	TCS	LOS Delay V/C Q	17 0.34 11	F 118 224	>	F 113	F	F 528 2.05 99	B 10 0.44 49	>	F 124	F	F 494 1.98 71	C 33 0.63 0	>	F 291	F	F 122 1.11 85	C 23 0.21 8	>	F 85	F 139 2.04
		2037 Total	TCS	LOS Delay V/C Q	20 0.49 15	F 110 221	>	F 104	F	F 498 1.98 98	A 10 0.47 51	>	F 111	F	F 574 2.16 73	C 34 0.64 0	>	F 336	F	F 327 1.61 126	C 24 0.22 8	>	F 229	F 155 2.05



TABLE 8.6: PM PEAK HOUR OPERATIONS – 2022-2037 (3/3)

Analysis Period	Intersection	Horizon	Control Type	MOE	Direction / Movement / Approach																Overall
					Eastbound				Westbound				Northbound				Southbound				
					Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	Argus Road & South Service Road	Base Year	TWSC	LOS Delay V/C Q	< A < 7 < 0.05 < 1	> A > 7 > A > 7	< A < 0 < 0.26 < 0	> A > 0 > A > 0					B 13 0.19 5	> B > 13 > v > v			B 13				
		2027 Background	TWSC	LOS Delay V/C Q	< A < 7 < 0.06 < 2	> A > 7 > A > 7	< A < 0 < 0.28 < 0	> A > 0 > A > 0					B 13 0.21 6	> B > 13 > v > v			B 13				
		2027 Total	TWSC	LOS Delay V/C Q	< A < 5 < 0.07 < 2	> A > 5 > A > 5	< A < 0 < 0.37 < 0	> A > 0 > A > 0					C 17 0.27 9	> C > 17 > v > v			C 17				
		2032 Background	TWSC	LOS Delay V/C Q	< A < 4 < 0.08 < 2	> A > 4 > A > 4	< A < 0 < 0.41 < 0	> A > 0 > A > 0					F 124 1.16 149	> F > 124 > v > v			F 124				
		2032 Total	TWSC	LOS Delay V/C Q	< A < 4 < 0.10 < 3	> A > 4 > A > 4	< A < 0 < 0.50 < 0	> A > 0 > A > 0					F 258 1.47 217	> F > 258 > v > v			F 258				
		2037 Background	TWSC	LOS Delay V/C Q	< A < 4 < 0.12 < 3	> A > 4 > A > 4	< A < 0 < 0.56 < 0	> A > 0 > A > 0					F 238 1.39 147	> F > 238 > v > v			F 238				
		2037 Total	TWSC	LOS Delay V/C Q	< A < 5 < 0.14 < 4	> A > 5 > A > 5	< A < 0 < 0.65 < 0	> A > 0 > A > 0					F 455 1.87 195	> F > 455 > v > v			F 455				
PM Peak Hour	Cross Ave & East Driveway Access	2027 Total	TWSC	LOS Delay V/C Q	< A < 0 < 0.54 < 0	> A > 0 > A > 0	< A < 0 < 0.30 < 0	> A > 0 > A > 0					A 0 0.00 0	> A > 0 > v > v			A 0				
		2032 Total	TWSC	LOS Delay V/C Q	< A < 1 < 0.69 < 1	> A > 1 > A > 1	< A < 0 < 0.41 < 0	> A > 0 > A > 0					F 184 1.04 51	> F > 184 > v > v			F 184				
		2037 Total	TWSC	LOS Delay V/C Q	< A < 2 < 0.84 < 2	> A > 2 > A > 2	< A < 0 < 0.54 < 0	> A > 0 > A > 0					F Err 3.78 Err	> F > Err > v > v			F Err				
PM Peak Hour	North Driveway & Argus Road	2027 Total	TWSC	LOS Delay V/C Q	A 0 0.06 0	> A > 0 > A > 0	< A < 3 < 0.09 < 2	> A > 3 > A > 3	C 17 0.29 10	> C > 17 > v > v											
		2032 Total	TWSC	LOS Delay V/C Q	A 0 0.09 0	> A > 0 > A > 0	< A < 3 < 0.10 < 3	> A > 3 > A > 3	C 22 0.38 14	> C > 22 > v > v											
		2037 Total	TWSC	LOS Delay V/C Q	A 0 0.11 0	> A > 0 > A > 0	< A < 3 < 0.10 < 3	> A > 3 > A > 3	D 25 0.42 16	> D > 25 > v > v											

MOE - Measure of Effectiveness
 LOS - Level of Service
 Delay - Average Delay per Vehicle in Seconds
 Q - 95th Percentile Queue Length (m)
 TCS - Traffic Control Signal
 TWSC - Two-Way Stop Control
 < - Shared Left-Turn
 > - Shared Right-Turn



9 Mitigation

As summarized in the analysis tables in the previous chapter, several study area locations either currently experience or are projected to experience operational deficiencies independent of the development. **The analysis also identified that the development would have minimal impacts on traffic conditions in the study area.**

9.1 Midtown Oakville Improvements

Mitigation measures at several study area intersections have been identified through the Midtown Oakville Environmental Assessment. The critical transportation network improvements include the following:

- ▶ The extension of Cross Avenue eastward to Royal Windsor Drive and the QEW. This extension will likely divert eastbound left-turns at Cross Avenue and Trafalgar Road to the QEW and Royal Windsor Drive interchange. In addition to the extension, Cross Avenue will be widened from Trafalgar Road to Lyons Lane.
- ▶ A new north-south crossing of the QEW east of Trafalgar Road. This north-south road will connect the Cross Avenue extension with Iroquois Shore Road and Trafalgar Road at McCraney Street. This new street will have pedestrian and cycling infrastructure, dedicated transit lanes, and general-purpose lanes. The purpose of the new roadway is to divert north/south traffic on Trafalgar Road;
- ▶ Realignment of the Trafalgar Road and QEW Eastbound Off-Ramp Terminal. A new eastbound QEW direct off-ramp will be constructed under Trafalgar Road and connect with the Cross Avenue extension. This new off-ramp will divert eastbound right-turns that will generally turn onto Trafalgar Road. The realignment of South Service Road and Argus Road to the west of its current location will be needed to accommodate this new off-ramp;
- ▶ Two new active transportation crossings of the QEW are west and east of Trafalgar Road. The west crossing will connect Oakville Place to the realigned Argus Road. The east crossing will be separate and east of Trafalgar Road;
- ▶ Improvements to the QEW and Royal Windsor Drive interchange will include a new westbound off-ramp, a new eastbound on-ramp, a new eastbound direct off-ramp to Cross Avenue extension, and the widening and extension of Royal Windsor Drive to Iroquois Shore Road at Eighth Line. The



improvements to this interchange will likely divert traffic to/from the Trafalgar Road interchanges; and

- ▶ For access and circulation within Midtown Oakville, a revised local road network for Midtown Oakville is designed to support and align with the broader transportation network determined through the MOEA. A local road network of east-west and north-south roads will likely improve operations at South Service Road East at Argus Road and Argus Road at Cross Avenue while providing additional connectivity to developments in the area.

Because the GO Oakville Station is located centrally within the study area, the Trafalgar Road corridor experiences many trips during the weekday peak hours. In most circumstances, widening existing roads or building new ones will infringe on private property, impact mature trees and green space, or compromise the public realm (e.g. sidewalks, boulevards).

The Midtown Oakville and Trafalgar Road EA recognize this and identify roadway improvements that will provide some relief to operational issues; however, vehicle capacity constraints will persist for the overall transportation network. Instead, the strategy is to further focus on providing a sustainable transportation strategy to move more people per kilometre by walking, cycling and transit or in combination with high occupancy vehicles.

9.2 Transportation Network Overview

The vehicle traffic analyses of intersection performance conducted overall conditions are expected to experience congestion during the weekday peak hours. This area surrounds one of the busiest GO Transit stations within the province; the area is expected to experience vehicle capacity constraints two to four hours a day on a typical weekday. The other 20 hours of the weekday, weekends and holidays would be expected to exhibit better vehicle traffic conditions.

Widening any arterial roads to accommodate vehicular traffic volumes is not recommended in the study area¹⁵. This would be counter-intuitive to the vision of a people-centric, pedestrian-friendly environment that expects people to use more sustainable modes to travel. Any potential road widening would accommodate dedicated bus lanes to improve transit capacity and efficiency.

Conditions for pedestrians, cyclists and transit users would be expected to be significantly improved from existing conditions in the

¹⁵ The Road to Change, Halton Region Transportation Master Plan, September 2011



study area. The smaller block size and wide sidewalks on both sides of any new roads will aid in pedestrian connectivity through pedestrian pathways. Wider sidewalks and multi-use pathways are anticipated in areas of the highest pedestrian demand.

Cycling infrastructure presently is limited in the study area. The cycling network is expected to expand through redevelopment, and gaps in the network are expected to be filled.

Increased frequency of GO trains and buses and Oakville Transit buses are expected to make transit more convenient. Transit priority measures are recommended to be explored further by the Town to help make transit schedules more reliable and make transit a more attractive option.

There is forecast to be more vehicle traffic congestion, longer delays and long queues at full build-out of the study area. At the same time, with the people-centric approach to Midtown Oakville, there are expected to be more amenities and better connectivity for pedestrians and cyclists and more frequent, reliable, and convenient service for transit passengers. The finer grain road network is proposed to provide enhanced multi-modal connectivity and access.

9.3 Right-in/Right-Out Conditions

9.3.1 Argus Road & South Service Road East

Future southbound left-turn movements from South Service Road East are forecast to operate at LOS F due to high east-west volumes along Argus Road and background development traffic from South Service Road East trying to access Cross Avenue.

For this study, background traffic from South Service Road East was assumed to utilize Argus Road to access Cross Avenue as a “worst-case scenario.” However, Midtown Oakville plans to introduce a revised local road network to alleviate congestion at this intersection by providing access to Cross Avenue via alternative north-south local roads.

To avoid situations where southbound drivers are experiencing significant delays, the southbound leg of the South Service Road may be limited to right-in/right-out movements. A 2037 sensitivity test has been analyzed with restricted movements. **Table 9.1** summarizes the LOS results. Detailed results of the Sensitivity test can be found in **Appendix I**. Limiting movements improves delays; however, most of the delay stems from a lack of gaps in east-west traffic for southbound movements to be made.



9.3.2 East Driveway Access

Future southbound left-turn movements at East Driveway access road and Cross Avenue are forecast to operate at LOS F due to a high volume of vehicles attempting to go north along Trafalgar Road.

To avoid situations where southbound drivers are experiencing significant delays, the southbound leg of the north-south local road at the Cross Avenue intersection may be limited to right-in/right-out movements. A 2037 sensitivity test has been analyzed with restricted movements. **Table 9.1** summarizes the LOS results. Detailed results of the Sensitivity test can be found in **Appendix I**. Limiting movements improves delays for southbound movements as site traffic reroutes to the North Driveway Access.

9.3.3 Site-Circulation Impacts

It should be noted that, over time, residents may reroute to avoid lengthy southbound delays by using the signalized intersection at Argus Road and Cross Avenue. Vehicles may reroute by either exiting from the North Driveway or via the north-south local road, should that be connected to Argus Road. Limiting movements to right-in/right-out is not expected to significantly impact site-generated traffic as both driveways connect to a unified underground parking garage.



TABLE 9.1: 2037 TRAFFIC OPERATIONS SENSITIVITY

Analysis Period	Intersection	Horizon	Control Type	MOE	Direction / Movement / Approach																Overall
					Eastbound				Westbound				Northbound				Southbound				
					Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Argus Road & South Service Road	2037 Total	TWSC	LOS	A			A	>	A							C	C			
				Delay	0			0	>	0							21	21			
				V/C	0.14			0.79	>								0.07				
				Q	0			0	>								2				
AM Peak Hour	Cross Ave & East Driveway Access	2037 Total	TWSC	LOS	<	A		A	>	A							B	B			
				Delay	<	0		0	>	0							15	15			
				V/C	<	0.56		0.54	>								0.01				
				Q	<	0		0	>								0				
PM Peak Hour	Argus Road & South Service Road	2037 Total	TWSC	LOS	A			A	>	A							C	C			
				Delay	0			0	>	0							19	19			
				V/C	0.17			0.65	>								0.22				
				Q	0			0	>								7				
PM Peak Hour	Cross Ave & East Driveway Access	2037 Total	TWSC	LOS	<	A		A	>	A							B	B			
				Delay	<	0		0	>	0							16	16			
				V/C	<	0.66		0.54	>								0.07				
				Q	<	0		0	>								2				

MOE - Measure of Effectiveness

LOS - Level of Service

Delay - Average Delay per Vehicle in Seconds

Q - 95th Percentile Queue Length (m)

TCS - Traffic Control Signal

TWSC - Two-Way Stop Control

< - Shared Left-Turn

> - Shared Right-Turn



10 Conclusions and Recommendations

10.1 Conclusions

Development Concept Review

A review of the proposed Development Concept plans was undertaken with the following conclusions reached:

- ▶ Pedestrian, bicycle and vehicular access to the Site provides appropriate mobility opportunities for all modes.
- ▶ The proposed Development Concept is consistent and compatible with both short-term (prior to the development of adjacent properties) and long-term (with the fulfillment of the Mid-Town Oakville streets and blocks plan) Mid-Town Oakville conditions.

Parking Supply

- ▶ Adoption of reduced minimum resident and non-residential parking supply standards is appropriate based on the following considerations:
 - The proposed parking reduction is consistent with Provincial, Regional & Local Mobility and Parking Policy;
 - The parking supply strategy is in conformance with Ontario's current vision for transit nodes;
 - The area transportation context and proposed TDM framework supports multi-modal travel;
 - The provision of an enhanced TDM plan was determined as a proactive method of reducing the proposed resident parking supply; and,
 - The parking supply reduction significantly reduces the cost of construction of the project, which can improve the initial proposed housing along with ongoing life-cycle maintenance and property tax costs, further enhancing the affordability of the project for the residents in the long-term and,
 - The proposed reduction in parking supply has regard to matters of Provincial interest; they are consistent with the Provincial Policy Statement. They conform with the Growth Plan and the Region of Halton Official Plan, and the Livable Oakville Plan Mid-Town Oakville provisions.
 - While a reduction to the minimum resident and commercial parking requirements under Zoning By-Law 2014-014 is



proposed, the **resulting vehicular parking supply will meet the development's needs regarding the existing /planned transit infrastructure in the immediate area, including higher-order transit.**

- A reduced resident parking supply ratio of 0.50 parking spaces per residential unit and office and retail and daycare parking rates of 1.08 parking spaces per 100 m² is considered appropriate.
- ▶ The proposed development incorporates a total of six (6) loading spaces. The **proposed loading arrangements** are functionally and operationally appropriate and will facilitate the loading/unloading, moving, delivery and refuse collection needs of the proposed development
- ▶ The **proposed bicycle parking supply** of 1,754 bicycle parking spaces is considered appropriate and will accommodate the bicycle parking demands of the proposed development.

Transportation Impact Study

The proposed development will generate approximately 512 new vehicle trips during the weekday AM peak hour and 414 new vehicle trips during the weekday PM peak hour.

Detailed traffic analysis was conducted for each study area intersections under Base conditions, 2027, 2032 and 2037 Background and Total conditions.

To avoid situations where drivers along a stop-controlled minor approach experience significant delays, the intersections of South Service Road and Argus Road and the Cross Avenue and the East Driveway Access are recommended to be restricted to right-in/out operations. As the development provides two access points through a unified underground parking garage, limiting movements to right-in/right-out is not expected to impact site-generated traffic circulation significantly.

It is acknowledged that deficiencies currently exist at specific locations, primarily along the Trafalgar Road corridor within the study area. They can be expected to persist in the future with anticipated growth in traffic, independent of the development.

For clarification, delays at the study area intersection have been previously documented as a foreseeable issue without the proposed development in the Midtown Oakville EA. The EA identified several roadway improvements to address traffic growth's existing and long-



term impacts. The construction of new direct off-ramps for the QEW at Trafalgar Road, a revised local road network for Midtown Oakville, an extension of Cross Avenue and a variety of intersection improvements are proposed. It is understood that these improvements will provide some relief to operational issues. However, vehicle capacity constraints will persist for the overall transportation network.

As the EA recognized capacity constraints, further remedial measures to improve intersection capacity are not likely to be implemented. Instead, future improvements to the transportation network are expected to primarily focus on sustainable forms of transportation, including an improved transit network through the addition of BRT along Trafalgar Road.

By focusing on shifting commuter travel to public transit, intersection operations could be expected to maintain the status quo (at capacity condition during peak hours) or improve if fewer vehicles transverse the intersections during the peak hours of a typical weekday. The Town of Oakville's Urban Mobility & Transportation Strategy¹⁶ echoes this sentiment:

“The Town of Oakville and Halton Region must accept a crucial point: they will never solve congestion. There will always be someone new who fills up space on the road, regardless of whether that space was created by paving a new lane or having some drivers switch to buses. It is well established that the expansion of congested roadways does not reduce congestion – it just increases the number of people on those roadways. This is called induced demand.”

“Due to the principle of induced demand, vehicular congestion can never be solved completely, and Oakville should not fall into the trap of trying to prove otherwise. Oakville's current methodology for assessing traffic (and the impacts to traffic from new developments) fails to capture this fact, biases suburban developments over urban ones, and does not assess other modes such as walking, cycling and transit.”

¹⁶ Oakville Urban Mobility & Transportation Strategy, Steer, November 2021



Transportation Demand Management

The proposed development proposes active mitigation by implementing several measures for transportation demand management (TDM). To complement and build upon the location and accessibility of the development and enhance the non-auto-dependent mobility of prospective residents, the development will consider adopting the following TDM measures to reduce the dependency on vehicular travel. These measures seek to accomplish the following:

- ▶ Facilitation of Reduced Car Ownership and Usage;
- ▶ Vehicular Parking Supply and Management;
- ▶ Encourage Transit Use;
- ▶ Encourage and Facilitate Bicycle Use;
- ▶ Enhance Pedestrian Access and Walkability;
- ▶ Land Use and Building Infrastructure; and
- ▶ Coordination, Communication, and Promotion

A limited parking supply is one of the most essential TDM measures. Research conducted focused on whether a relationship exists between the provision of off-street parking and the choice to drive among individuals travelling to or from the site. Following data collection and an empirical review of the data, this research found that reductions in off-street vehicular parking for office, residential, and retail developments reduce the overall automobile mode share associated with those developments relative to projects with the same land uses in similar contexts that provide more off-street vehicular parking.

The role of parking management is a crucial element in helping Oakville meet its trip reduction goals. If free and unregulated parking is provided, there is little incentive for many residents and visitors to use alternative modes of transportation. The Town of Oakville's Urban Mobility & Transportation Strategy echoes this sentiment:

“The provision of free parking is a subsidy to drivers, and its removal or reduction can serve as an encouragement to switch to other modes of transport.”



10.2 Recommendations

Based on the findings of this study, the following recommendations are identified:

- ▶ South Service Road and Argus Road be restricted to right-in/right-out only
- ▶ Cross Avenue at East Site Driveway be limited to right-in/right-out only
- ▶ On-site pedestrian sidewalks are recommended to be well-lit and conform to the Town of Oakville's design standards and the Accessibility for Ontarians with Disabilities Act (AODA) design standards.
- ▶ Implement reduced vehicular parking rates to serve as a critical TDM measure to reduce vehicular travel to and from the Project and provide support for reduced environmental and project cost impacts on the delivery of residential, retail, office, and daycare land uses within the Mid-Town Oakville context.
- ▶ Applicant implements unbundling resident parking where parking spaces are provided as a separate cost to residents.
- ▶ Provide a comprehensive TDM plan to maximize alternative mobility opportunities for residents, visitors and employees of the Project.



Appendix A

Terms of Reference



Greg Lue

From: Krusto, Matt <Matt.Krusto@halton.ca>
Sent: September 27, 2021 10:45 AM
To: Greg Lue
Cc: White, Mark J. (MTO); Adam Makarewicz; Syed Rizvi
Subject: RE: 210403 - 571 Argus Road, Oakville - Traffic Impact Study & Parking Study - Terms of Reference

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Greg,

Thank you for the detailed terms of reference. Sorry for the delay in replying. Below please find my comments.

I am good with all of the intersections shown for analysis.

Existing data can be used and grown to year 2021. You can also confirm with Halton's Road Operations group if there are more updated counts than 2017. For the traffic volume counts and traffic signal timing (from Halton Region), information can be requested from our Road Operations group at trafficdatarequests@halton.ca.

Traffic counts newer than March 2020 should not be used given the impacts to travel patterns resulting from the COVID-19 pandemic.

For Modal Split Assumptions: Town of Oakville staff must review and approve your proposed modal split assumptions outlined in your below terms of reference. Halton's Transportation Master Plan 2011 utilizes a transit mode split of 10% for 2021, 15% for 2026 and 20% for 2031. Assumption of travel via other modes (active transportation i.e.: walk, cycle) should utilize a 5% mode split for 2031. Transportation Demand Management (TDM) assumptions of 3% for 2031 would also be acceptable. **Transit mode splits will need to be adjusted from the 2011 TMP assumptions to reasonable percentages based on current year (2021), 2026 and 2031 planned and proposed mode splits (based on existing facilities and service in the area to date (planned &/or proposed)). Reasonable assumptions and rationale must be clearly outlined in the Study.**

For the growth rate, based on the approved Trafalgar Road Class Environmental Assessment Study (May 2015), *"...the model predicts growth rates averaging two percent per annum, to the year 2031, on various sections of Trafalgar Road and the crossing streets."*

Town of Oakville staff will comment on background developments to be assumed and, the acceptable assumptions for Midtown.

Other general Study comments include:

The TIS report will include:

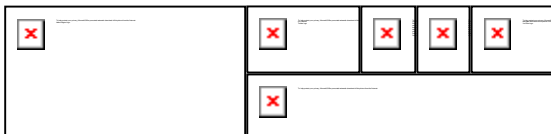
- *Site Plan and Map,*
- *Size & Number of Development Phases,*
- *Existing Conditions (Study Area Intersections, Road Network, Pedestrian Routes, Cycling Routes, Transit Services),*
- *Existing Traffic Conditions (Site Operating Characteristics, Data Collection/Traffic Counts, Analysis Periods (5 years Ahead),*
- *Future Background Conditions (Horizon Years, Horizon Year Volumes)*

- *Background Traffic Demand (with TMC's < 2 years old),*
- *Background Traffic Demand Forecast (with acceptable growth rates)*
- *Site Generated Traffic (Transit Modal Split, Trip Generation/Distribution/Assignment)*
- *Future Total Traffic Demand,*
- *Capacity Analysis (by Intersection, with LOS, Avg. Delay, V/C ratios),*
- *Traffic Impacts (Tables – Total Traffic with/without Mitigation)*
- *Access Considerations – Existing, Proposed, Geometrics (turn lanes, sight lines),*
- *Recommendations - Identify required/recommended road improvements either as a result of the development impacts, or general non-development improvements.*
- *TDM recommendations (Transit, Pedestrian & Cycling Facilities Analysis)*
- *Conclusions*

Hope this helps.

Matt

Matt Krusto
Supervisor, Transportation Development Review
 Infrastructure Planning & Policy
 Public Works
Halton Region
 905-825-6000, ext. 7225 | 1-866-442-5866



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From: Greg Lue <glue@ptsl.com>
Sent: Thursday, September 16, 2021 2:34 PM
To: Krusto, Matt <Matt.Krusto@halton.ca>; Mark.j.white@ontario.ca; Syed Rizvi <syed.rizvi@oakville.ca>
Cc: Adam Makarewicz <amakarewicz@ptsl.com>
Subject: 210403 - 571 Argus Road, Oakville - Traffic Impact Study & Parking Study - Terms of Reference

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Hi all,

Paradigm Transportations Solutions Limited has been retained to conduct a Transportation Impact Analysis and Parking Study for a proposed development located 217-227 Cross Avenue and 571 Argus Road in the Town of Oakville. The preliminary site plan (attached) envisions a large-scale development of two towers with proposed heights of 24 and 33 storeys on top of a mutual 6-storey podium. The development would include approximately 863 residential units with 275 parking spaces and 121 bicycle parking spaces. Vehicle access

will be provided through two driveway connections to Argus Road providing separated connections for parking and loading activities.

Proposed Terms of Reference

Study Area Intersections

- Trafalgar Road at QEW WB Ramp (signalized);
- Trafalgar Road at QEW EB Ramp (signalized);
- Trafalgar Road at Cross Avenue/South Service Road (signalized);
- Trafalgar Road at Cornwall Road (signalized);
- Cross Avenue and Argus Road/GO Station Driveway (signalized);
- Trafalgar Road at Argus Road (unsignalized);
- Argus Road and South Service Road (unsignalized); and
- One site driveway.

Existing Data

- We have TMC data in the study area from that are from 2017 and 2019. Are there any issues with these counts being too old to use? Historic traffic growth trends at Trafalgar Rd & QEW ramps showed a decrease in traffic of 3-4% between 2015 and 2017. Thus, we would assume no growth from TMC year to Base year.
- Are there any concerns with new traffic data being collected in the coming weeks?

Horizon Years

- 2021 Base Year
- Opening Date
- 5 and 10-years from opening date

Analysis Periods

- Weekday AM peak hour
- Weekday PM peak hour

Analysis

- Synchro 10
- HCM 2000
- SimTraffic Queueing (five 60-min iterations)

Background Traffic

- Generalized growth rate 2% per annum
- Redevelopment of Midtown Oakville traffic will be included based on forecasts from the Midtown Oakville Transportation and Stormwater Municipal Class EA 2015
- Can you comment on this and provide any other relevant studies or inputs to estimate the traffic for the site(s)?

Site Traffic Estimates

- ITE Trip Generation Data 10th Edition
- Modal split reductions will be considered assuming all agencies agree on the reduction. Preliminary reductions based on the Town of Oakville Transportation Master Plan (2018) have these trip reductions at 6.6% to account for transit, 6% accounting for active transportation, and 6% accounting for travel demand management.

Site Traffic Distribution

- Existing travel patterns/TTS data

Access and Circulation Review

- Front End Garbage Truck
- Fire Truck
- Other vehicles TBD based on Clients input/needs

Parking Study

- Parking generation for the site will be calculated using parking rates obtained from ITE Parking Generation Manual, Zoning By-Law comparisons, and other sources.
- A parking rate will be recommended that is deemed applicable to the subject site taking into account the development's location. The recommended rate will then be used to estimate the number of parking spaces needed to meet the projected parking demand. The estimated parking supply needed will be compared to the By-law required supply to assess the feasibility of providing less than the By-law supply requirements. In the event that the parking review determines that a parking reduction cannot be justified, the report will speak to this point.

Report

- We will document the study methodologies, findings, and conclusions in a report with appendices containing the detailed analysis results and any data collected.



Please let us know your comments on the study.

Greg Lue, M.A.Sc., P.Eng.
Transportation Engineer



Paradigm Transportation Solutions Limited

5A-150 Pinebush Road, Cambridge ON N1R 8J8

p: 905.381.2229 x307

m: 905.981.7479

e: glue@ptsl.com

w: www.ptsl.com

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Greg Lue

From: White, Mark J. (MTO) <Mark.J.White@ontario.ca>
Sent: September 17, 2021 3:26 PM
To: Greg Lue
Subject: RE: 210403 - 571 Argus Road, Oakville - Traffic Impact Study & Parking Study - Terms of Reference

Follow Up Flag: Follow up
Flag Status: Flagged

Good morning Greg,

The proposed development 571 Argus Road Oakville is outside of MTO's permit control area, therefore we have no comment.

Regards,

Mark White
Corridor Management Planner
Ministry of Transportation | Central Region
159 Sir William Hearst Ave. 7th Floor,
Toronto, ON M3M 0B7
Mark.j.white@ontario.ca

From: Greg Lue <glue@ptsl.com>
Sent: September 16, 2021 2:34 PM
To: Krusto, Matt <Matt.Krusto@halton.ca>; White, Mark J. (MTO) <Mark.J.White@ontario.ca>; Syed Rizvi <syed.rizvi@oakville.ca>
Cc: Adam Makarewicz <amakarewicz@ptsl.com>
Subject: 210403 - 571 Argus Road, Oakville - Traffic Impact Study & Parking Study - Terms of Reference

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Please let us know your comments on the study.

Greg Lue, M.A.Sc., P.Eng.
Transportation Engineer



Paradigm Transportation Solutions Limited

5A-150 Pinebush Road, Cambridge ON N1R 8J8
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m: 905.981.7479
e: glue@ptsl.com
w: www.ptsl.com

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Greg Lue

From: Aquisha Khan <aquisha.khan@oakville.ca>
Sent: September 23, 2021 2:10 PM
To: Greg Lue
Cc: Tricia Collingwood
Subject: RE: 210403 - 571 Argus Rd - Town Contact Information

Follow Up Flag: Follow up
Flag Status: Flagged

Thank you Tricia.

Mr. Lue, please see my comments below in red.

Aquisha Khan, P. Eng.
Transportation Engineer
Transportation and Engineering
Town of Oakville | 905-845-6601, | www.oakville.ca

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From: Tricia Collingwood <tricia.collingwood@oakville.ca>
Sent: September 22, 2021 6:55 PM
To: 'Greg Lue' <glue@ptsl.com>
Cc: Aquisha Khan <aquisha.khan@oakville.ca>
Subject: RE: 210403 - 571 Argus Rd - Town Contact Information

Hello Greg – sorry for the delay – I have cc'd Aquisha.

Aquisha – please see below for information coming from the Applicant:

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- , 1 7 · t · f i n S ε t a } S f i a s s j . ε ; l v t ; f l 0 S u n n f l v a t n l f l v n f i a s s j " ε } · ~ n f l » v } i n j ε ~ i v n l » v u t u n s · t · f i n i a j | t f i ε · ; l f i a s s j " ε } · ~ n f l ε l n t n f i · v n t u n t ε t a } f i a s s j " ε } · ~ n f l ε f i t u n f l · l % a f n a v t t n f f n j t ε ; f l ; n f f n j t ε ; ε « n f a t ε ; f l a ; a } f l v } v } i n · ; l n f i a | n ; ε f i t u n » n n | l a % % B M B « n a | u f · f f l % ; % ; n j n f l a f l ε f a l v « f i " n ~ n ; f l f i n > · v n l ε a j j ε ~ ~ ε l a t n t ε t a } f i a s s j " ε } · ~ n f l » v } i n v n ; t s n l v s ; n j n f l a f l ε f l · j u a f l a l l v t ε ; a } t · f i ; v t j a ; n f l f l ε f a t n j ; t t u ~ ε l v s j a t ε ; f l v t t n f f n j t ε ; f i n j ε ; s t · f a t ε ; f l f l t ; a } t v v t a l { · f l t · n ; f l a ; l f l t ; a } v f l t a } a t ε ;
- ° 1 7 · t · f i n P f a l C n t » ε f i l a f f l · ~ « t ε ; f l 7 ε f i t u n 7 v n a ; l S n ; \ n a f f l a s t n f i E « n ; v t 0 a % u f f i v ε ; f l S f a s a t a f i P f a l v l a f f l · ~ n l ε ε « n f a t n a f l a f l v D a ; n j ε f f i l ε f i » v u 9 E Y j · f i j a ; n f l S u n f i n ~ ε " a } ε s t u n n a f l t i ε · ; l j u a ; n } v n l f i t u t t · f i ; a t S f a s a t a f i P f a l a ; l . ε f i ; » a } P f a l » v } a f l ε i n j ε ; f l n f n l ε i n j ε ; f l v t n ; t » v u t u n « f i n f f n l l n f l t ; a f l « ε f i f a n l v t u n S f a s a t a f i P f a l ~ « f i " n ~ n ; f l . } a f f l 2 ; " v i ε ; ~ n ; t a } % f l n f f l ~ n ; t % l l v t ε ; a } j a t v f l n f l v a t n t u a t " ~ i ε s j a ; n j a « a j v % v l a f f l t ; n l ε 9 E Y · f l a t n 1 7 ε f i a j j n f l a ; l j v i j · j a t ε ; » v u v B v l ε » ; E a | " v } h t a f n " v n l } ε j a } f i a l ; n t » ε f i l a f l « ε f i f a n l v t u n B v l ε » ; E a | " v } h . } a f f l 2 ; " v i ε ; ~ n ; t a } % f l n f f l ~ n ; t » v } i n a f f l · ~ n l 1

- 8. [AK:] Include a Parking Section – This section to include if the requirements are met, parking layout plan.
- 9. [AK:] Include a Transportation Demand Management Plan section – This section to incorporation how it would be used.
- 10. [AK:] Include a Turning Movement Plans – This section to illustrate loading/unloading, fire route.
- 11. [AK:] Include a Solid waste management Plan – This is upon final approval from region (Identify if private/public).

[AK:] If there are any other questions, please feel free to contact me.

Thank you
Tricia

Tricia Collingwood, MURP, MCIP, RPP
Senior Planner - Current Planning - East District

Planning Services

Town of Oakville | 905-845-6601, ext.3833 | f: 905-338-4414 | www.oakville.ca

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From: Greg Lue <glue@ptsl.com>
Sent: September 14, 2021 2:22 PM
To: Tricia Collingwood <tricia.collingwood@oakville.ca>
Subject: 210403 - 571 Argus Rd - Town Contact Information

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Hi Tricia,

Paradigm has been retained to prepare a Traffic Impact Study for a development at 571 Argus Road in the Town of Oakville. I am preparing to send of Terms of Reference for the study and I was told the Town contact is Aquisha Khan but I can't seem to find their contact information. Could you possibly send me their contact information? Thanks !

Greg Lue, M.A.Sc., P.Eng.
Transportation Engineer



Paradigm Transportation Solutions Limited

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p: 905.381.2229 x307
m: 905.981.7479
e: glue@ptsl.com
w: www.ptsl.com

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Appendix B

Existing Traffic Data



Trafalgar Rd @ North Service Rd E

Morning Peak Diagram

Specified Period

From: 7:00:00

To: 9:00:00

One Hour Peak

From: 7:45:00

To: 8:45:00

Municipality: Halton Region
Site #: 0000003015
Intersection: Trafalgar Rd & North Service Rd E
TFR File #: 7
Count date: 1-Jun-2017

Weather conditions:
Clear/Dry
Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Leg Total: 4937
 North Entering: 3090
 North Peds: 0
 Peds Cross: \times

Heavys	0	77	0	77
Trucks	0	18	0	18
Cars	5	2990	0	2995
Totals	5	3085	0	



Heavys	59
Trucks	30
Cars	1758
Totals	1847

East Leg Total: 896
 East Entering: 620
 East Peds: 5
 Peds Cross: \times

Heavys	Trucks	Cars	Totals
3	4	28	35

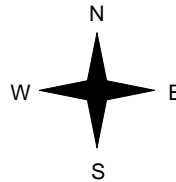


Trafalgar Rd

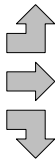
Cars	Trucks	Heavys	Totals
213	7	6	226
23	4	3	30
344	12	8	364
580	23	17	



North Service Rd E



Heavys	Trucks	Cars	Totals
0	0	1	1
0	0	0	0
3	2	176	181
3	2	177	



QEW WB On/Off Ramp



Cars	Trucks	Heavys	Totals
261	3	12	276

Peds Cross: \times
 West Peds: 8
 West Entering: 182
 West Leg Total: 217

Cars	3510
Trucks	32
Heavys	88
Totals	3630



Cars	0	1544	261	1805
Trucks	0	23	3	26
Heavys	0	53	12	65
Totals	0	1620	276	

Peds Cross: \times
 South Peds: 0
 South Entering: 1896
 South Leg Total: 5526

Comments

Trafalgar Rd @ North Service Rd E

Mid-day Peak Diagram

Specified Period

From: 11:00:00

To: 14:00:00

One Hour Peak

From: 12:00:00

To: 13:00:00

Municipality: Halton Region
Site #: 0000003015
Intersection: Trafalgar Rd & North Service Rd E
TFR File #: 7
Count date: 1-Jun-2017

Weather conditions:
Clear/Dry
Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Leg Total: 3903
 North Entering: 1954
 North Peds: 3
 Peds Cross: \bowtie

Heavys	0	62	0	62
Trucks	0	27	0	27
Cars	10	1855	0	1865
Totals	10	1944	0	



Heavys	64
Trucks	63
Cars	1822
Totals	1949

East Leg Total: 1092
 East Entering: 742
 East Peds: 9
 Peds Cross: \bowtie

Heavys	0
Trucks	2
Cars	81
Totals	83

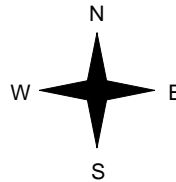


Trafalgar Rd

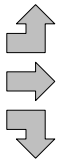
Cars	230	Trucks	16	Heavys	18	Totals	264
	71		2		0		73
	387		13		5		405
Totals	688		31		23		



North Service Rd E



Heavys	1	Trucks	1	Cars	24	Totals	26
	0		0		0		0
	4		3		214		221
Totals	5		4		238		



QEW WB On/Off Ramp



Cars	331	Trucks	11	Heavys	8	Totals	350
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Peds Cross: \bowtie
 West Peds: 15
 West Entering: 247
 West Leg Total: 330

Cars	2456
Trucks	43
Heavys	71
Totals	2570



Cars	0	1568	331	1899
Trucks	0	46	11	57
Heavys	0	45	8	53
Totals	0	1659	350	

Peds Cross: \bowtie
 South Peds: 3
 South Entering: 2009
 South Leg Total: 4579

Comments

Trafalgar Rd @ North Service Rd E

Afternoon Peak Diagram

Specified Period

From: 15:00:00

To: 18:00:00

One Hour Peak

From: 17:00:00

To: 18:00:00

Municipality: Halton Region
Site #: 0000003015
Intersection: Trafalgar Rd & North Service Rd E
TFR File #: 7
Count date: 1-Jun-2017

Weather conditions:
Clear/Dry
Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Leg Total: 5024
 North Entering: 2280
 North Peds: 2
 Peds Cross: \times

Heavys	0	37	0	37
Trucks	0	13	0	13
Cars	10	2220	0	2230
Totals	10	2270	0	



Heavys	35
Trucks	10
Cars	2699
Totals	2744

East Leg Total: 1173
 East Entering: 857
 East Peds: 14
 Peds Cross: \times

Heavys	0
Trucks	1
Cars	126
Totals	127

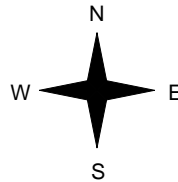


Trafalgar Rd

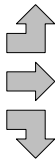
Cars	321	Trucks	2	Heavys	3	Totals	326
Cars	116	Trucks	1	Heavys	0	Totals	117
Cars	407	Trucks	2	Heavys	5	Totals	414
Cars	844	Trucks	5	Heavys	8	Totals	



North Service Rd E



Heavys	0
Trucks	0
Cars	17
Totals	17
Heavys	0
Trucks	0
Cars	0
Totals	0
Heavys	1
Trucks	0
Cars	223
Totals	224
Heavys	1
Trucks	0
Cars	240
Totals	240



QEW WB On/Off Ramp



Cars	313	Trucks	1	Heavys	2	Totals	316
------	-----	--------	---	--------	---	--------	-----

Peds Cross: \times
 West Peds: 14
 West Entering: 241
 West Leg Total: 368

Cars	2850	Cars	0	2361	313	2674
Trucks	15	Trucks	0	8	1	9
Heavys	43	Heavys	0	32	2	34
Totals	2908	Totals	0	2401	316	



Peds Cross: \times
 South Peds: 0
 South Entering: 2717
 South Leg Total: 5625

Comments

Trafalgar Rd @ North Service Rd E

Total Count Diagram

Municipality: Halton Region
Site #: 0000003015
Intersection: Trafalgar Rd & North Service Rd E
TFR File #: 7
Count date: 1-Jun-2017

Weather conditions:
 Clear/Dry
Person(s) who counted:
 Cam

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Leg Total: 33764
 North Entering: 17883
 North Peds: 9
 Peds Cross: \times

Heavys	1	476	0	477
Trucks	0	166	0	166
Cars	63	17177	0	17240
Totals	64	17819	0	



Heavys	458
Trucks	232
Cars	15191
Totals	15881

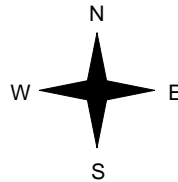
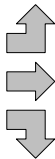
East Leg Total: 8515
 East Entering: 5956
 East Peds: 67
 Peds Cross: \times

Heavys	Trucks	Cars	Totals
9	11	557	577



North Service Rd E

Heavys	Trucks	Cars	Totals
1	2	129	132
0	0	0	0
20	22	1547	1589
21	24	1676	



Trafalgar Rd

Cars	Trucks	Heavys	Totals
2172	61	101	2334
494	11	8	513
3005	62	42	3109
5671	134	151	

QEW WB On/Off Ramp



Cars	Trucks	Heavys	Totals
2456	46	57	2559

Peds Cross: \times
 West Peds: 82
 West Entering: 1721
 West Leg Total: 2298

Cars	21729	Cars	0	12890	2456	15346
Trucks	250	Trucks	0	169	46	215
Heavys	538	Heavys	0	356	57	413
Totals	22517	Totals	0	13415	2559	



Peds Cross: \times
 South Peds: 4
 South Entering: 15974
 South Leg Total: 38491

Comments

Trafalgar Rd @ QEW EB Off Ramp

Morning Peak Diagram

Specified Period

From: 7:00:00

To: 9:00:00

One Hour Peak

From: 7:45:00

To: 8:45:00

Municipality: Halton Region
Site #: 0000003014
Intersection: Trafalgar Rd & QEW EB Off Ramp
TFR File #: 6
Count date: 1-Jun-2017

Weather conditions:
Clear/Dry
Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Leg Total: 3931

North Entering: 2046

North Peds: 0

Peds Cross: ∇

Heavys	0	63	63
Trucks	0	17	17
Cars	0	1966	1966
Totals	0	2046	



Heavys	68
Trucks	21
Cars	1796
Totals	1885

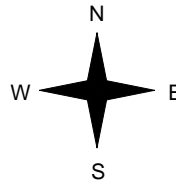
Heavys	Trucks	Cars	Totals
0	0	0	0



Trafalgar Rd



QEW EB Off Ramp



Heavys	Trucks	Cars	Totals
12	11	799	822
6	2	591	599
18	13	1390	



Trafalgar Rd



Peds Cross: ∇
 West Peds: 6
 West Entering: 1421
 West Leg Total: 1421

Cars	2557
Trucks	19
Heavys	69
Totals	2645



Cars	0	997	997
Trucks	0	10	10
Heavys	0	56	56
Totals	0	1063	

Peds Cross: ∇
 South Peds: 0
 South Entering: 1063
 South Leg Total: 3708

Comments

Trafalgar Rd @ QEW EB Off Ramp

Mid-day Peak Diagram

Specified Period

From: 11:00:00

To: 14:00:00

One Hour Peak

From: 11:30:00

To: 12:30:00

Municipality: Halton Region
Site #: 0000003014
Intersection: Trafalgar Rd & QEW EB Off Ramp
TFR File #: 6
Count date: 1-Jun-2017

Weather conditions:
Clear/Dry
Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Leg Total: 3410
 North Entering: 1392
 North Peds: 0
 Peds Cross: ∇

Heavys	0	32	32
Trucks	0	13	13
Cars	0	1347	1347
Totals	0	1392	



Heavys	56
Trucks	25
Cars	1937
Totals	2018

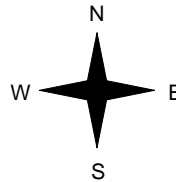
Heavys	Trucks	Cars	Totals
0	0	0	0



Trafalgar Rd



QEW EB Off Ramp



Heavys	Trucks	Cars	Totals
21	8	644	673
6	9	421	436
27	17	1065	



Trafalgar Rd



Peds Cross: ∇
 West Peds: 11
 West Entering: 1109
 West Leg Total: 1109

Cars	1768
Trucks	22
Heavys	38
Totals	1828



Cars	0	1293	1293
Trucks	0	17	17
Heavys	0	35	35
Totals	0	1345	

Peds Cross: ∇
 South Peds: 2
 South Entering: 1345
 South Leg Total: 3173

Comments

Trafalgar Rd @ QEW EB Off Ramp

Afternoon Peak Diagram

Specified Period

From: 15:00:00

To: 18:00:00

One Hour Peak

From: 17:00:00

To: 18:00:00

Municipality: Halton Region
Site #: 0000003014
Intersection: Trafalgar Rd & QEW EB Off Ramp
TFR File #: 6
Count date: 1-Jun-2017

Weather conditions:
Clear/Dry
Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Leg Total: 4360
 North Entering: 1485
 North Peds: 0
 Peds Cross: ∇

Heavys	0	26	26
Trucks	0	5	5
Cars	0	1454	1454
Totals	0	1485	



Heavys	34
Trucks	6
Cars	2835
Totals	2875

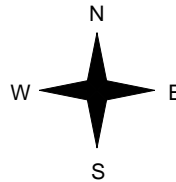
Heavys	Trucks	Cars	Totals
0	0	0	0



Trafalgar Rd



QEW EB Off Ramp



Heavys	Trucks	Cars	Totals
1	2	888	891
5	0	414	419
6	2	1302	



Trafalgar Rd



Peds Cross: ∇
 West Peds: 17
 West Entering: 1310
 West Leg Total: 1310

Cars	1868
Trucks	5
Heavys	31
Totals	1904



Cars	0	1947	1947
Trucks	0	4	4
Heavys	0	33	33
Totals	0	1984	

Peds Cross: ∇
 South Peds: 2
 South Entering: 1984
 South Leg Total: 3888

Comments

Trafalgar Rd @ QEW EB Off Ramp

Total Count Diagram

Municipality: Halton Region
Site #: 0000003014
Intersection: Trafalgar Rd & QEW EB Off Ramp
TFR File #: 6
Count date: 1-Jun-2017

Weather conditions:
 Clear/Dry
Person(s) who counted:
 Cam

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Leg Total: 28637
 North Entering: 12310
 North Peds: 0
 Peds Cross: ∇

Heavys	0	296	296
Trucks	0	118	118
Cars	0	11896	11896
Totals	0	12310	

Heavys	411
Trucks	143
Cars	15773
Totals	16327



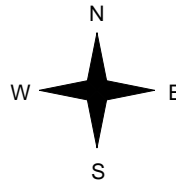
Heavys	Trucks	Cars	Totals
0	0	0	0



Trafalgar Rd



QEW EB Off Ramp



Heavys	Trucks	Cars	Totals
114	48	5398	5560
59	36	3438	3533
173	84	8836	



Trafalgar Rd



Peds Cross: ∇
 West Peds: 87
 West Entering: 9093
 West Leg Total: 9093

Cars	15334
Trucks	154
Heavys	355
Totals	15843



Cars	0	10375	10375
Trucks	0	95	95
Heavys	0	297	297
Totals	0	10767	

Peds Cross: ∇
 South Peds: 7
 South Entering: 10767
 South Leg Total: 26610

Comments

Trafalgar Rd @ Argus Rd

Morning Peak Diagram

Specified Period

From: 7:00:00

To: 9:00:00

One Hour Peak

From: 7:45:00

To: 8:45:00

Municipality: Halton Region
Site #: 0000003013
Intersection: Trafalgar Rd & Argus Rd
TFR File #: 2
Count date: 15-May-2017

Weather conditions:
Sunny/Dry
Person(s) who counted:
Bronek
Radek

**** Non-Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Leg Total: 3496
 North Entering: 2579
 North Peds: 0
 Peds Cross: ∇

Heavys	10	39	49
Trucks	3	46	49
Cars	633	1848	2481
Totals	646	1933	



Heavys	42
Trucks	26
Cars	849
Totals	917

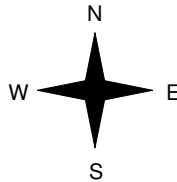
Heavys	Trucks	Cars	Totals
10	3	633	646



Trafalgar Rd



Argus Rd



Heavys	Trucks	Cars	Totals
0	0	0	0
0	1	14	15
0	1	14	



Trafalgar Rd



Peds Cross: ∇
 West Peds: 11
 West Entering: 15
 West Leg Total: 661

Cars	1862
Trucks	47
Heavys	39
Totals	1948



Cars	0	849	849
Trucks	0	26	26
Heavys	0	42	42
Totals	0	917	

Peds Cross: ∇
 South Peds: 0
 South Entering: 917
 South Leg Total: 2865

Comments

Trafalgar Rd @ Argus Rd

Mid-day Peak Diagram

Specified Period

From: 11:00:00

To: 14:00:00

One Hour Peak

From: 12:15:00

To: 13:15:00

Municipality: Halton Region
Site #: 0000003013
Intersection: Trafalgar Rd & Argus Rd
TFR File #: 2
Count date: 15-May-2017

Weather conditions:
Sunny/Dry
Person(s) who counted:
Bronek
Radek

**** Non-Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Leg Total: 2892
 North Entering: 1647
 North Peds: 0
 Peds Cross: ∇

Heavys	11	30	41
Trucks	5	32	37
Cars	279	1290	1569
Totals	295	1352	



Heavys	29
Trucks	22
Cars	1194
Totals	1245

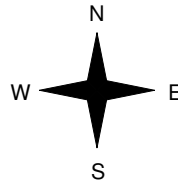
Heavys	Trucks	Cars	Totals
11	5	279	295



Trafalgar Rd



Argus Rd



Heavys	Trucks	Cars	Totals
0	0	0	0
1	2	35	38
1	2	35	



Trafalgar Rd



Peds Cross: ∇
 West Peds: 9
 West Entering: 38
 West Leg Total: 333

Cars	1325
Trucks	34
Heavys	31
Totals	1390



Cars	0	1194	1194
Trucks	0	22	22
Heavys	0	29	29
Totals	0	1245	

Peds Cross: ∇
 South Peds: 0
 South Entering: 1245
 South Leg Total: 2635

Comments

Trafalgar Rd @ Argus Rd

Afternoon Peak Diagram

Specified Period

From: 15:00:00

To: 18:00:00

One Hour Peak

From: 17:00:00

To: 18:00:00

Municipality: Halton Region
Site #: 0000003013
Intersection: Trafalgar Rd & Argus Rd
TFR File #: 2
Count date: 15-May-2017

Weather conditions:
Sunny/Dry
Person(s) who counted:
Bronek
Radek

**** Non-Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Leg Total: 3579
 North Entering: 1674
 North Peds: 0
 Peds Cross: ∇

Heavys	9	21	30
Trucks	1	8	9
Cars	330	1305	1635
Totals	340	1334	



Heavys	29
Trucks	8
Cars	1868
Totals	1905

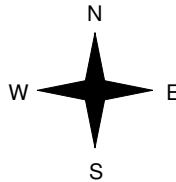
Heavys	Trucks	Cars	Totals
9	1	330	340



Trafalgar Rd



Argus Rd



Heavys	Trucks	Cars	Totals
0	0	0	0
2	1	35	38
2	1	35	



Trafalgar Rd



Peds Cross: ∇
 West Peds: 24
 West Entering: 38
 West Leg Total: 378

Cars	1340
Trucks	9
Heavys	23
Totals	1372



Cars	0	1868	1868
Trucks	0	8	8
Heavys	0	29	29
Totals	0	1905	

Peds Cross: ∇
 South Peds: 0
 South Entering: 1905
 South Leg Total: 3277

Comments

Trafalgar Rd @ Argus Rd

Total Count Diagram

Municipality: Halton Region
Site #: 0000003013
Intersection: Trafalgar Rd & Argus Rd
TFR File #: 2
Count date: 15-May-2017

Weather conditions:
 Sunny/Dry
Person(s) who counted:
 Bronek
 Radek

**** Non-Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Leg Total: 24276
 North Entering: 14428
 North Peds: 0
 Peds Cross: ∇

Heavys	85	240	325
Trucks	21	245	266
Cars	3022	10815	13837
Totals	3128	11300	



Heavys	267
Trucks	169
Cars	9412
Totals	9848

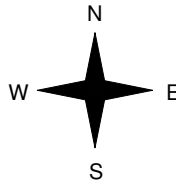
Heavys	Trucks	Cars	Totals
85	21	3022	3128



Trafalgar Rd



Argus Rd



Heavys	Trucks	Cars	Totals
0	0	0	0
6	8	215	229
6	8	215	



Trafalgar Rd



Peds Cross: ∇
 West Peds: 99
 West Entering: 229
 West Leg Total: 3357

Cars	11030
Trucks	253
Heavys	246
Totals	11529



Cars	0	9412	9412
Trucks	0	169	169
Heavys	0	267	267
Totals	0	9848	

Peds Cross: ∇
 South Peds: 0
 South Entering: 9848
 South Leg Total: 21377

Comments

Trafalgar Rd @ South Service Rd

Morning Peak Diagram

Specified Period

From: 7:00:00

To: 9:00:00

One Hour Peak

From: 8:00:00

To: 9:00:00

Municipality: Halton Region
Site #: 0000003012
Intersection: Trafalgar Rd & South Service Rd
TFR File #: 5
Count date: 1-Jun-2017

Weather conditions:
Clear/Dry
Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Leg Total: 3502
 North Entering: 1907
 North Peds: 1
 Peds Cross: \bowtie

Heavys	14	16	3	33
Trucks	2	21	5	28
Cars	377	1232	237	1846
Totals	393	1269	245	



Heavys	54
Trucks	15
Cars	1526
Totals	1595

East Leg Total: 607
 East Entering: 234
 East Peds: 52
 Peds Cross: \bowtie

Heavys	Trucks	Cars	Totals
28	5	547	580



Trafalgar Rd

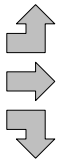
Cars	Trucks	Heavys	Totals
109	1	4	114
74	1	5	80
39	1	0	40
222	3	9	



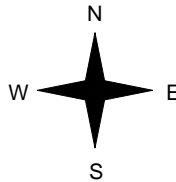
South Service Rd



Heavys	Trucks	Cars	Totals
27	6	337	370
5	0	72	77
9	4	94	107
41	10	503	



Cross Ave



Trafalgar Rd



Cars	Trucks	Heavys	Totals
360	5	8	373

Peds Cross: \bowtie
 West Peds: 10
 West Entering: 554
 West Leg Total: 1134

Cars	1365
Trucks	26
Heavys	25
Totals	1416



Cars	96	1080	51	1227
Trucks	2	8	0	10
Heavys	9	23	0	32
Totals	107	1111	51	

Peds Cross: \bowtie
 South Peds: 4
 South Entering: 1269
 South Leg Total: 2685

Comments

Trafalgar Rd @ South Service Rd

Mid-day Peak Diagram

Specified Period

From: 11:00:00

To: 14:00:00

One Hour Peak

From: 12:00:00

To: 13:00:00

Municipality: Halton Region
Site #: 0000003012
Intersection: Trafalgar Rd & South Service Rd
TFR File #: 5
Count date: 1-Jun-2017

Weather conditions:
Clear/Dry
Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Leg Total: 3320
 North Entering: 1509
 North Peds: 0
 Peds Cross: \times

Heavys	9	12	4	25
Trucks	6	21	2	29
Cars	232	1101	122	1455
Totals	247	1134	128	



Heavys	42
Trucks	25
Cars	1744
Totals	1811

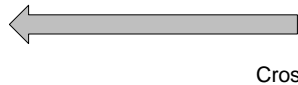
East Leg Total: 594
 East Entering: 336
 East Peds: 8
 Peds Cross: \times

Heavys	Trucks	Cars	Totals
17	8	450	475

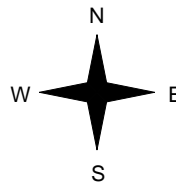


Trafalgar Rd

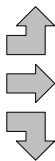
Cars	Trucks	Heavys	Totals
151	3	6	160
89	0	2	91
80	2	3	85
320	5	11	



Cross Ave



Heavys	Trucks	Cars	Totals
21	2	407	430
2	2	70	74
6	0	88	94
29	4	565	



South Service Rd



Peds Cross: \times
 West Peds: 20
 West Entering: 598
 West Leg Total: 1073

Cars	1269
Trucks	23
Heavys	21
Totals	1313



Cars	129	1186	54	1369
Trucks	2	20	2	24
Heavys	6	15	0	21
Totals	137	1221	56	

Peds Cross: \times
 South Peds: 28
 South Entering: 1414
 South Leg Total: 2727

Comments

Trafalgar Rd @ South Service Rd

Afternoon Peak Diagram

Specified Period

From: 15:00:00

To: 18:00:00

One Hour Peak

From: 17:00:00

To: 18:00:00

Municipality: Halton Region
Site #: 0000003012
Intersection: Trafalgar Rd & South Service Rd
TFR File #: 5
Count date: 1-Jun-2017

Weather conditions:
Clear/Dry
Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Leg Total: 4034
 North Entering: 1668
 North Peds: 0
 Peds Cross: \times

Heavys	9	5	0	14
Trucks	0	4	0	4
Cars	281	1250	119	1650
Totals	290	1259	119	



Heavys	34
Trucks	9
Cars	2323
Totals	2366

East Leg Total: 749
 East Entering: 515
 East Peds: 70
 Peds Cross: \times

Heavys	Trucks	Cars	Totals
20	0	516	536

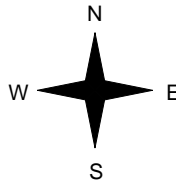


Trafalgar Rd

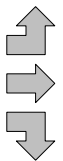
Cars	Trucks	Heavys	Totals
246	1	1	248
125	0	5	130
134	1	2	137
505	2	8	



Cross Ave



Heavys	Trucks	Cars	Totals
28	1	837	866
6	0	72	78
11	0	109	120
45	1	1018	



South Service Rd



Cars	Trucks	Heavys	Totals
228	0	6	234



Trafalgar Rd

Peds Cross: \times
 West Peds: 18
 West Entering: 1064
 West Leg Total: 1600

Cars	1493
Trucks	5
Heavys	18
Totals	1516



Cars	110	1240	37	1387
Trucks	0	7	0	7
Heavys	6	5	0	11
Totals	116	1252	37	

Peds Cross: \times
 South Peds: 15
 South Entering: 1405
 South Leg Total: 2921

Comments

Trafalgar Rd @ South Service Rd

Total Count Diagram

Municipality: Halton Region
Site #: 0000003012
Intersection: Trafalgar Rd & South Service Rd
TFR File #: 5
Count date: 1-Jun-2017

Weather conditions:
 Clear/Dry
Person(s) who counted:
 Cam

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Leg Total: 27051
 North Entering: 12565
 North Peds: 1
 Peds Cross: \times

Heavys	93	116	17	226
Trucks	14	124	15	153
Cars	2294	8870	1022	12186
Totals	2401	9110	1054	



Heavys	349
Trucks	148
Cars	13989
Totals	14486

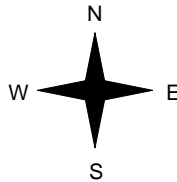
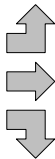
East Leg Total: 4526
 East Entering: 2674
 East Peds: 256
 Peds Cross: \times

Heavys	Trucks	Cars	Totals
167	27	3820	4014



Cross Ave

Heavys	Trucks	Cars	Totals
197	24	3662	3883
21	8	474	503
59	7	728	794
277	39	4864	



Trafalgar Rd

Cars	Trucks	Heavys	Totals
1272	20	34	1326
736	3	18	757
569	8	14	591
2577	31	66	



South Service Rd



Cars	Trucks	Heavys	Totals
1776	32	44	1852

Peds Cross: \times
 West Peds: 102
 West Entering: 5180
 West Leg Total: 9194

Cars	10167	Cars	790	9055	280	10125
Trucks	139	Trucks	10	104	9	123
Heavys	189	Heavys	56	118	6	180
Totals	10495	Totals	856	9277	295	



Peds Cross: \times
 South Peds: 83
 South Entering: 10428
 South Leg Total: 20923

Comments

Trafalgar Rd @ Cornwall Rd

Morning Peak Diagram

Specified Period

From: 7:00:00

To: 9:00:00

One Hour Peak

From: 8:00:00

To: 9:00:00

Municipality: Halton Region
Site #: 0000003011
Intersection: Trafalgar Rd & Cornwall Rd
TFR File #: 4
Count date: 1-Jun-2017

Weather conditions:
Clear/Dry
Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Leg Total: 2557
 North Entering: 1337
 North Peds: 25
 Peds Cross: \times

Heavys	9	6	19	34
Trucks	10	6	4	20
Cars	300	471	512	1283
Totals	319	483	535	



Heavys	14
Trucks	9
Cars	1197
Totals	1220

East Leg Total: 1995
 East Entering: 953
 East Peds: 18
 Peds Cross: \times

Heavys	Trucks	Cars	Totals
19	13	713	745

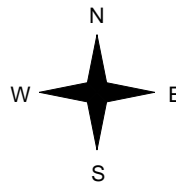


Trafalgar Rd

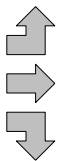
Cars	Trucks	Heavys	Totals
543	5	9	557
366	3	9	378
17	1	0	18
926	9	18	



Cornwall Rd



Heavys	Trucks	Cars	Totals
3	3	339	345
12	7	443	462
1	0	71	72
16	10	853	



Cornwall Rd



Cars	Trucks	Heavys	Totals
1000	11	31	1042

Peds Cross: \times
 West Peds: 9
 West Entering: 879
 West Leg Total: 1624

Cars	559	Cars	47	315	45	407
Trucks	7	Trucks	0	1	0	1
Heavys	7	Heavys	1	2	0	3
Totals	573	Totals	48	318	45	



Peds Cross: \times
 South Peds: 7
 South Entering: 411
 South Leg Total: 984

Comments

Trafalgar Rd @ Cornwall Rd

Mid-day Peak Diagram

Specified Period

From: 11:00:00

To: 14:00:00

One Hour Peak

From: 12:00:00

To: 13:00:00

Municipality: Halton Region
Site #: 0000003011
Intersection: Trafalgar Rd & Cornwall Rd
TFR File #: 4
Count date: 1-Jun-2017

Weather conditions:
Clear/Dry
Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Leg Total: 2692
 North Entering: 1309
 North Peds: 24
 Peds Cross: \times

Heavys	8	1	12	21
Trucks	10	3	6	19
Cars	186	516	567	1269
Totals	204	520	585	



Heavys	22
Trucks	23
Cars	1338
Totals	1383

East Leg Total: 2106
 East Entering: 1076
 East Peds: 13
 Peds Cross: \times

Heavys	Trucks	Cars	Totals
21	17	576	614



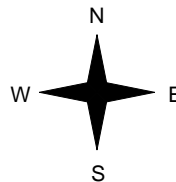
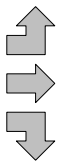
Trafalgar Rd

Cars	Trucks	Heavys	Totals
626	13	13	652
359	7	13	379
44	1	0	45
1029	21	26	



Cornwall Rd

Heavys	Trucks	Cars	Totals
5	6	324	335
6	5	368	379
0	2	37	39
11	13	729	



Trafalgar Rd



Cars	Trucks	Heavys	Totals
1001	11	18	1030



Peds Cross: \times
 West Peds: 6
 West Entering: 753
 West Leg Total: 1367

Cars	597	Cars	31	388	66	485
Trucks	6	Trucks	0	4	0	4
Heavys	1	Heavys	0	4	0	4
Totals	604	Totals	31	396	66	



Peds Cross: \times
 South Peds: 8
 South Entering: 493
 South Leg Total: 1097

Comments

Trafalgar Rd @ Cornwall Rd

Afternoon Peak Diagram

Specified Period

From: 15:00:00

To: 18:00:00

One Hour Peak

From: 17:00:00

To: 18:00:00

Municipality: Halton Region
Site #: 0000003011
Intersection: Trafalgar Rd & Cornwall Rd
TFR File #: 4
Count date: 1-Jun-2017

Weather conditions:
Clear/Dry
Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Leg Total: 2883
 North Entering: 1483
 North Peds: 21
 Peds Cross: \times

Heavys	6	0	11	17
Trucks	2	2	1	5
Cars	462	524	475	1461
Totals	470	526	487	



Heavys	8
Trucks	7
Cars	1385
Totals	1400

East Leg Total: 2246
 East Entering: 1261
 East Peds: 10
 Peds Cross: \times

Heavys	Trucks	Cars	Totals
11	5	1208	1224

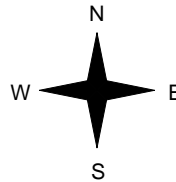


Trafalgar Rd

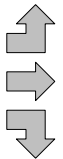
Cars	Trucks	Heavys	Totals
556	3	5	564
634	1	5	640
57	0	0	57
1247	4	10	



Cornwall Rd



Heavys	Trucks	Cars	Totals
3	2	424	429
6	6	447	459
1	0	161	162
10	8	1032	



Cornwall Rd



Peds Cross: \times
 West Peds: 17
 West Entering: 1050
 West Leg Total: 2274

Cars	742	Cars	112	405	39	556
Trucks	2	Trucks	2	2	0	4
Heavys	1	Heavys	0	0	0	0
Totals	745	Totals	114	407	39	



Trafalgar Rd

Peds Cross: \times
 South Peds: 14
 South Entering: 560
 South Leg Total: 1305

Comments

Trafalgar Rd @ Cornwall Rd

Total Count Diagram

Municipality: Halton Region
Site #: 0000003011
Intersection: Trafalgar Rd & Cornwall Rd
TFR File #: 4
Count date: 1-Jun-2017

Weather conditions:
 Clear/Dry
Person(s) who counted:
 Cam

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Leg Total: 20400
 North Entering: 10198
 North Peds: 147
 Peds Cross: \times

Heavys	58	29	112	199
Trucks	60	29	40	129
Cars	2277	3661	3932	9870
Totals	2395	3719	4084	



Heavys	146
Trucks	111
Cars	9945
Totals	10202

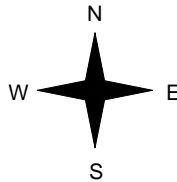
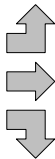
East Leg Total: 15937
 East Entering: 8450
 East Peds: 79
 Peds Cross: \times

Heavys	151	Trucks	98	Cars	6219	Totals	6468
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Cornwall Rd

Heavys	40	Trucks	36	Cars	2602	Totals	2678
	68		35		2939		3042
	5		9		490		504
Totals	113	80	6031				



Trafalgar Rd

Cars	4396	Trucks	51	Heavys	87	Totals	4534
	3495		36		87		3618
	293		4		1		298
Totals	8184	91	175				



Cornwall Rd

Cars	7227	Trucks	79	Heavys	181	Totals	7487
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Peds Cross: \times
 West Peds: 79
 West Entering: 6224
 West Leg Total: 12692

Cars	4444
Trucks	42
Heavys	35
Totals	4521



Cars	447	2947	356	3750
Trucks	2	24	4	30
Heavys	6	19	1	26
Totals	455	2990	361	

Peds Cross: \times
 South Peds: 68
 South Entering: 3806
 South Leg Total: 8327

Comments



Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Cross Avenue & Argus Road
Site Code:
Start Date: 01/10/2019
Page No: 1

Turning Movement Data

Start Time	Cross Avenue Eastbound						Cross Avenue Westbound						GO Bus Station Northbound						Argus Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	2	75	5	0	1	82	12	134	0	0	1	146	7	0	14	0	0	21	5	2	85	0	1	92	341
7:15 AM	3	82	2	0	3	87	7	154	2	0	10	163	1	0	7	0	0	8	13	2	112	0	2	127	385
7:30 AM	2	90	5	0	1	97	9	131	5	0	8	145	6	0	14	0	1	20	11	3	103	0	0	117	379
7:45 AM	6	87	2	0	1	95	7	157	4	0	3	168	1	0	9	0	0	10	17	6	130	0	0	153	426
Hourly Total	13	334	14	0	6	361	35	576	11	0	22	622	15	0	44	0	1	59	46	13	430	0	3	489	1531
8:00 AM	7	76	5	0	0	88	11	118	7	0	5	136	9	0	16	0	2	25	11	4	110	0	1	125	374
8:15 AM	14	102	1	0	1	117	10	145	6	0	4	161	3	0	6	0	0	9	14	2	120	0	0	136	423
8:30 AM	10	88	6	0	1	104	10	96	6	0	2	112	9	0	13	0	0	22	17	2	39	0	0	58	296
8:45 AM	12	81	2	0	1	95	8	84	8	0	3	100	4	1	3	0	0	8	8	4	57	0	0	69	272
Hourly Total	43	347	14	0	3	404	39	443	27	0	14	509	25	1	38	0	2	64	50	12	326	0	1	388	1365
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	6	81	4	0	1	91	6	59	7	0	3	72	6	0	8	0	1	14	20	4	22	0	0	46	223
11:15 AM	4	73	2	0	2	79	2	66	10	0	1	78	0	0	3	0	0	3	20	0	30	0	0	50	210
11:30 AM	7	76	7	0	1	90	7	66	7	0	3	80	7	0	11	0	1	18	21	2	33	0	2	56	244
11:45 AM	3	94	1	0	1	98	1	67	8	1	1	77	0	0	3	0	0	3	28	2	24	0	1	54	232
Hourly Total	20	324	14	0	5	358	16	258	32	1	8	307	13	0	25	0	2	38	89	8	109	0	3	206	909
12:00 PM	3	77	4	0	4	84	7	73	6	0	4	86	3	0	4	0	1	7	31	3	20	0	1	54	231
12:15 PM	7	88	1	0	0	96	2	78	4	0	1	84	4	0	7	0	0	11	23	0	37	0	1	60	251
12:30 PM	1	97	4	0	3	102	7	76	9	0	4	92	4	0	8	0	0	12	25	3	19	0	0	47	253
12:45 PM	7	98	1	0	2	106	3	82	7	0	1	92	1	0	3	0	0	4	26	1	21	0	3	48	250
Hourly Total	18	360	10	0	9	388	19	309	26	0	10	354	12	0	22	0	1	34	105	7	97	0	5	209	985
1:00 PM	7	117	4	0	2	128	8	89	10	0	1	107	9	0	9	0	1	18	18	4	19	0	2	41	294
1:15 PM	4	99	1	0	0	104	3	76	9	0	3	88	1	0	2	0	0	3	18	0	25	0	2	43	238
1:30 PM	3	75	6	0	2	84	8	69	4	0	1	81	7	0	8	0	1	15	22	1	23	0	0	46	226
1:45 PM	5	84	1	0	1	90	1	82	13	0	4	96	0	0	4	0	1	4	17	1	18	0	2	36	226
Hourly Total	19	375	12	0	5	406	20	316	36	0	9	372	17	0	23	0	3	40	75	6	85	0	6	166	984
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	4	92	4	0	4	100	8	82	10	0	10	100	7	0	10	0	6	17	24	4	24	0	0	52	269
3:15 PM	6	108	1	0	0	115	3	83	9	0	6	95	3	0	2	0	0	5	22	4	27	0	1	53	268
3:30 PM	7	101	4	0	5	112	9	63	14	0	8	86	5	0	10	0	1	15	11	3	25	0	10	39	252
3:45 PM	4	84	1	0	1	89	1	87	4	0	2	92	3	0	2	0	0	5	19	3	27	0	3	49	235
Hourly Total	21	385	10	0	10	416	21	315	37	0	26	373	18	0	24	0	7	42	76	14	103	0	14	193	1024
4:00 PM	4	145	4	0	0	153	8	72	6	0	6	86	5	0	11	0	1	16	27	5	34	0	0	66	321
4:15 PM	5	90	2	0	0	97	4	72	4	0	3	80	2	1	7	0	2	10	23	3	33	0	1	59	246
4:30 PM	3	195	4	1	1	203	4	64	10	0	5	78	2	0	13	0	1	15	25	6	36	0	3	67	363
4:45 PM	2	122	5	0	0	129	4	72	5	0	2	81	5	0	10	0	0	15	25	3	37	0	1	65	290
Hourly Total	14	552	15	1	1	582	20	280	25	0	16	325	14	1	41	0	4	56	100	17	140	0	5	257	1220

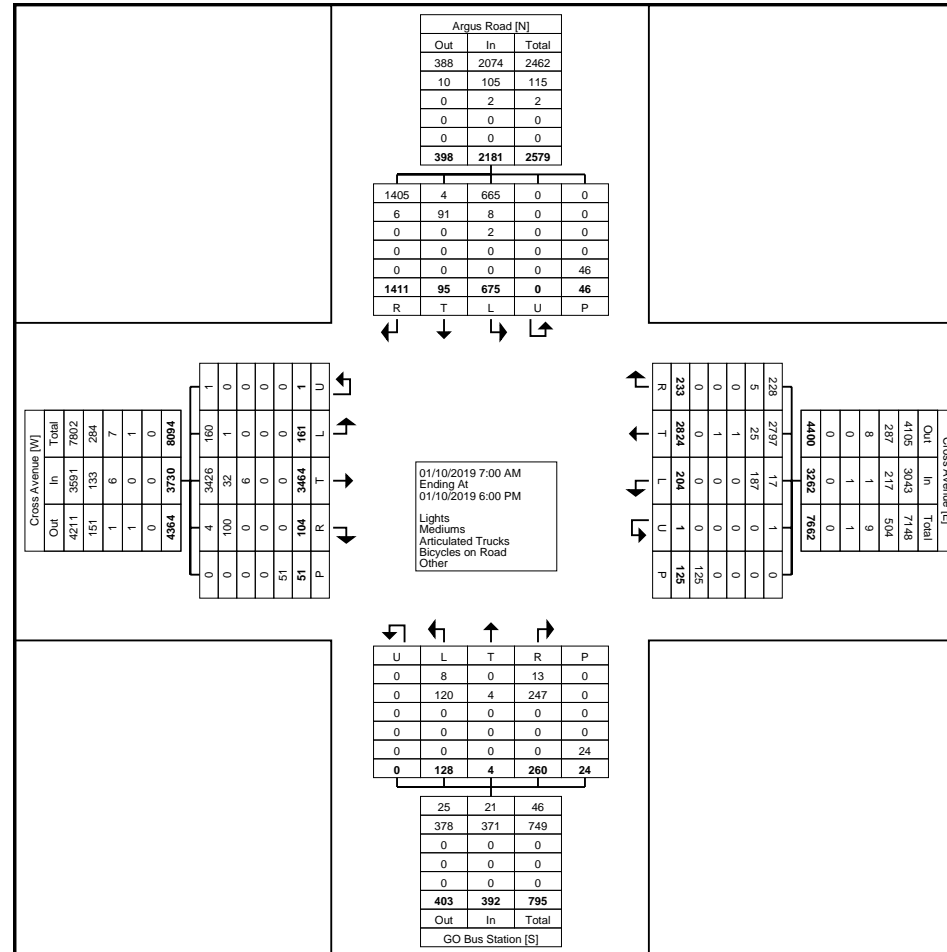
5:00 PM	2	212	5	0	2	219	9	83	8	0	4	100	3	0	14	0	1	17	39	6	21	0	0	66	402
5:15 PM	4	108	3	0	6	115	8	82	12	0	8	102	4	0	8	0	2	12	32	2	30	0	2	64	293
5:30 PM	2	225	5	0	2	232	8	86	8	0	3	102	2	0	16	0	0	18	24	4	31	0	4	59	411
5:45 PM	5	242	2	0	2	249	9	76	11	0	5	96	5	2	5	0	1	12	39	6	39	0	3	84	441
Hourly Total	13	787	15	0	12	815	34	327	39	0	20	400	14	2	43	0	4	59	134	18	121	0	9	273	1547
Grand Total	161	3464	104	1	51	3730	204	2824	233	1	125	3262	128	4	260	0	24	392	675	95	1411	0	46	2181	9565
Approach %	4.3	92.9	2.8	0.0	-	-	6.3	86.6	7.1	0.0	-	-	32.7	1.0	66.3	0.0	-	-	30.9	4.4	64.7	0.0	-	-	-
Total %	1.7	36.2	1.1	0.0	-	39.0	2.1	29.5	2.4	0.0	-	34.1	1.3	0.0	2.7	0.0	-	4.1	7.1	1.0	14.8	0.0	-	22.8	-
Lights	160	3426	4	1	-	3591	17	2797	228	1	-	3043	8	0	13	0	-	21	665	4	1405	0	-	2074	8729
% Lights	99.4	98.9	3.8	100.0	-	96.3	8.3	99.0	97.9	100.0	-	93.3	6.3	0.0	5.0	-	-	5.4	98.5	4.2	99.6	-	-	95.1	91.3
Mediums	1	32	100	0	-	133	187	25	5	0	-	217	120	4	247	0	-	371	8	91	6	0	-	105	826
% Mediums	0.6	0.9	96.2	0.0	-	3.6	91.7	0.9	2.1	0.0	-	6.7	93.8	100.0	95.0	-	-	94.6	1.2	95.8	0.4	-	-	4.8	8.6
Articulated Trucks	0	6	0	0	-	6	0	1	0	0	-	1	0	0	0	0	-	0	2	0	0	0	-	2	9
% Articulated Trucks	0.0	0.2	0.0	0.0	-	0.2	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.3	0.0	0.0	-	-	0.1	0.1
Bicycles on Road	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	3	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	6.5	-	-
Pedestrians	-	-	-	-	51	-	-	-	-	-	125	-	-	-	-	-	24	-	-	-	-	-	43	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	93.5	-	-



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Count Name: Cross Avenue & Argus Road
 Site Code:
 Start Date: 01/10/2019
 Page No: 3



Turning Movement Data Plot



Paradigm Transportation Solutions Limited
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Count Name: Cross Avenue & Argus Road
Site Code:
Start Date: 01/10/2019
Page No: 4

Turning Movement Peak Hour Data (7:30 AM)

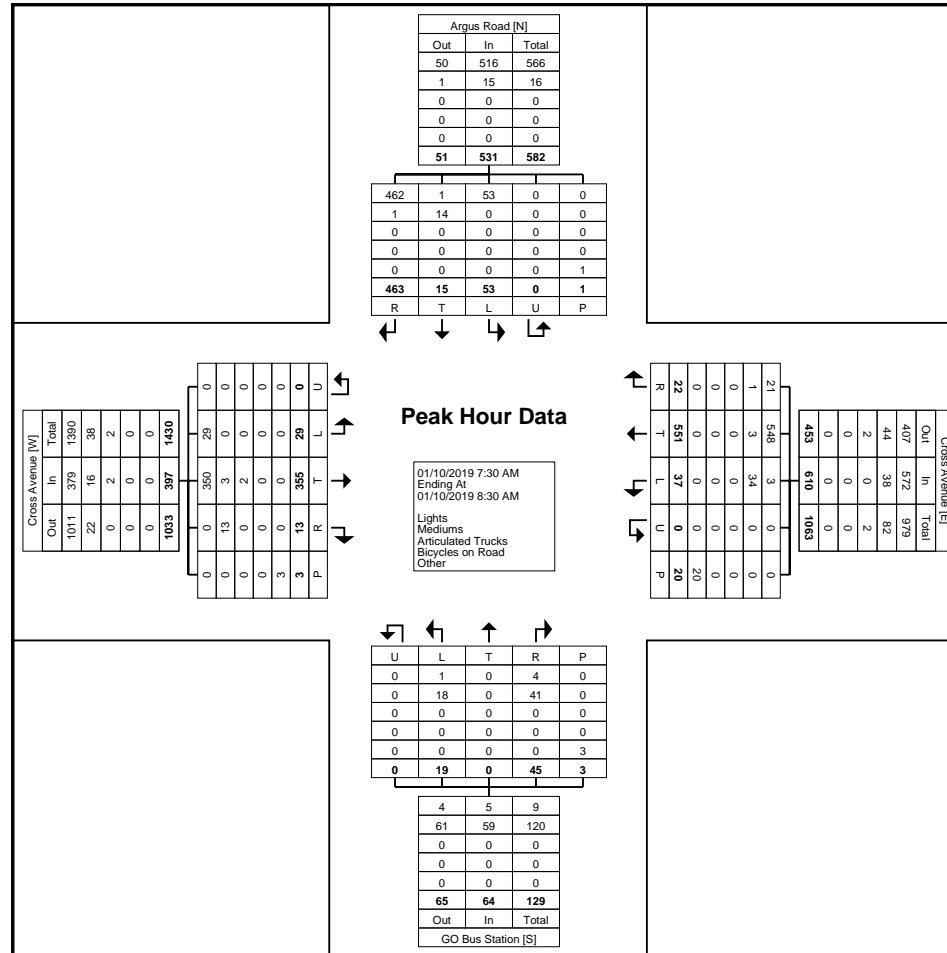
Start Time	Cross Avenue Eastbound						Cross Avenue Westbound						GO Bus Station Northbound						Argus Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:30 AM	2	90	5	0	1	97	9	131	5	0	8	145	6	0	14	0	1	20	11	3	103	0	0	117	379
7:45 AM	6	87	2	0	1	95	7	157	4	0	3	168	1	0	9	0	0	10	17	6	130	0	0	153	426
8:00 AM	7	76	5	0	0	88	11	118	7	0	5	136	9	0	16	0	2	25	11	4	110	0	1	125	374
8:15 AM	14	102	1	0	1	117	10	145	6	0	4	161	3	0	6	0	0	9	14	2	120	0	0	136	423
Total	29	355	13	0	3	397	37	551	22	0	20	610	19	0	45	0	3	64	53	15	463	0	1	531	1602
Approach %	7.3	89.4	3.3	0.0	-	-	6.1	90.3	3.6	0.0	-	-	29.7	0.0	70.3	0.0	-	-	10.0	2.8	87.2	0.0	-	-	-
Total %	1.8	22.2	0.8	0.0	-	24.8	2.3	34.4	1.4	0.0	-	38.1	1.2	0.0	2.8	0.0	-	4.0	3.3	0.9	28.9	0.0	-	33.1	-
PHF	0.518	0.870	0.650	0.000	-	0.848	0.841	0.877	0.786	0.000	-	0.908	0.528	0.000	0.703	0.000	-	0.640	0.779	0.625	0.890	0.000	-	0.868	0.940
Lights	29	350	0	0	-	379	3	548	21	0	-	572	1	0	4	0	-	5	53	1	462	0	-	516	1472
% Lights	100.0	98.6	0.0	-	-	95.5	8.1	99.5	95.5	-	-	93.8	5.3	-	8.9	-	-	7.8	100.0	6.7	99.8	-	-	97.2	91.9
Mediums	0	3	13	0	-	16	34	3	1	0	-	38	18	0	41	0	-	59	0	14	1	0	-	15	128
% Mediums	0.0	0.8	100.0	-	-	4.0	91.9	0.5	4.5	-	-	6.2	94.7	-	91.1	-	-	92.2	0.0	93.3	0.2	-	-	2.8	8.0
Articulated Trucks	0	2	0	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	2
% Articulated Trucks	0.0	0.6	0.0	-	-	0.5	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	100.0	-	-
Pedestrians	-	-	-	-	3	-	-	-	-	-	20	-	-	-	-	-	3	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	0.0	-	-



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Count Name: Cross Avenue & Argus Road
Site Code:
Start Date: 01/10/2019
Page No: 5



Turning Movement Peak Hour Data Plot (7:30 AM)



Paradigm Transportation Solutions Limited
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Count Name: Cross Avenue & Argus Road
Site Code:
Start Date: 01/10/2019
Page No: 6

Turning Movement Peak Hour Data (12:15 PM)

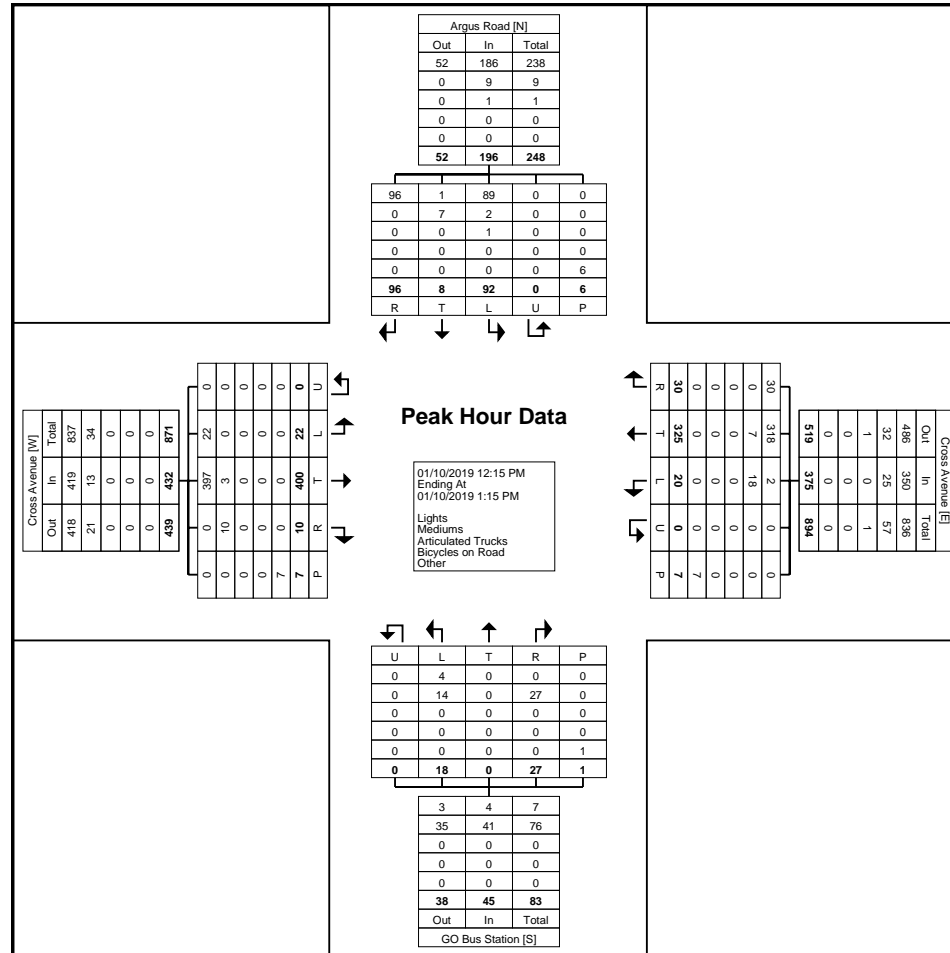
Start Time	Cross Avenue Eastbound						Cross Avenue Westbound						GO Bus Station Northbound						Argus Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
12:15 PM	7	88	1	0	0	96	2	78	4	0	1	84	4	0	7	0	0	11	23	0	37	0	1	60	251
12:30 PM	1	97	4	0	3	102	7	76	9	0	4	92	4	0	8	0	0	12	25	3	19	0	0	47	253
12:45 PM	7	98	1	0	2	106	3	82	7	0	1	92	1	0	3	0	0	4	26	1	21	0	3	48	250
1:00 PM	7	117	4	0	2	128	8	89	10	0	1	107	9	0	9	0	1	18	18	4	19	0	2	41	294
Total	22	400	10	0	7	432	20	325	30	0	7	375	18	0	27	0	1	45	92	8	96	0	6	196	1048
Approach %	5.1	92.6	2.3	0.0	-	-	5.3	86.7	8.0	0.0	-	-	40.0	0.0	60.0	0.0	-	-	46.9	4.1	49.0	0.0	-	-	-
Total %	2.1	38.2	1.0	0.0	-	41.2	1.9	31.0	2.9	0.0	-	35.8	1.7	0.0	2.6	0.0	-	4.3	8.8	0.8	9.2	0.0	-	18.7	-
PHF	0.786	0.855	0.625	0.000	-	0.844	0.625	0.913	0.750	0.000	-	0.876	0.500	0.000	0.750	0.000	-	0.625	0.885	0.500	0.649	0.000	-	0.817	0.891
Lights	22	397	0	0	-	419	2	318	30	0	-	350	4	0	0	0	-	4	89	1	96	0	-	186	959
% Lights	100.0	99.3	0.0	-	-	97.0	10.0	97.8	100.0	-	-	93.3	22.2	-	0.0	-	-	8.9	96.7	12.5	100.0	-	-	94.9	91.5
Mediums	0	3	10	0	-	13	18	7	0	0	-	25	14	0	27	0	-	41	2	7	0	0	-	9	88
% Mediums	0.0	0.8	100.0	-	-	3.0	90.0	2.2	0.0	-	-	6.7	77.8	-	100.0	-	-	91.1	2.2	87.5	0.0	-	-	4.6	8.4
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	1	1
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	1.1	0.0	0.0	-	-	0.5	0.1
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	7	-	-	-	-	-	7	-	-	-	-	-	1	-	-	-	-	-	6	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



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Count Name: Cross Avenue & Argus Road
 Site Code:
 Start Date: 01/10/2019
 Page No: 7



Turning Movement Peak Hour Data Plot (12:15 PM)



Paradigm Transportation Solutions Limited
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Count Name: Cross Avenue & Argus Road
Site Code:
Start Date: 01/10/2019
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Turning Movement Peak Hour Data (5:00 PM)

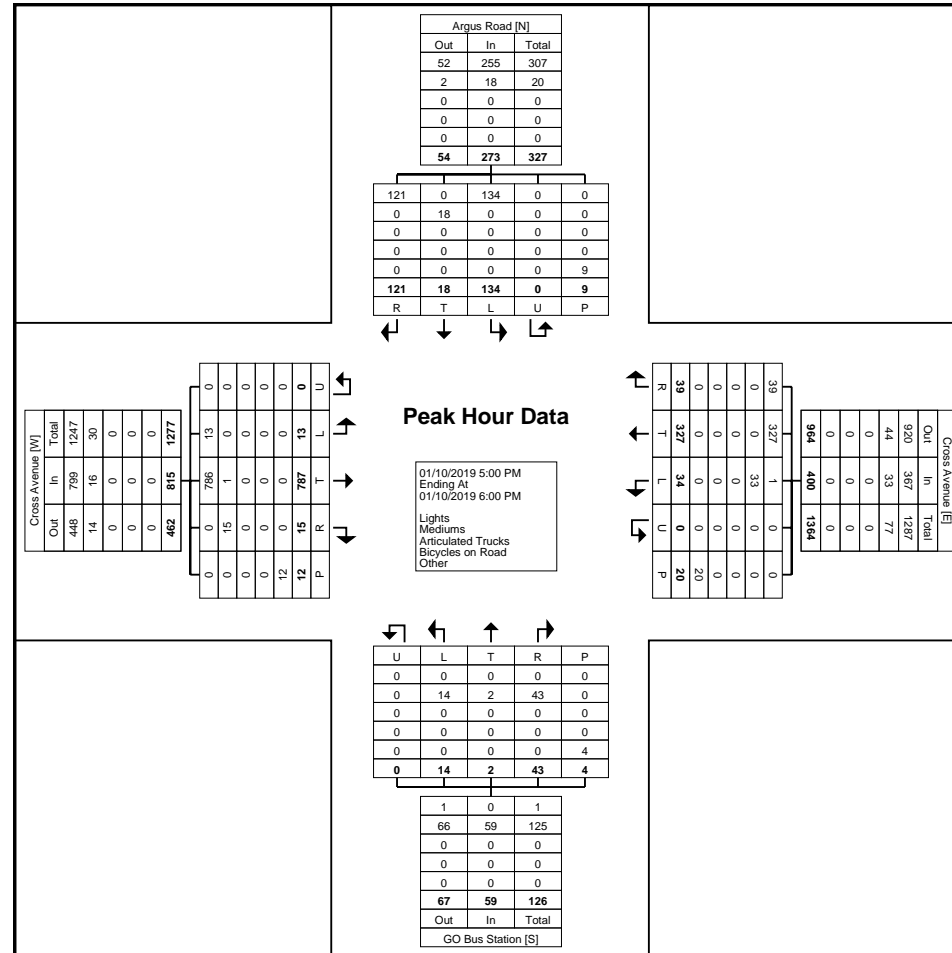
Start Time	Cross Avenue Eastbound						Cross Avenue Westbound						GO Bus Station Northbound						Argus Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
5:00 PM	2	212	5	0	2	219	9	83	8	0	4	100	3	0	14	0	1	17	39	6	21	0	0	66	402
5:15 PM	4	108	3	0	6	115	8	82	12	0	8	102	4	0	8	0	2	12	32	2	30	0	2	64	293
5:30 PM	2	225	5	0	2	232	8	86	8	0	3	102	2	0	16	0	0	18	24	4	31	0	4	59	411
5:45 PM	5	242	2	0	2	249	9	76	11	0	5	96	5	2	5	0	1	12	39	6	39	0	3	84	441
Total	13	787	15	0	12	815	34	327	39	0	20	400	14	2	43	0	4	59	134	18	121	0	9	273	1547
Approach %	1.6	96.6	1.8	0.0	-	-	8.5	81.8	9.8	0.0	-	-	23.7	3.4	72.9	0.0	-	-	49.1	6.6	44.3	0.0	-	-	-
Total %	0.8	50.9	1.0	0.0	-	52.7	2.2	21.1	2.5	0.0	-	25.9	0.9	0.1	2.8	0.0	-	3.8	8.7	1.2	7.8	0.0	-	17.6	-
PHF	0.650	0.813	0.750	0.000	-	0.818	0.944	0.951	0.813	0.000	-	0.980	0.700	0.250	0.672	0.000	-	0.819	0.859	0.750	0.776	0.000	-	0.813	0.877
Lights	13	786	0	0	-	799	1	327	39	0	-	367	0	0	0	0	-	0	134	0	121	0	-	255	1421
% Lights	100.0	99.9	0.0	-	-	98.0	2.9	100.0	100.0	-	-	91.8	0.0	0.0	0.0	-	-	0.0	100.0	0.0	100.0	-	-	93.4	91.9
Mediums	0	1	15	0	-	16	33	0	0	0	-	33	14	2	43	0	-	59	0	18	0	0	-	18	126
% Mediums	0.0	0.1	100.0	-	-	2.0	97.1	0.0	0.0	-	-	8.3	100.0	100.0	100.0	-	-	100.0	0.0	100.0	0.0	-	-	6.6	8.1
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	11.1	-	-
Pedestrians	-	-	-	-	12	-	-	-	-	-	20	-	-	-	-	-	4	-	-	-	-	-	8	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	88.9	-	-



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Count Name: Cross Avenue & Argus Road
Site Code:
Start Date: 01/10/2019
Page No: 9



Turning Movement Peak Hour Data Plot (5:00 PM)



Paradigm Transportation Solutions Limited
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Waterloo, Ontario, Canada N2J 1N8
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Count Name: Cross Avenue & Argus Road
Site Code:
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Paradigm Transportation Solutions Limited
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Count Name: Argus Road & South Service Road
Site Code:
Start Date: 01/10/2019
Page No: 1

Turning Movement Data

Start Time	Argus Road Eastbound						Argus Road Westbound						Northbound Approach Northbound						South Service Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	0	1	0	0	1	1	1	102	17	0	4	120	1	0	0	0	2	1	0	0	0	1	0	122	
7:15 AM	0	0	0	0	0	0	0	128	17	0	2	145	0	0	0	0	1	0	0	0	0	0	0	145	
7:30 AM	1	1	1	0	0	3	0	127	25	0	1	152	0	0	0	0	1	0	1	0	0	0	1	156	
7:45 AM	0	0	0	0	0	0	2	157	28	0	2	187	0	1	0	0	2	1	0	0	1	0	1	189	
Hourly Total	1	2	1	0	1	4	3	514	87	0	9	604	1	1	0	0	6	2	1	0	1	0	2	612	
8:00 AM	0	1	1	0	0	2	1	130	21	0	1	152	0	0	0	0	2	0	2	2	2	1	0	7	161
8:15 AM	0	3	0	0	1	3	1	125	39	0	1	165	1	0	0	0	1	1	1	0	0	0	0	1	170
8:30 AM	2	2	0	0	0	4	0	60	27	0	0	87	1	1	0	0	1	2	0	1	2	0	0	3	96
8:45 AM	2	2	0	0	0	4	0	85	30	0	1	115	0	1	0	0	0	1	1	2	0	0	0	3	123
Hourly Total	4	8	1	0	1	13	2	400	117	0	3	519	2	2	0	0	4	4	4	5	4	1	0	14	550
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	2	5	1	1	0	9	0	30	18	0	0	48	1	3	0	0	1	4	4	3	3	1	0	11	72
11:15 AM	2	1	0	0	0	3	1	33	19	0	0	53	0	2	1	0	0	3	2	2	8	0	0	12	71
11:30 AM	4	4	0	0	0	8	1	32	25	0	3	58	0	1	0	0	2	1	2	1	3	0	0	6	73
11:45 AM	1	0	0	0	0	1	0	38	20	0	1	58	1	4	0	0	0	5	2	4	2	0	0	8	72
Hourly Total	9	10	1	1	0	21	2	133	82	0	4	217	2	10	1	0	3	13	10	10	16	1	0	37	288
12:00 PM	1	4	1	0	0	6	1	22	24	1	1	48	1	3	0	0	0	4	3	3	5	0	0	11	69
12:15 PM	0	0	0	0	0	0	1	32	15	0	1	48	0	1	0	0	0	1	2	3	3	0	0	8	57
12:30 PM	0	2	0	1	0	3	2	30	20	0	2	52	0	0	1	0	0	1	2	0	5	0	0	7	63
12:45 PM	1	6	1	0	0	8	0	37	20	0	0	57	0	1	0	0	0	1	1	0	3	0	0	4	70
Hourly Total	2	12	2	1	0	17	4	121	79	1	4	205	1	5	1	0	0	7	8	6	16	0	0	30	259
1:00 PM	1	2	0	0	0	3	0	32	24	0	2	56	0	0	0	0	3	0	0	0	5	0	0	5	64
1:15 PM	1	3	1	0	0	5	0	44	10	0	0	54	0	1	0	0	0	1	3	0	4	0	0	7	67
1:30 PM	1	2	0	1	0	4	0	30	27	0	4	57	1	0	0	0	5	1	2	1	2	0	0	5	67
1:45 PM	1	3	1	0	0	5	0	38	17	0	2	55	0	2	0	0	0	2	1	2	2	0	0	5	67
Hourly Total	4	10	2	1	0	17	0	144	78	0	8	222	1	3	0	0	8	4	6	3	13	0	0	22	265
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	5	3	0	0	1	8	0	36	16	0	4	52	1	0	0	0	5	1	3	2	5	0	0	10	71
3:15 PM	1	2	0	0	0	3	0	31	18	0	0	49	0	1	0	0	2	1	1	1	1	0	0	3	56
3:30 PM	1	7	1	0	0	9	0	31	6	0	1	37	0	2	1	0	3	3	4	2	4	0	0	10	59
3:45 PM	1	5	0	0	0	6	1	36	12	0	1	49	0	1	0	0	1	1	2	1	5	1	0	9	65
Hourly Total	8	17	1	0	1	26	1	134	52	0	6	187	1	4	1	0	11	6	10	6	15	1	0	32	251
4:00 PM	5	1	0	1	0	7	0	44	12	0	3	56	1	3	0	0	1	4	4	3	2	0	0	9	76
4:15 PM	0	3	0	0	0	3	0	46	19	0	1	65	1	0	0	0	2	1	3	0	2	0	0	5	74
4:30 PM	3	4	0	0	0	7	0	37	9	0	1	46	0	0	0	0	1	0	1	0	4	0	0	5	58
4:45 PM	1	0	0	0	0	1	0	51	12	0	0	63	1	0	0	0	1	1	4	2	5	0	0	11	76
Hourly Total	9	8	0	1	0	18	0	178	52	0	5	230	3	3	0	0	5	6	12	5	13	0	0	30	284

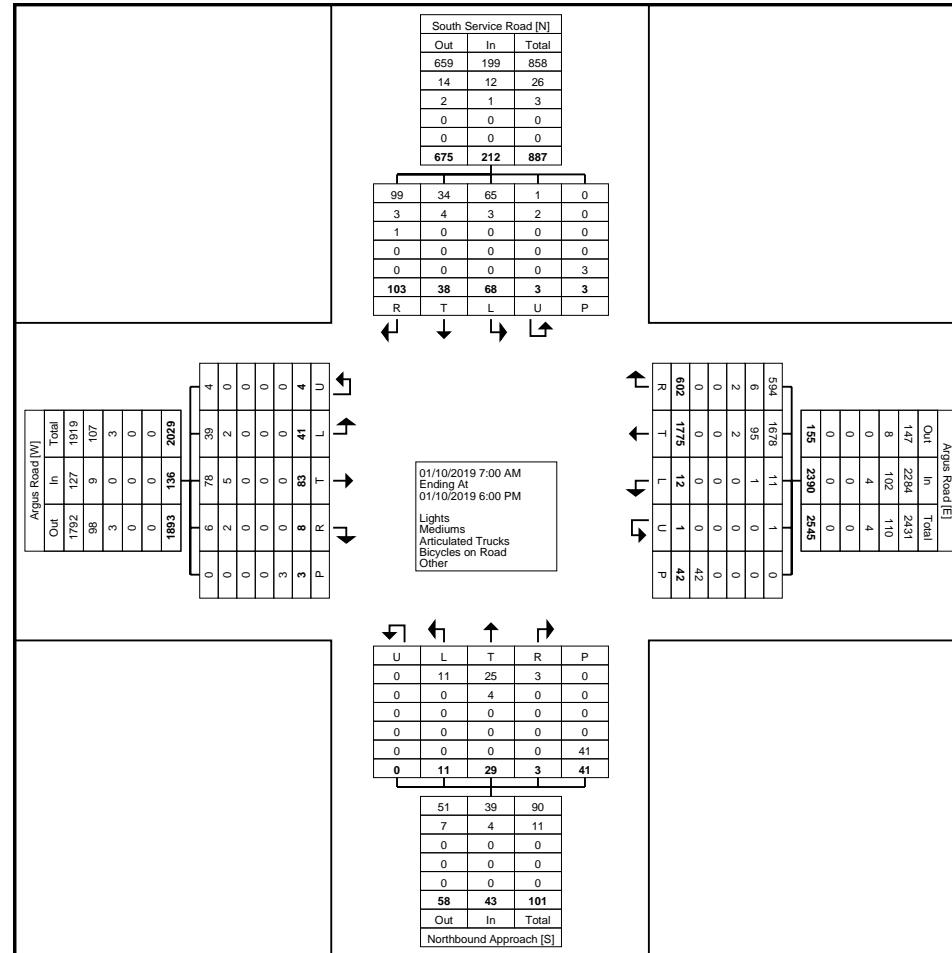
5:00 PM	2	5	0	0	0	7	0	27	16	0	0	43	0	1	0	0	0	1	10	1	13	0	1	24	75
5:15 PM	1	3	0	0	0	4	0	40	10	0	1	50	0	0	0	0	1	0	1	1	5	0	0	7	61
5:30 PM	0	4	0	0	0	4	0	36	15	0	1	51	0	0	0	0	2	0	1	1	2	0	0	4	59
5:45 PM	1	4	0	0	0	5	0	48	14	0	1	62	0	0	0	0	1	0	5	0	5	0	0	10	77
Hourly Total	4	16	0	0	0	20	0	151	55	0	3	206	0	1	0	0	4	1	17	3	25	0	1	45	272
Grand Total	41	83	8	4	3	136	12	1775	602	1	42	2390	11	29	3	0	41	43	68	38	103	3	3	212	2781
Approach %	30.1	61.0	5.9	2.9	-	-	0.5	74.3	25.2	0.0	-	-	25.6	67.4	7.0	0.0	-	-	32.1	17.9	48.6	1.4	-	-	-
Total %	1.5	3.0	0.3	0.1	-	4.9	0.4	63.8	21.6	0.0	-	85.9	0.4	1.0	0.1	0.0	-	1.5	2.4	1.4	3.7	0.1	-	7.6	-
Lights	39	78	6	4	-	127	11	1678	594	1	-	2284	11	25	3	0	-	39	65	34	99	1	-	199	2649
% Lights	95.1	94.0	75.0	100.0	-	93.4	91.7	94.5	98.7	100.0	-	95.6	100.0	86.2	100.0	-	-	90.7	95.6	89.5	96.1	33.3	-	93.9	95.3
Mediums	2	5	2	0	-	9	1	95	6	0	-	102	0	4	0	0	-	4	3	4	3	2	-	12	127
% Mediums	4.9	6.0	25.0	0.0	-	6.6	8.3	5.4	1.0	0.0	-	4.3	0.0	13.8	0.0	-	-	9.3	4.4	10.5	2.9	66.7	-	5.7	4.6
Articulated Trucks	0	0	0	0	-	0	0	2	2	0	-	4	0	0	0	0	-	0	0	0	1	0	-	1	5
% Articulated Trucks	0.0	0.0	0.0	0.0	-	0.0	0.0	0.1	0.3	0.0	-	0.2	0.0	0.0	0.0	-	-	0.0	0.0	0.0	1.0	0.0	-	0.5	0.2
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	3	-	-	-	-	-	42	-	-	-	-	-	41	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



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Count Name: Argus Road & South Service Road
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Turning Movement Data Plot



Paradigm Transportation Solutions Limited
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Count Name: Argus Road & South Service Road
Site Code:
Start Date: 01/10/2019
Page No: 4

Turning Movement Peak Hour Data (7:30 AM)

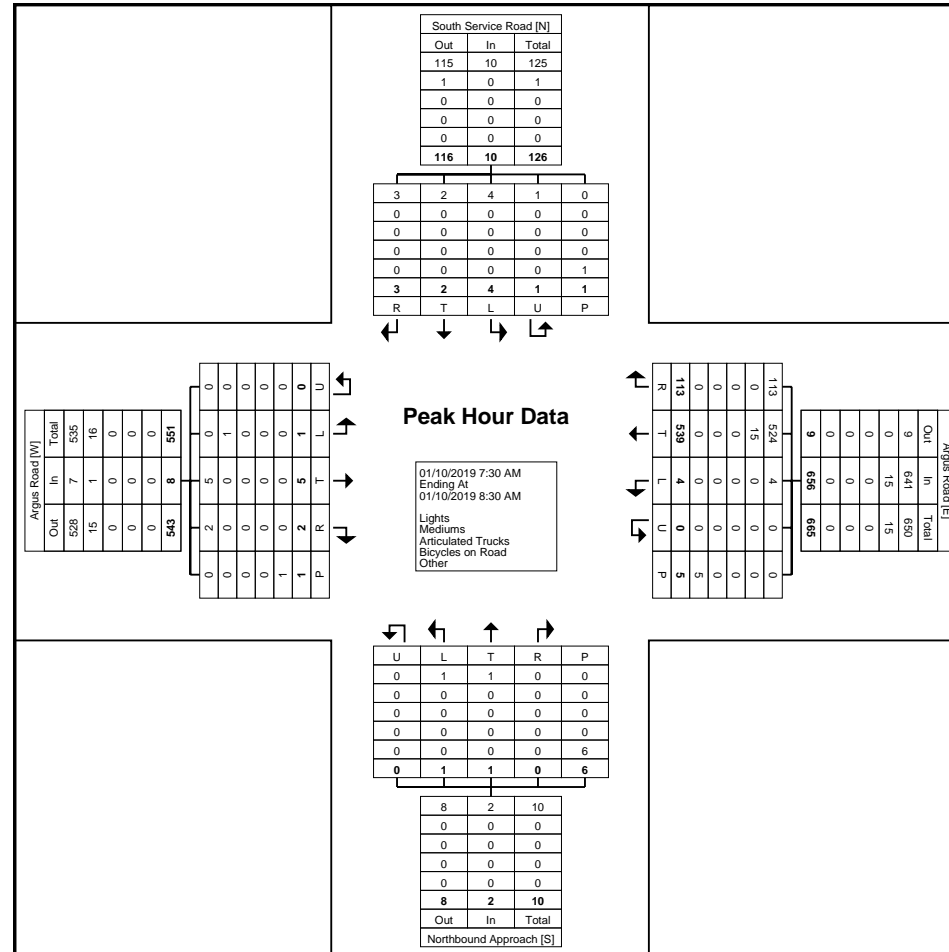
Start Time	Argus Road Eastbound						Argus Road Westbound						Northbound Approach Northbound						South Service Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:30 AM	1	1	1	0	0	3	0	127	25	0	1	152	0	0	0	0	1	0	1	0	0	0	0	1	156
7:45 AM	0	0	0	0	0	0	2	157	28	0	2	187	0	1	0	0	2	1	0	0	1	0	1	1	189
8:00 AM	0	1	1	0	0	2	1	130	21	0	1	152	0	0	0	0	2	0	2	2	2	1	0	7	161
8:15 AM	0	3	0	0	1	3	1	125	39	0	1	165	1	0	0	0	1	1	1	0	0	0	0	1	170
Total	1	5	2	0	1	8	4	539	113	0	5	656	1	1	0	0	6	2	4	2	3	1	1	10	676
Approach %	12.5	62.5	25.0	0.0	-	-	0.6	82.2	17.2	0.0	-	-	50.0	50.0	0.0	0.0	-	-	40.0	20.0	30.0	10.0	-	-	-
Total %	0.1	0.7	0.3	0.0	-	1.2	0.6	79.7	16.7	0.0	-	97.0	0.1	0.1	0.0	0.0	-	0.3	0.6	0.3	0.4	0.1	-	1.5	-
PHF	0.250	0.417	0.500	0.000	-	0.667	0.500	0.858	0.724	0.000	-	0.877	0.250	0.250	0.000	0.000	-	0.500	0.500	0.250	0.375	0.250	-	0.357	0.894
Lights	0	5	2	0	-	7	4	524	113	0	-	641	1	1	0	0	-	2	4	2	3	1	-	10	660
% Lights	0.0	100.0	100.0	-	-	87.5	100.0	97.2	100.0	-	-	97.7	100.0	100.0	-	-	-	100.0	100.0	100.0	100.0	100.0	-	100.0	97.6
Mediums	1	0	0	0	-	1	0	15	0	0	-	15	0	0	0	0	-	0	0	0	0	0	-	0	16
% Mediums	100.0	0.0	0.0	-	-	12.5	0.0	2.8	0.0	-	-	2.3	0.0	0.0	-	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	2.4
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	5	-	-	-	-	-	6	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



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Count Name: Argus Road & South Service Road
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 Start Date: 01/10/2019
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Turning Movement Peak Hour Data Plot (7:30 AM)



Paradigm Transportation Solutions Limited
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Count Name: Argus Road & South Service Road
Site Code:
Start Date: 01/10/2019
Page No: 6

Turning Movement Peak Hour Data (11:00 AM)

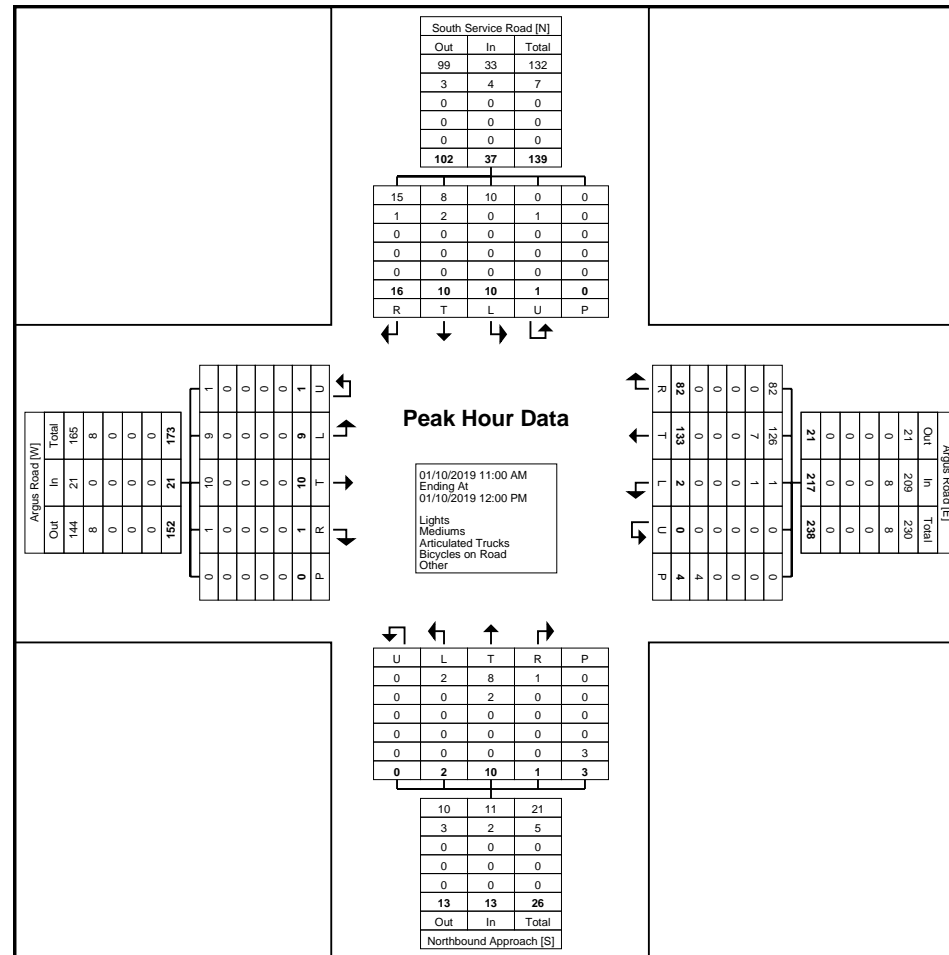
Start Time	Argus Road Eastbound						Argus Road Westbound						Northbound Approach Northbound						South Service Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
11:00 AM	2	5	1	1	0	9	0	30	18	0	0	48	1	3	0	0	1	4	4	3	3	1	0	11	72
11:15 AM	2	1	0	0	0	3	1	33	19	0	0	53	0	2	1	0	0	3	2	2	8	0	0	12	71
11:30 AM	4	4	0	0	0	8	1	32	25	0	3	58	0	1	0	0	2	1	2	1	3	0	0	6	73
11:45 AM	1	0	0	0	0	1	0	38	20	0	1	58	1	4	0	0	0	5	2	4	2	0	0	8	72
Total	9	10	1	1	0	21	2	133	82	0	4	217	2	10	1	0	3	13	10	10	16	1	0	37	288
Approach %	42.9	47.6	4.8	4.8	-	-	0.9	61.3	37.8	0.0	-	-	15.4	76.9	7.7	0.0	-	-	27.0	27.0	43.2	2.7	-	-	-
Total %	3.1	3.5	0.3	0.3	-	7.3	0.7	46.2	28.5	0.0	-	75.3	0.7	3.5	0.3	0.0	-	4.5	3.5	3.5	5.6	0.3	-	12.8	-
PHF	0.563	0.500	0.250	0.250	-	0.583	0.500	0.875	0.820	0.000	-	0.935	0.500	0.625	0.250	0.000	-	0.650	0.625	0.625	0.500	0.250	-	0.771	0.986
Lights	9	10	1	1	-	21	1	126	82	0	-	209	2	8	1	0	-	11	10	8	15	0	-	33	274
% Lights	100.0	100.0	100.0	100.0	-	100.0	50.0	94.7	100.0	-	-	96.3	100.0	80.0	100.0	-	-	84.6	100.0	80.0	93.8	0.0	-	89.2	95.1
Mediums	0	0	0	0	-	0	1	7	0	0	-	8	0	2	0	0	-	2	0	2	1	1	-	4	14
% Mediums	0.0	0.0	0.0	0.0	-	0.0	50.0	5.3	0.0	-	-	3.7	0.0	20.0	0.0	-	-	15.4	0.0	20.0	6.3	100.0	-	10.8	4.9
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	4	-	-	-	-	-	3	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-



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Count Name: Argus Road & South Service Road
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 Start Date: 01/10/2019
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Turning Movement Peak Hour Data Plot (11:00 AM)



Paradigm Transportation Solutions Limited
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Count Name: Argus Road & South Service Road
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Turning Movement Peak Hour Data (4:00 PM)

Start Time	Argus Road Eastbound						Argus Road Westbound						Northbound Approach Northbound						South Service Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
4:00 PM	5	1	0	1	0	7	0	44	12	0	3	56	1	3	0	0	1	4	4	3	2	0	0	9	76
4:15 PM	0	3	0	0	0	3	0	46	19	0	1	65	1	0	0	0	2	1	3	0	2	0	0	5	74
4:30 PM	3	4	0	0	0	7	0	37	9	0	1	46	0	0	0	0	1	0	1	0	4	0	0	5	58
4:45 PM	1	0	0	0	0	1	0	51	12	0	0	63	1	0	0	0	1	1	4	2	5	0	0	11	76
Total	9	8	0	1	0	18	0	178	52	0	5	230	3	3	0	0	5	6	12	5	13	0	0	30	284
Approach %	50.0	44.4	0.0	5.6	-	-	0.0	77.4	22.6	0.0	-	-	50.0	50.0	0.0	0.0	-	-	40.0	16.7	43.3	0.0	-	-	-
Total %	3.2	2.8	0.0	0.4	-	6.3	0.0	62.7	18.3	0.0	-	81.0	1.1	1.1	0.0	0.0	-	2.1	4.2	1.8	4.6	0.0	-	10.6	-
PHF	0.450	0.500	0.000	0.250	-	0.643	0.000	0.873	0.684	0.000	-	0.885	0.750	0.250	0.000	0.000	-	0.375	0.750	0.417	0.650	0.000	-	0.682	0.934
Lights	9	7	0	1	-	17	0	160	52	0	-	212	3	3	0	0	-	6	12	5	13	0	-	30	265
% Lights	100.0	87.5	-	100.0	-	94.4	-	89.9	100.0	-	-	92.2	100.0	100.0	-	-	-	100.0	100.0	100.0	100.0	-	-	100.0	93.3
Mediums	0	1	0	0	-	1	0	18	0	0	-	18	0	0	0	0	-	0	0	0	0	0	-	0	19
% Mediums	0.0	12.5	-	0.0	-	5.6	-	10.1	0.0	-	-	7.8	0.0	0.0	-	-	-	0.0	0.0	0.0	0.0	-	-	0.0	6.7
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	-	0.0	-	0.0	-	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	0.0	-	0.0	-	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	5	-	-	-	-	-	5	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-



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Count Name: Argus Road & South Service Road
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Date: 23-Mar-22

Intersection: Trafalgar & QEW WB Ramp

8 Phase Basic Timing Sheet

	1	2	3	4	5	6	7	8	2 Ped	4 Ped	6 Ped	8 Ped
Phases in use		X	X	X					X	X		
Direction		SB	Prot EBL	WB		NB		EB				
Min Green		28	7	10		28		10				
Veh Ext.		4.5	3.0	3.0		4.5		3.0				
Yellow		4	3	4		4		4				
Red		3	2	3		3		3				
Walk		7		7		7		7				
Don't Walk		21		24		21		24				
Max 1		30	20	40		30		40				
Max 2		70		90		70		90				
Max 3												
Veh Recall												
Ped Recall												
Notes:												

<p>Pattern 1 Time: 6:00-7:00,9:00-10:00 Cycle Length: 120 Offset (%): 81%</p> <table border="0"> <tr><td colspan="5"> </td></tr> <tr><td>Direction</td><td></td><td></td><td></td><td></td></tr> <tr><td>Phase</td><td>1</td><td>2</td><td>3</td><td>4</td></tr> <tr><td>%</td><td>0</td><td>58</td><td>10</td><td>32</td></tr> <tr><td>Direction</td><td></td><td></td><td></td><td></td></tr> <tr><td>Phase</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>%</td><td>0</td><td>58</td><td>0</td><td>42</td></tr> </table>						Direction					Phase	1	2	3	4	%	0	58	10	32	Direction					Phase	5	6	7	8	%	0	58	0	42	<p>Pattern 2 Time: 7:00-9:00 Cycle Length: 140 Offset (%): 91%</p> <table border="0"> <tr><td colspan="5"> </td></tr> <tr><td>Direction</td><td></td><td></td><td></td><td></td></tr> <tr><td>Phase</td><td>1</td><td>2</td><td>3</td><td>4</td></tr> <tr><td>%</td><td>0</td><td>62</td><td>9</td><td>29</td></tr> <tr><td>Direction</td><td></td><td></td><td></td><td></td></tr> <tr><td>Phase</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>%</td><td>0</td><td>62</td><td>0</td><td>38</td></tr> </table>						Direction					Phase	1	2	3	4	%	0	62	9	29	Direction					Phase	5	6	7	8	%	0	62	0	38
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<p>Pattern 3 Time: 10:00-15:15,19:00-22:00 Cycle Length: 120 Offset (%): 81%</p> <table border="0"> <tr><td colspan="5"> </td></tr> <tr><td>Direction</td><td></td><td></td><td></td><td></td></tr> <tr><td>Phase</td><td>1</td><td>2</td><td>3</td><td>4</td></tr> <tr><td>%</td><td>0</td><td>55</td><td>10</td><td>35</td></tr> <tr><td>Direction</td><td></td><td></td><td></td><td></td></tr> <tr><td>Phase</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>%</td><td>0</td><td>55</td><td>0</td><td>45</td></tr> </table>						Direction					Phase	1	2	3	4	%	0	55	10	35	Direction					Phase	5	6	7	8	%	0	55	0	45	<p>Pattern 4 Time: 15:15-17:00 Cycle Length: 120 Offset (%): 81%</p> <table border="0"> <tr><td colspan="5"> </td></tr> <tr><td>Direction</td><td></td><td></td><td></td><td></td></tr> <tr><td>Phase</td><td>1</td><td>2</td><td>3</td><td>4</td></tr> <tr><td>%</td><td>0</td><td>55</td><td>10</td><td>35</td></tr> <tr><td>Direction</td><td></td><td></td><td></td><td></td></tr> <tr><td>Phase</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>%</td><td>0</td><td>55</td><td>0</td><td>45</td></tr> </table>						Direction					Phase	1	2	3	4	%	0	55	10	35	Direction					Phase	5	6	7	8	%	0	55	0	45
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Date: 23-Mar-22

Intersection: Trafalgar & QEW EB Ramp

8 Phase Basic Timing Sheet

	1	2	3	4	5	6	7	8	2 Ped	4 Ped	6 Ped	8 Ped
Phases in use		X		X					X	X		
Direction		NB/SB		EB								
Min Green		29		10								
Veh Ext.				3.0								
Yellow		4		4								
Red		3		3								
Walk		7		7								
Don't Walk		22		24								
Max 1		50		40								
Max 2		70		90								
Max 3												
Veh Recall												
Ped Recall												
Notes:												

<p>Pattern 1 Time: 6:00-7:00,9:00-10:00 Cycle Length: 120 Offset (%): 97%</p> <table border="0"> <tr> <td>Direction</td> <td colspan="4"></td> </tr> <tr> <td>Phase</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <td>%</td> <td>0</td> <td>60</td> <td>0</td> <td>40</td> </tr> <tr> <td>Direction</td> <td colspan="4"></td> </tr> <tr> <td>Phase</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> </tr> <tr> <td>%</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> </table>	Direction					Phase	1	2	3	4	%	0	60	0	40	Direction					Phase	5	6	7	8	%	0	0	0	0	<p>Pattern 2 Time: 7:00-9:00 Cycle Length: 140 Offset (%): 4%</p> <table border="0"> <tr> <td>Direction</td> <td colspan="4"></td> </tr> <tr> <td>Phase</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <td>%</td> <td>0</td> <td>59</td> <td>0</td> <td>41</td> </tr> <tr> <td>Direction</td> <td colspan="4"></td> </tr> <tr> <td>Phase</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> </tr> <tr> <td>%</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> </table>	Direction					Phase	1	2	3	4	%	0	59	0	41	Direction					Phase	5	6	7	8	%	0	0	0	0
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<p>Pattern 3 Time: 10:00-15:15, 19:00-22:00 Cycle Length: 120 Offset (%): 97%</p> <table border="0"> <tr> <td>Direction</td> <td colspan="4"></td> </tr> <tr> <td>Phase</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <td>%</td> <td>0</td> <td>60</td> <td>0</td> <td>40</td> </tr> <tr> <td>Direction</td> <td colspan="4"></td> </tr> <tr> <td>Phase</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> </tr> <tr> <td>%</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> </table>	Direction					Phase	1	2	3	4	%	0	60	0	40	Direction					Phase	5	6	7	8	%	0	0	0	0	<p>Pattern 4 Time: 15:15-17:00 Cycle Length: 120 Offset (%): 65%</p> <table border="0"> <tr> <td>Direction</td> <td colspan="4"></td> </tr> <tr> <td>Phase</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <td>%</td> <td>0</td> <td>58</td> <td>0</td> <td>42</td> </tr> <tr> <td>Direction</td> <td colspan="4"></td> </tr> <tr> <td>Phase</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> </tr> <tr> <td>%</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> </table>	Direction					Phase	1	2	3	4	%	0	58	0	42	Direction					Phase	5	6	7	8	%	0	0	0	0
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TRAFALGAR RD & CORNWALL RD Direct port 13 - Trafalgar & Cross

Configuration Phase Sequence Page 1

Phase Ring (MM)1-1-1

Phase															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	1	1	1	2	2	2	2	1	1	2	2	1	1	2	2

Hardware Alternate Sequence Enable: No

Phase Ring Sequence

Sequence	Ring	Phase															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	Barrier Mode	B		B	B	B		B		B							
1	1	1	2	3	4	9	10	13	14	0	0	0	0	0	0	0	0
1	2	5	6	8	7	11	12	15	16	0	0	0	0	0	0	0	0
2	1	1	2	3	4	9	10	13	14	0	0	0	0	0	0	0	0
2	2	5	6	8	7	11	12	15	16	0	0	0	0	0	0	0	0
3	1	1	2	3	4	9	10	13	14	0	0	0	0	0	0	0	0
3	2	5	6	8	7	11	12	15	16	0	0	0	0	0	0	0	0
4	1	1	2	3	4	9	10	13	14	0	0	0	0	0	0	0	0
4	2	5	6	8	7	11	12	15	16	0	0	0	0	0	0	0	0
5	1	1	2	3	4	9	10	13	14	0	0	0	0	0	0	0	0
5	2	5	6	8	7	11	12	15	16	0	0	0	0	0	0	0	0
6	1	1	2	3	4	9	10	13	14	0	0	0	0	0	0	0	0
6	2	5	6	8	7	11	12	15	16	0	0	0	0	0	0	0	0
7	1	1	2	3	4	9	10	13	14	0	0	0	0	0	0	0	0
7	2	5	6	8	7	11	12	15	16	0	0	0	0	0	0	0	0
8	1	1	2	3	4	9	10	13	14	0	0	0	0	0	0	0	0
8	2	5	6	8	7	11	12	15	16	0	0	0	0	0	0	0	0
9	1	1	2	3	4	9	10	13	14	0	0	0	0	0	0	0	0
9	2	5	6	8	7	11	12	15	16	0	0	0	0	0	0	0	0
10	1	1	2	3	4	9	10	13	14	0	0	0	0	0	0	0	0
10	2	5	6	8	7	11	12	15	16	0	0	0	0	0	0	0	0
11	1	1	2	3	4	9	10	13	14	0	0	0	0	0	0	0	0
11	2	5	6	8	7	11	12	15	16	0	0	0	0	0	0	0	0
12	1	1	2	3	4	9	10	13	14	0	0	0	0	0	0	0	0
12	2	5	6	8	7	11	12	15	16	0	0	0	0	0	0	0	0
13	1	1	2	3	4	9	10	13	14	0	0	0	0	0	0	0	0
13	2	5	6	8	7	11	12	15	16	0	0	0	0	0	0	0	0
14	1	1	2	3	4	9	10	13	14	0	0	0	0	0	0	0	0
14	2	5	6	8	7	11	12	15	16	0	0	0	0	0	0	0	0
15	1	1	2	3	4	9	10	13	14	0	0	0	0	0	0	0	0
15	2	5	6	8	7	11	12	15	16	0	0	0	0	0	0	0	0
16	1	1	2	3	4	9	10	13	14	0	0	0	0	0	0	0	0
16	2	5	6	8	7	11	12	15	16	0	0	0	0	0	0	0	0

**Phase
Compatibility
(MM)1-1-2**

Phase 1	Phase 2
1	5
1	6
2	5
2	6
3	8
4	7
9	11
9	12
10	11
10	12
13	15
13	16
14	15
14	16

**Phase Direction
Descriptions**

Phase	Description
1	SBLT
2	NB
3	WBLT
4	EB
5	NBLT
6	SB
7	EBLT
8	WB

**Overlap Direction
Descriptions**

Overlap	Description
---------	-------------

Administration (MM)1-7-1

Enable CRC Check: No

CRC: 0000

Request Download Program Data: No

Enable Automatic Backup to Datakey: Yes

TRAFALGAR RD & CORNWALL RD Direct port 13 - Trafalgar & Cross

Configuration Phase Sequence Page 2

In Use(MM)1-2

Exclusive Ped(MM)1-2

Backup Prevent(MM)1-1-3

Simultaneous Gap(MM)1-1-4

Disable(MM)1-1-4

Phases In Use
1
2
3
4
5
6
7
8

Phase

Phase	Timing Phase	Backup
1	2	Yes
2	3	Yes
3	4	Yes
4	5	Yes
5	6	B
6	7	Yes

Phase	Must Gap with Phase

Phase

Load Switch Assignments (MMU Channel) (MM)1-3

Phase	Overlap	Type	Dimming				Power Up			Auto		Flash Together	
			Red	Yellow	Green	Dark	Auto	Red	Yellow	Dark	Red		Yellow
1	1	V				+	Yes				Yes		
2	2	V				+	Yes				Yes		Yes
3	3	V				+	Yes				Yes		
4	4	V				+	Yes				Yes		Yes
5	5	V				-	Yes				Yes		
6	6	V				-	Yes				Yes		Yes
7	7	V				-	Yes				Yes		
8	8	V				-	Yes				Yes		Yes
9	2	P				+	Yes						
10	4	P				+	Yes						
11	6	P				-	Yes						
12	0					-	Yes						
13	1					+	Yes				Yes		
14	2	O				-	Yes				Yes		Yes
15	3	O				+	Yes				Yes		
16	4	O				-	Yes				Yes		Yes

TRAFALGAR RD & CORNWALL RD Direct port 13 - Trafalgar & Cross

Configuration Port 1 (SDLC)

SDLC Options (MM)1-4-1

Bus Interface Terminal/Facilities

BIU	Term and Facility Enable	Detector Rack Enable
1	Yes	Yes
2	Yes	Yes
3	No	No
4	No	No
5	No	No
6	No	No
7	No	No
8	No	No

Enable TS2/MMU Type Cabinet: Yes
 Enable MMU Extended Status: Yes
 Enable SDLC Stop Time: No
 Enable 3 Critical RFE's Lockup: Yes
 Diagonstics (Test Fixture) Enable: No

Secondary To Secondary Addressing

ID	Term and Facility Enable	Detector Rack Enable
1	No	No
2	No	No
3	No	No
4	No	No
5	No	No
6	No	No
7	No	No
8	No	No

Secondary To Secondary Addressing MMU: No
 Secondary To Secondary Addressing Diagonstics: No

MMU Program (MM)1-4-2

Channel Can Serve with Channel	
Channel 1	Channel 2
1	5
1	6
1	11
2	5
2	6
2	9
2	11
3	7
3	8
3	12
4	7
4	8
4	10
4	12
5	9
6	9
6	11
7	10
8	10
8	12
9	11
10	12

Color Check Enable (MM)1-4-3

Enable Color Check: Yes

Color Check Enable

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MMU Channel	Green	Yellow	Red
1	Yes	Yes	No
2	Yes	Yes	Yes
3	Yes	Yes	No
4	Yes	Yes	Yes
5	Yes	Yes	No
6	Yes	Yes	Yes
7	Yes	Yes	No
8	Yes	Yes	Yes
9	Yes	No	Yes
10	Yes	No	Yes
11	Yes	No	Yes

TRAFALGAR RD & CORNWALL RD Direct port 13 - Trafalgar & Cross

Controller Timing Plan (MM)2-1

Plan 1

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Min Green	7	27	12	10	7	27	10	10	5	5	5	5	5	5	5	5
BK Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CS Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Delay Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk	0	7	0	7	0	7	0	0	0	10	0	10	0	10	0	10
Walk 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear	0	20	0	28	0	20	0	7	0	16	0	16	0	16	0	16
Ped Clear 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped CO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Ext	3.0	5.0	3.5	4.0	3.0	5.0	3.0	4.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Ext 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max 1	25	50	25	40	25	50	35	45	35	35	35	35	35	35	35	35
Max 2	40	70	70	70	40	70	70	70	40	40	40	40	40	40	40	40
Max 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DYM Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DYM Stp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	3.0	4.0	4.0	4.0	3.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Red Clear	1.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Red Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red Revert	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
ACT B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SEC/ACT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Int	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cars Wt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STPT Duc	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TRAFALGAR RD & CORNWALL RD Direct port 13 - Trafalgar & Cross

Controller Start/Fash (MM) 2-5**Startup**

Phase	Phase Setting
2	Y
6	Y

Overlap
A
B
C
D

Flash > Mon: No
Flash Time: 0
All Red: 0
Power Start Sequence: 1

Automatic Flash

Entry Phase
2
6

Exit Phase
2
6

Overlap Exit
A
B
C
D

Flash > Mon: No
Exit Flash Interval: W
Minimum Auto Flash: 8
Minimum Recall: No
Cycle Through Phase: No

TRAFALGAR RD & CORNWALL RD Direct port 13 - Trafalgar & Cross

Controller Options**Controller Options (MM)2-6-1**

Phase	Flashing Green Phase	Guaranteed Passage	Non Act 1	Non Act 2	Dual Entry	Conditional Service	Conditional Reservice	Ped Reservice	Rest In Walk	Flashing Walk	Ped Clear Yellow	Ped Clear Red	IGRN + Veh Ext
2	No	No	Yes	No	No	No	No	No	Yes	No	No	No	No
3	No	No	No	No	Yes	No	No	No	No	No	No	No	No
4	No	No	No	Yes	Yes	No	No	No	No	No	No	No	No
6	No	No	Yes	No	No	Yes	No	No	Yes	No	No	No	No
7	No	No	No	No	Yes	No	No	No	No	No	No	No	No
8	No	No	No	Yes	Yes	No	No	No	No	No	No	No	No

Ped Clear Protect: Off

Red Revert: 2.0

Act Pre-Time (MM)2-7

Pre-Time Mode Enable: No

Free Input Enables Pre-Timed: Yes

Pre-Timed Phase

Phase Recall Options (MM)2-8

Plan	Phase	Lock Detector	Vehicle Recall	Ped Recall	Max Recall	Soft Recall	No Rest	AI Calc
1	2	No	Yes	Yes	No	No	No	No
1	6	No	Yes	Yes	No	No	No	No
2	1	Yes	No	No	No	No	No	No
2	2	Yes	No	No	No	No	No	No
2	3	Yes	No	No	No	No	No	No
2	4	Yes	No	No	No	No	No	No
2	5	Yes	No	No	No	No	No	No
2	6	Yes	No	No	No	No	No	No
2	7	Yes	No	No	No	No	No	No
2	8	Yes	No	No	No	No	No	No
2	9	Yes	No	No	No	No	No	No
2	10	Yes	No	No	No	No	No	No
2	11	Yes	No	No	No	No	No	No
2	12	Yes	No	No	No	No	No	No
2	13	Yes	No	No	No	No	No	No
2	14	Yes	No	No	No	No	No	No
2	15	Yes	No	No	No	No	No	No
2	16	Yes	No	No	No	No	No	No
3	1	Yes	No	No	No	No	No	No
3	2	Yes	No	No	No	No	No	No
3	3	Yes	No	No	No	No	No	No
3	4	Yes	No	No	No	No	No	No
3	5	Yes	No	No	No	No	No	No
3	6	Yes	No	No	No	No	No	No
3	7	Yes	No	No	No	No	No	No
3	8	Yes	No	No	No	No	No	No
3	9	Yes	No	No	No	No	No	No
3	10	Yes	No	No	No	No	No	No
3	11	Yes	No	No	No	No	No	No
3	12	Yes	No	No	No	No	No	No
3	13	Yes	No	No	No	No	No	No
3	14	Yes	No	No	No	No	No	No
3	15	Yes	No	No	No	No	No	No
3	16	Yes	No	No	No	No	No	No
4	1	Yes	No	No	No	No	No	No
4	2	Yes	No	No	No	No	No	No
4	3	Yes	No	No	No	No	No	No
4	4	Yes	No	No	No	No	No	No
4	5	Yes	No	No	No	No	No	No
4	6	Yes	No	No	No	No	No	No
4	7	Yes	No	No	No	No	No	No
4	8	Yes	No	No	No	No	No	No
4	9	Yes	No	No	No	No	No	No
4	10	Yes	No	No	No	No	No	No
4	11	Yes	No	No	No	No	No	No
4	12	Yes	No	No	No	No	No	No
4	13	Yes	No	No	No	No	No	No
4	14	Yes	No	No	No	No	No	No
4	15	Yes	No	No	No	No	No	No
4	16	Yes	No	No	No	No	No	No

TRAFALGAR RD & CORNWALL RD Direct port 13 - Trafalgar & Cross

Coordination Options**Coordination Options (MM)3-1**

Manual Pattern: Auto
 ECPI Coord: Yes
 System Source: TBC
 System Format: STD
 Splits In: Percent
 Offsets In: Percent
 Transition: Smooth
 Max Select: MAXINH
 Dwell/Add Time: 0
 Dly Coord Wz-Lz: No
 Force Off: Float
 Offset Reference: Lead
 Use Ped Time: Yes
 Ped Recall: No
 Ped Resv: No
 Local Zero Ovr: No
 Fo Add Ini Green: No
 Re-sync Count: 3
 Multisync: No

Split Demand (MM)3-5

Demand 1	Demand 2
Phase	Phase

Demand	Detector	Call Time	Cycle Count

Auto Perm Minimum Green (Seconds) (MM)3-4

Phase	Min Green
1	3

TRAFALGAR RD & CORNWALL RD Direct port 13 - Trafalgar & Cross

Coordination Pattern Data
Pattern Data (MM)3-2

Pattern	Split Pattern	TS2	Cycle	Std(COS)	Offset Value	Dwell/Add Time	Splits In	Offsets In	Actuated Coord
1	1	0-1	120	111	12	0	Percent	Percent	Yes
2	2	0-2	140	0	6	0	Percent	Percent	Yes
3	3	0-3	120	0	12	0	Percent	Percent	Yes
4	4	1-1	120	0	49	0	Percent	Percent	Yes
5	5	1-2	140	0	42	0	Percent	Percent	Yes
6	6	1-3	255	0	0	0	Percent	Percent	No
11	11	3-2	120	0	85	0	Percent	Percent	No
12	12	3-3	120	0	45	0	Percent	Percent	No
13	13	4-1	150	0	10	0	Percent	Percent	No
18	18	5-3	150	0	19	0	Percent	Percent	No
21	21	6-3	120	0	85	0	Percent	Percent	No
23	23	7-2	120	0	85	0	Percent	Percent	No
24	24	7-3	120	0	0	0	Percent	Percent	No

Pattern	Timing Plan	Actuated Walk Rest	Sequence	Phase Reservice	Action Plan	Max Select	Force Off	Vehicle Perm 1	Vehicle Perm 2	Vehicle Perm 3
1	0	Yes	0	No	0	Max Inhibit	None	0	0	0
2	0	Yes	0	No	0	Max Inhibit	Float	0	0	0
3	0	Yes	0	No	0	Max Inhibit	Float	0	0	0
4	0	Yes	0	No	0	Max Inhibit	Float	0	0	0
5	0	Yes	0	No	0	None	None	0	0	0
6	0	No	0	No	0	None	None	0	0	0
11	0	No	0	No	0	None	None	0	0	0
12	0	No	0	No	0	None	None	0	0	0
13	0	No	0	No	0	None	None	0	0	0
18	0	No	0	No	0	None	None	0	0	0
21	0	No	0	No	0	None	None	0	0	0
23	0	No	0	No	0	None	None	0	0	0
24	0	No	0	No	0	None	None	0	0	0

Pattern	Ring Split Ext 1	Ring Split Ext 2	Ring Split Ext 3	Ring Split Ext 4	Split Demand Pattern 1	Split Demand Pattern 2	XArt Pattern	Ring Displ 2	Ring Displ 3	Ring Displ 4
1	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0

Split Preference Phases

Pattern	Phase	Preference 1	Preference 2
---------	-------	--------------	--------------

Special Functions

Pattern	Function	Output
---------	----------	--------

Split Pattern Data (MM)3-3
Coord Phases

Split Pattern	Phase	Split
1	1	10
1	2	39

Split/Modes

Split Pattern	Mode	Phase															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Coord	X				X											
1		X			X												

21	2	36
21	3	19
21	4	30
21	5	15
21	6	36
21	7	30
21	8	19
23	1	15
23	2	36
23	3	19
23	4	30
23	5	15
23	6	36
23	7	30
23	8	19

TRAFALGAR RD & CORNWALL RD Direct port 13 - Trafalgar & Cross

Preemptor Preempt Plan (MM)4-1

Preempt Phases

Preempt	Phase	Track Clear Veh	Dwell Veh	Dwell Ped	Cycling Veh	Cycling Ped	Exit Phase	Exit Calls	Special Function
3	2	No	Yes	No	No	No	No	No	No
3	6	No	Yes	No	No	No	No	No	No
4	2	No	Yes	No	No	No	No	No	No
4	6	No	Yes	No	No	No	No	No	No

Preempt Overlaps

Preempt	Overlap	Track Clear	Enable Trailing	Dwell Overlap	Cycling Overlap
---------	---------	-------------	-----------------	---------------	-----------------

Preempt	Enable	Preempt Override	Interlock Enable	Detector Lock	Delay	Inhibit	Override Flash	Duration	CLR > GRN
1	No	Yes	No	Yes	0	0	No	0	No
2	No	Yes	No	Yes	0	0	No	0	No
3	Standard	Yes	No	Yes	0	0	No	15	No
4	Standard	Yes	No	Yes	0	0	No	15	No
5	No	Yes	No	Yes	0	0	No	0	No
6	No	Yes	No	Yes	0	0	No	0	No
7	No	Yes	No	Yes	0	0	No	0	No
8	No	Yes	No	Yes	0	0	No	0	No
9	No	Yes	No	Yes	0	0	No	0	No
10	No	Yes	No	Yes	0	0	No	0	No

Preempt	Term Overlap Asap	PC Through Yellow	Terminate Phase	Ped Dark	Track Clearance Re-service	Dwell Flash	Linked Pmt	Flash Exit Color	Preempt To Coord	Fault Type
1	No	No	No	No	No	Off	0	Green	No	Hard
2	No	No	No	No	No	Off	0	Green	No	Hard
3	No	Yes	No	No	No	Off	0	Green	No	Hard
4	No	No	No	No	No	Off	0	Green	No	Hard
5	No	No	No	No	No	Off	0	Green	No	Hard
6	No	No	No	No	No	Off	0	Green	No	Hard
7	No	No	No	No	No	Off	0	Green	No	Hard
8	No	No	No	No	No	Off	0	Green	No	Hard
9	No	No	No	No	No	Off	0	Green	No	Hard
10	No	No	No	No	No	Off	0	Green	No	Hard

Preempt	Exit Timing Plan	Reservice	Free During Pmt Ring 1	Free During Pmt Ring 2	Free During Pmt Ring 3	Free During Pmt Ring 4
1	0	0	No	No	No	No
2	0	0	No	No	No	No
3	0	0	No	No	No	No
4	0	0	No	No	No	No
5	0	0	No	No	No	No
6	0	0	No	No	No	No
7	0	0	No	No	No	No
8	0	0	No	No	No	No
9	0	0	No	No	No	No
10	0	0	No	No	No	No

Preempt	Entrance Walk	Entrance Ped Clear	Entrance Min Green	Entrance Yellow	Entrance Red	Track Clear Min Green	Gate Down Ext Green	Gate Down Max Green	Track Clear Yellow	Track Clear Red
1	0	255	5	4.0	1.0	0	0	0	4.0	1.0
2	0	255	5	4.0	1.0	0	0	0	4.0	1.0
3	0	7	5	4.0	2.0	0	0	0	4.0	1.0
4	0	7	5	4.0	2.0	0	0	0	4.0	1.0
5	0	255	5	4.0	1.0	0	0	0	4.0	1.0
6	0	255	5	4.0	1.0	0	0	0	4.0	1.0
7	0	255	5	4.0	1.0	0	0	0	4.0	1.0
8	0	255	5	4.0	1.0	0	0	0	4.0	1.0
9	0	255	5	4.0	1.0	0	0	0	4.0	1.0

10	0	255	5	4.0	1.0	0	0	0	4.0	1.0
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Preempt	Min Dwell Time	Extend Preempt Input Time	Max Preempt Call Time	Exit Yellow Time	Exit Red Time	Preempt Active Out	Preempt Active Dwell	Other Priority Preempt	Non-Priority Preempt	Inhibit Ext Time
1	0	0.0	0	4.0	1.0	On	No	Off	Off	0.0
2	0	0.0	0	4.0	1.0	On	No	Off	Off	0.0
3	0	0.0	0	4.0	1.0	On	No	Off	Off	0.0
4	0	0.0	0	4.0	1.0	On	No	Off	Off	0.0
5	0	0.0	0	4.0	1.0	On	No	Off	Off	0.0
6	0	0.0	0	4.0	1.0	On	No	Off	Off	0.0
7	0	0.0	0	4.0	1.0	On	No	Off	Off	0.0
8	0	0.0	0	4.0	1.0	On	No	Off	Off	0.0
9	0	0.0	0	4.0	1.0	On	No	Off	Off	0.0
10	0	0.0	0	4.0	1.0	On	No	Off	Off	0.0

TRAFALGAR RD & CORNWALL RD Direct port 13 - Trafalgar & Cross

Time Base Clock/Calendar

Clock/Calendar Options (MM)5-1

Enable Action Plan: 0
Sync Reference Time: 3:15 AM
Sync Reference: Reference Time
Day Light Savings: USDLS
Time Reset Input Set Time: 3:30:00
Standard Time From GMT: -5

TRAFALGAR RD & CORNWALL RD Direct port 13 - Trafalgar & Cross

Time Base Action Plan**Action Plan (MM)5-2**

Plan	Pattern	Veh Det Plan	Flash	Red Rest	Controller Seq	Timing Plan	Override System	Detector Log	Veh Det Diag Plan	Ped Det Diag Plan	Dimming Enable
1	1	1	No	No	0	0	Yes	None	0	0	No
2	2	0	No	No	0	0	Yes	None	0	0	No
3	3	0	No	No	0	0	Yes	None	0	0	No
4	4	0	No	No	0	0	Yes	None	0	0	No
5	5	0	No	No	0	0	Yes	None	0	0	No
6	254 - FREE	0	No	No	0	0	Yes	None	0	0	No
7	21	0	No	No	0	0	No	None	0	0	No
8	23	0	No	No	0	0	No	None	0	0	No
9	24	0	No	No	0	0	No	None	0	0	No

Action Plan Phases

Plan	Phase	Ped Rcl	Walk 2	Vex 2	Veh Rcl	Max Rcl	Max 2	Max 3	CS Inhibit	Omit

Action Plan Special Functions

Plan	Function

Action Plan Auxiliary Functions

Plan	Function

Logic Statement Control

Plan	LP	Statement Control

TRAFALGAR RD & CORNWALL RD Direct port 13 - Trafalgar & Cross

Time Base Day Plan/Schedule
Day Plan (MM)5-3

Plan	Event	Action Plan	Start Time
1	1	1	6:00 AM
1	2	2	7:00 AM
1	3	1	9:00 AM
1	4	3	10:00 AM
1	5	4	3:15 PM
1	6	5	5:00 PM
1	7	3	7:00 PM
1	8	6	10:00 PM

Schedule (MM)5-4

Schedule Number	Day Plan Number	Months	Days of Week	Days of Month
1	1	Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sept, Oct, Nov, Dec	Sun, Mon, Tues, Wed, Thurs, Fri, Sat	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31
2	2	Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sept, Oct, Nov, Dec	Sun, Sat	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31

TRAFALGAR RD & CORNWALL RD Direct port 13 - Trafalgar & Cross

Detectors**Detectors Page 1****Vehicle Detectors Setup (MM)6-1**

Vehicle Plan	Detector Number	Called	Type
1	3	3	S
1	4	4	S
1	7	7	S
1	8	8	S
1	9	9	S
1	10	10	S
1	11	11	S
1	12	12	S
1	15	7	S
1	16	7	S
1	17	1	S
1	18	2	S
1	21	5	S
1	22	6	S
1	25	1	S
1	26	2	S
1	29	5	S
1	30	6	S

Vehicle Detector Setup (MM)6-2 continued

Detector Number	ECPI	TS2 Detector	Detector Description
1	S-STANDARD	Yes	
2	S-STANDARD	Yes	
3	S-STANDARD	Yes	
4	S-STANDARD	Yes	
5	S-STANDARD	Yes	
6	S-STANDARD	Yes	
7	S-STANDARD	Yes	
8	S-STANDARD	Yes	
9	S-STANDARD	Yes	
10	S-STANDARD	Yes	
11	S-STANDARD	Yes	
12	S-STANDARD	Yes	
13	S-STANDARD	Yes	
14	S-STANDARD	Yes	
15	S-STANDARD	Yes	
16	S-STANDARD	Yes	
17	S-STANDARD	Yes	
18	S-STANDARD	Yes	
19	S-STANDARD	Yes	
20	S-STANDARD	Yes	
21	S-STANDARD	Yes	
22	S-STANDARD	Yes	
23	S-STANDARD	Yes	
24	S-STANDARD	Yes	
25	S-STANDARD	Yes	
26	S-STANDARD	Yes	
27	S-STANDARD	Yes	
28	S-STANDARD	Yes	
29	S-STANDARD	Yes	
30	S-STANDARD	Yes	
31	S-STANDARD	Yes	
32	S-STANDARD	Yes	
33	S-STANDARD	Yes	
34	S-STANDARD	Yes	
35	S-STANDARD	Yes	
36	S-STANDARD	Yes	
37	S-STANDARD	Yes	
38	S-STANDARD	Yes	
39	S-STANDARD	Yes	
40	S-STANDARD	Yes	
41	S-STANDARD	Yes	
42	S-STANDARD	Yes	
43	S-STANDARD	Yes	
44	S-STANDARD	Yes	
45	N-NTCIP	Yes	
46	N-NTCIP	Yes	
47	N-NTCIP	Yes	
48	N-NTCIP	Yes	
49	N-NTCIP	Yes	
50	N-NTCIP	Yes	
51	N-NTCIP	Yes	
52	N-NTCIP	Yes	
53	N-NTCIP	Yes	
54	N-NTCIP	Yes	
55	N-NTCIP	Yes	
56	N-NTCIP	Yes	
57	N-NTCIP	Yes	
58	N-NTCIP	Yes	
59	N-NTCIP	Yes	
60	N-NTCIP	Yes	
61	N-NTCIP	Yes	
62	N-NTCIP	Yes	
63	N-NTCIP	Yes	
64	N-NTCIP	Yes	

Vehicle Detector Setup (MM)6-2 continued

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Detector Number	Vehicle Plan	Assigned Phase	Switch Phase	Extend Time/Passage Time	Delay Time	Queue Limit/Disconnect Time	Added Option	Call Option	NTCIP Occupancy	NTCIP Volume	ECPI Log	Lock In	Ext Option
1	1	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
1	2	1	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
1	3	1	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
1	4	1	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
2	1	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
2	2	2	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
2	3	2	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
2	4	2	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
3	1	3	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
3	2	3	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
3	3	3	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
3	4	3	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
4	1	4	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
4	2	4	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
4	3	4	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
4	4	4	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
5	1	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
5	2	5	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
5	3	5	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
5	4	5	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
6	1	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
6	2	6	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
6	3	6	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
6	4	6	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
7	1	7	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
7	2	7	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
7	3	7	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
7	4	7	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
8	1	8	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
8	2	8	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
8	3	8	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
8	4	8	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
9	1	9	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
9	2	9	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
9	3	9	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
9	4	9	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
10	1	10	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
10	2	10	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
10	3	10	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
10	4	10	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
11	1	11	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
11	2	11	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
11	3	11	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
11	4	11	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
12	1	12	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
12	2	12	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
12	3	12	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
12	4	12	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
13	1	13	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
13	2	13	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
13	3	13	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
13	4	13	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
14	1	14	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
14	2	14	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
14	3	14	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
14	4	14	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
15	1	7	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
15	2	15	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
15	3	15	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
15	4	15	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
16	1	7	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
16	2	16	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
16	3	16	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
16	4	16	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
17	1	1	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
17	2	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
17	3	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
17	4	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage

35	4	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
36	1	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
36	2	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
36	3	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
36	4	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
37	1	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
37	2	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
37	3	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
37	4	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
38	1	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
38	2	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
38	3	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
38	4	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
39	1	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
39	2	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
39	3	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
39	4	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
40	1	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
40	2	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
40	3	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
40	4	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
41	1	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
41	2	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
41	3	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
41	4	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
42	1	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
42	2	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
42	3	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
42	4	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
43	1	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
43	2	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
43	3	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
43	4	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
44	1	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
44	2	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
44	3	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage
44	4	0	0	0.0	0.0	0	No	Yes	No	No	No	None	Passage

Ped Detector Options (MM)6-3

Phase Ped Detector (NTCIP)

Local Ped Detector	Number
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15
16	16

Local System Detector

Local System Detector	Number
-----------------------	--------

TRAFALGAR RD & CORNWALL RD Direct port 13 - Trafalgar & Cross

Detectors

Detectors Page 2

Log - Speed Detector Setup (MM)6-5

NTCIP Log Period: 0 ECPI Log Period: TBAP Length Unit: Inch

Speed Detector	Local Detector	One/Two Detector	Vehicle Length	Trap Length	Enable Log
1	0	1	0	0	No
2	0	1	0	0	No
3	0	1	0	0	No
4	0	1	0	0	No
5	0	1	0	0	No
6	0	1	0	0	No
7	0	1	0	0	No
8	0	1	0	0	No
9	0	1	0	0	No
10	0	1	0	0	No
11	0	1	0	0	No
12	0	1	0	0	No
13	0	1	0	0	No
14	0	1	0	0	No
15	0	1	0	0	No
16	0	1	0	0	No

Vehicle Detector Diagnostics (MM)6-6

Plan	Detector	Counts	Act	Pres	Multiplier	Failed Time	Failed Call Delay
1	1	0	0	0	1	255	0
1	2	0	0	0	1	255	0
1	3	0	0	0	1	255	0
1	4	0	0	0	1	255	0
1	5	0	0	0	1	255	0
1	6	0	0	0	1	255	0
1	7	0	0	0	1	255	0
1	8	0	0	0	1	255	0
1	9	0	0	0	1	255	0
1	10	0	0	0	1	255	0
1	11	0	0	0	1	255	0
1	12	0	0	0	1	255	0
1	13	0	0	0	1	255	0
1	14	0	0	0	1	255	0
1	15	0	0	0	1	255	0
1	16	0	0	0	1	255	0
1	17	0	0	0	1	255	0
1	18	0	0	0	1	255	0
1	19	0	0	0	1	255	0
1	20	0	0	0	1	255	0
1	21	0	0	0	1	255	0
1	22	0	0	0	1	255	0
1	23	0	0	0	1	255	0
1	24	0	0	0	1	255	0
1	25	0	0	0	1	255	0
1	26	0	0	0	1	255	0
1	27	0	0	0	1	255	0
1	28	0	0	0	1	255	0
1	29	0	0	0	1	255	0
1	30	0	0	0	1	255	0
1	31	0	0	0	1	255	0
1	32	0	0	0	1	255	0

Pedestrian Detector Diagnostics (MM)6-7

Plan	Detector	Counts	Act	Pres	Multiplier
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Date: 23-Mar-22

Intersection: Trafalgar & Cornwall

8 Phase Basic Timing Sheet

	1	2	3	4	5	6	7	8	2 Ped	4 Ped	6 Ped	8 Ped
Phases in use	X	X	X	X	X	X	X	X	X	X	X	X
Direction	Prot SBL	NB	Prot EBL	WB	Prot NBL	SB	Prot WBL	EB				
Min Green	7	20	7	10	7	20	7	10				
Veh Ext.												
Yellow	3	4	3	4	3	4	3	4				
Red	2	3	2	3	2	3	2	3				
Walk		7		7		7		7				
Don't Walk		25		23		25		23				
Max 1	25	50	25	40	25	50	25	40				
Max 2	40	70	45	65	40	70	45	65				
Max 3												
Veh Recall												
Ped Recall												
Notes:												

<p>Pattern 1 Time: 6:00-7:00, 9:00-10:00 Cycle Length: 120 Offset (%): 37%</p> <table border="1"> <tbody> <tr> <td>Direction</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Phase</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <td>%</td> <td>20</td> <td>33</td> <td>10</td> <td>37</td> </tr> <tr> <td>Direction</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Phase</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> </tr> <tr> <td>%</td> <td>10</td> <td>43</td> <td>16</td> <td>31</td> </tr> </tbody> </table>	Direction					Phase	1	2	3	4	%	20	33	10	37	Direction					Phase	5	6	7	8	%	10	43	16	31	<p>Pattern 2 Time: 7:00-9:00 Cycle Length: 140 Offset (%): 41%</p> <table border="1"> <tbody> <tr> <td>Direction</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Phase</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <td>%</td> <td>27</td> <td>29</td> <td>9</td> <td>35</td> </tr> <tr> <td>Direction</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Phase</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> </tr> <tr> <td>%</td> <td>9</td> <td>47</td> <td>16</td> <td>28</td> </tr> </tbody> </table>	Direction					Phase	1	2	3	4	%	27	29	9	35	Direction					Phase	5	6	7	8	%	9	47	16	28
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Phase	1	2	3	4																																																									
%	20	33	10	37																																																									
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Phase	5	6	7	8																																																									
%	10	43	16	31																																																									
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Phase	1	2	3	4																																																									
%	27	29	9	35																																																									
Direction																																																													
Phase	5	6	7	8																																																									
%	9	47	16	28																																																									
<p>Pattern 3 Time: 10:00-15:15, 19:00-22:00 Cycle Length: 120 Offset (%): 37%</p> <table border="1"> <tbody> <tr> <td>Direction</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Phase</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <td>%</td> <td>22</td> <td>33</td> <td>10</td> <td>35</td> </tr> <tr> <td>Direction</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Phase</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> </tr> <tr> <td>%</td> <td>10</td> <td>45</td> <td>14</td> <td>31</td> </tr> </tbody> </table>	Direction					Phase	1	2	3	4	%	22	33	10	35	Direction					Phase	5	6	7	8	%	10	45	14	31	<p>Pattern 4 Time: 15:15-17:00 Cycle Length: 120 Offset (%): 78%</p> <table border="1"> <tbody> <tr> <td>Direction</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Phase</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <td>%</td> <td>20</td> <td>33</td> <td>10</td> <td>37</td> </tr> <tr> <td>Direction</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Phase</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> </tr> <tr> <td>%</td> <td>10</td> <td>43</td> <td>16</td> <td>31</td> </tr> </tbody> </table>	Direction					Phase	1	2	3	4	%	20	33	10	37	Direction					Phase	5	6	7	8	%	10	43	16	31
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Phase	1	2	3	4																																																									
%	22	33	10	35																																																									
Direction																																																													
Phase	5	6	7	8																																																									
%	10	45	14	31																																																									
Direction																																																													
Phase	1	2	3	4																																																									
%	20	33	10	37																																																									
Direction																																																													
Phase	5	6	7	8																																																									
%	10	43	16	31																																																									
<p>Pattern 5 Time: 17:00-19:00 Cycle Length: 140 Offset (%): 70</p> <table border="1"> <tbody> <tr> <td>Direction</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Phase</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <td>%</td> <td>24</td> <td>30</td> <td>10</td> <td>36</td> </tr> <tr> <td>Direction</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Phase</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> </tr> <tr> <td>%</td> <td>10</td> <td>44</td> <td>18</td> <td>28</td> </tr> </tbody> </table>	Direction					Phase	1	2	3	4	%	24	30	10	36	Direction					Phase	5	6	7	8	%	10	44	18	28	<p>Pattern 6 Time: 22:00 Cycle Length: local Offset (%):</p> <table border="1"> <tbody> <tr> <td>Direction</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Phase</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <td>%</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Direction</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Phase</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> </tr> <tr> <td>%</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> </tbody> </table>	Direction					Phase	1	2	3	4	%	0	0	0	0	Direction					Phase	5	6	7	8	%	0	0	0	0
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Trafalgar Rd @ Cornwall Rd (Master) - Cross Ave @ Argus Rd

Configuration Phase Sequence Page 1

Phase Ring (MM)1-1-1

Phase															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	1	1	1	2	2	2	2	1	1	2	2	1	1	2	2

Hardware Alternate Sequence Enable: No

Phase Ring Sequence

Sequence	Ring	Phase															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	Barrier Mode	B		B		B		B		B							
1	1	1	2	3	4	9	10	13	14	0	0	0	0	0	0	0	0
1	2	5	6	7	8	11	12	15	16	0	0	0	0	0	0	0	0
2	1	2	1	3	4	10	9	13	14	0	0	0	0	0	0	0	0
2	2	5	6	7	8	11	12	15	16	0	0	0	0	0	0	0	0
3	1	1	2	4	3	9	10	14	13	0	0	0	0	0	0	0	0
3	2	5	6	7	8	11	12	15	16	0	0	0	0	0	0	0	0
4	1	2	1	4	3	10	9	14	13	0	0	0	0	0	0	0	0
4	2	5	6	7	8	11	12	15	16	0	0	0	0	0	0	0	0
5	1	1	2	3	4	9	10	13	14	0	0	0	0	0	0	0	0
5	2	6	5	7	8	12	11	15	16	0	0	0	0	0	0	0	0
6	1	2	1	3	4	10	9	13	14	0	0	0	0	0	0	0	0
6	2	6	5	7	8	12	11	15	16	0	0	0	0	0	0	0	0
7	1	1	2	4	3	9	10	14	13	0	0	0	0	0	0	0	0
7	2	6	5	7	8	12	11	15	16	0	0	0	0	0	0	0	0
8	1	2	1	4	3	10	9	14	13	0	0	0	0	0	0	0	0
8	2	6	5	7	8	12	11	15	16	0	0	0	0	0	0	0	0
9	1	1	2	3	4	9	10	13	14	0	0	0	0	0	0	0	0
9	2	5	6	8	7	11	12	16	15	0	0	0	0	0	0	0	0
10	1	2	1	3	4	10	9	13	14	0	0	0	0	0	0	0	0
10	2	5	6	8	7	11	12	16	15	0	0	0	0	0	0	0	0
11	1	1	2	4	3	9	10	14	13	0	0	0	0	0	0	0	0
11	2	5	6	8	7	11	12	16	15	0	0	0	0	0	0	0	0
12	1	2	1	4	3	10	9	14	13	0	0	0	0	0	0	0	0
12	2	5	6	8	7	11	12	16	15	0	0	0	0	0	0	0	0
13	1	1	2	3	4	9	10	13	14	0	0	0	0	0	0	0	0
13	2	6	5	8	7	12	11	16	15	0	0	0	0	0	0	0	0
14	1	2	1	3	4	10	9	13	14	0	0	0	0	0	0	0	0
14	2	6	5	8	7	12	11	16	15	0	0	0	0	0	0	0	0
15	1	1	2	4	3	9	10	14	13	0	0	0	0	0	0	0	0
15	2	6	5	8	7	12	11	16	15	0	0	0	0	0	0	0	0
16	1	2	1	4	3	10	9	14	13	0	0	0	0	0	0	0	0
16	2	6	5	8	7	12	11	16	15	0	0	0	0	0	0	0	0

**Phase
Compatibility
(MM)1-1-2**

Phase 1	Phase 2
1	5
1	6
2	5
2	6
3	7
3	8
4	7
4	8
9	11
9	12
10	11
10	12
13	15
13	16
14	15
14	16

**Phase Direction
Descriptions**

Phase	Description
1	WBLT
2	EB
4	SB
6	WB
8	NB

**Overlap Direction
Descriptions**

Overlap	Description
---------	-------------

Administration (MM)1-7-1

Enable CRC Check: No

CRC: 0000

Request Download Program Data: No

Enable Automatic Backup to Datakey: Yes

Trafalgar Rd @ Cornwall Rd (Master) - Cross Ave @ Argus Rd

Configuration Phase Sequence Page 2

In Use(MM)1-2		Exclusive Ped(MM)1-2		Backup Prevent(MM)1-1-3			Simultaneous Gap(MM)1-1-4		Disable(MM)1-1-4
Phases In Use	Phase	Phase	Timing Phase	Backup	Phase	Must Gap with Phase	Phase		
1		1	2	Yes					
2		3	4	Yes					
4		5	6	Yes					
6		7	8	Yes					
8									

Load Switch Assignments (MMU Channel) (MM)1-3

Phase	Overlap	Type	Dim				Auto		Flash Together
			R	Y	G	D	R	Y	
1	1	V				+	Yes		
2	2	V				+	Yes		Yes
3	3	V				+	Yes		
4	4	V				+	Yes		Yes
5	5	V				-	Yes		
6	6	V				-	Yes		Yes
7	7	V				-	Yes		
8	8	V				-	Yes		Yes
9	2	P				+			
10	4	P				+			
11	6	P				-			
12	8	P				-			
13	1	O				+	Yes		
14	2	O				-	Yes		Yes
15	3	O				+	Yes		
16	4	O				-	Yes		Yes

Trafalgar Rd @ Cornwall Rd (Master) - Cross Ave @ Argus Rd

Configuration Port 1 (SDLC)**SDLC Options (MM)1-4-1****Bus Interface Terminal/Facilities**

BIU	Term and Facility Enable	Detector Rack Enable
1	Yes	Yes
2	Yes	Yes
3	No	No
4	No	No
5	No	No
6	No	No
7	No	No
8	No	No

Enable TS2/MMU Type Cabinet: No
 Enable MMU Extended Status: Yes
 Enable SDLC Stop Time: No
 Enable 3 Critical RFE's Lockup: Yes
 MMU To CU SDLC External Start: Enabled
 Diagnostics (Test Fixture) Enable: No

Secondary To Secondary Addressing

ID	Term and Facility Enable	Detector Rack Enable
1	No	No
2	No	No
3	No	No
4	No	No
5	No	No
6	No	No
7	No	No
8	No	No

Secondary To Secondary Addressing MMU: No
 Secondary To Secondary Addressing Diagnostics: No

MMU Program (MM)1-4-2

Channel Can Serve with Channel	
Channel 1	Channel 2
1	5
1	6
1	11
2	5
2	6
2	9
2	11
3	7
3	8
3	12
4	7
4	8
4	10
4	12
5	9
6	9
6	11

7	10
8	10
8	12
9	11
10	12

Color Check Enable (MM)1-4-3

Enable Color Check: Yes

Color Check Enable

MMU Channel	Green	Yellow	Red
1	Yes	Yes	No
2	Yes	Yes	Yes
4	Yes	Yes	Yes
6	Yes	Yes	Yes
8	Yes	Yes	Yes
9	Yes	No	Yes
10	Yes	No	Yes
11	Yes	No	Yes
12	Yes	No	Yes

Trafalgar Rd @ Cornwall Rd (Master) - Cross Ave @ Argus Rd

**Controller Timing Plan (MM)2-1
Plan 1**

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Min Green	8	22	5	10	5	22	5	10	5	5	5	5	5	5	5	5
BK Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CS Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Delay Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk	0	7	0	7	0	7	0	7	0	10	0	10	0	10	0	10
Walk 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear	0	16	0	16	0	16	0	16	0	16	0	16	0	16	0	16
Ped Clear 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped CO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Ext	2.5	5.0	0.0	4.0	0.0	5.0	0.0	4.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Ext 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max 1	12	45	0	30	0	45	0	30	35	35	35	35	35	35	35	35
Max 2	0	0	0	0	0	0	0	0	40	40	40	40	40	40	40	40
Max 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DYM Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DYM Stp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Red Clear	1.0	2.0	1.0	2.0	1.0	2.0	1.0	2.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Red Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red Revert	4.0	4.0	2.0	4.0	2.0	4.0	2.0	4.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
ACT B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SEC/ACT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Int	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cars Wt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STPT Duc	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Trafalgar Rd @ Cornwall Rd (Master) - Cross Ave @ Argus Rd

Controller Start/Fash (MM) 2-5**Startup**

Phase	Phase Setting
2	Y
6	Y

Overlap

Flash > Mon: Yes
Flash Time: 0
All Red: 9
Power Start Sequence: 1

Automatic Flash

Entry Phase
2
6

Exit Phase
2
6

Overlap Exit
A
B
C
D

Flash > Mon: Yes
Exit Flash Interval: W
Minimum Auto Flash: 8
Minimum Recall: No
Cycle Through Phase: No

Trafalgar Rd @ Cornwall Rd (Master) - Cross Ave @ Argus Rd

Controller Options**Controller Options (MM)2-6-1**

Phase	Flashing Green Phase	Guaranteed Passage	Non Act 1	Non Act 2	Dual Entry	Conditional Service	Conditional Reservice	Ped Reservice	Rest In Walk	Flashing Walk	Ped Clear Yellow	Ped Clear Red	IGRN + Veh Ext
2	No	No	Yes	No	Yes	No	No	Yes	No	No	No	No	No
4	No	No	No	Yes	Yes	No	No	No	No	No	No	No	No
6	No	No	Yes	No	Yes	No	No	Yes	No	No	No	No	No
8	No	No	No	Yes	Yes	No	No	No	No	No	No	No	No

Ped Clear Protect: Off

Red Revert: 2.0

Act Pre-Time (MM)2-7

Pre-Time Mode Enable: No

Free Input Enables Pre-Timed: Yes

Pre-Timed Phase

Phase Recall Options (MM)2-8

Plan	Phase	Lock Detector	Vehicle Recall	Ped Recall	Max Recall	Soft Recall	No Rest	AI Calc
1	2	No	Yes	No	No	No	No	No
1	4	No	Yes	No	No	No	No	No
1	6	No	Yes	No	No	No	No	No
1	8	No	Yes	No	No	No	No	No
2	1	Yes	No	No	No	No	No	No
2	2	Yes	No	No	No	No	No	No
2	3	Yes	No	No	No	No	No	No
2	4	Yes	No	No	No	No	No	No
2	5	Yes	No	No	No	No	No	No
2	6	Yes	No	No	No	No	No	No
2	7	Yes	No	No	No	No	No	No
2	8	Yes	No	No	No	No	No	No
2	9	Yes	No	No	No	No	No	No
2	10	Yes	No	No	No	No	No	No
2	11	Yes	No	No	No	No	No	No
2	12	Yes	No	No	No	No	No	No
2	13	Yes	No	No	No	No	No	No
2	14	Yes	No	No	No	No	No	No
2	15	Yes	No	No	No	No	No	No
2	16	Yes	No	No	No	No	No	No
3	1	Yes	No	No	No	No	No	No
3	2	Yes	No	No	No	No	No	No
3	3	Yes	No	No	No	No	No	No
3	4	Yes	No	No	No	No	No	No
3	5	Yes	No	No	No	No	No	No
3	6	Yes	No	No	No	No	No	No
3	7	Yes	No	No	No	No	No	No
3	8	Yes	No	No	No	No	No	No
3	9	Yes	No	No	No	No	No	No
3	10	Yes	No	No	No	No	No	No
3	11	Yes	No	No	No	No	No	No
3	12	Yes	No	No	No	No	No	No
3	13	Yes	No	No	No	No	No	No
3	14	Yes	No	No	No	No	No	No
3	15	Yes	No	No	No	No	No	No
3	16	Yes	No	No	No	No	No	No
4	1	Yes	No	No	No	No	No	No
4	2	Yes	No	No	No	No	No	No
4	3	Yes	No	No	No	No	No	No
4	4	Yes	No	No	No	No	No	No
4	5	Yes	No	No	No	No	No	No
4	6	Yes	No	No	No	No	No	No
4	7	Yes	No	No	No	No	No	No
4	8	Yes	No	No	No	No	No	No
4	9	Yes	No	No	No	No	No	No
4	10	Yes	No	No	No	No	No	No
4	11	Yes	No	No	No	No	No	No
4	12	Yes	No	No	No	No	No	No
4	13	Yes	No	No	No	No	No	No
4	14	Yes	No	No	No	No	No	No
4	15	Yes	No	No	No	No	No	No
4	16	Yes	No	No	No	No	No	No

Trafalgar Rd @ Cornwall Rd (Master) - Cross Ave @ Argus Rd

Coordination Options**Coordination Options (MM)3-1**

Manual Pattern: Auto
 ECPI Coord: Yes
 System Source: TBC
 System Format: STD
 Splits In: Seconds
 Offsets In: Seconds
 Transition: Smooth
 Max Select: MAXINH
 Dwell/Add Time: 0
 Dly Coord Wz-Lz: No
 Force Off: Float
 Offset Reference: Lead
 Use Ped Time: Yes
 Ped Recall: No
 Ped Resv: No
 Local Zero Ovrd: No
 Fo Add Ini Green: No
 Re-sync Count: 0
 Multisync: No

Split Demand (MM)3-5**Demand 1 Demand 2**

Phase	Phase
-------	-------

Demand	Detector	Call Time	Cycle Count
--------	----------	-----------	-------------

Auto Perm Minimum Green (Seconds) (MM)3-4

Phase	Min Green
-------	-----------

Trafalgar Rd @ Cornwall Rd (Master) - Cross Ave @ Argus Rd

Coordination Pattern Data

Pattern Data (MM)3-2

Pattern	Split Pattern	TS2	Cycle	Std(COS)	Offset Value	Splits In	Offsets In	Actuated Coord
---------	---------------	-----	-------	----------	--------------	-----------	------------	----------------

Pattern	Timing Plan	Actuated Walk Rest	Sequence	Phase Reservice	Action Plan	XArt Pattern	Vehicle Perm 1	Vehicle Perm 2	Vehicle Perm 3
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Pattern	Ring Split Ext 1	Ring Split Ext 2	Ring Split Ext 3	Ring Split Ext 4	Split Demand Pattern 1	Split Demand Pattern 2	Ring Displ 2	Ring Displ 3	Ring Displ 4
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Split Preference Phases

Pattern	Phase	Preference 1	Preference 2
---------	-------	--------------	--------------

Special Functions

Pattern	Function	Output
---------	----------	--------

Split Pattern Data (MM)3-3

Coord Phases

Split Pattern	Phase	Split
---------------	-------	-------

Split/Modes

Split Pattern	Mode	Phase															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Trafalgar Rd @ Cornwall Rd (Master) - Cross Ave @ Argus Rd

Preemptor Preempt Plan (MM)4-1

Preempt Phases

Preempt	Phase	Track Clear Veh	Dwell Veh	Dwell Ped	Cycling Veh	Cycling Ped	Exit Phase	Exit Calls	Special Function
3	2	No	Yes	No	No	No	Yes	No	No
3	6	No	Yes	No	No	No	Yes	No	No
5	2	No	Yes	No	No	No	Yes	No	No
5	6	No	Yes	No	No	No	Yes	No	No
6	2	No	Yes	No	No	No	Yes	No	No
6	6	No	Yes	No	No	No	Yes	No	No

Preempt Overlaps

Preempt	Overlap	Track Clear	Enable Trailing	Dwell Overlap	Cycling Overlap
---------	---------	-------------	-----------------	---------------	-----------------

Preempt	Enable	Preempt Override	Interlock Enable	Detector Lock	Delay	Inhibit	Override Flash	Duration	CLR > GRN
1	No	Yes	No	Yes	0	0	Yes	0	No
2	No	Yes	No	Yes	0	0	Yes	0	No
3	Standard	Yes	No	Yes	0	0	Yes	10	No
4	No	Yes	No	Yes	0	0	Yes	0	No
5	No	Yes	No	Yes	0	0	Yes	10	No
6	No	Yes	No	Yes	0	0	Yes	10	No
7	No	Yes	No	Yes	0	0	Yes	0	No
8	No	Yes	No	Yes	0	0	Yes	0	No
9	No	Yes	No	Yes	0	0	Yes	0	No
10	No	Yes	No	Yes	0	0	Yes	0	No

Preempt	Term Overlap Asap	PC Through Yellow	Terminate Phase	Ped Dark	Track Clearance Re-service	Dwell Flash	Linked Pmt	Flash Exit Color	Preempt To Coord	Fault Type
1	No	No	No	No	No	Off	0	Red	No	Hard
2	No	No	No	No	No	Off	0	Green	No	Hard
3	No	Yes	No	No	No	Off	0	Green	No	Hard
4	No	No	No	No	No	Off	0	Green	No	Hard
5	No	Yes	No	No	No	Off	0	Green	No	Hard
6	No	Yes	No	No	No	Off	0	Green	No	Hard
7	No	No	No	No	No	Off	0	Green	No	Hard
8	No	No	No	No	No	Off	0	Green	No	Hard
9	No	No	No	No	No	Off	0	Green	No	Hard
10	No	No	No	No	No	Off	0	Green	No	Hard

Preempt	Exit Timing Plan	Reservice	Free During Pmt Ring 1	Free During Pmt Ring 2	Free During Pmt Ring 3	Free During Pmt Ring 4
1	0	0	No	No	No	No
2	0	0	No	No	No	No
3	0	0	No	No	No	No
4	0	0	No	No	No	No
5	0	0	No	No	No	No
6	0	0	No	No	No	No
7	0	0	No	No	No	No
8	0	0	No	No	No	No
9	0	0	No	No	No	No
10	0	0	No	No	No	No

--	--	--	--	--	--	--	--	--	--

Preempt	Entrance Walk	Entrance Ped Clear	Entrance Min Green	Entrance Yellow	Entrance Red	Track Clear Min Green	Gate Down Ext Green	Gate Down Max Green	Track Clear Yellow	Track Clear Red
1	0	255	5	4.0	1.0	0	0	0	4.0	1.0
2	0	255	5	4.0	1.0	0	0	0	4.0	1.0
3	0	7	3	4.0	2.0	0	0	0	4.0	1.0
4	0	255	5	4.0	1.0	0	0	0	4.0	1.0
5	0	7	3	4.0	1.0	0	0	0	4.0	1.0
6	0	7	3	4.0	1.0	0	0	0	4.0	1.0
7	0	255	5	4.0	1.0	0	0	0	4.0	1.0
8	0	255	5	4.0	1.0	0	0	0	4.0	1.0
9	0	255	5	4.0	1.0	0	0	0	4.0	1.0
10	0	255	5	4.0	1.0	0	0	0	4.0	1.0

Preempt	Min Dwell Time	Extend Preempt Input Time	Max Preempt Call Time	Exit Yellow Time	Exit Red Time	Preempt Active Out	Preempt Active Dwell	Other Priority Preempt	Non-Priority Preempt
1	0	0.0	0	4.0	1.0	On	No	Off	Off
2	0	0.0	0	4.0	1.0	On	No	Off	Off
3	0	0.0	0	4.0	1.0	On	No	Off	Off
4	0	0.0	0	4.0	1.0	On	No	Off	Off
5	0	0.0	0	4.0	1.0	On	No	Off	Off
6	0	0.0	0	4.0	1.0	On	No	Off	Off
7	0	0.0	0	4.0	1.0	On	No	Off	Off
8	0	0.0	0	4.0	1.0	On	No	Off	Off
9	0	0.0	0	4.0	1.0	On	No	Off	Off
10	0	0.0	0	4.0	1.0	On	No	Off	Off

Trafalgar Rd @ Cornwall Rd (Master) - Cross Ave @ Argus Rd

Preemptor Preempt Filtering
Enable Preempt Filtering and TSP/SCP
(MM)4-2

Input	Solid	Pulsing
3	Preemption -3	Preemption -7
4	Preemption -4	Preemption -8
5	Preemption -5	Preemption -9
6	Preemption -6	Preemption -10

Trafalgar Rd @ Cornwall Rd (Master) - Cross Ave @ Argus Rd

Time Base Clock/Calendar
Clock/Calendar Options (MM)5-1

Enable Action Plan: 0
Sync Reference Time: 3:15 AM
Sync Reference: Reference Time
Day Light Savings: USDLS
Time Reset Input Set Time: 3:30:00
Standard Time From GMT: -5

Trafalgar Rd @ Cornwall Rd (Master) - Cross Ave @ Argus Rd

Time Base Action Plan**Action Plan (MM)5-2**

Plan	Pattern	Veh Det Plan	Flash	Red Rest	Controller Seq	Timing Plan	System Override	Detector Log	Veh Det Diag Plan	Ped Det Diag Plan	Dimming Enable
------	---------	--------------	-------	----------	----------------	-------------	-----------------	--------------	-------------------	-------------------	----------------

Action Plan Phases

Plan	Phase	Ped Rcl	Walk 2	Vex 2	Veh Rcl	Max Rcl	Max 2	Max 3	CS Inhibit	Omit
------	-------	---------	--------	-------	---------	---------	-------	-------	------------	------

Action Plan Special Functions

Plan	Function
------	----------

Action Plan Auxiliary Functions

Plan	Function
------	----------

Logic Statement Control

Plan	LP	Statement Control
------	----	-------------------

Trafalgar Rd @ Cornwall Rd (Master) - Cross Ave @ Argus Rd

Time Base Day Plan/Schedule

Day Plan (MM)5-3

Plan	Event	Action Plan	Start Time
------	-------	-------------	------------

Schedule (MM)5-4

Schedule Number	Day Plan Number	Months	Days of Week	Days of Month
-----------------	-----------------	--------	--------------	---------------

Trafalgar Rd @ Cornwall Rd (Master) - Cross Ave @ Argus Rd

Detectors

Detectors Page 1

Vehicle Detectors Setup (MM)6-1

Vehicle Plan	Detector Number	Called
1	8	4

Vehicle Detector Setup (MM)6-2 continued

Detector Number	ECPI	TS2 Detector	Detector Description
1	6	Yes	
2	6	Yes	
3	6	Yes	
4	6	Yes	
5	6	Yes	
6	6	Yes	
7	6	Yes	
8	6	Yes	
9	6	Yes	
10	6	Yes	
11	6	Yes	
12	6	Yes	
13	6	Yes	
14	6	Yes	
15	6	Yes	
16	6	Yes	
18	6	Yes	
19	6	Yes	
21	6	Yes	
22	6	Yes	
23	6	Yes	
25	6	Yes	
26	6	Yes	
27	6	Yes	
28	6	Yes	
29	6	Yes	
30	6	Yes	
31	6	Yes	
32	6	Yes	
33	6	Yes	
34	6	Yes	
35	6	Yes	
36	6	Yes	
37	6	Yes	
38	6	Yes	
39	6	Yes	
40	6	Yes	
41	6	Yes	
42	6	Yes	
43	6	Yes	
44	6	Yes	
45	6	Yes	
46	6	Yes	
47	6	Yes	
48	6	Yes	
49	6	Yes	
50	6	Yes	
51	6	Yes	
52	6	Yes	
53	6	Yes	
54	6	Yes	
55	6	Yes	
56	6	Yes	
57	6	Yes	
58	6	Yes	
59	6	Yes	
60	6	Yes	
61	6	Yes	
62	6	Yes	
63	6	Yes	

64	6	Yes	
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Vehicle Detector Setup (MM)6-2 continued

Detector Number	Vehicle Plan	Assigned Phase	Switch Phase	Extend Time	Delay Time	Queue Limit	Yellow Lock	Added Option	Call Option	Passage Option	Queue Option	NTCIP Occupancy	NTCIP Volume
2	1	2	0	0.0	0.0	0	No	No	Yes	Yes	No	No	No
4	1	4	0	0.0	4.0	0	No	No	Yes	Yes	No	No	No
5	1	5	0	0.0	0.0	0	No	No	Yes	Yes	No	No	No
6	1	6	0	0.0	0.0	0	No	No	Yes	Yes	No	No	No
7	1	4	0	0.0	0.0	0	No	No	Yes	Yes	No	No	No
9	1	9	0	0.0	0.0	0	No	No	Yes	Yes	No	No	No
10	1	10	0	0.0	0.0	0	No	No	Yes	Yes	No	No	No
11	1	11	0	0.0	0.0	0	No	No	Yes	Yes	No	No	No
12	1	12	0	0.0	0.0	0	No	No	Yes	Yes	No	No	No
13	1	13	0	0.0	0.0	0	No	No	Yes	Yes	No	No	No
14	1	14	0	0.0	0.0	0	No	No	Yes	Yes	No	No	No
15	1	15	0	0.0	0.0	0	No	No	Yes	Yes	No	No	No
16	1	16	0	0.0	0.0	0	No	No	Yes	Yes	No	No	No
17	1	1	6	0.0	0.0	0	No	No	Yes	Yes	No	No	No
24	1	8	0	0.0	0.0	0	No	No	Yes	Yes	No	No	No

Ped Detector Options (MM)6-3
Phase Ped Detector (NTCIP)

Local Ped Detector	Number
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15
16	16

Local System Detector

Local System Detector	Number
-----------------------	--------

Trafalgar Rd @ Cornwall Rd (Master) - Cross Ave @ Argus Rd

Detectors

Detectors Page 2

Log - Speed Detector Setup (MM)6-5

NTCIP Log Period: 0 ECPI Log Period: TBAP Length Unit: Inch

Speed Detector	Local Detector	One/Two Detector	Vehicle Length	Trap Length	Enable Log
1	0	1	0	0	No
2	0	1	0	0	No
3	0	1	0	0	No
4	0	1	0	0	No
5	0	1	0	0	No
6	0	1	0	0	No
7	0	1	0	0	No
8	0	1	0	0	No
9	0	1	0	0	No
10	0	1	0	0	No
11	0	1	0	0	No
12	0	1	0	0	No
13	0	1	0	0	No
14	0	1	0	0	No
15	0	1	0	0	No
16	0	1	0	0	No

Vehicle Detector Diagnostics (MM)6-6

Plan	Detector	Counts	Act	Pres	Multiplier	Failed Time	Failed Call Delay
1	1	0	0	0	1	255	0
1	2	0	0	0	1	255	0
1	3	0	0	0	1	255	0
1	4	0	0	0	1	255	0
1	5	0	0	0	1	255	0
1	6	0	0	0	1	255	0
1	7	0	0	0	1	255	0
1	8	0	0	0	1	255	0
1	9	0	0	0	1	255	0
1	10	0	0	0	1	255	0
1	11	0	0	0	1	255	0
1	12	0	0	0	1	255	0
1	13	0	0	0	1	255	0
1	14	0	0	0	1	255	0
1	15	0	0	0	1	255	0
1	16	0	0	0	1	255	0
1	17	0	0	0	1	255	0
1	18	0	0	0	1	255	0
1	19	0	0	0	1	255	0
1	20	0	0	0	1	255	0
1	21	0	0	0	1	255	0
1	22	0	0	0	1	255	0
1	23	0	0	0	1	255	0
1	24	0	0	0	1	255	0
1	25	0	0	0	1	255	0
1	26	0	0	0	1	255	0
1	27	0	0	0	1	255	0
1	28	0	0	0	1	255	0
1	29	0	0	0	1	255	0

1	30	0	0	0	1	255	0
1	31	0	0	0	1	255	0
1	32	0	0	0	1	255	0
1	33	0	0	0	1	255	0
1	34	0	0	0	1	255	0
1	35	0	0	0	1	255	0
1	36	0	0	0	1	255	0
1	37	0	0	0	1	255	0
1	38	0	0	0	1	255	0
1	39	0	0	0	1	255	0
1	40	0	0	0	1	255	0
1	41	0	0	0	1	255	0
1	42	0	0	0	1	255	0
1	43	0	0	0	1	255	0
1	44	0	0	0	1	255	0
1	45	0	0	0	1	255	0
1	46	0	0	0	1	255	0
1	47	0	0	0	1	255	0
1	48	0	0	0	1	255	0
1	49	0	0	0	1	255	0
1	50	0	0	0	1	255	0
1	51	0	0	0	1	255	0
1	52	0	0	0	1	255	0
1	53	0	0	0	1	255	0
1	54	0	0	0	1	255	0
1	55	0	0	0	1	255	0
1	56	0	0	0	1	255	0
1	57	0	0	0	1	255	0
1	58	0	0	0	1	255	0
1	59	0	0	0	1	255	0
1	60	0	0	0	1	255	0
1	61	0	0	0	1	255	0
1	62	0	0	0	1	255	0
1	63	0	0	0	1	255	0
1	64	0	0	0	1	255	0

Pedestrian Detector Diagnostics (MM)6-7

Plan	Detector	Counts	Act	Pres	Multiplier
------	----------	--------	-----	------	------------

Appendix C

Reduced Scale Architectural Drawings – BDP Quadrangle, April 21, 2022



BDP. Quadrangle

Quadrangle Architects Limited
901 King Street West, Suite 701 Toronto, ON M5V 3H5
t 416 598 1240 www.bdpquadrangle.com



217-227 Cross Avenue and 571-587 Argus Road

2022-04-19 Issued for Rezoning

for
Distrikt Developments

Project No. 19072

Issued for OPA and Rezoning Application

ARCHITECTURAL DRAWINGS

A000.S	Cover Page
A101.S	Site plan and Statistics
A102.S	Circulation Site Plan
A151.S	P1 and P2 Underground Plans
A152.S	P3-P5 and P6 Underground Plans
A201.S	Ground and Second floor plans
A202.S	Typical Third to Sixth and Seventh floor plans
A203.S	Typical Lower Tower and Upper Tower plans
A204.S	Mechanical Penthouse and Roof plans
A401.S	Building A and B - East and North Elevations
A402.S	Building A and B - West and South Elevations
A403.S	Building C - East and North Elevations
A404.S	Building C - West and South Elevations
A451.S	Building A and B Sections
A462.S	Building B and C Sections

PLANNING CONSULTANT

Rousfields Inc.
3 Church Street, Suite 200
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CIVIL CONSULTANT

Trafalgar Engineering Ltd.
1-481 Morden Rd
Oakville, ON L6K 3W6
T (905) 338-3366

URBAN DESIGN & LANDSCAPE ARCHITECT

Janet Rosenberg & Studio Inc.
148 Kenwood Ave
York, ON M6C 2S3
T (416) 656-6665

TRAFFIC CONSULTANT 1

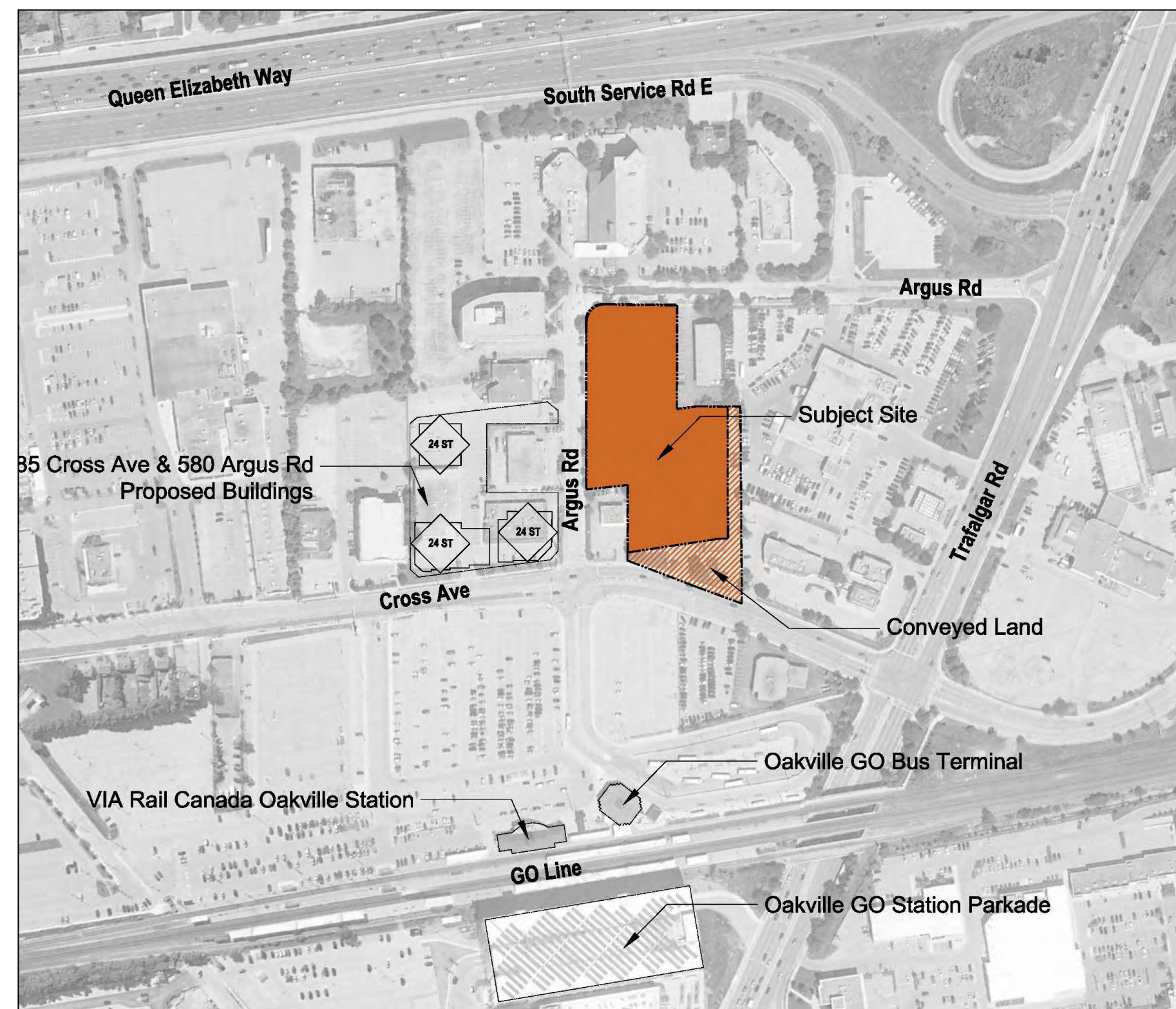
BA Consulting Group Ltd
45 St Clair Ave W
Toronto, ON M4V 1K9
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TRAFFIC CONSULTANT 2

Paradigm Transportation Solutions Ltd
150 Pinelush Rd #5A
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T (519) 896-3163



3 CONTEXT PLAN
A101.S



2 KEY PLAN
A101.S

217-227 Cross Ave and 571-587 Argus Rd Distrikt Developments			
Zoning:			
Height Limit:			
Lot Size:	12617 sm	135809.388 sf	

Floor	Floor Area/Typ. Floor (sm)	No. Typ. Floors	Floor Area By-Law 2014-014*		Floor Area, Net (sm)**	Net Residential (sm)	Interior Amenity (sm)	Exterior Amenity (sm)	Net Rentable Retail (sm)	Net Office Space (sm)	No. of Units
			sm	sf							
Building A	MPH	743	1	743	7,998	0	0	0	0	0	0
	Level 34-58	743	25	18,575	199,941	16,775	16,775	0	0	0	250
	Level 6-33	810	26	21,060	226,690	19,188	19,188	0	0	0	260
Building B	MPH	741	1	741	7,976	0	0	0	0	0	0
	Level 30-49	741	20	14,820	159,522	13,380	13,380	0	0	0	240
Building A & B	Level 8-29	801	22	17,622	189,683	16,038	16,038	0	0	0	264
	Level 7	825	1	825	8,890	753	753	1,457	0	0	0
Building A & B	Level 3-6	2817	4	11,268	121,289	10,420	10,420	0	0	0	152
	Level 2	2817	1	2,817	30,322	2,605	2,095	510	116.58	0	30
Building A & B Total	Ground	3323	1	3,323	35,769	2,160	590	0	1,570	0	0
				92,604	996,789	82,057	78,486	2,001	1,574	1,570	0

Floor	Floor Area/Typ. Floor (sm)	No. Typ. Floors	Floor Area By-Law 2014-014*		Floor Area, Net (sm)**	Net Residential (sm)	Interior Amenity (sm)	Exterior Amenity (sm)	Net Rentable Retail (sm)	Net Office Space (sm)	No. of Units
			sm	sf							
Building C	MPH	736	1	736	7,922	0	0	0	0	0	0
	Level 26-44	736	19	13,984	150,524	12,635	12,635	0	0	0	228
	Level 8-25	796	18	14,328	154,227	13,050	13,050	0	0	0	216
Building C	Level 7	1297	1	1,297	13,961	1,159	0	1,159	1,013	0	0
	Level 3-6	2208	4	8,832	95,068	8,220	8,220	0	0	2,190	108
Building C Total	Level 2	2308	1	2,308	24,843	2,190	0	0	0	0	0
	Ground	2629	1	2,629	28,239	1,492	167	0	1,246	79	0
				44,114	474,843	38,746	34,072	1,159	1,013	1,246	2,269

Total Floor Area	136,718 sm	± 1,471,633 sf
Total Floor Area, Net	120,803 sm	± 1,300,323 sf
Total No. of Units		± 1,748

Proposed Height:	58 Storeys, ±179 m (excl. mech. penthouse)
FSI:	0.6

Parking (5.1A.4)		
Resident		874
Visitor		409
TOTAL REQUIRED		1283
Visitor (P1)		190
Visitor (P2)		220
Resident (P3)		220
Resident (P4)		220
Resident (P5)		220
Resident (P6)		216
TOTAL PROVIDED		1286
	Total Visitor	410
	Total Resident	876

Residential Amenity	
Interior Amenity	3160
Exterior Amenity	2567
TOTALS (sm)	5747

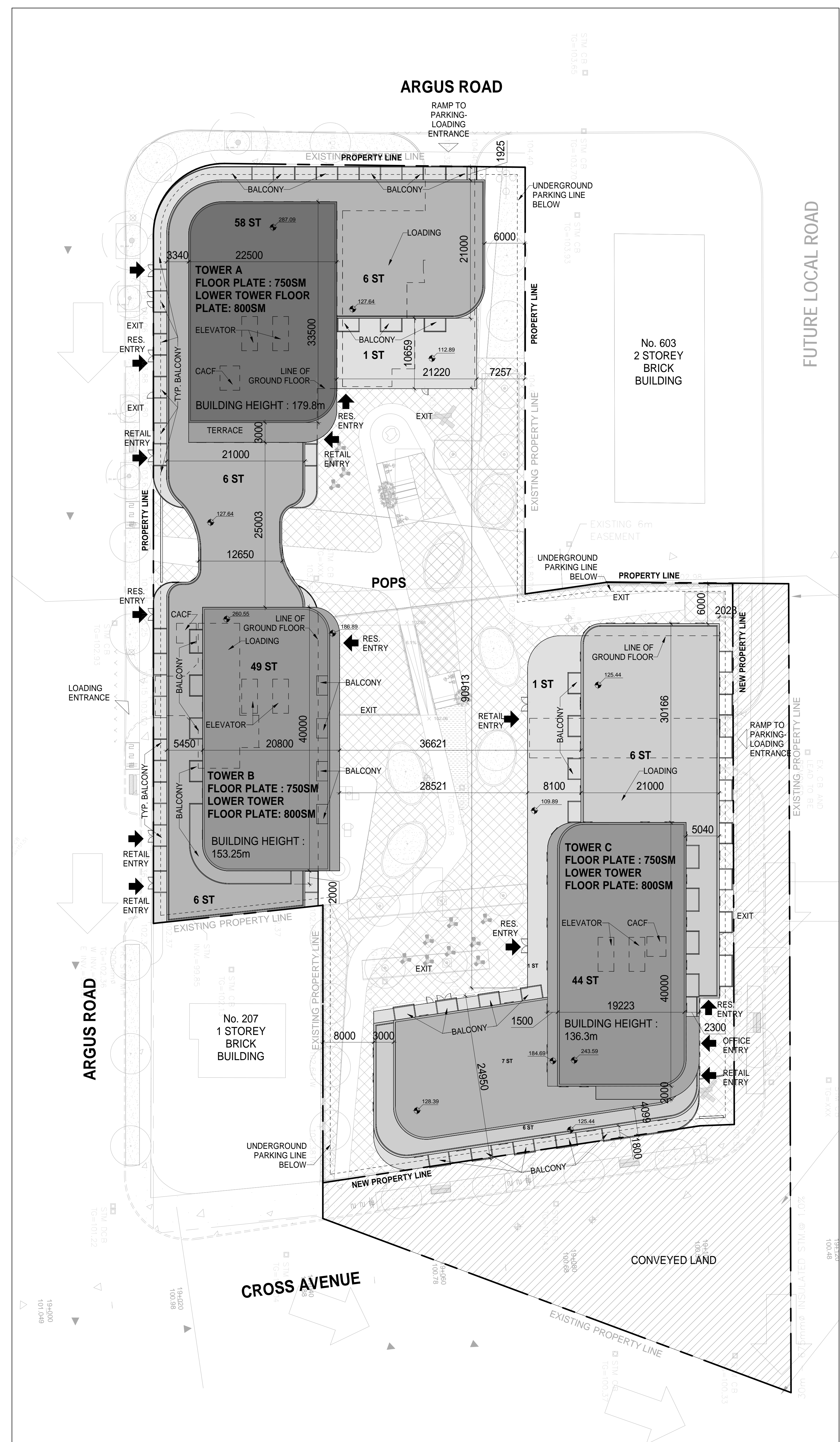
Bicycle Requirements (5.7.k.; Maximum of 200 spaces required)		
Long Term	Required	Provided
Short Term	1317	1317
TOTALS	437	437
	1754	1754

All calculations are preliminary

± Total Lot Area	12,617	sm
± Usable Lot Area with Road Conveyances	10,208	sm
± FSI	9.57	

No. of Units	Approx. Unit Mix		
	1B (575-600 sf)	2B (700-725 sf)	3B (975-990 sf)
1,748	1,223	455	70
100%	70%	26%	4%

* **Floor Area Definition By-Law 2014-014:** Means the aggregate area of a building contained within the exterior walls, but does not include attic or basement space unless otherwise specified by this By-law.
 ** **Floor Area, Net Definition By-Law 2015-018:** Means the total area of all floors of a building measured from the interior faces of the exterior walls or demising walls, but does not include the area of stair wells, elevators, escalators, ventilating shafts, attics, concourses, washrooms, attached enclosed and covered loading docks and related enclosed corridors used for loading purposes, above and below grade parking structures, storage rooms, rooms for garbage containment, and mechanical rooms.



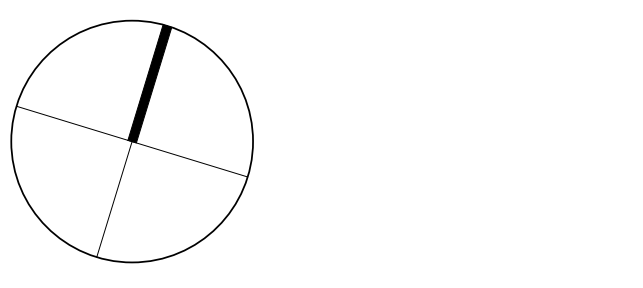
1 SITE PLAN
SCALE: 1:300

SITE PLAN LEGEND	
[Symbol]	PROPERTY LINE
[Symbol]	LINE OF UNDER GARAGE BELOW
[Symbol]	MAIN BUILDING ENTRANCE
[Symbol]	RETAIL ENTRANCE
[Symbol]	EXIT
[Symbol]	VEHICLE / LOADING ENTRANCE / EXIT
[Symbol]	FIRE HYDRANT
[Symbol]	SIAMENSE CONNECTION
[Symbol]	MANHOLE COVER
[Symbol]	AREA DRAIN
[Symbol]	CATCH BASIN
[Symbol]	FLOOR DRAIN (PARKING SLAB)
[Symbol]	FLOOR DRAIN (INTERIOR)
[Symbol]	EXISTING LIGHT
[Symbol]	TYPICAL PARKING SPACE
[Symbol]	TYPICAL B.F. PARKING SPACE
[Symbol]	F.F.E.
[Symbol]	FRESH FLOOR ELEVATION
[Symbol]	EXISTING ELEVATION
[Symbol]	PROPOSED ELEVATION
[Symbol]	TOP OF FLOOR
[Symbol]	BUILDING ENVELOPE
[Symbol]	FIRE ACCESS ROUTE HEAVY DUTY PAVING ASSEMBLY TO BE DESIGNED TO MEET THE LOADS IMPOSED BY FIRE FIGHTING EQUIPMENT.
[Symbol]	GREEN ROOF
[Symbol]	TERRACE PAVERS

REVISION RECORD

2022-04-19 Issued for Rezoning

ISSUE RECORD



BDP. Quadrangle

Quadrangle Architects Limited
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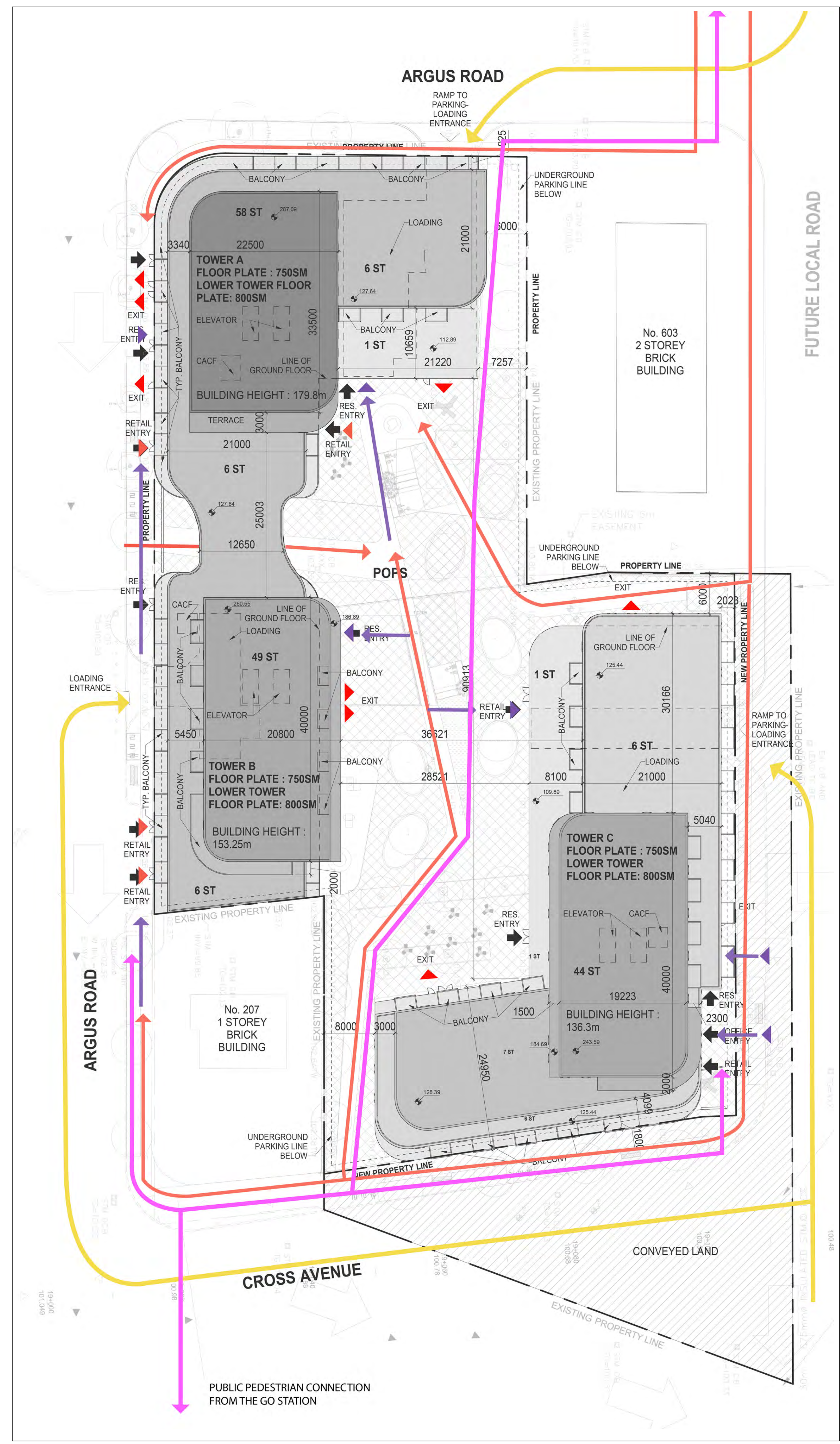
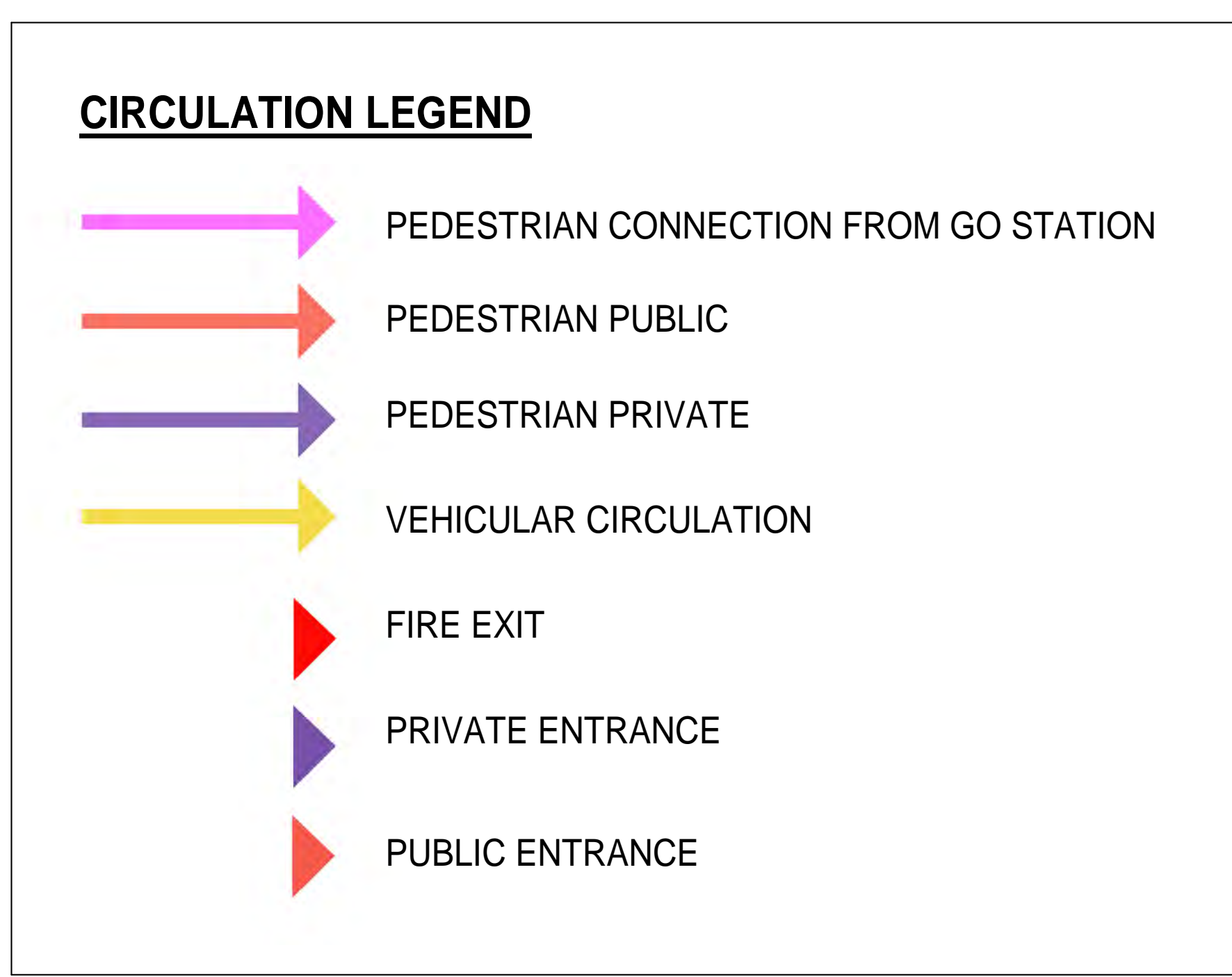
217-227 Cross Avenue and 571-587 Argus Road
2022-04-19 Issued for Rezoning
for Distrikt Developments

19072 1:300 AR KVE
PROJECT SCALE DRAWN REVIEWED

Site plan and Statistics

A101.S

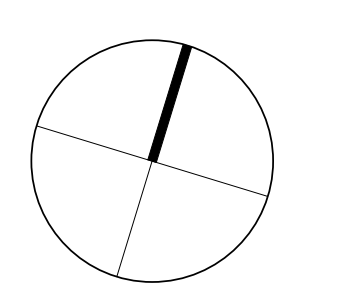
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1
A102.S CIRCULATION DIAGRAM
SCALE: 1 : 300

REVISION RECORD

2022-04-19 Issued for Rezoning
ISSUE RECORD



**BDP.
Quadrangle**

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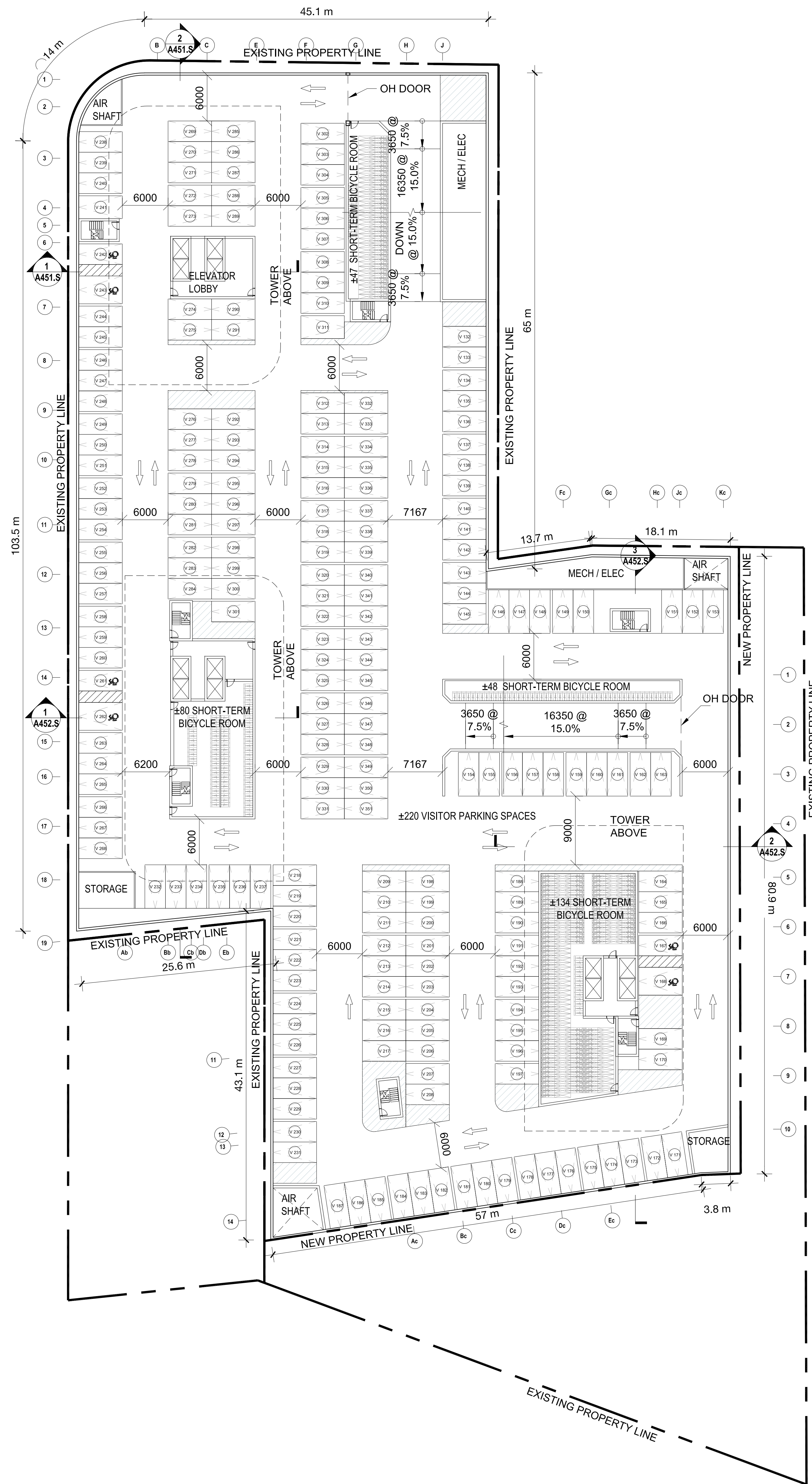
217-227 Cross Avenue and
571-587 Argus Road
2022-04-19 Issued for Rezoning
for
Distrikt Developments

19072 1 : 300 AR KVE
PROJECT SCALE DRAWN REVIEWED

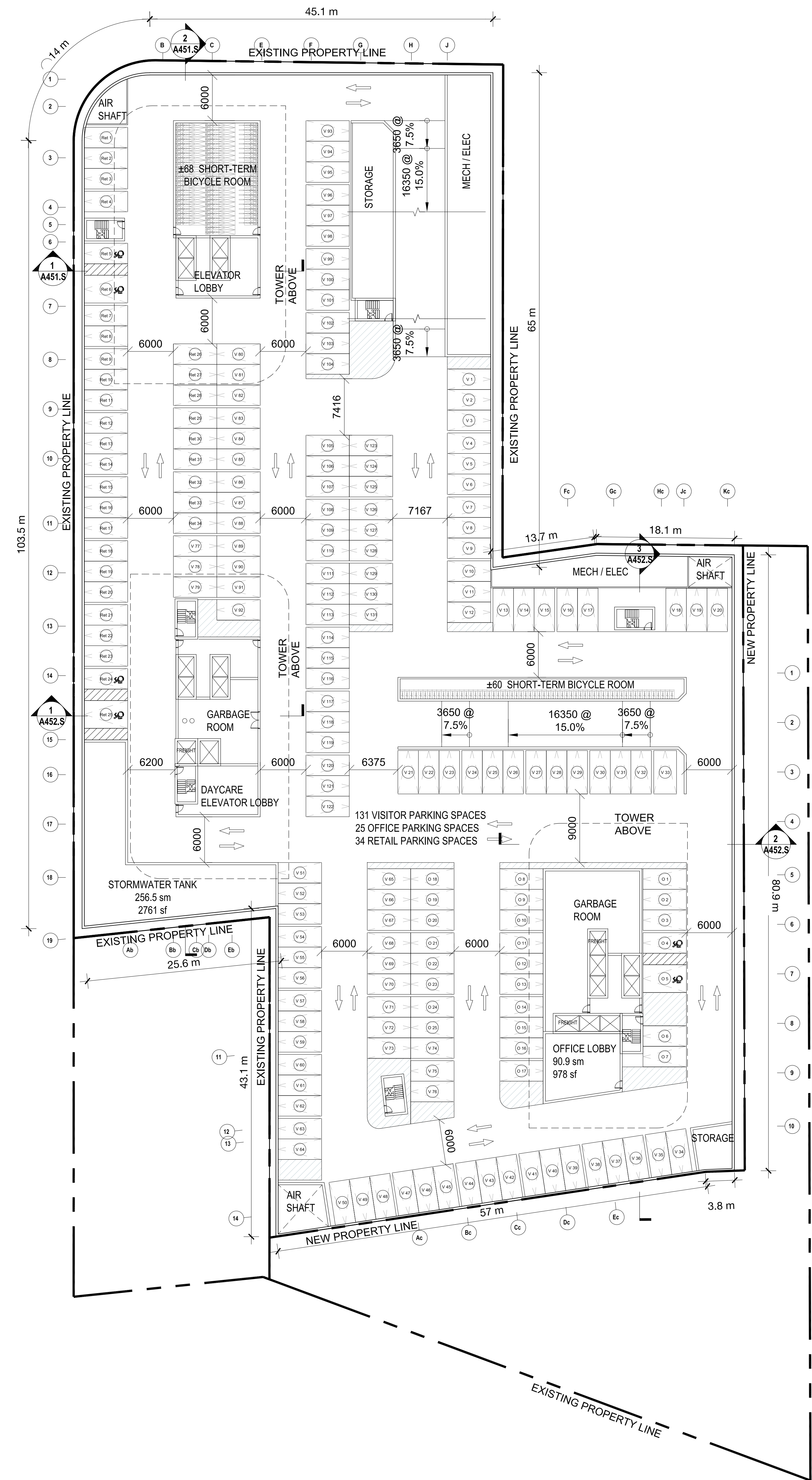
Circulation Site Plan

A102.S

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P2

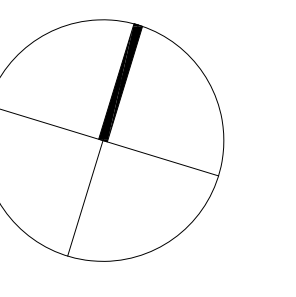


P1

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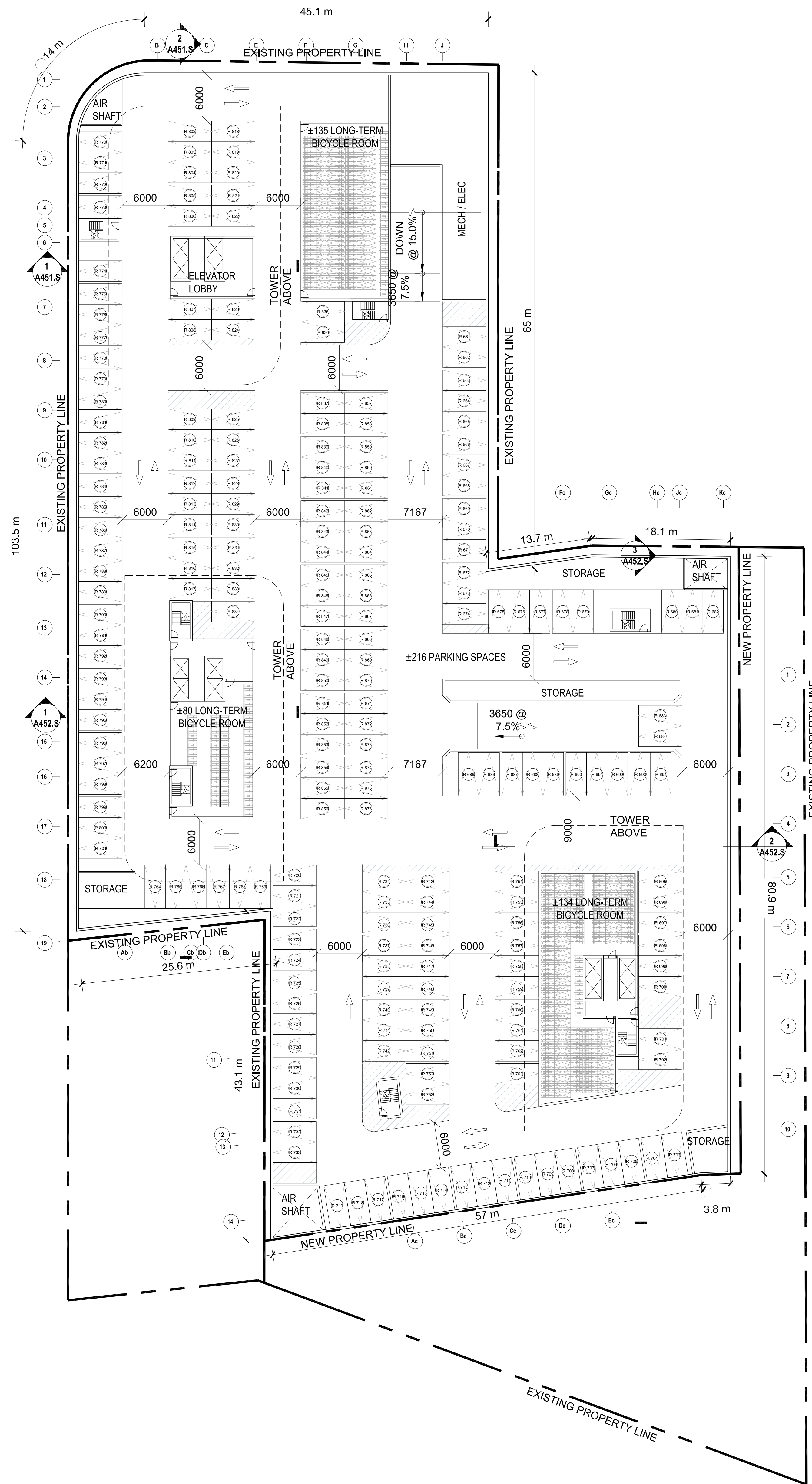
217-227 Cross Avenue and
571-587 Argus Road
Oakville, ON

19072 1:300 AR KVE
PROJECT SCALE DRAWN REVIEWED

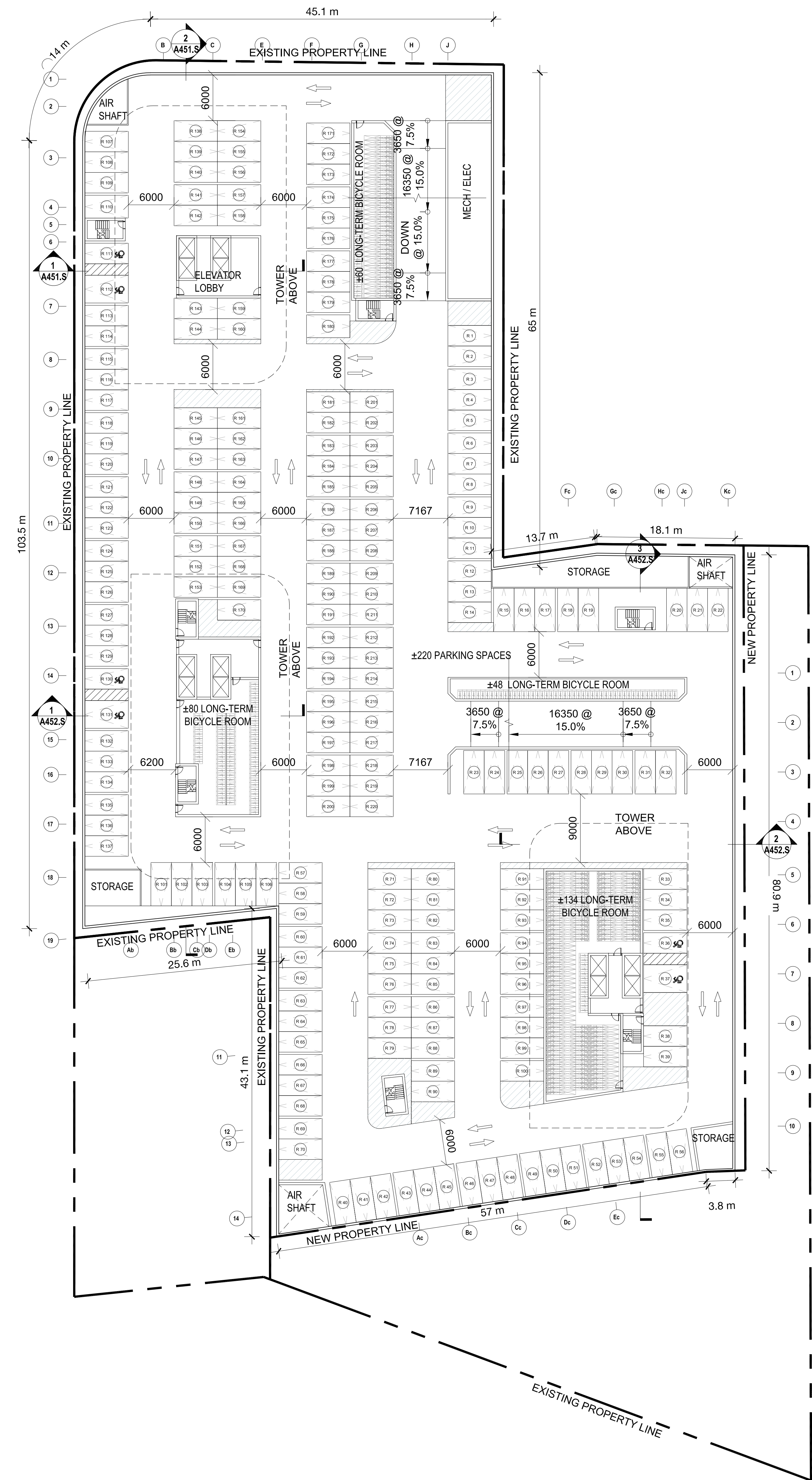
Parking Level Floor Plans
P1 & P2

A151.S

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P6

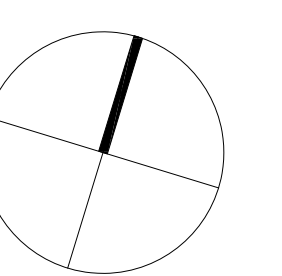


P3-P5

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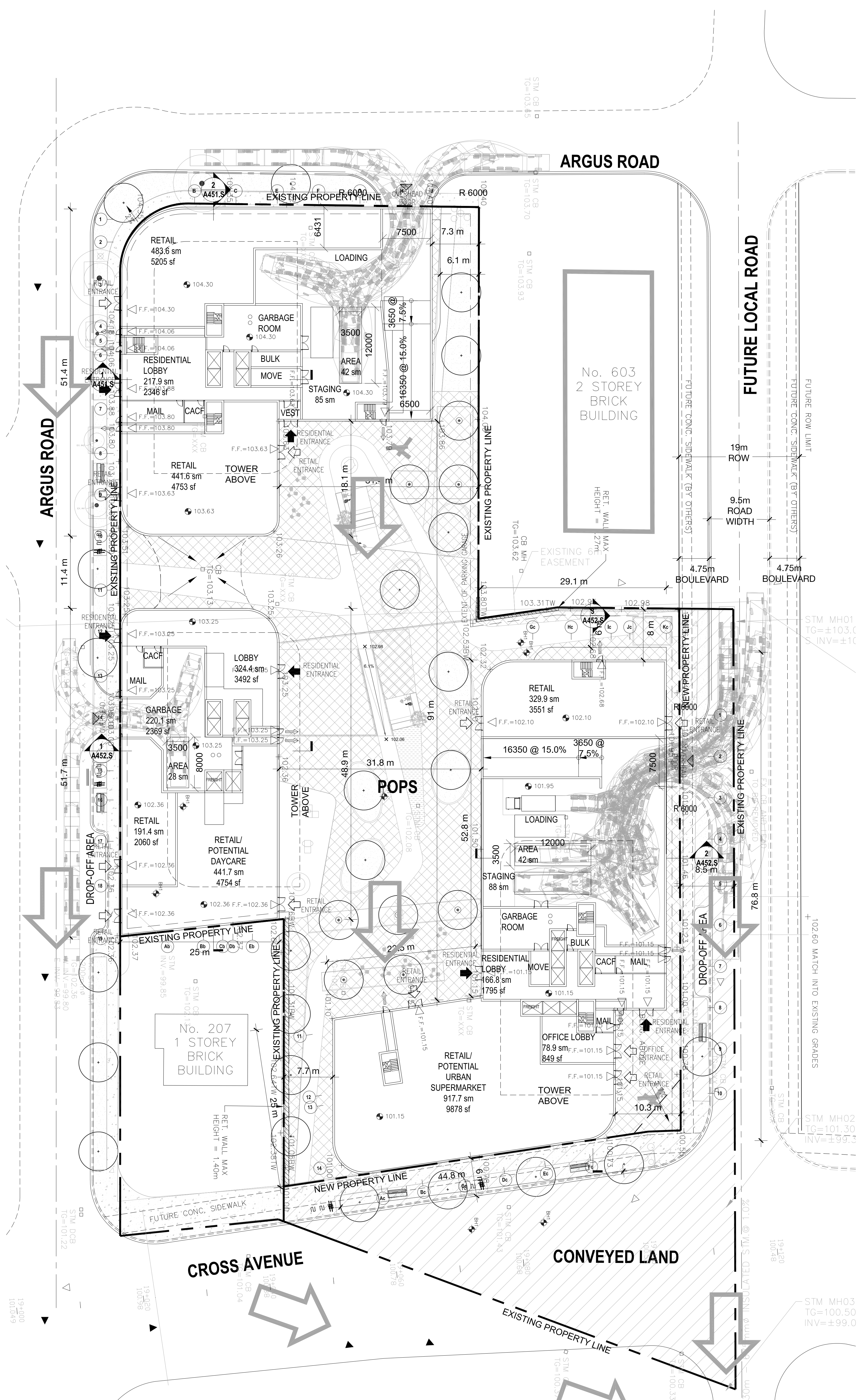
217-227 Cross Avenue and
571-587 Argus Road
Oakville, ON

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PROJECT SCALE DRAWN REVIEWED

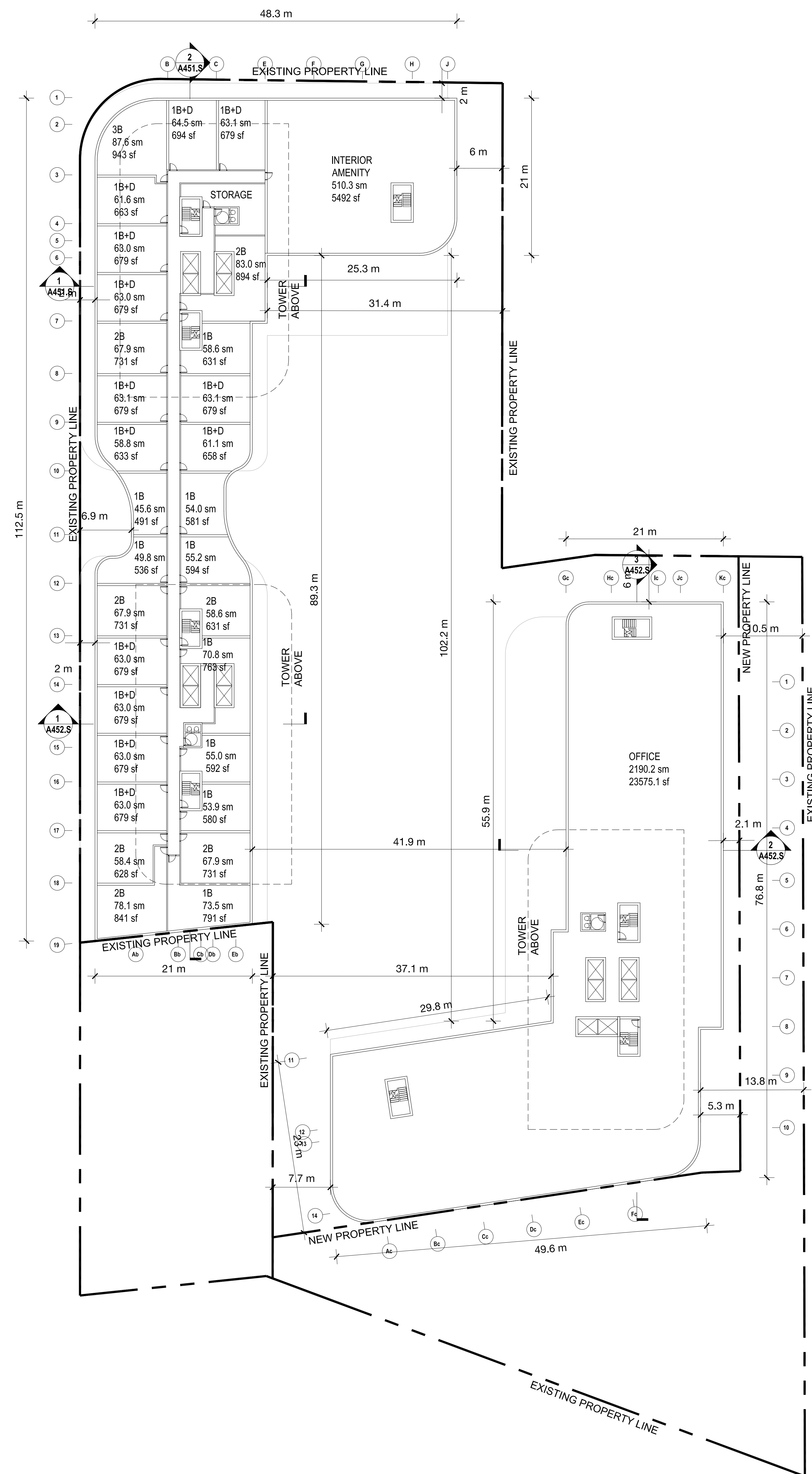
Parking Level Floor Plans
P3-P5
P6

A151.S

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Ground Floor

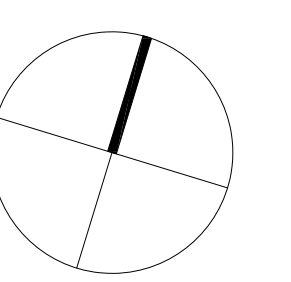


Floor 2

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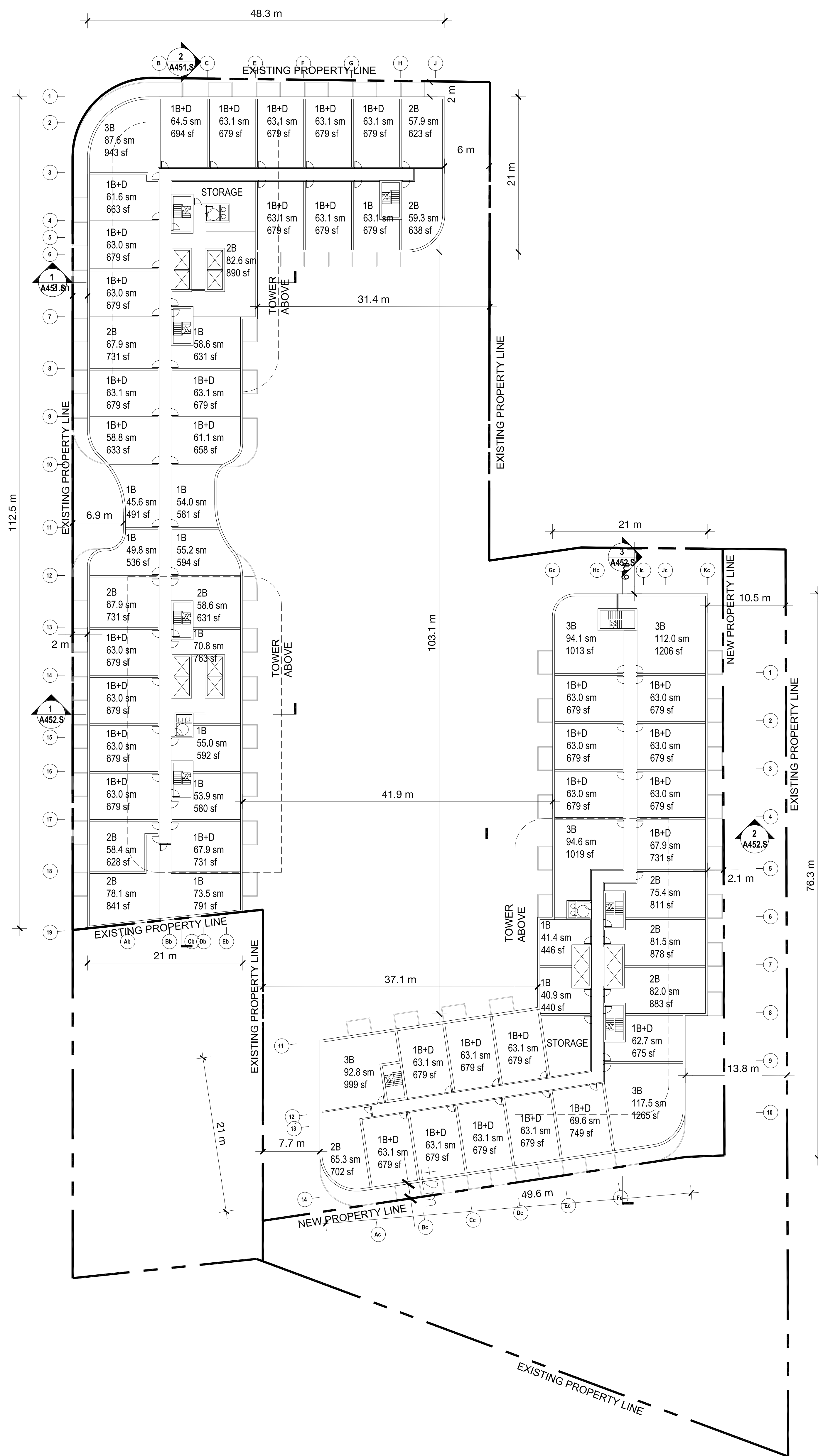
217-227 Cross Avenue and
571-587 Argus Road
Oakville, ON

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PROJECT SCALE DRAWN REVIEWED

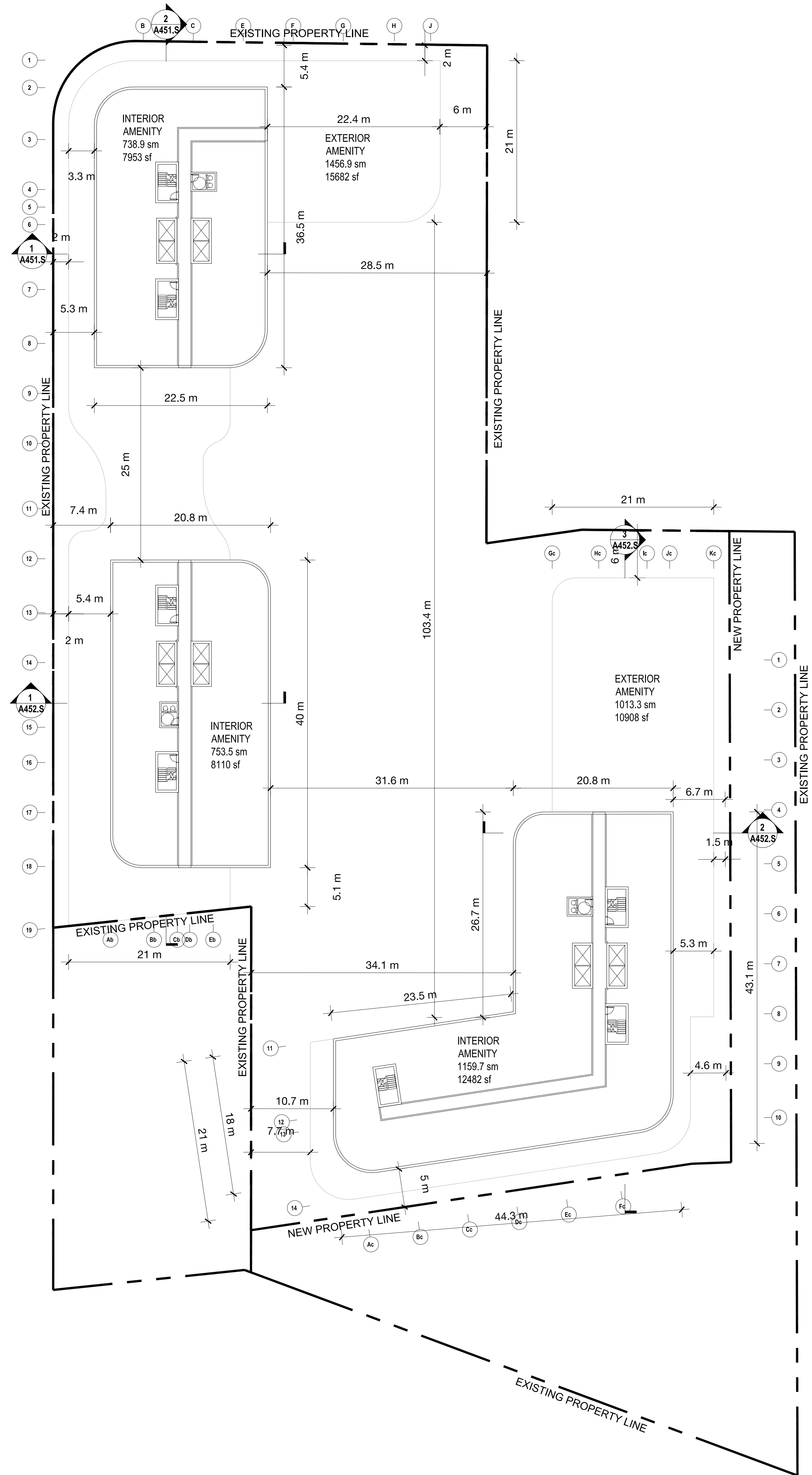
Ground Floor Plan &
2nd Floor Plan

A201.S

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Typical Podium Plans (Floor 3 to 6)

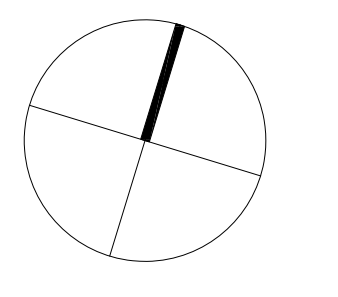


Amenity Plan (7th Floor)

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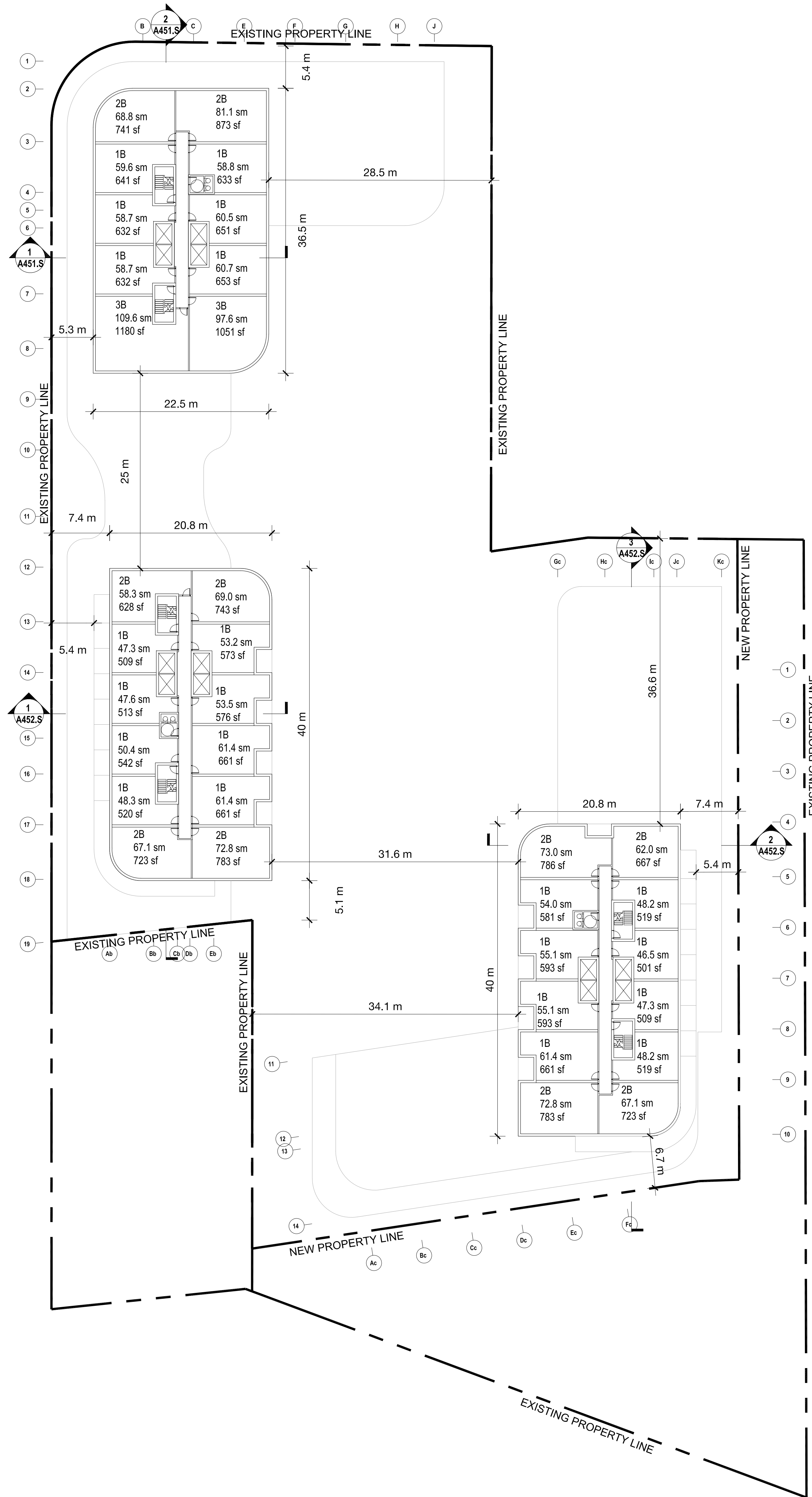
217-227 Cross Avenue and
571-587 Argus Road
Oakville, ON

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PROJECT SCALE DRAWN REVIEWED

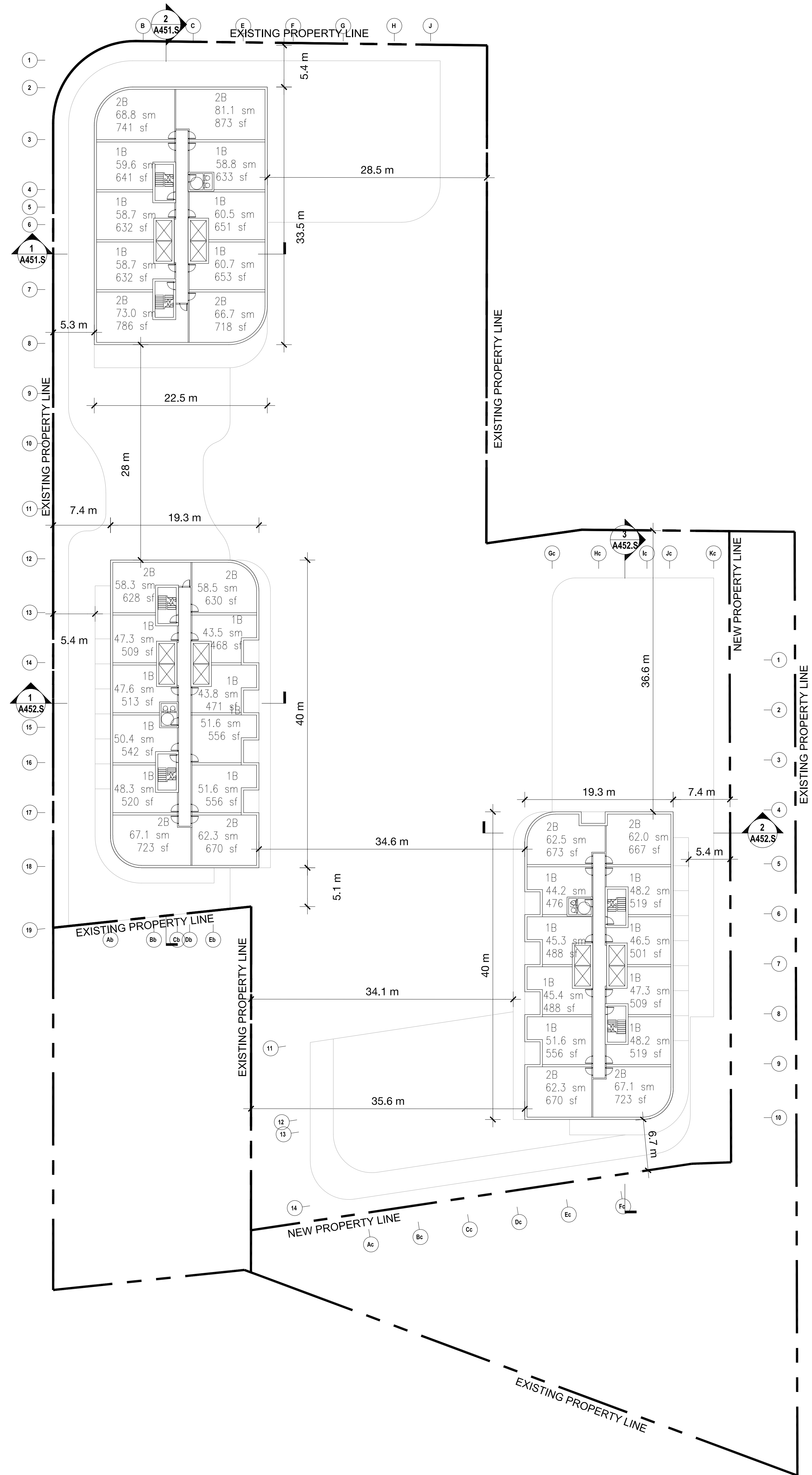
Plans of Floors 3-6 & 7

A202.S

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Typical Tower Plans (Lower Floors)

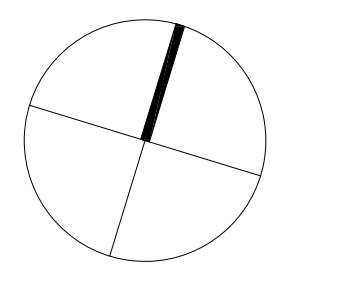


Typical Tower Plans (Upper Floors)

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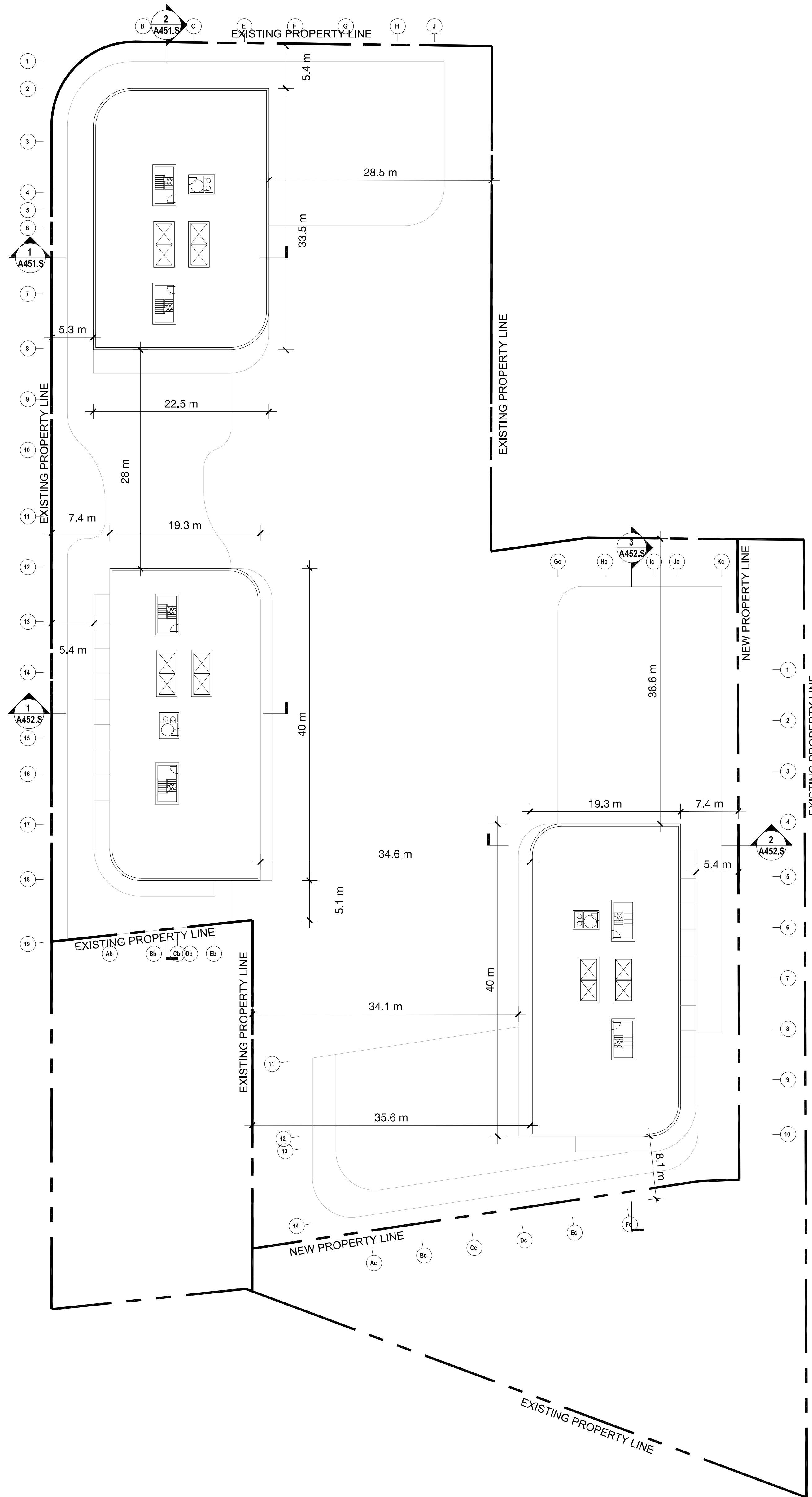
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571-587 Argus Road
Oakville, ON

19072 1:300 AR KVE
PROJECT SCALE DRAWN REVIEWED

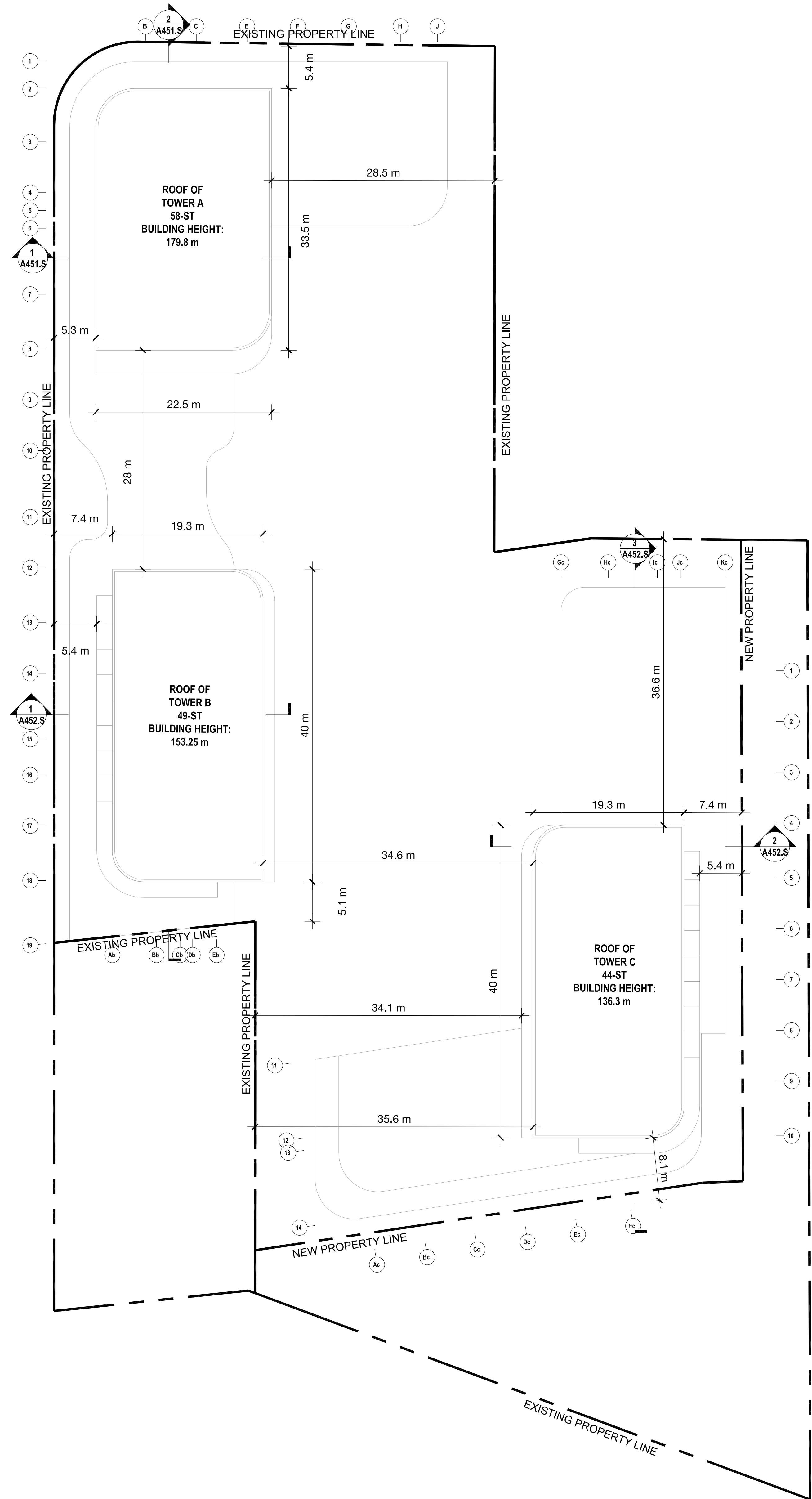
Typical Tower Plans

A203.S

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Mechanical Penthouse Plan

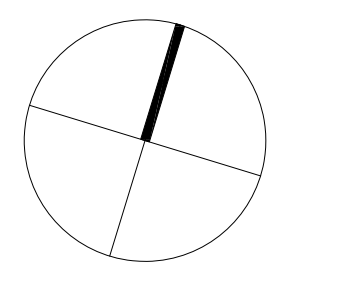


Roof Plan

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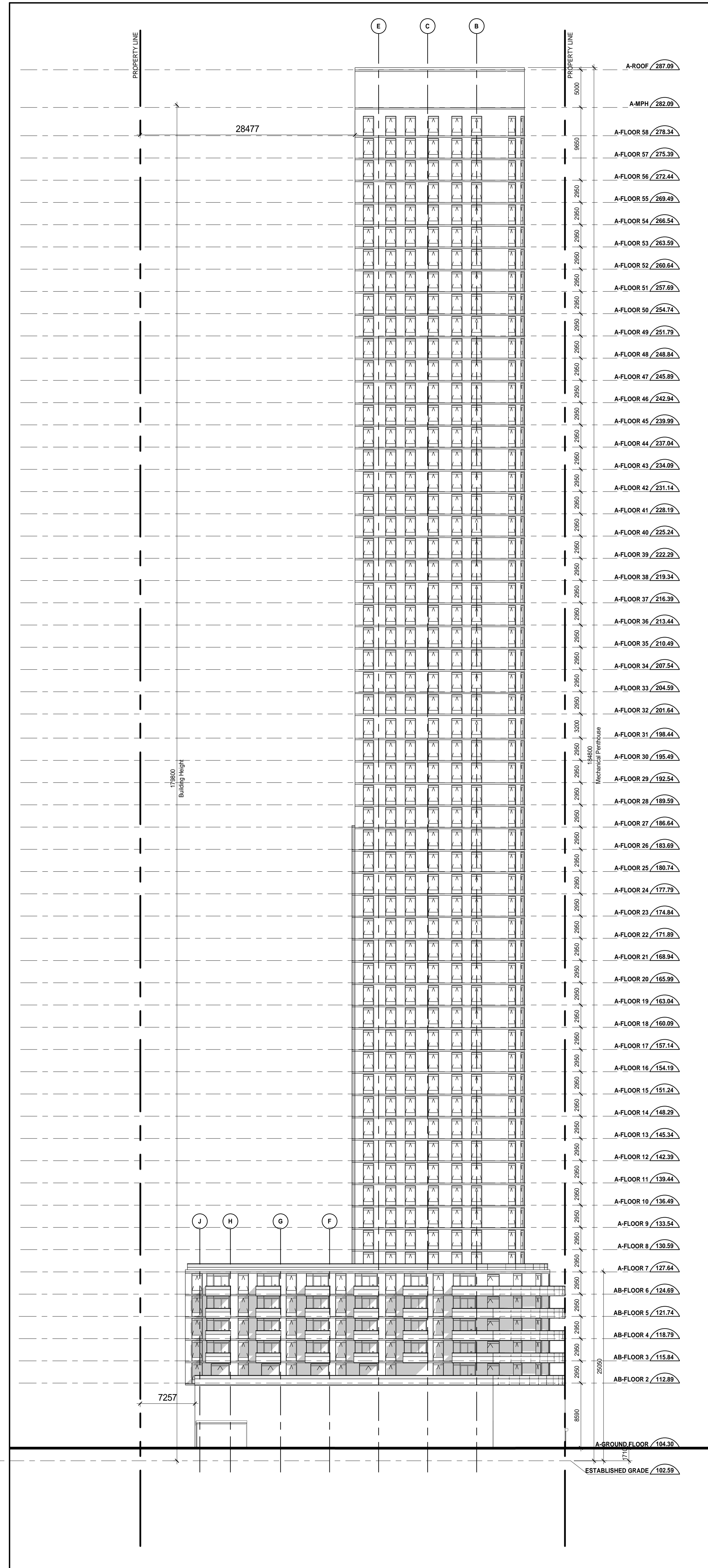
217-227 Cross Avenue and
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Oakville, ON

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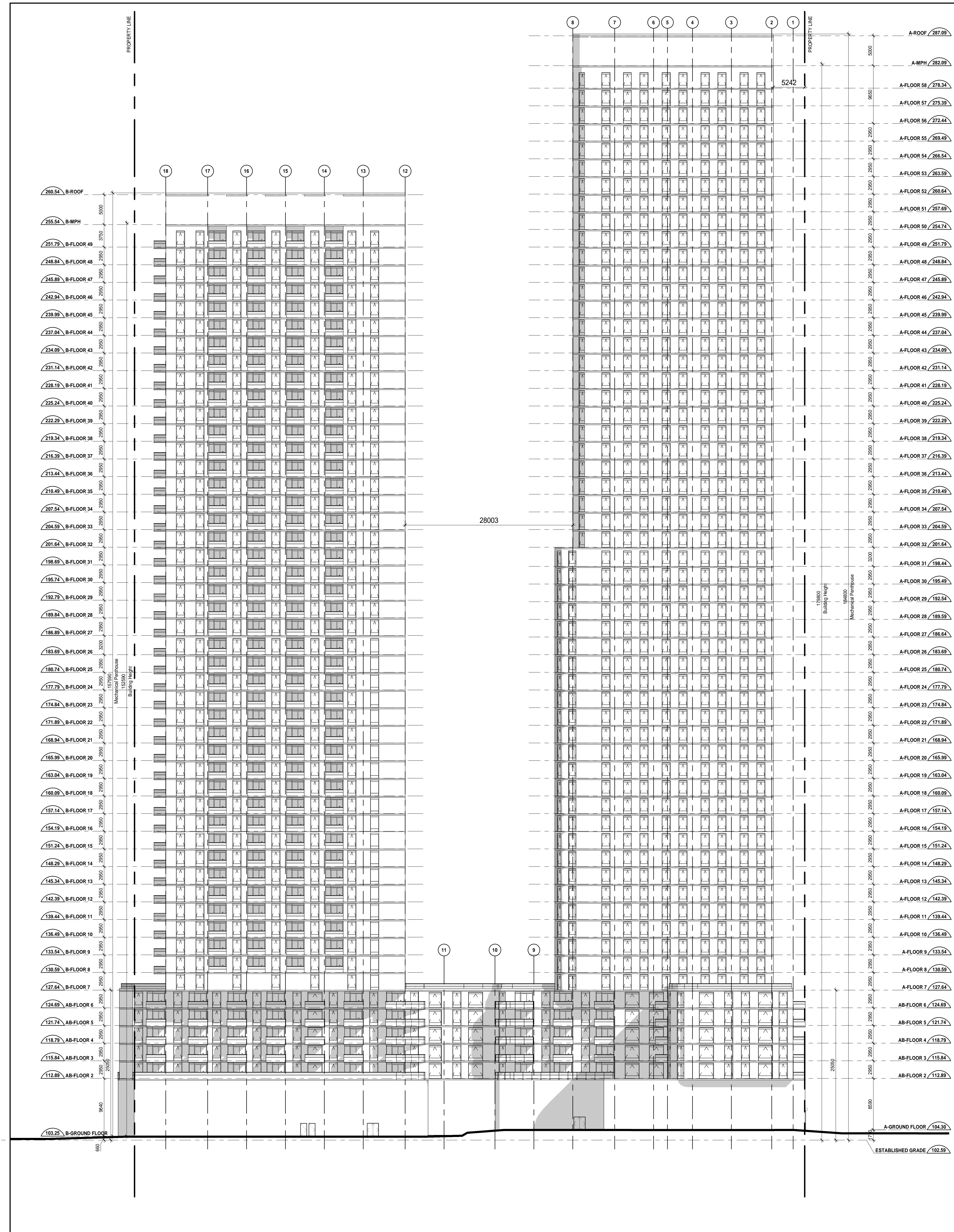
Mechanical Penthouse
Plan & Roof Plan

A204.S

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1 BUILDING A - NORTH ELEVATION
SCALE: 1:300



2 BUILDING AB - EAST ELEVATION
SCALE: 1:300

- LEGEND:**
- ◆ BRICK - COLOUR 1
 - ◆ BRICK - COLOUR 2
 - ◆ PRECAST
 - ◆ BRICK-EMBEDDED PRECAST
 - ◆ FIBRE-CEMENT CLADDING SYSTEM
 - ◆ PLATE ALUM CLADDING SYSTEM - COLOUR 1
 - ◆ BALCONY SLAB EDGE COVER
 - ◆ BALCONY AND TERRACE RAILING HANDRAILS AND PRIVACY SCREEN SUPPORT POSTS, HANDRAILS AND METAL FLASHING AND PARAPET CAP FLASHING
 - ◆ SHEET STEEL CLADDING SYSTEM
 - ◆ WINDOW SYSTEM METAL SPANDREL PROJECTING PANEL
 - ◆ WINDOW SYSTEM METAL SPANDREL FLUSH PANEL
 - ◆ WINDOW SYSTEM METAL SPANDREL RECESSED PANEL
 - ◆ RESIDENTIAL VISION GLASS - IGU
 - ◆ RESIDENTIAL VISION GLASS V-G+ WITH BIRD FRIENDLY FRIT PATTERN
 - ◆ RETAIL VISION GLASS WITH BIRD FRIENDLY FRIT PATTERN
 - ◆ SPANDREL GLASS - COLOUR 1
 - ◆ RAILING GLASS
 - ◆ RAILING GLASS WITH BIRD FRIENDLY FRIT PATTERN
 - ◆ PRIVACY SCREEN GLASS
 - ◆ RESIDENTIAL AND STOREFRONT WINDOW SYSTEM LOUVER
 - ◆ ARCHITECTURAL LOUVER
 - ◆ ELASTOMERIC COATING AT BALCONY UNDERSIDE
 - ◆ EXTERIOR HOLLOW METAL DOOR AND FRAME PAINT COLOUR
 - ◆ EPS
 - ◆ STUCCO FINISH

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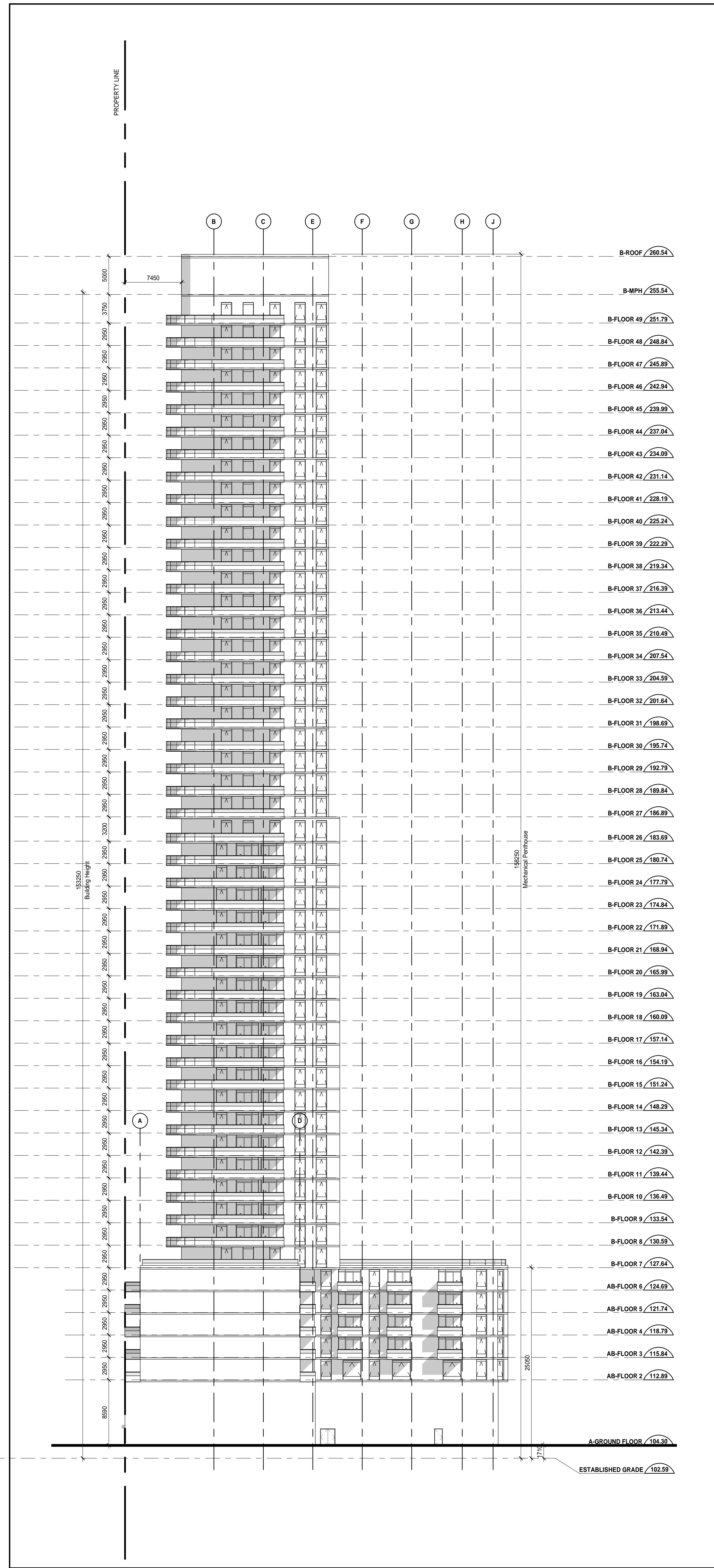
for
Distrikt Developments

19072 1:300 AR KVE
PROJECT SCALE DRAWN REVIEWED

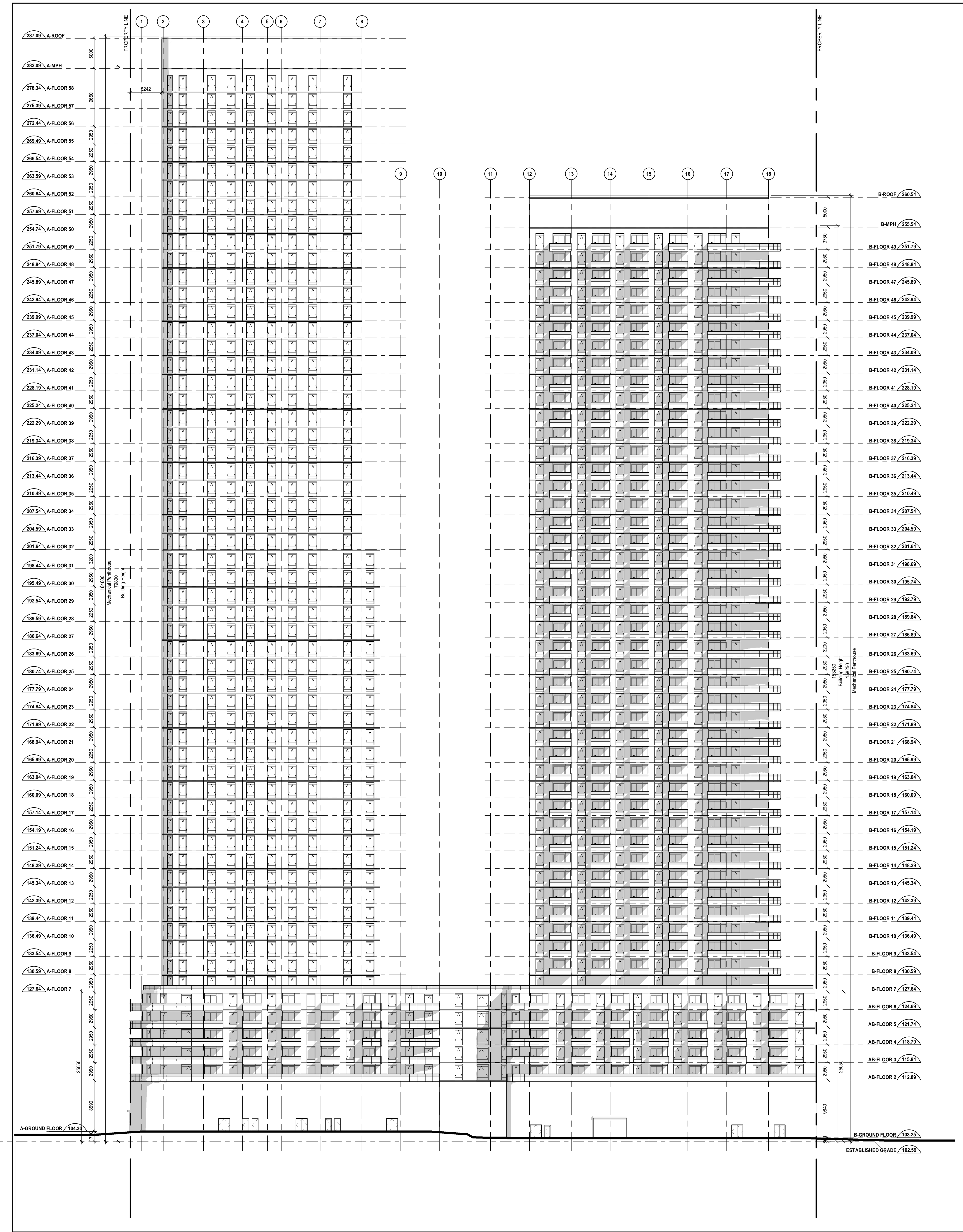
Building A and B - East and North
Elevations

A401.S

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2 BUILDING B - SOUTH ELEVATION
SCALE: 1 : 300



1 BUILDING AB - WEST ELEVATION
SCALE: 1 : 300

- LEGEND:**
- BRICK - COLOUR 1
 - BRICK - COLOUR 2
 - PRECAST
 - BRICK-EMBEDDED PRECAST
 - FIBRE-CEMENT CLADDING SYSTEM
 - PLATE ALUM CLADDING SYSTEM - COLOUR 1
 - BALCONY SLAB EDGE COVER
 - BALCONY AND TERRACE RAILING
 - HANDRAILS AND PRIVACY SCREEN SUPPORT POSTS, HANDRAILS AND METAL FLASHING AND PARAPET CAP FLASHING
 - SHEET STEEL CLADDING SYSTEM
 - WINDOW SYSTEM METAL SPANDREL PROJECTING PANEL
 - WINDOW SYSTEM METAL SPANDREL FLUSH PANEL
 - WINDOW SYSTEM METAL SPANDREL RECESSED PANEL
 - RESIDENTIAL VISION GLASS - IGU
 - RESIDENTIAL VISION GLASS VG-1 WITH BIRD FRIENDLY FRIT PATTERN
 - RETAIL VISION GLASS WITH BIRD FRIENDLY FRIT PATTERN
 - SPANDREL GLASS - COLOUR 1
 - RAILING GLASS
 - RAILING GLASS WITH BIRD FRIENDLY FRIT PATTERN
 - PRIVACY SCREEN GLASS
 - RESIDENTIAL AND STOREFRONT WINDOW SYSTEM LOUVRE
 - ARCHITECTURAL LOUVRE
 - ELASTOMERIC COATING AT BALCONY UNDERSIDE
 - EXTERIOR HOLLOW METAL DOOR AND FRAME PAINT COLOUR
 - EPS
 - STUCCO FINISH

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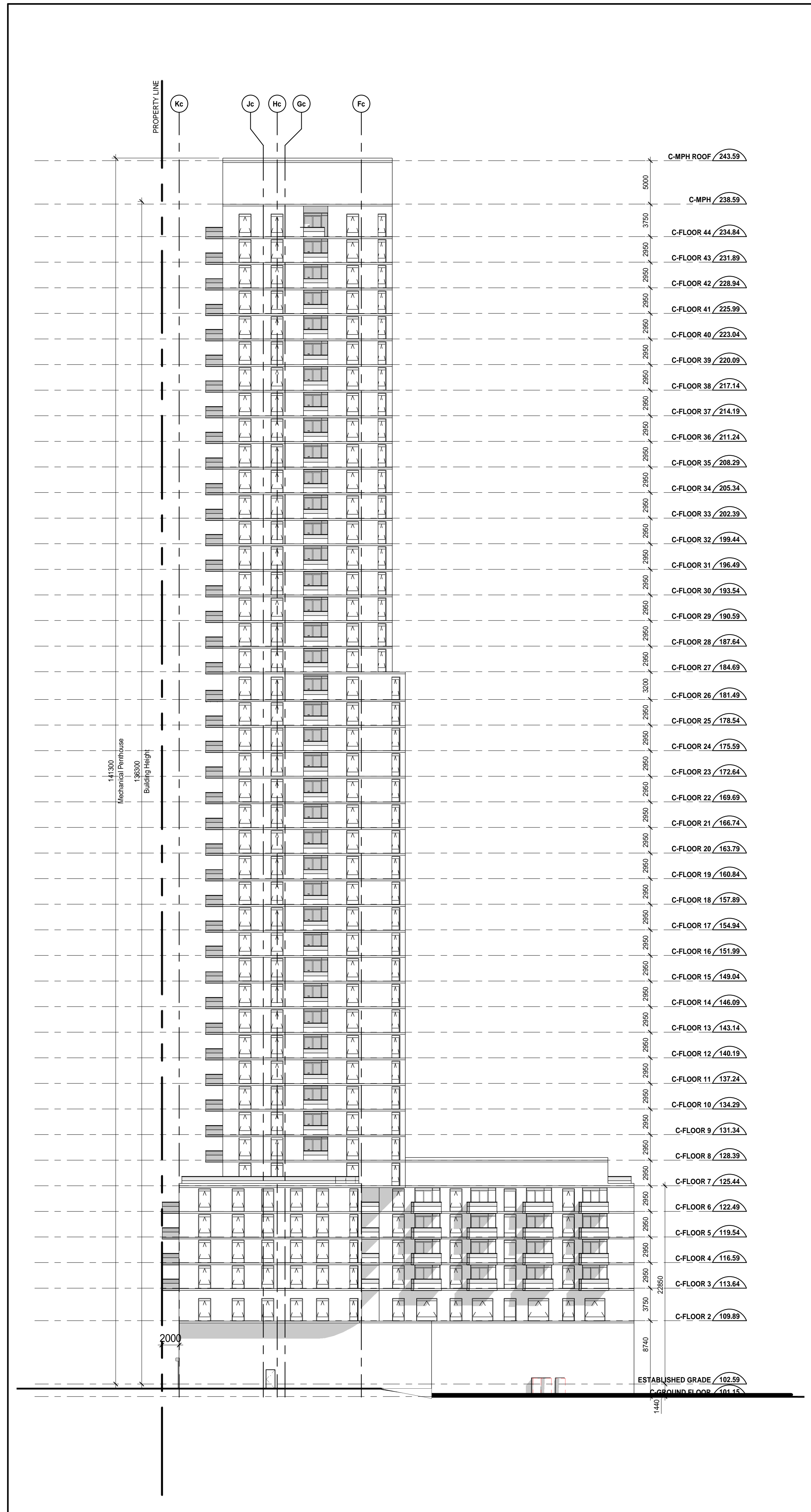
for
Distrikt Developments

19072 1:300 AR KVE
PROJECT SCALE DRAWN REVIEWED

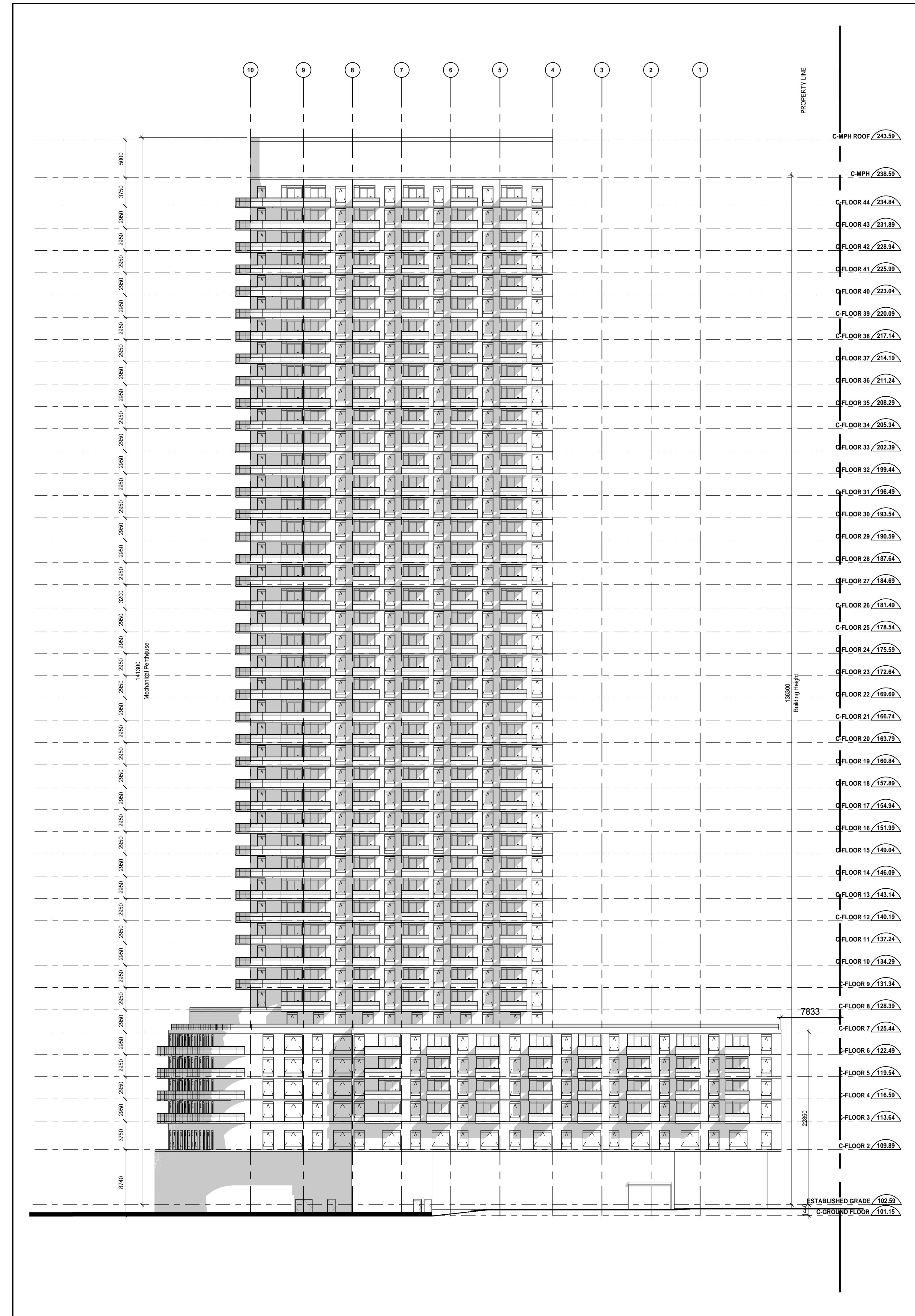
Building A and B - West and
South Elevations

A402.S

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2 BUILDING C - NORTH ELEVATION
SCALE: 1:300



1 BUILDING C - EAST ELEVATION
SCALE: 1:300

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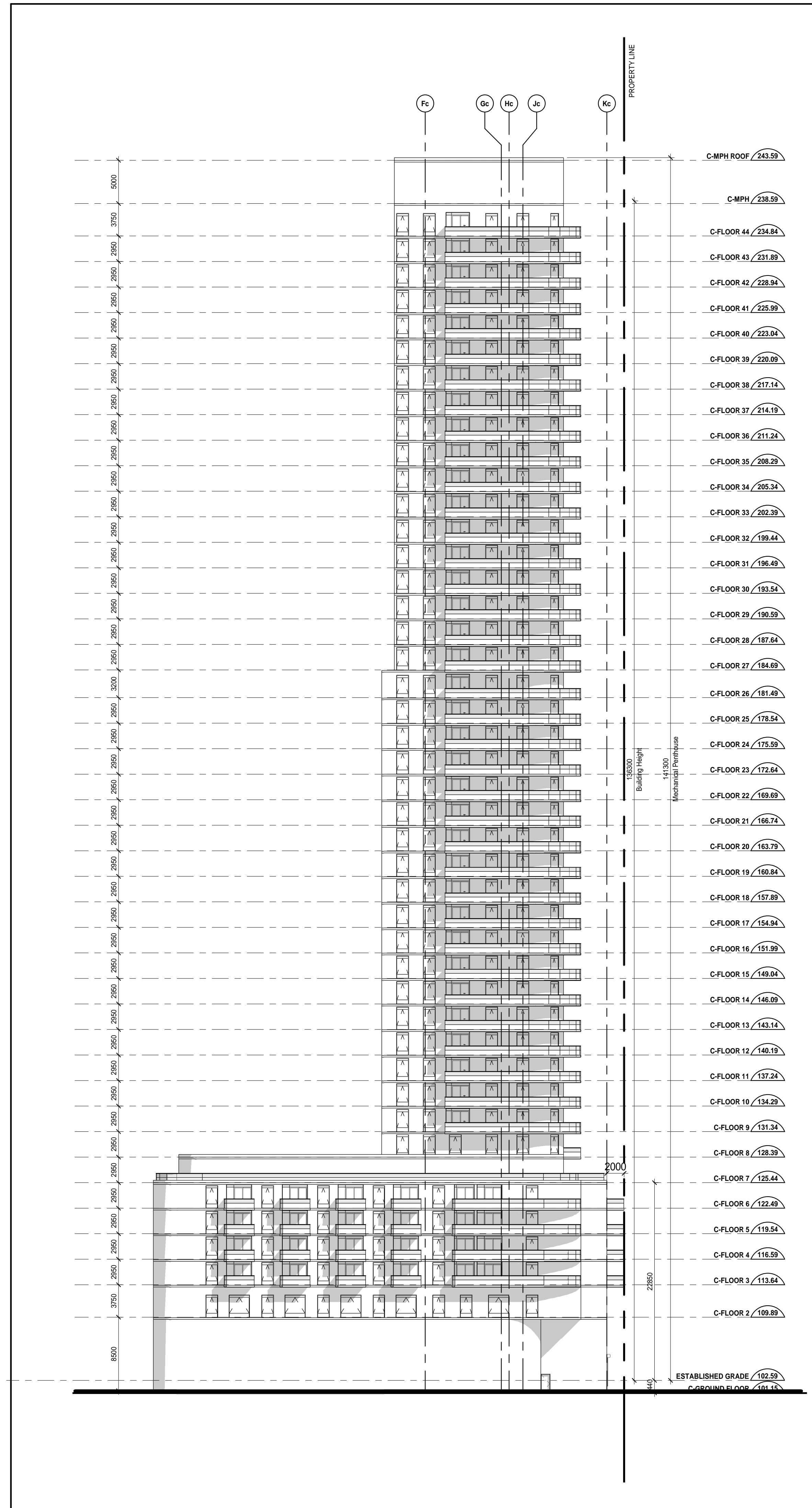
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PROJECT SCALE DRAWN REVIEWED

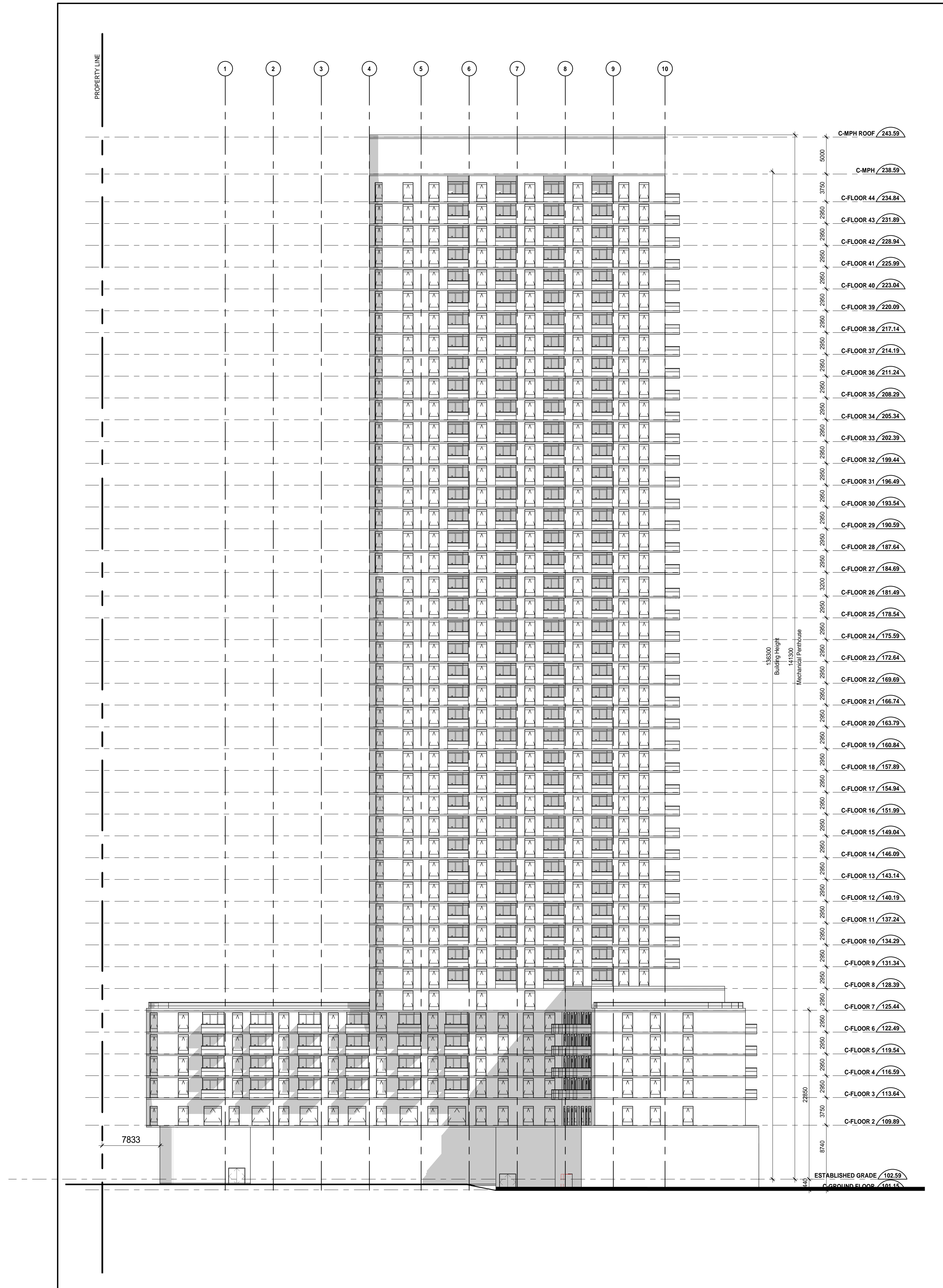
Building C - East and North
Elevations

A403.S

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1 BUILDING C - SOUTH ELEVATION
SCALE: 1 : 300



2 BUILDING C - WEST ELEVATION
SCALE: 1 : 300

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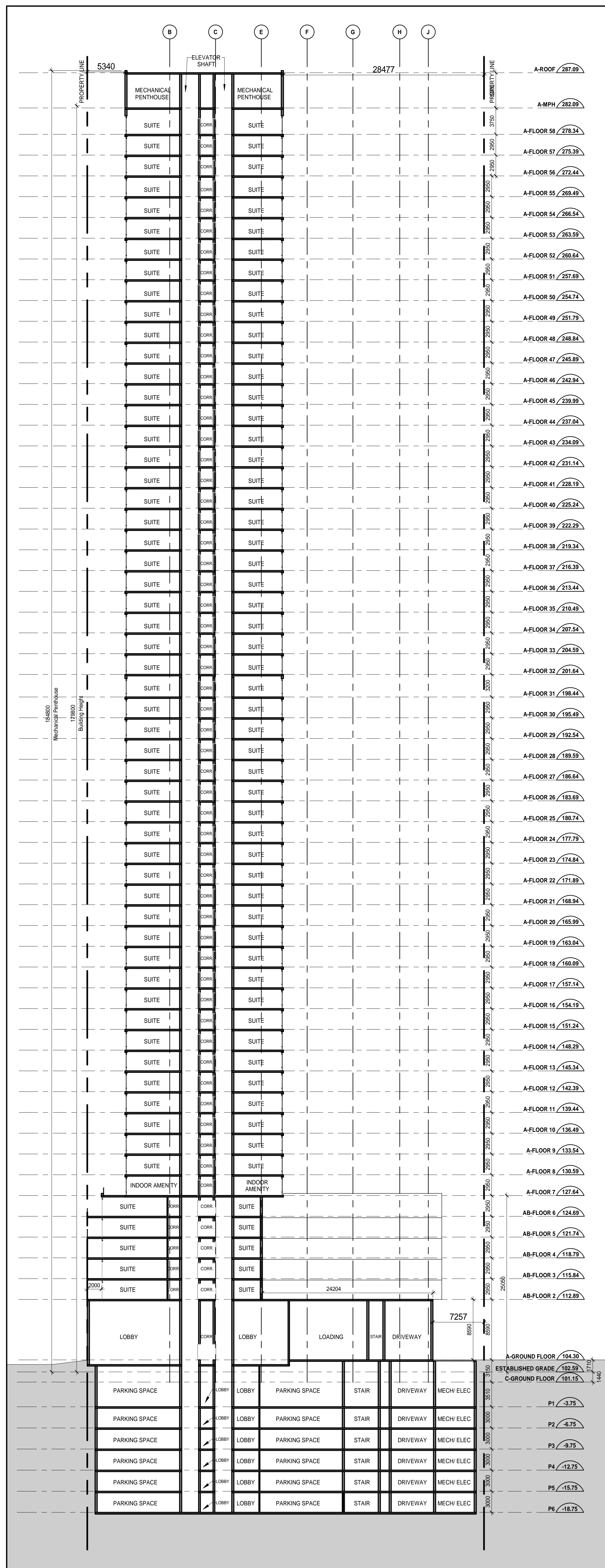
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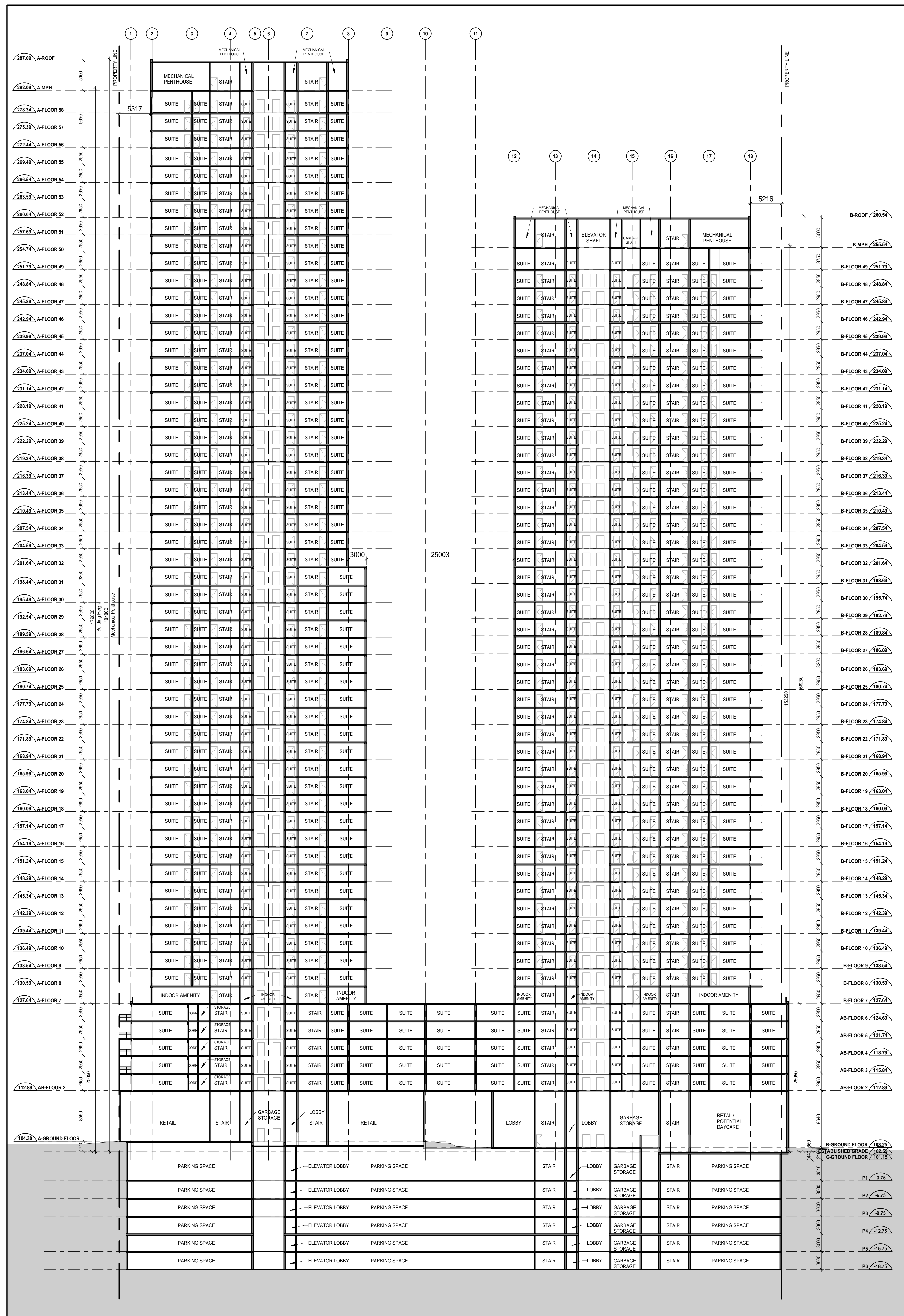
Building C - West and South
Elevations

A404.S

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1 BUILDING A - EAST WEST SECTION
SCALE: 1:300



2 BUILDING AB - NORTH SOUTH SECTION
SCALE: 1:300

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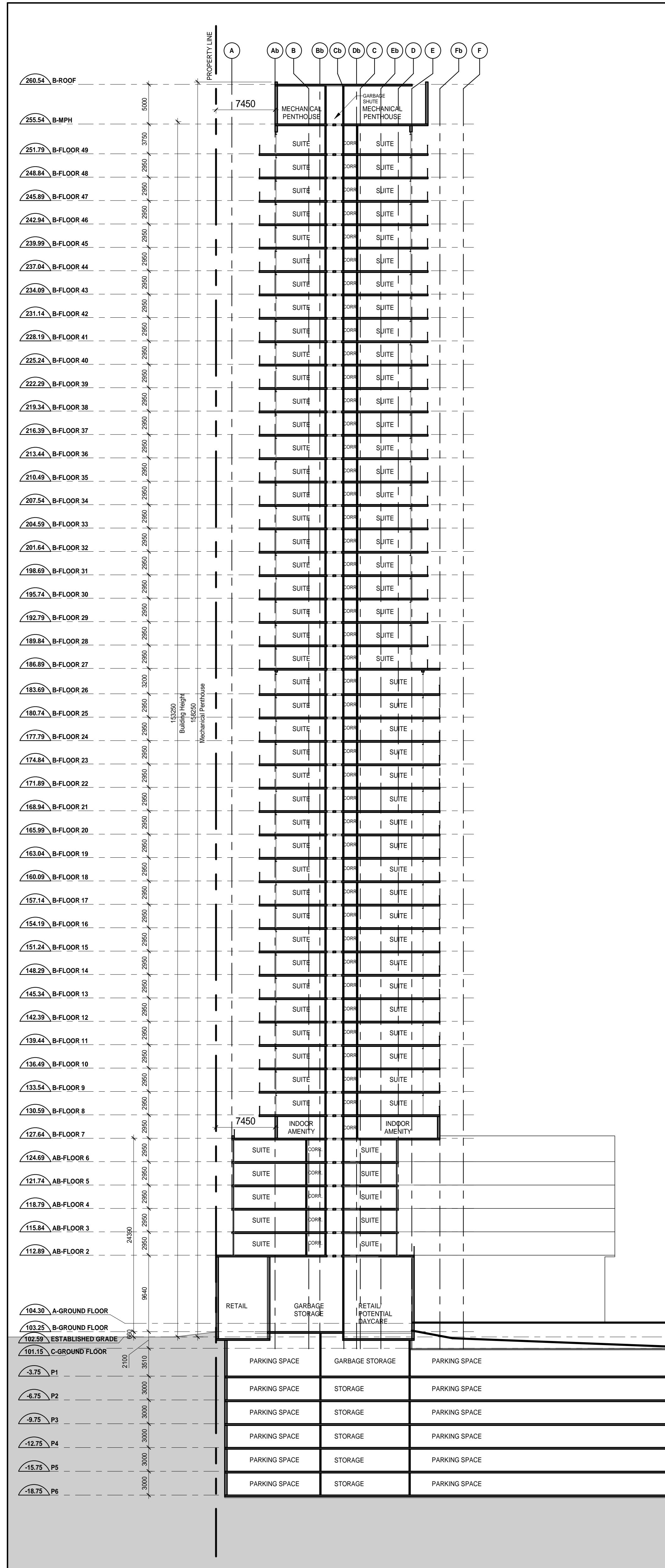
217-227 Cross Avenue and
571-587 Argus Road
2022-04-19 Issued for Rezoning
for
Distrikt Developments

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PROJECT SCALE DRAWN REVIEWED

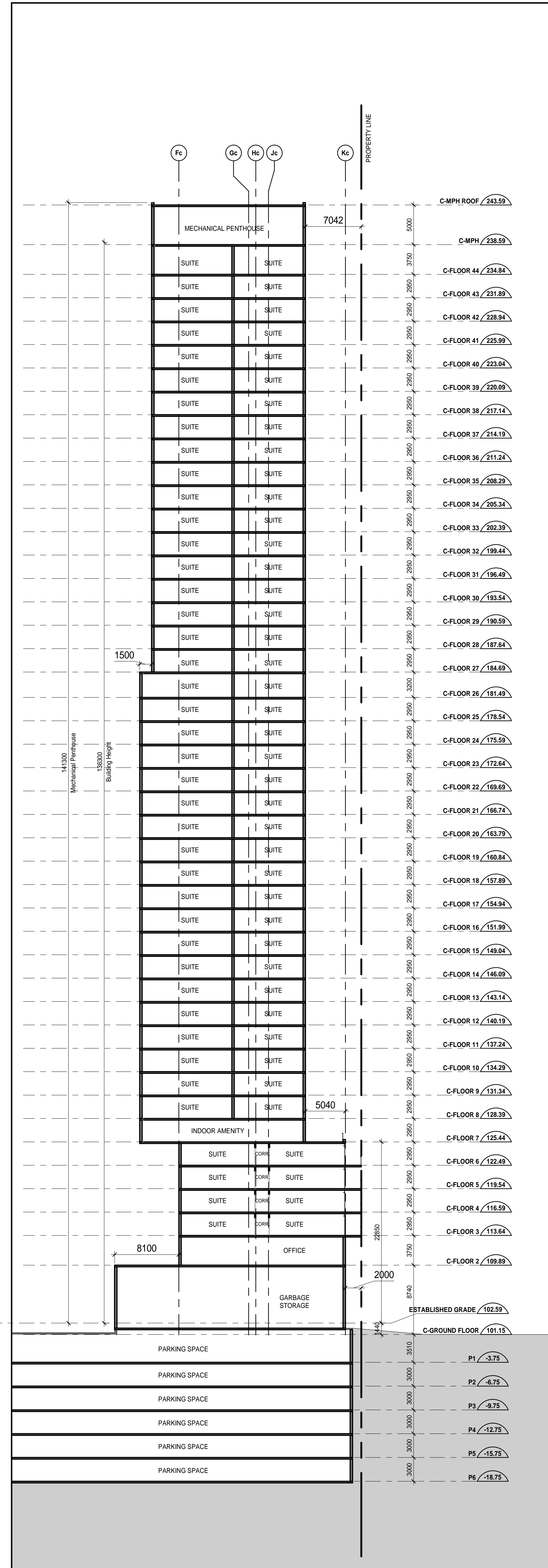
Building A and B Sections

A451.S

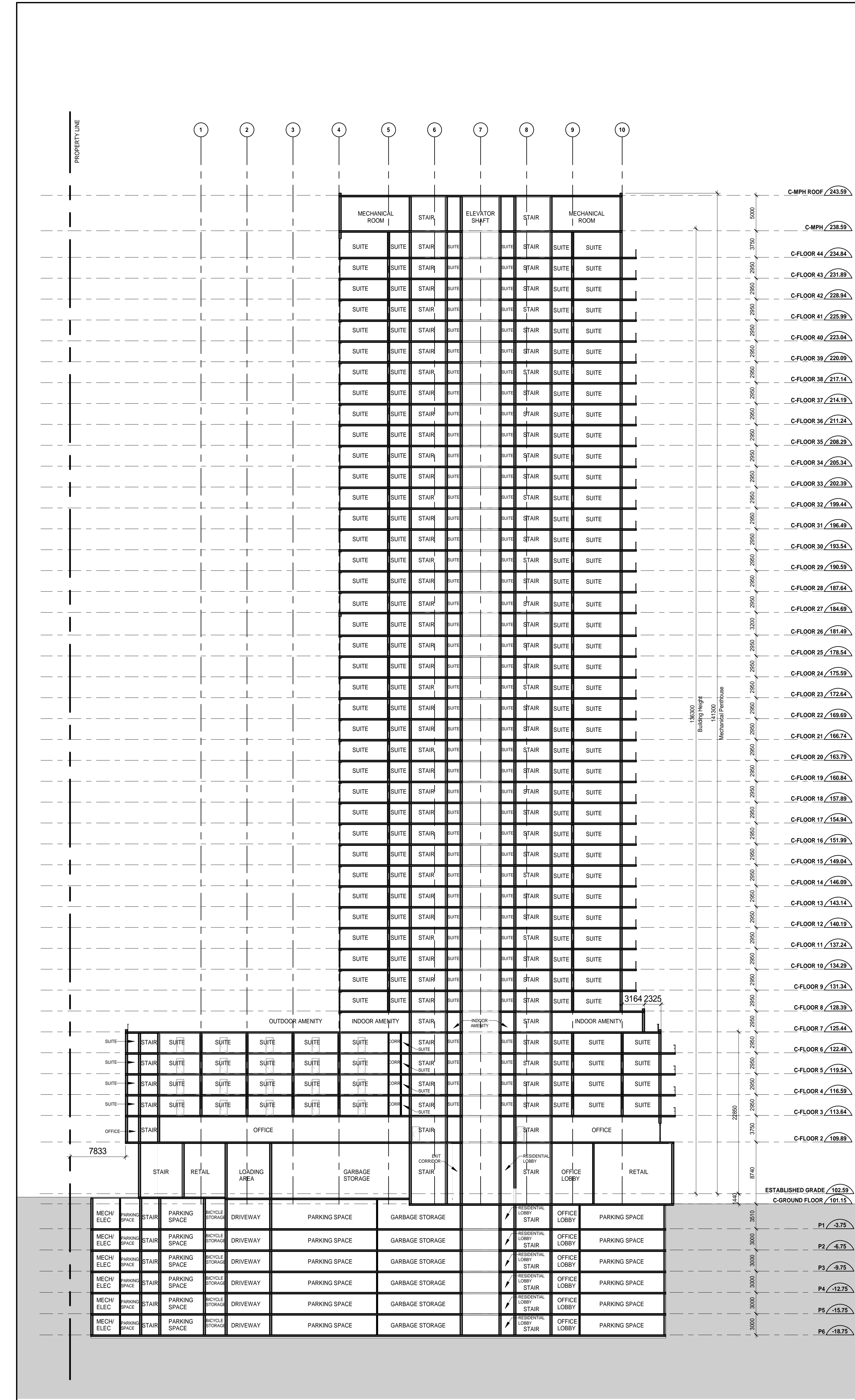
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1 BUILDING B - EAST WEST SECTION
SCALE: 1:300



2 BUILDING C - EAST WEST SECTION
SCALE: 1:300



3 BUILDING C - NORTH SOUTH SECTION
SCALE: 1:300

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Building B and C Sections

A452.S

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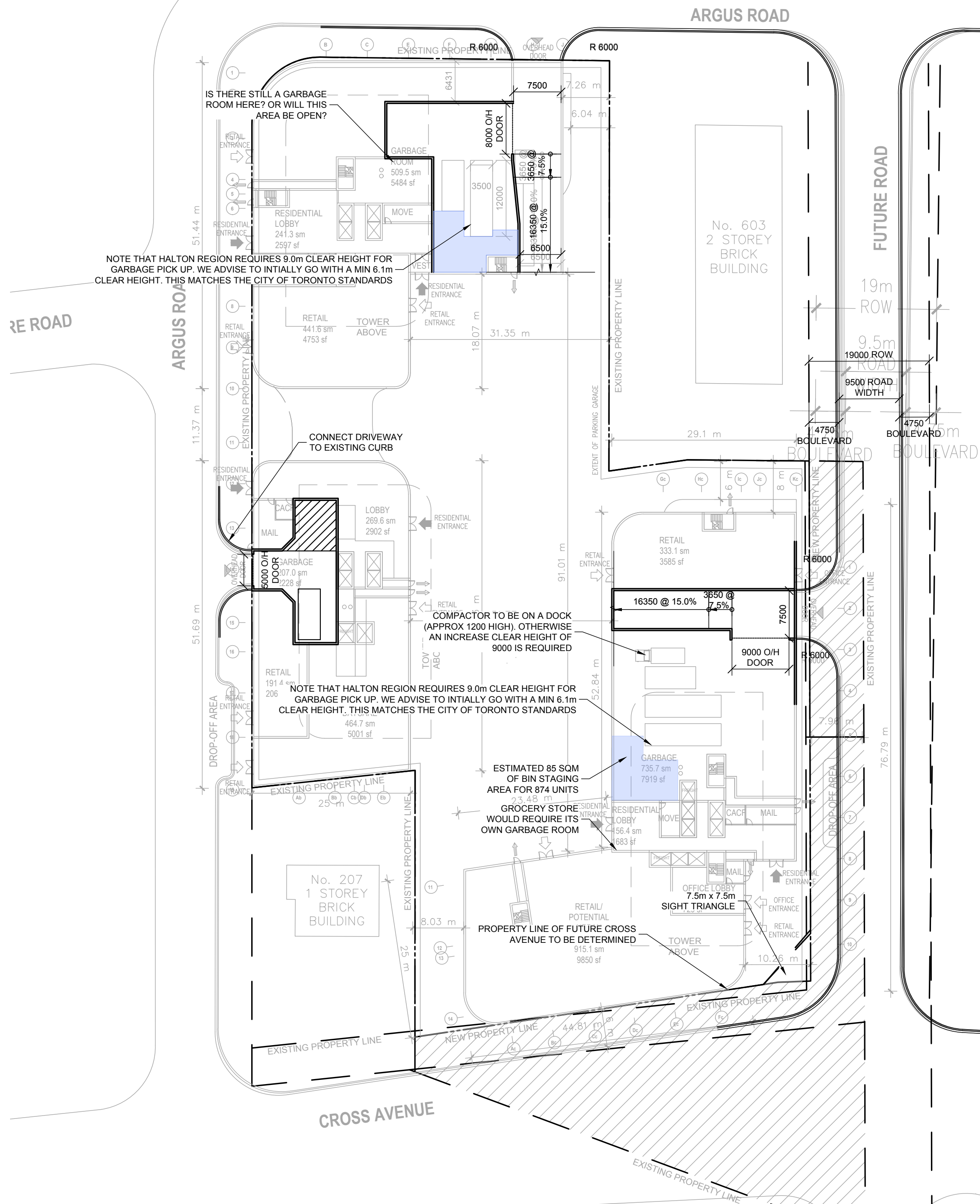
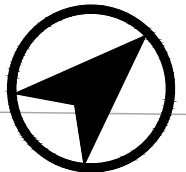
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2022-05-11 12:14:39 PM

Appendix D

Functional Design Drawings & Vehicle Manoeuvring Diagrams (VMDs), BA Group, May 2022





00 MM-DD-YR INT REVISION NOTE

BA Group
 BA Consulting Group Ltd.
 300 - 45 St. Clair Ave. W.
 Toronto ON M4V 1K9
 TEL: 416 961 7110
 EMAIL: baigroup@bagroup.com

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CROSS AND ARGUS

SITE PLAN REVIEW

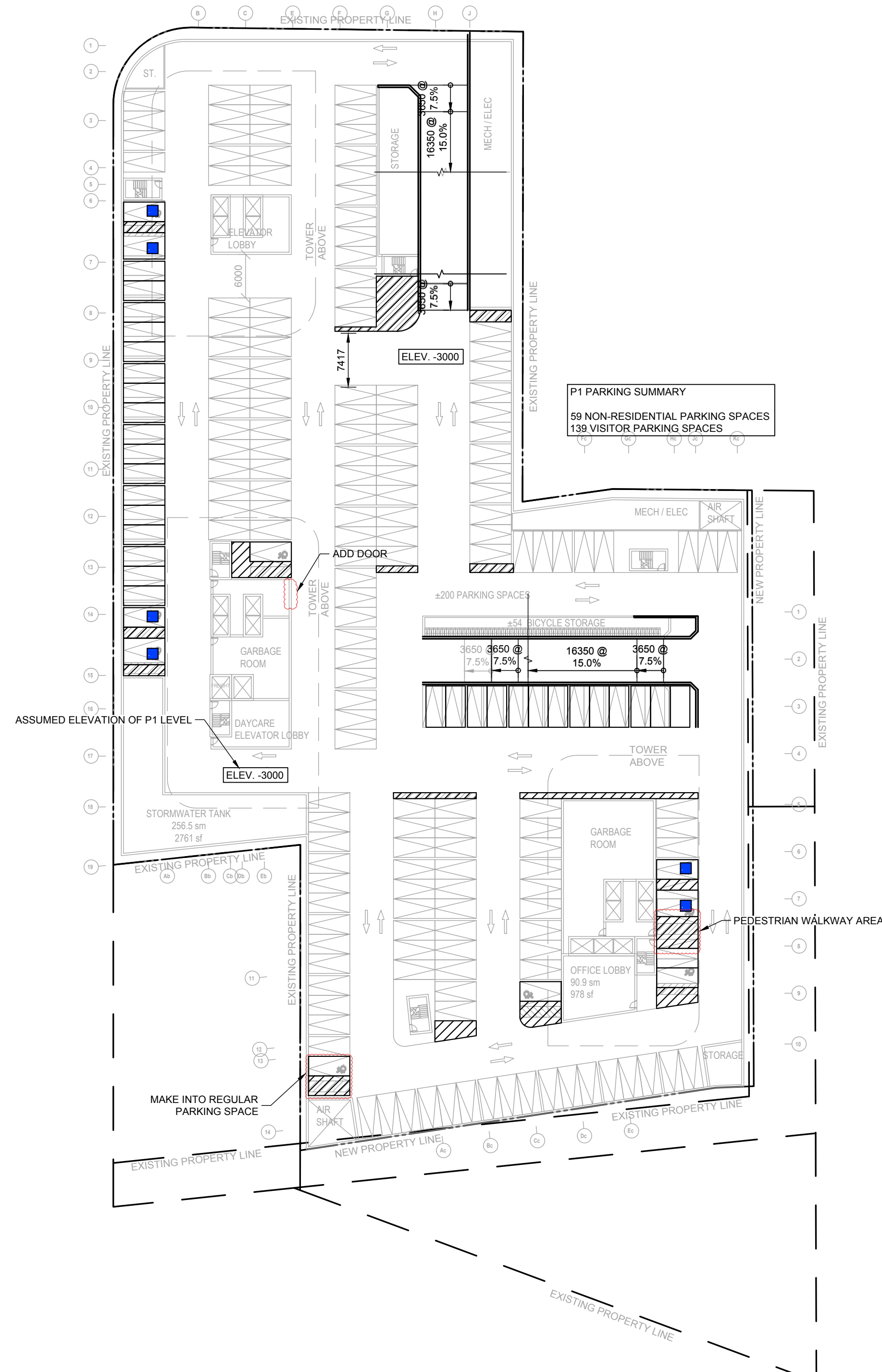
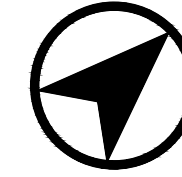
GROUND FLOOR

Date: May 03, 2022

Project No.: 8078-01



SPR-01



P1 PARKING SUMMARY
59 NON-RESIDENTIAL PARKING SPACES
132 VISITOR PARKING SPACES

±200 PARKING SPACES
±54 BICYCLE STORAGE
3650 @ 7.5%
16350 @ 15.0%
3650 @ 7.5%

ASSUMED ELEVATION OF P1 LEVEL

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BA Group logo and contact information for BA Consulting Group Ltd., 300 - 45 St. Clair Ave. W., Toronto ON M4V 1K9. TEL: 416 961 7110, EMAIL: baingroup@bagroup.com, BAGROUP.COM. MOVEMENT IN URBAN ENVIRONMENTS logo.

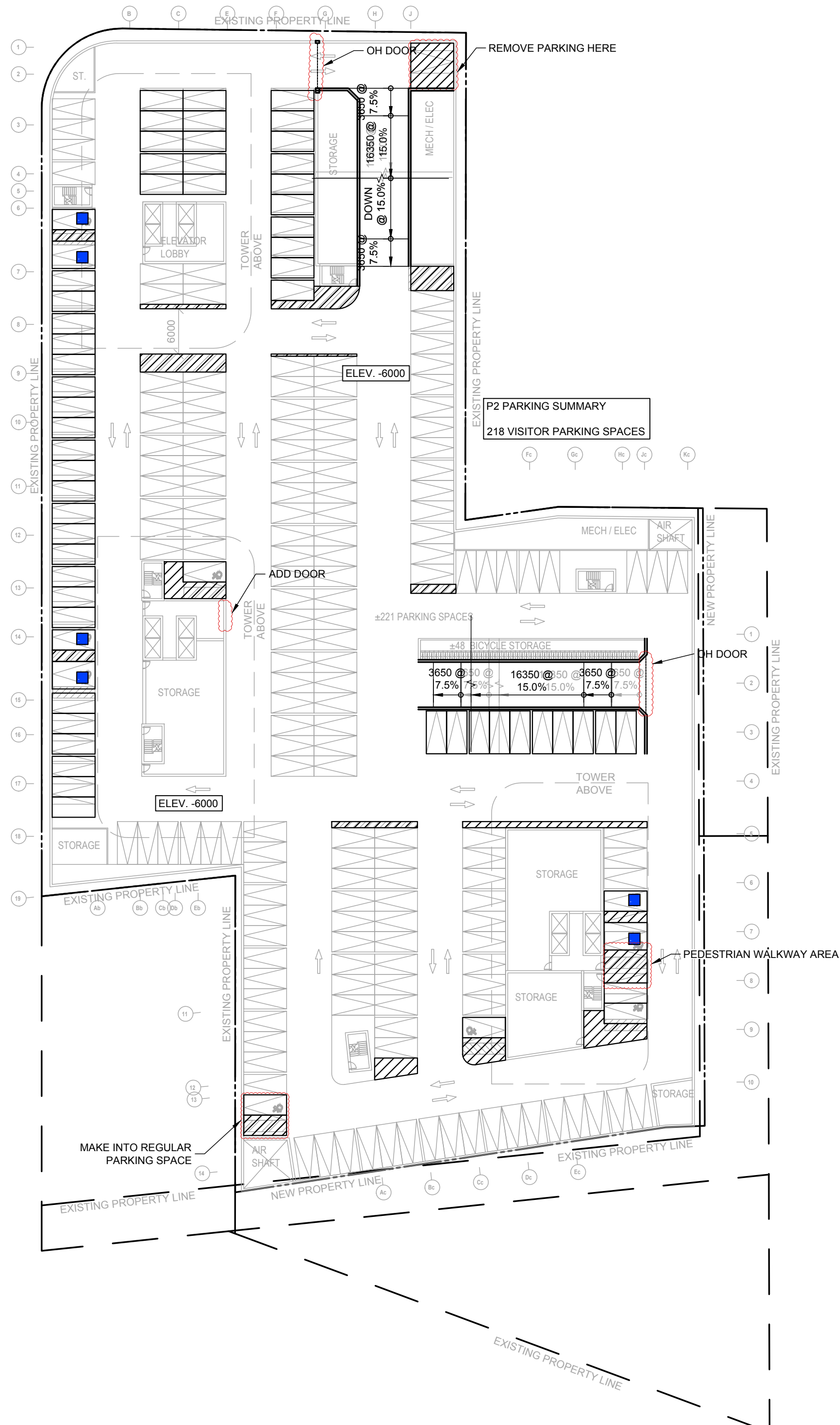
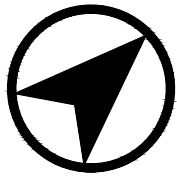
CROSS AND ARGUS

SITE PLAN REVIEW

P1 PARKING LEVEL

Date: May 03, 2022
Project No.: 8078-01
Scale: 1:500





P2 PARKING SUMMARY
218 VISITOR PARKING SPACES

±48 BICYCLE STORAGE
3650 @ 7.5% 16350 @ 15.0% 3650 @ 7.5%

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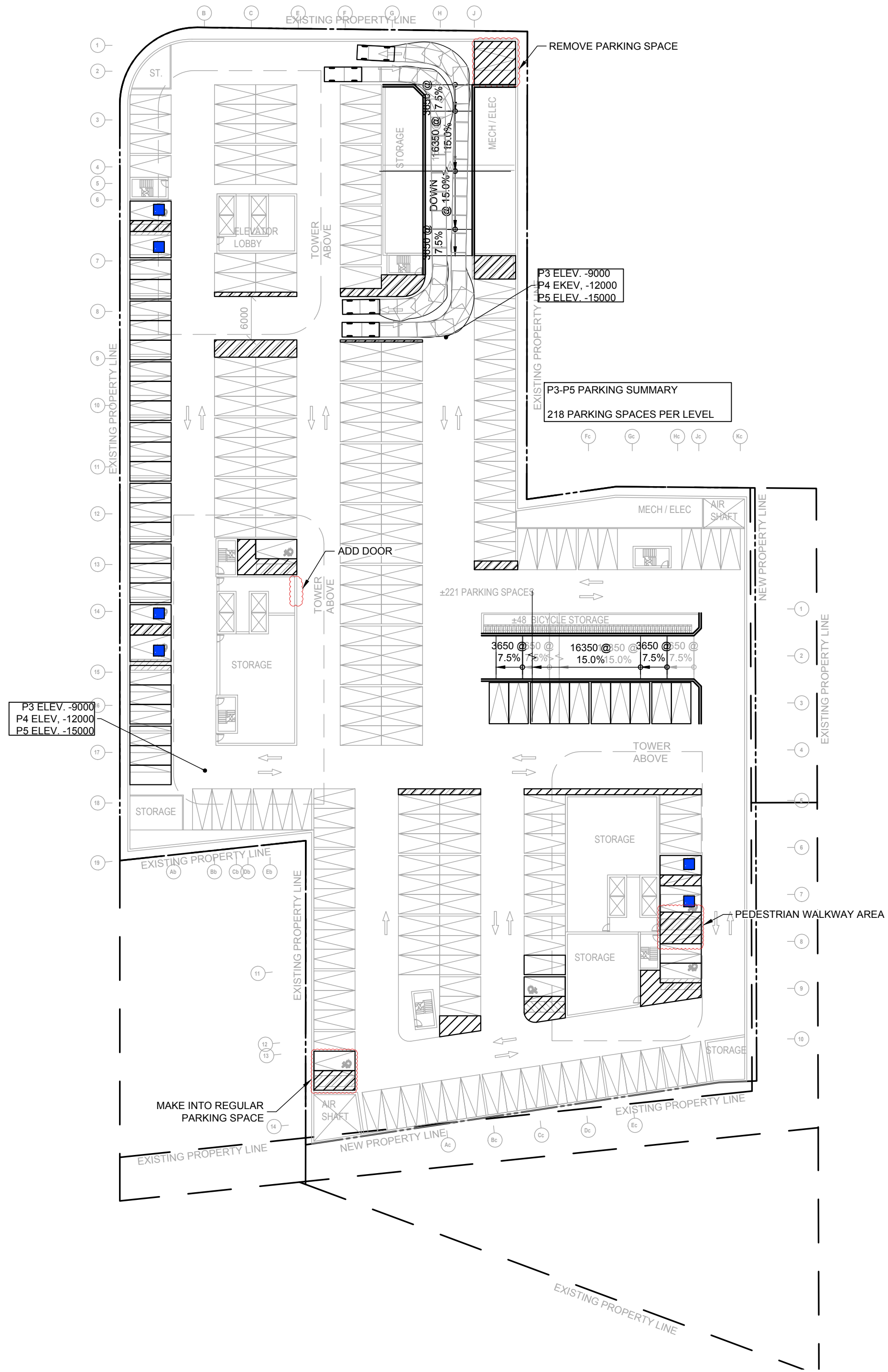
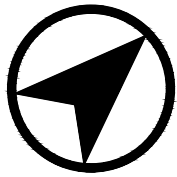
P2 PARKING LEVEL

Date: May 03, 2022

Project No.: 8078-01

Scale: 1:500

SPR-03



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SITE PLAN REVIEW

P3-P5 PARKING LEVEL

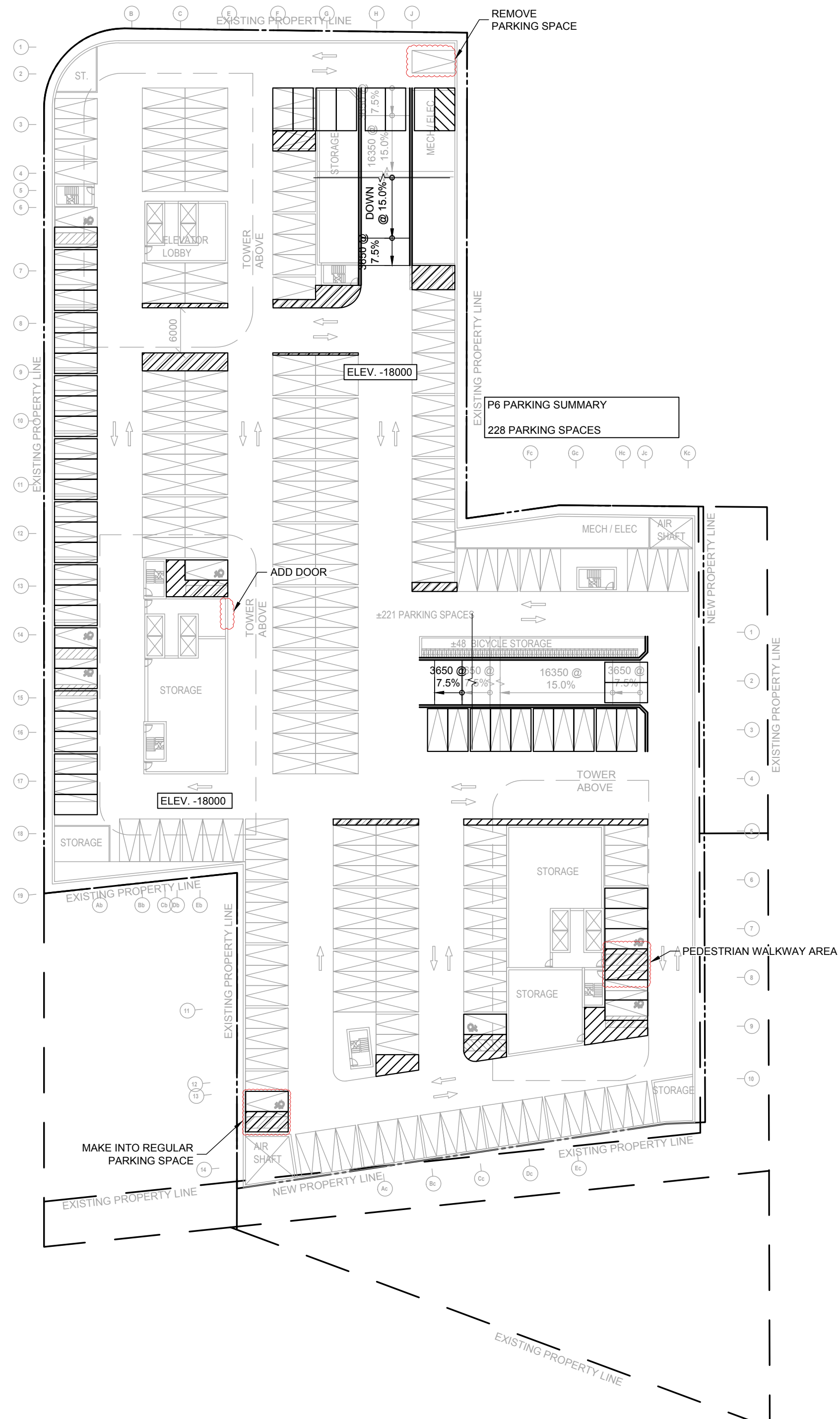
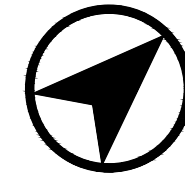
Date: May 03, 2022

Project No.: 8078-01


Scale: 1:500

SPR-04

Date Plotted: May 4, 2022 File Name: J:\8078-01\site Plan Review\4_April 21-2022\ba-Cross And Argus-SPR-April21-2022.dwg



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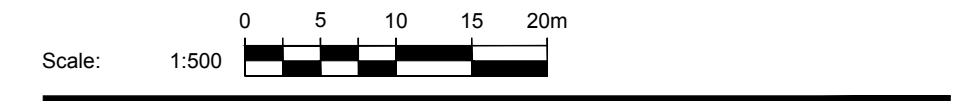
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SITE PLAN REVIEW

P6 PARKING LEVEL

Date: May 03, 2022

Project No.: 8078-01



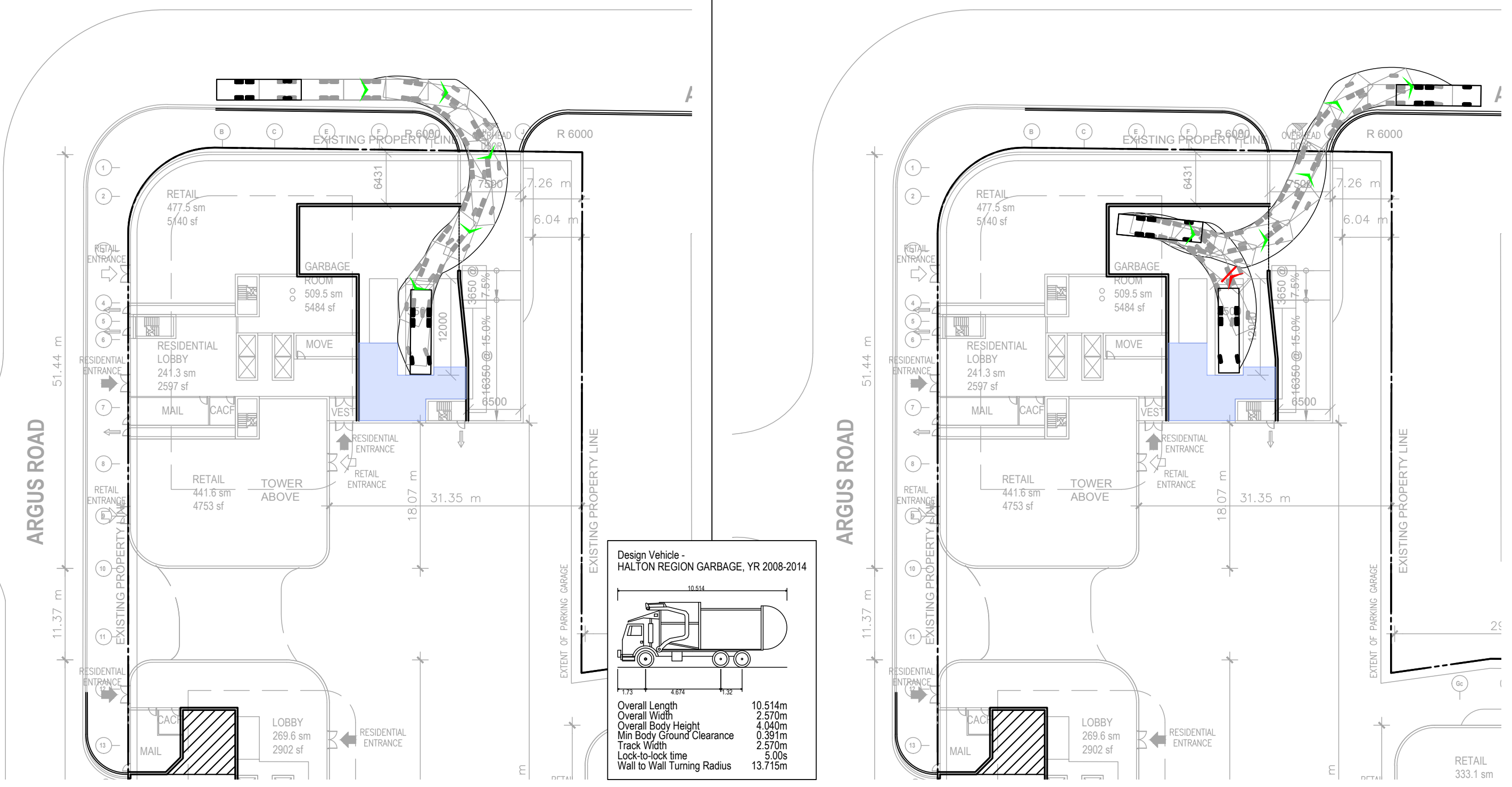
SPR-05

INBOUND

OUTBOUND



Date Plotted: May 4, 2022 Filename: J:\8078-01\ba\site Plan Review\4 April 21-2022\ba-Cross And Argus-SPR-April21-2022.dwg



Design Vehicle - HALTON REGION GARBAGE, YR 2008-2014

Overall Length	10.514m
Overall Width	2.570m
Overall Body Height	4.040m
Min Body Ground Clearance	0.391m
Track Width	2.570m
Lock-to-lock time	5.00s
Wall to Wall Turning Radius	13.715m



**CROSS AND ARGUS
VEHICLE MANOEUVRING DIAGRAM
HALTON REGION GARBAGE TRUCK**

Project: CROSS AND ARGUS
Project No. 8078-01
Date: May 02, 2022
Revised: --

Scale 1:500

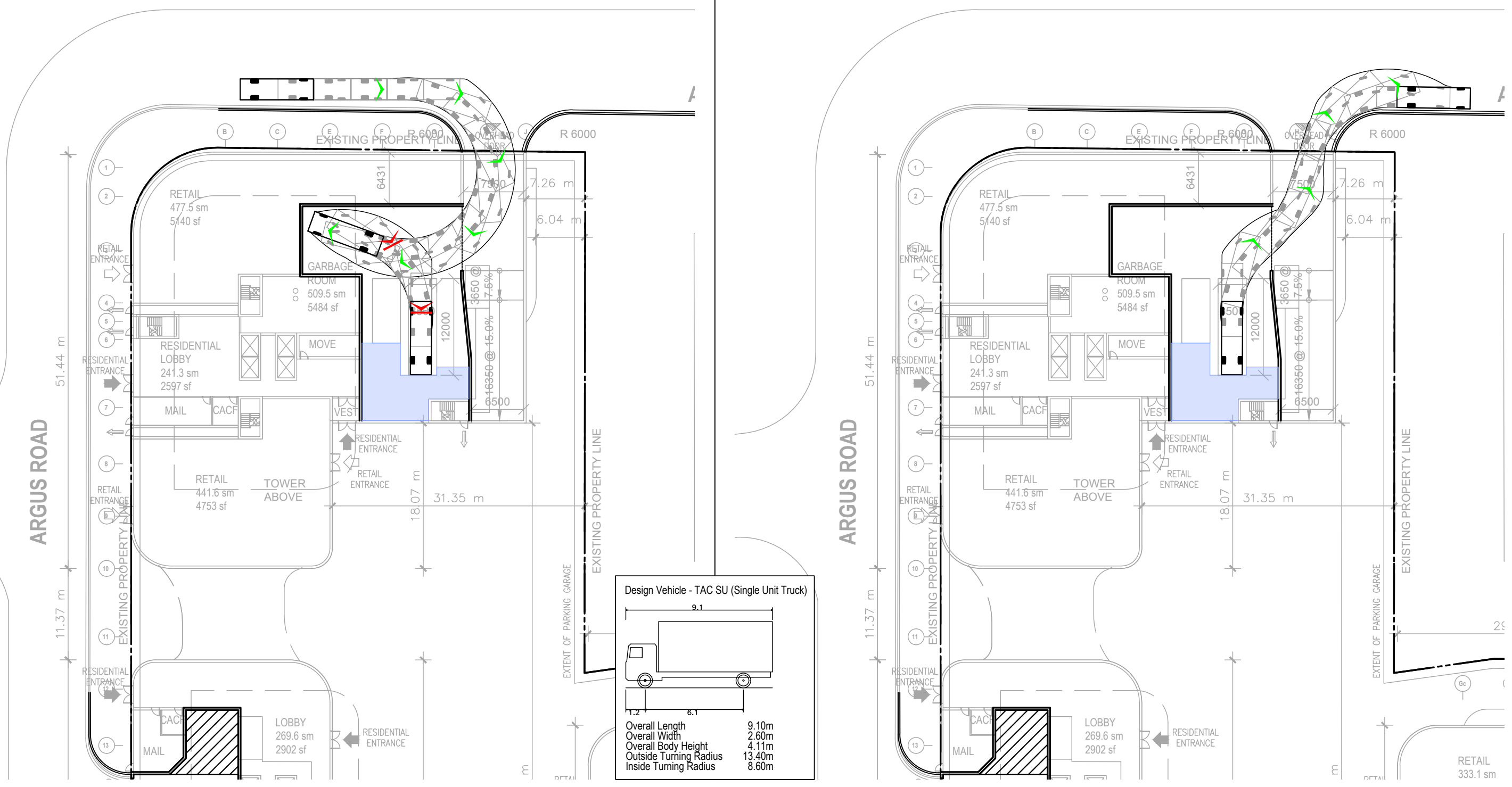
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INBOUND

OUTBOUND

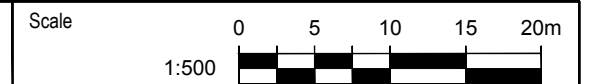


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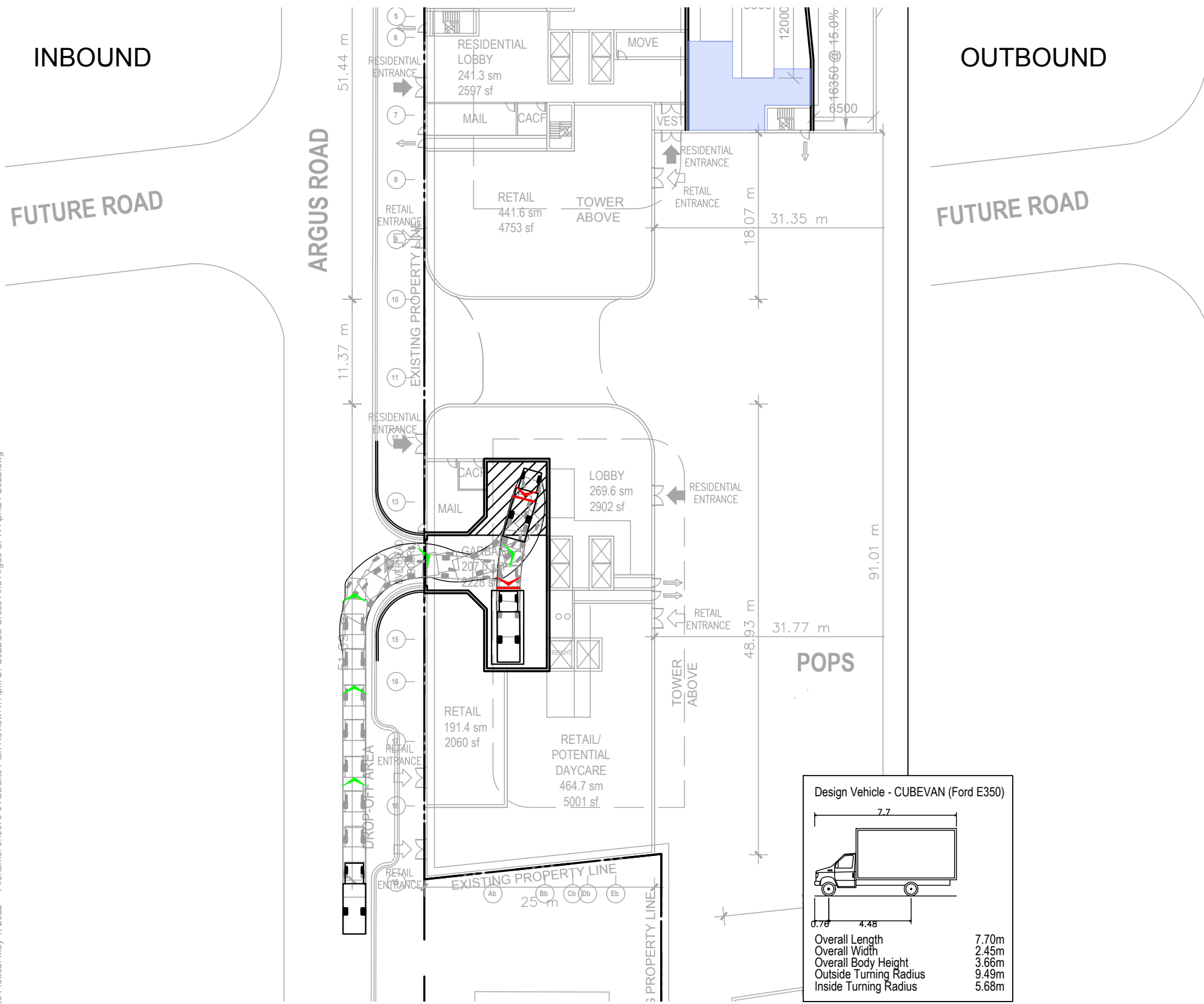
**CROSS AND ARGUS
VEHICLE MANOEUVRING DIAGRAM
SINGLE UNIT TRUCK**

Project: CROSS AND ARGUS
Project No. 8078-01
Date: May 02, 2022
Revised: --



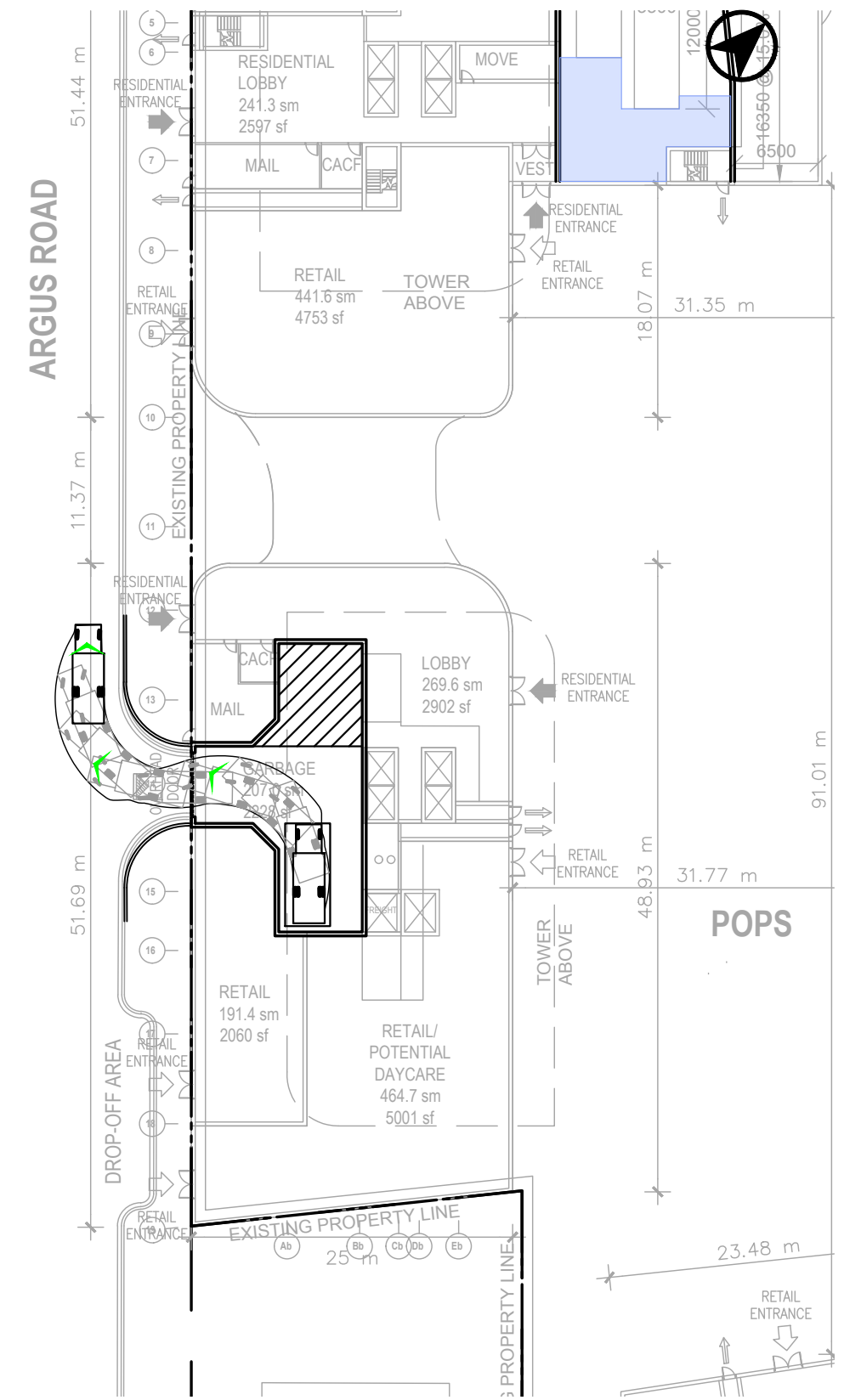
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Date Plotted: May 4, 2022 Filename: J:\8078-01\ba\site Plan Review\4 - April 21-2022\ba-Cross And Argus-SPR-April21-2022.dwg



Design Vehicle - CUBEVAN (Ford E350)

Overall Length	7.70m
Overall Width	2.45m
Overall Body Height	3.66m
Outside Turning Radius	9.49m
Inside Turning Radius	5.68m

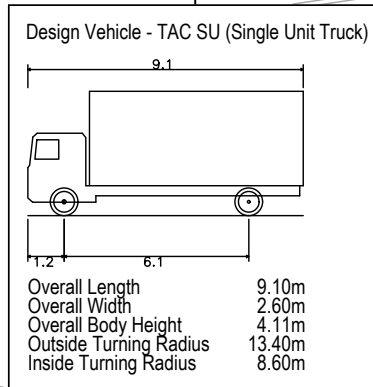
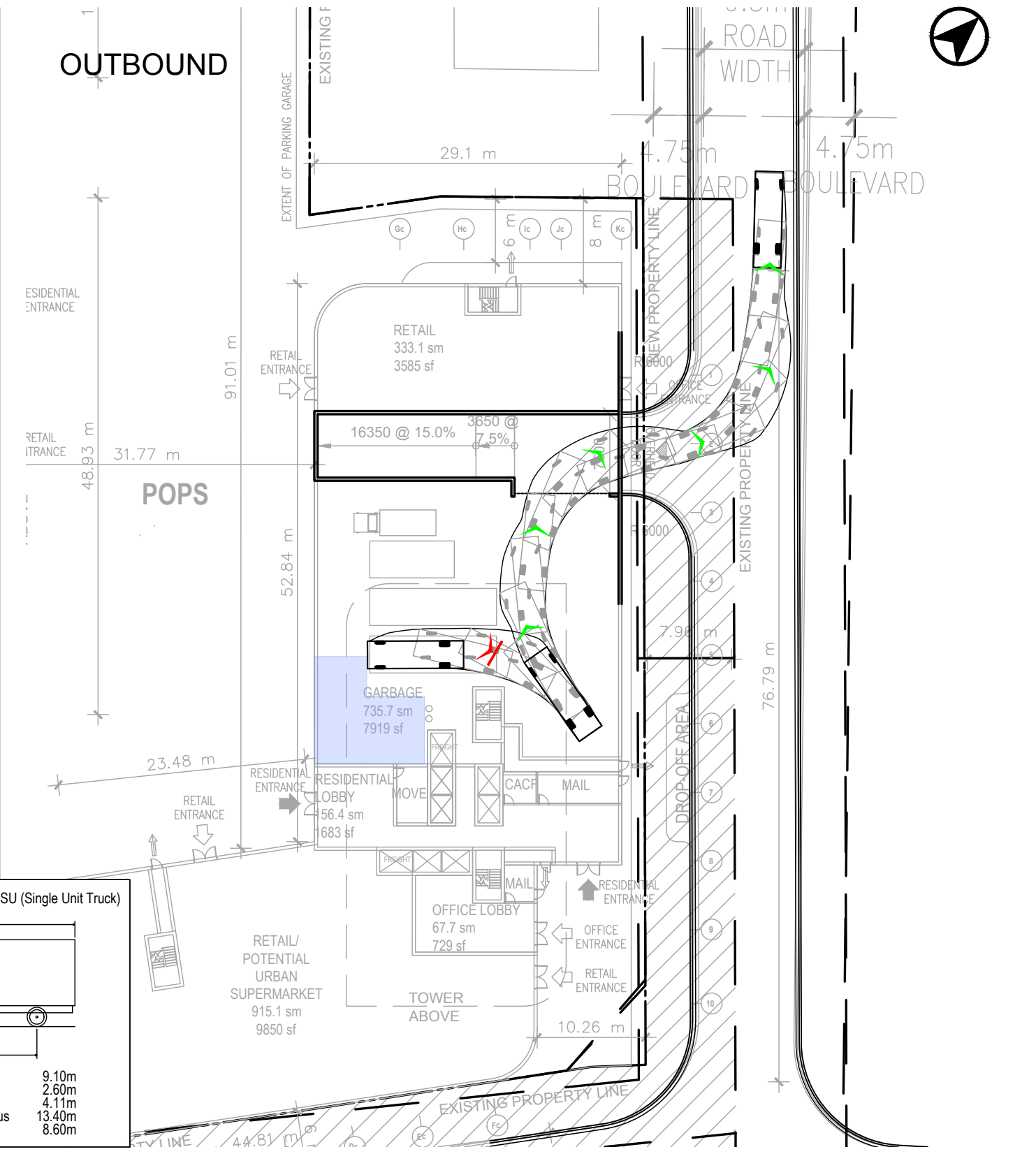
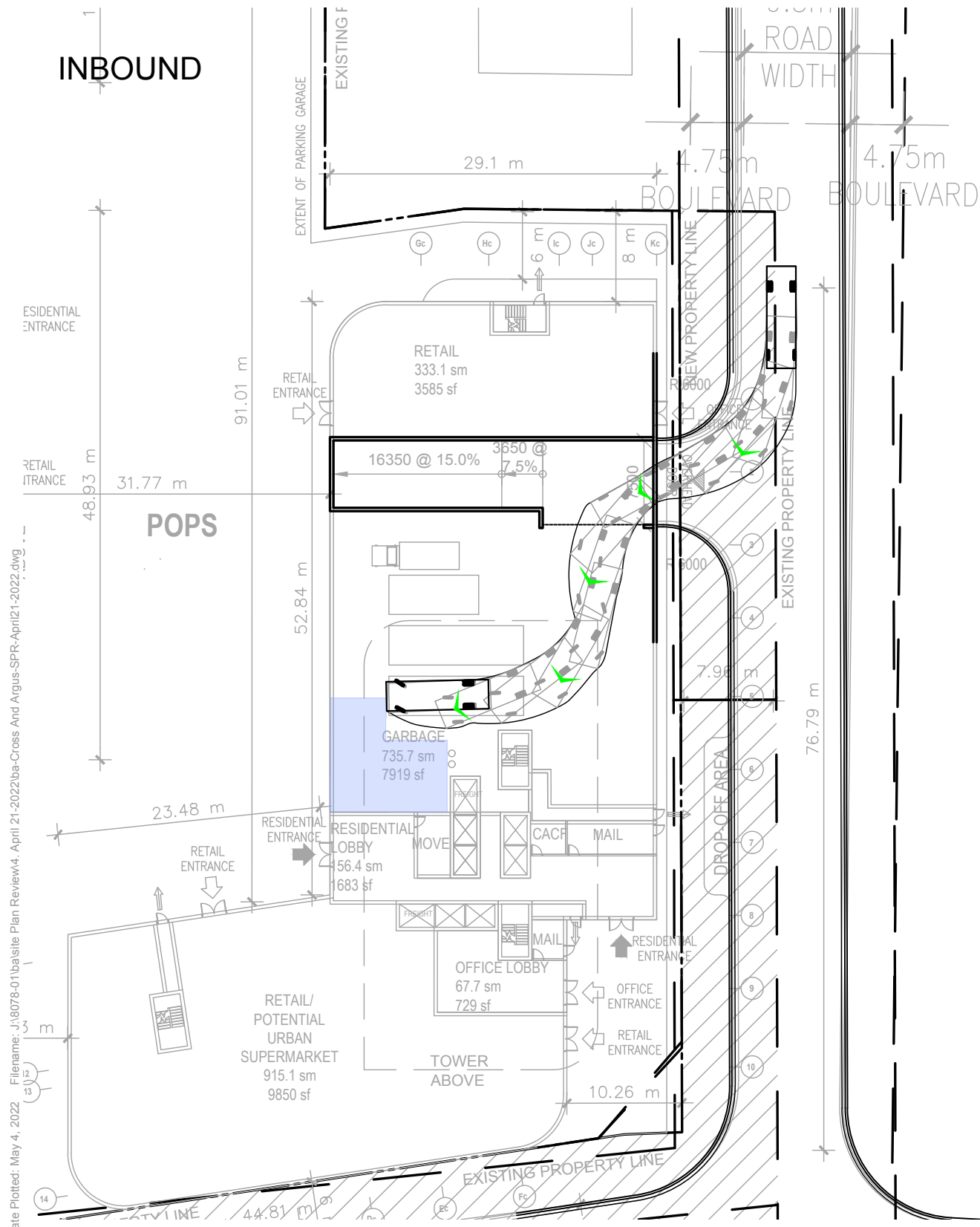


CROSS AND ARGUS
VEHICLE MANOEUVRING DIAGRAM
CUBE VAN

Project: CROSS AND ARGUS
 Project No. 8078-01
 Date: May 02, 2022
 Revised: --

Scale 1:500

Drawing No. **VMD-03**



CROSS AND ARGUS
VEHICLE MANOEUVRING DIAGRAM
SINGLE UNIT TRUCK

Project: CROSS AND ARGUS
 Project No. 8078-01
 Date: May 02, 2022
 Revised: --

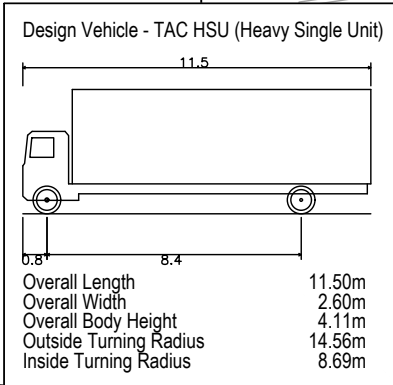
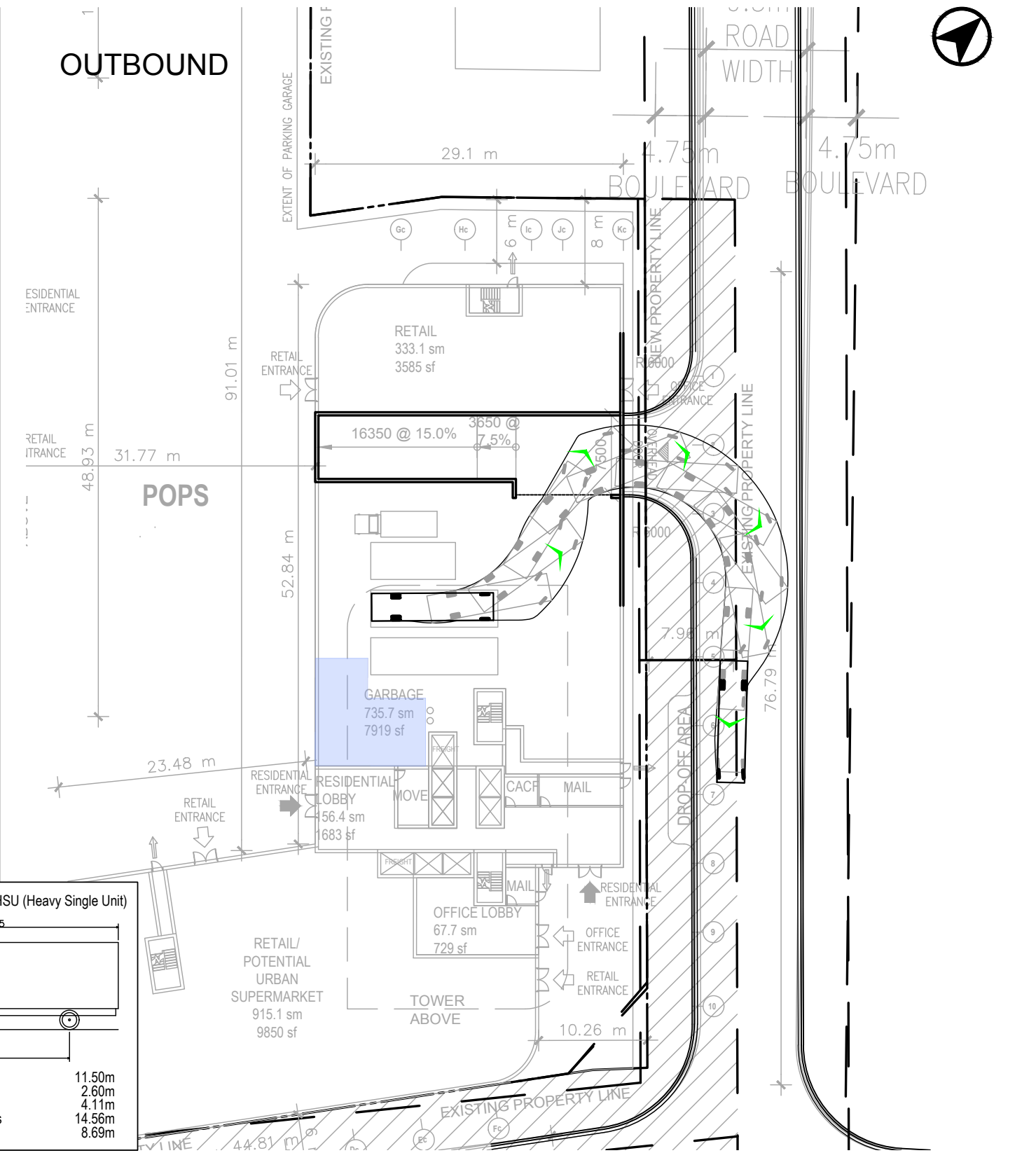
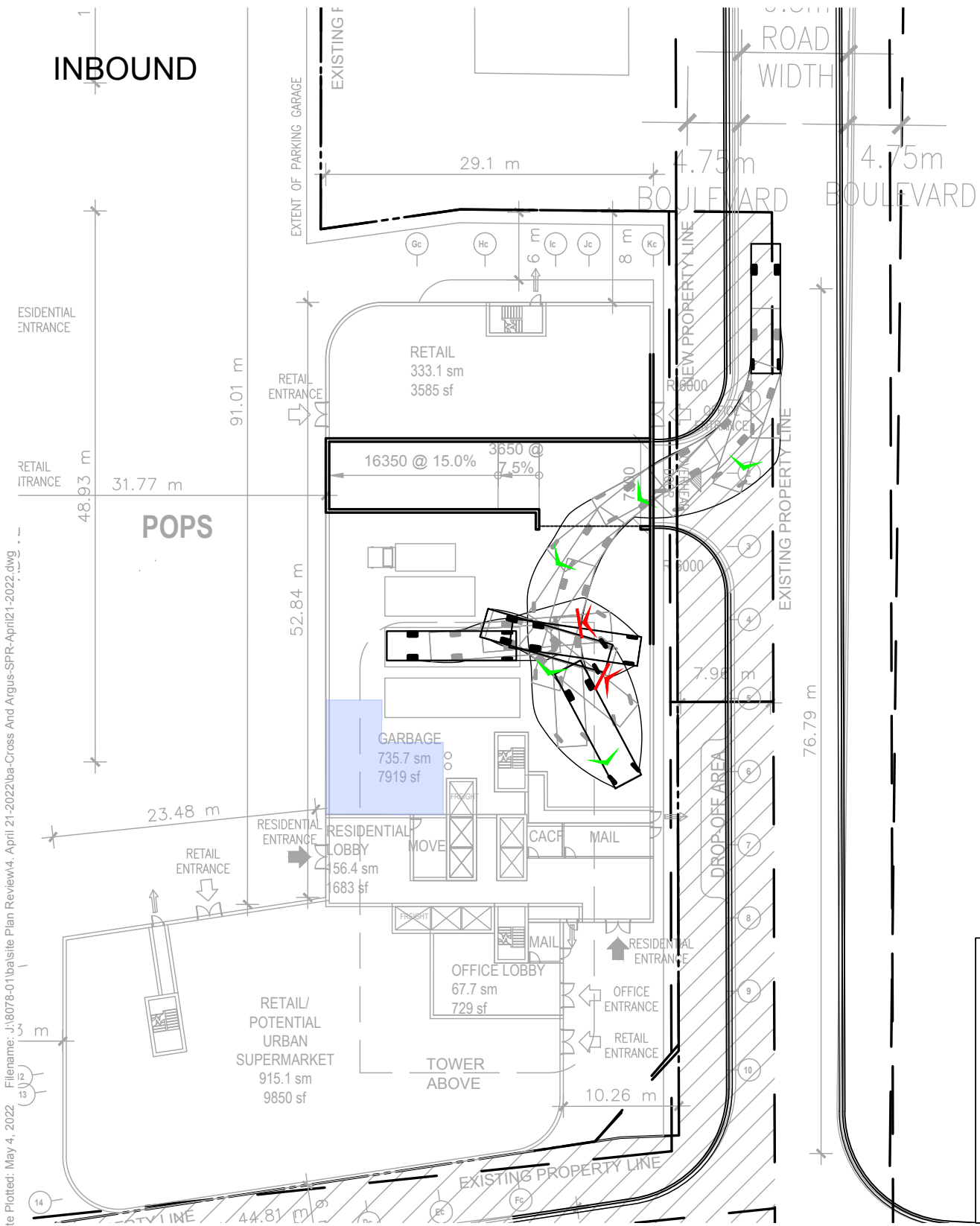


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INBOUND

OUTBOUND

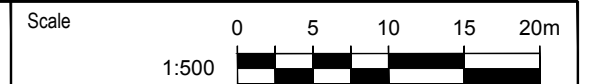


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CROSS AND ARGUS
VEHICLE MANOEUVRING DIAGRAM
HEAVY SINGLE UNIT TRUCK

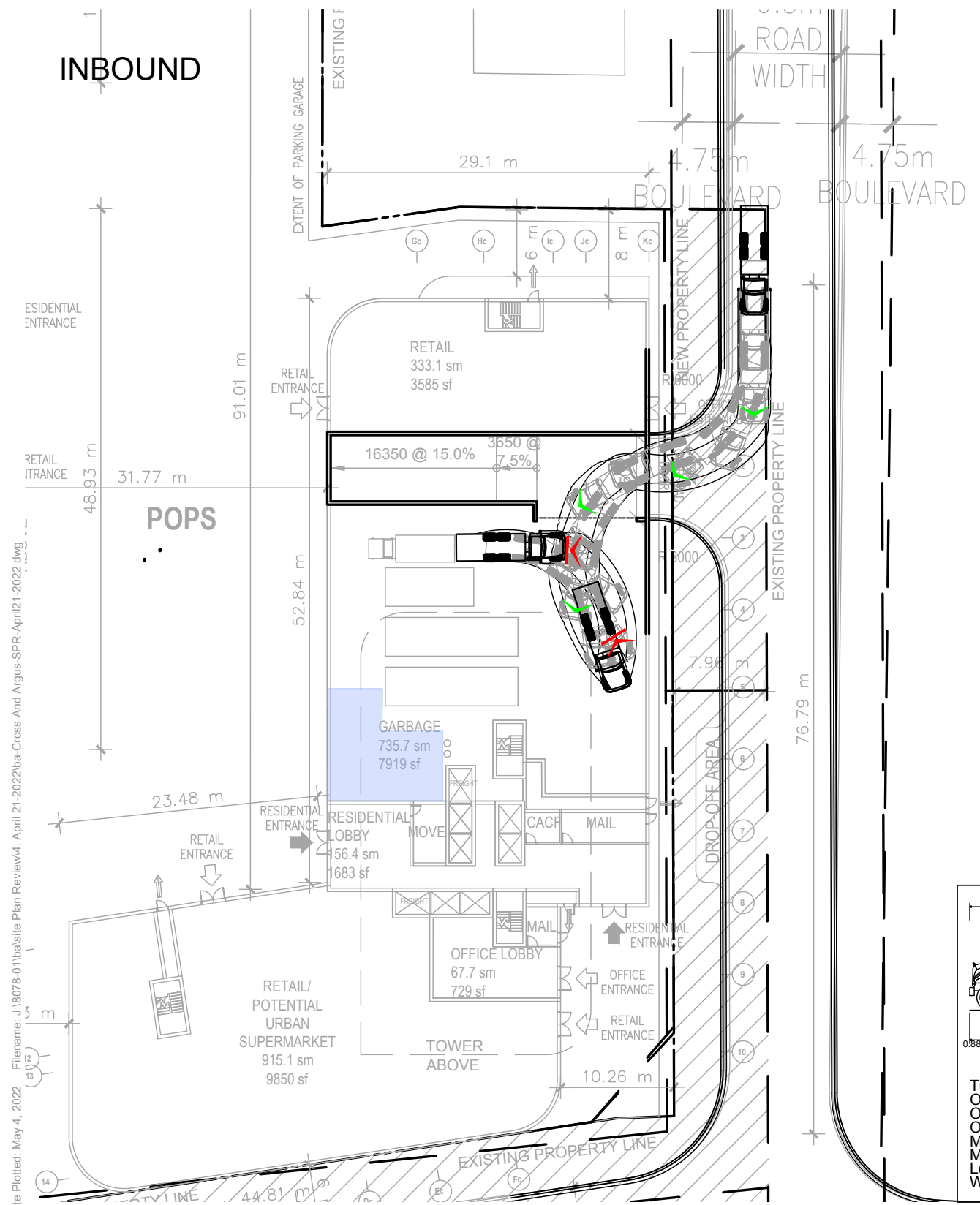
Project: CROSS AND ARGUS
Project No. 8078-01
Date: May 02, 2022
Revised: --



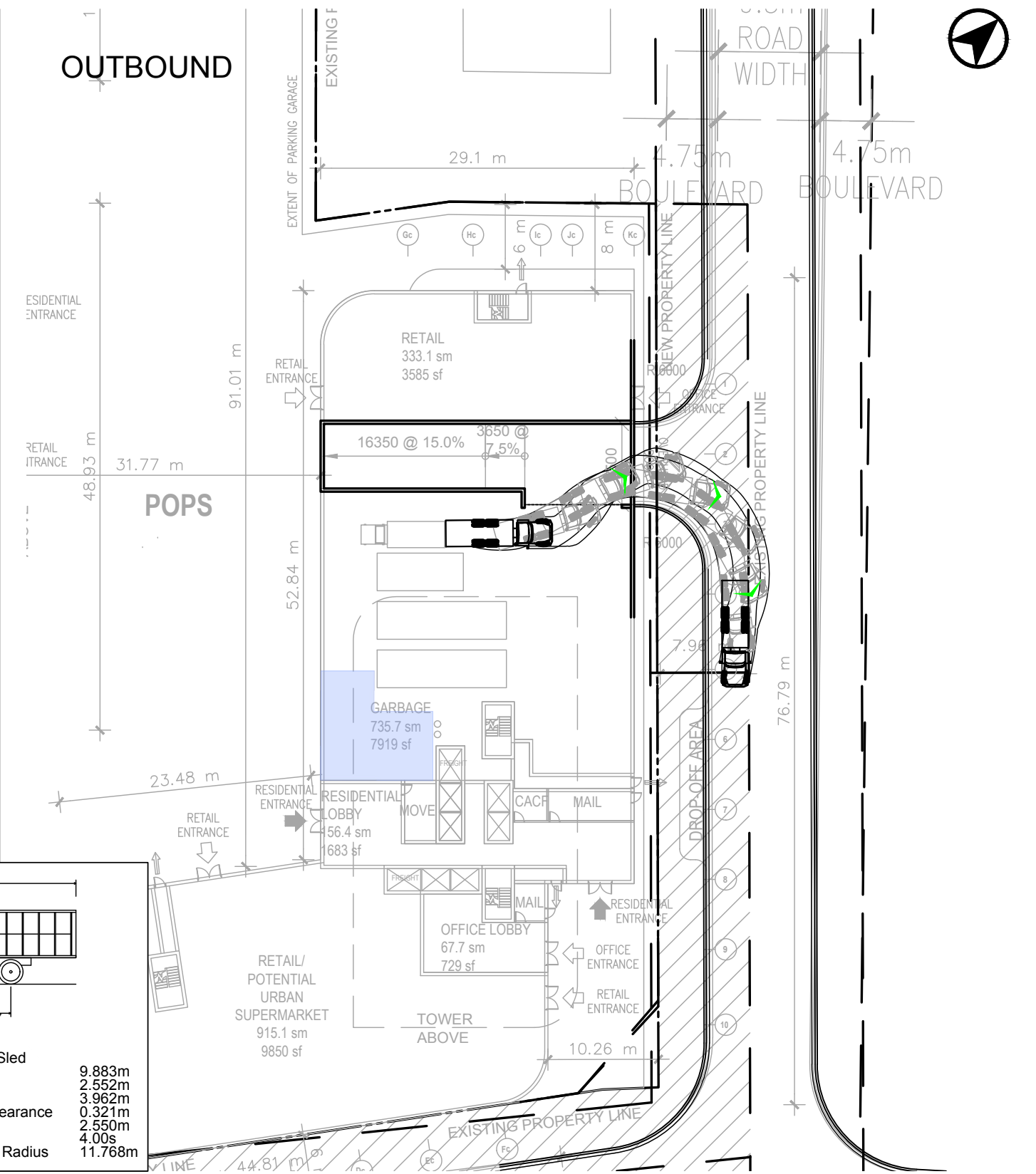
Drawing No. VMD-06

INBOUND

OUTBOUND



Turtle Island - Rear Sled
 Overall Length 9.883m
 Overall Width 2.552m
 Overall Body Height 3.962m
 Min Body Ground Clearance 0.321m
 Max Track Width 2.550m
 Lock-to-lock time 4.00s
 Wall to Wall Turning Radius 11.768m



Date Plotted: May 4, 2022 File: J:\6078-01\ba\site Plan Review\4 April 21-2022\ba-Cross And Argus-SPR-April21-2022.dwg

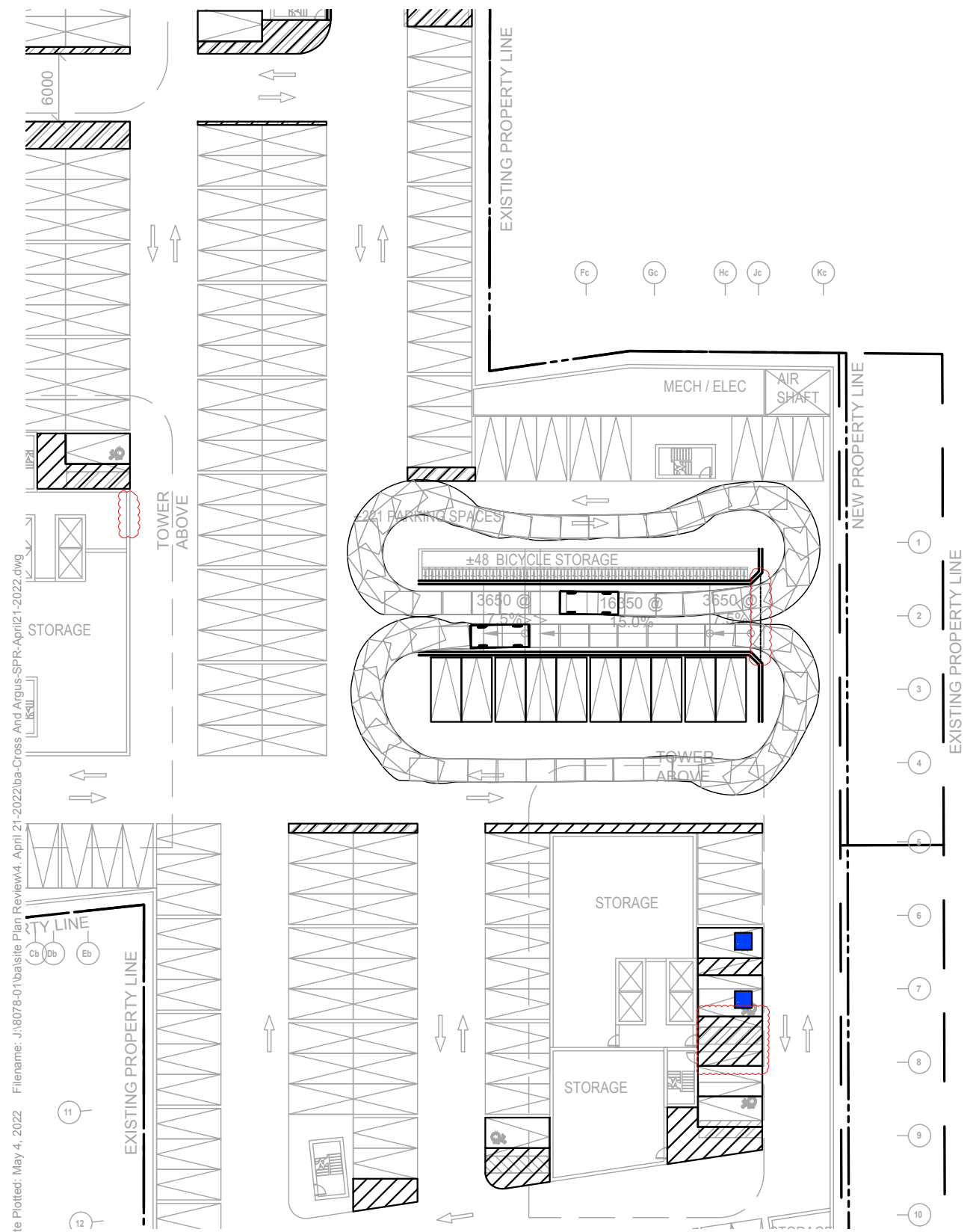


CROSS AND ARGUS
 VEHICLE MANOEUVRING DIAGRAM
 REAR SLED TURTLE ISLAND TRUCK

Project: CROSS AND ARGUS
 Project No. 8078-01
 Date: May 02, 2022
 Revised: --



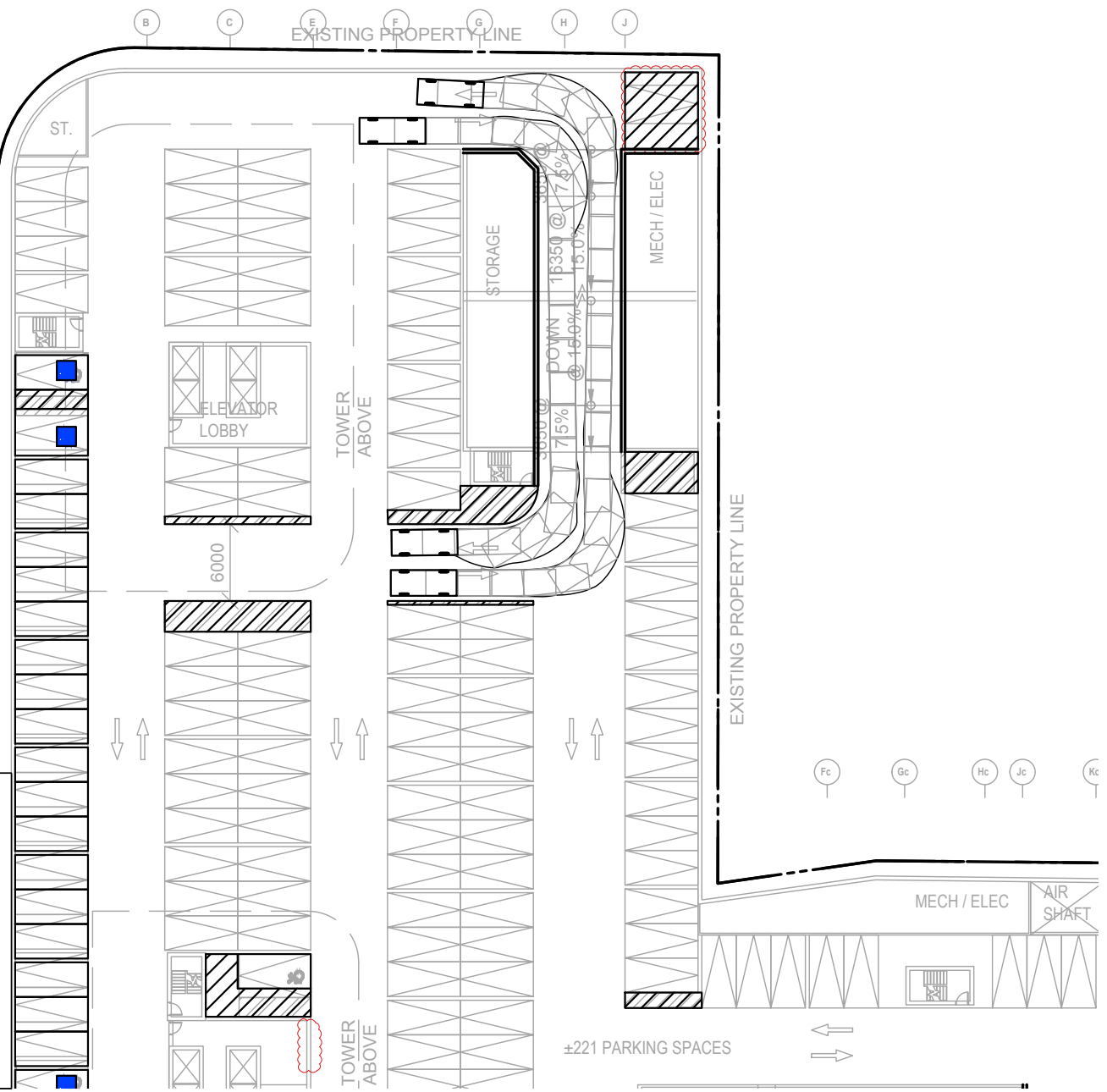
Drawing No. VMD-07



Design Vehicle - 2012 DODGE GRAND CARAVAN (95% Passenger Vehicle)

Overall Length 5.15m
 Overall Width 2.01m
 Overall Body Height 1.74m
 Outside Turning Radius *6.50m
 Inside Turning Radius *3.40m

*Field Measurements By BA Group



Date Plotted: May 4, 2022 File name: J:\8078-01\ba\site Plan Review\4 - April 21-2022\ba-Cross And Argus-SPR-April21-2022.dwg

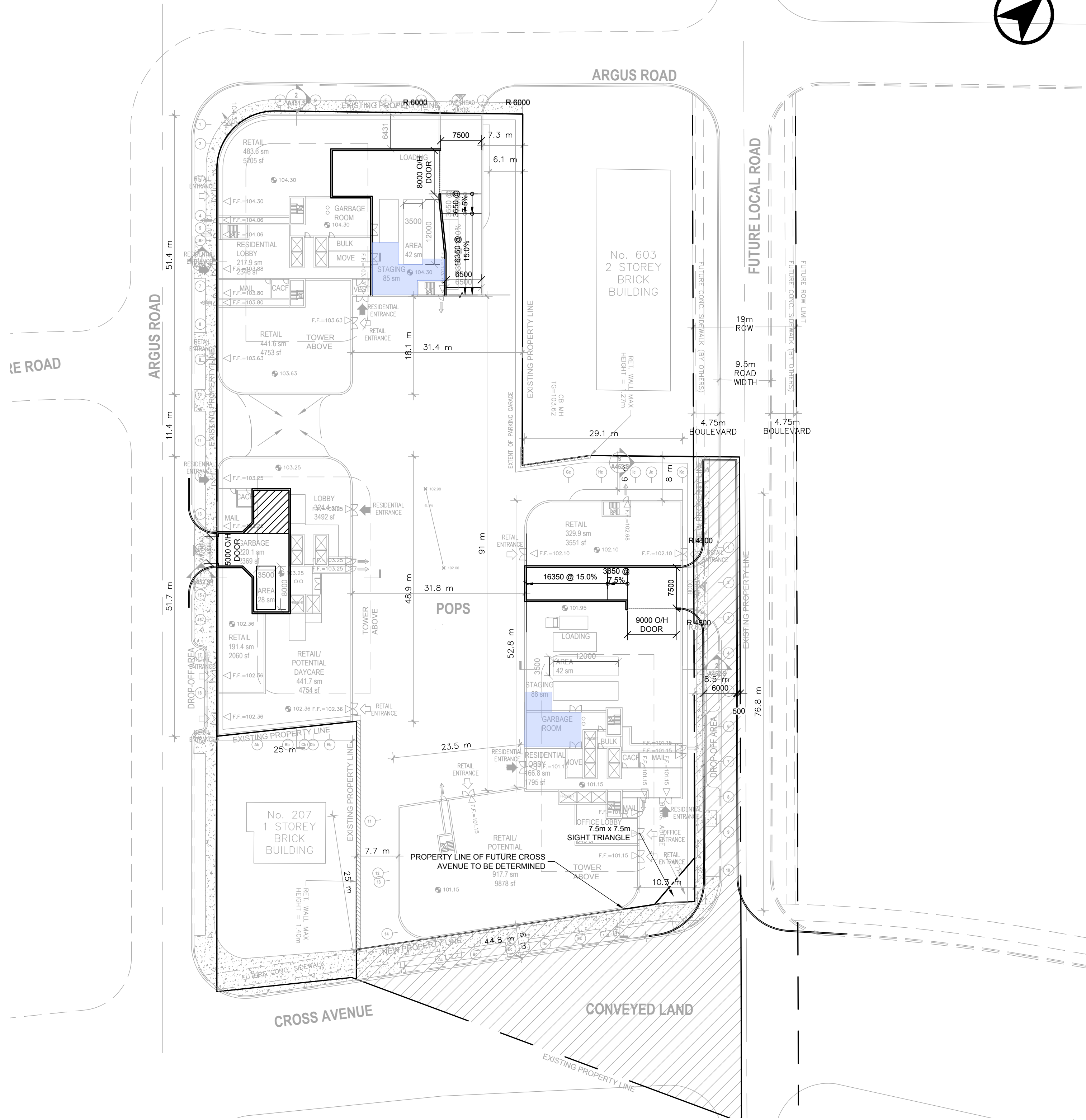
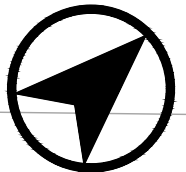


CROSS AND ARGUS
VEHICLE MANOEUVRING DIAGRAM
DODGE GRAND CARAVAN

Project: CROSS AND ARGUS
 Project No. 8078-01
 Date: May 02, 2022
 Revised: --

0 5 10 15 20m
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Drawing No. **VMD-08**



NO	MM-DD-YR	INT	REVISION NOTE
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BA Group
 BA Consulting Group Ltd.
 300 - 45 St. Clair Ave. W.
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 TEL: 416 961 7110
 EMAIL: baigroup@bagroup.com

MOVEMENT IN URBAN ENVIRONMENTS
 BAGROUP.COM

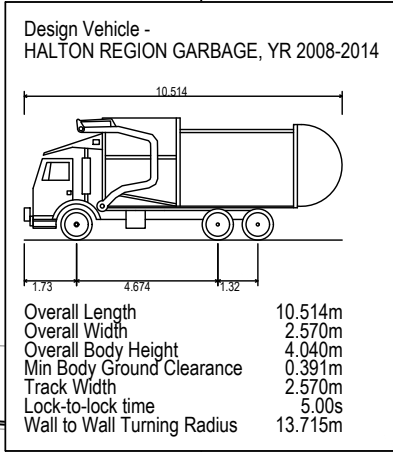
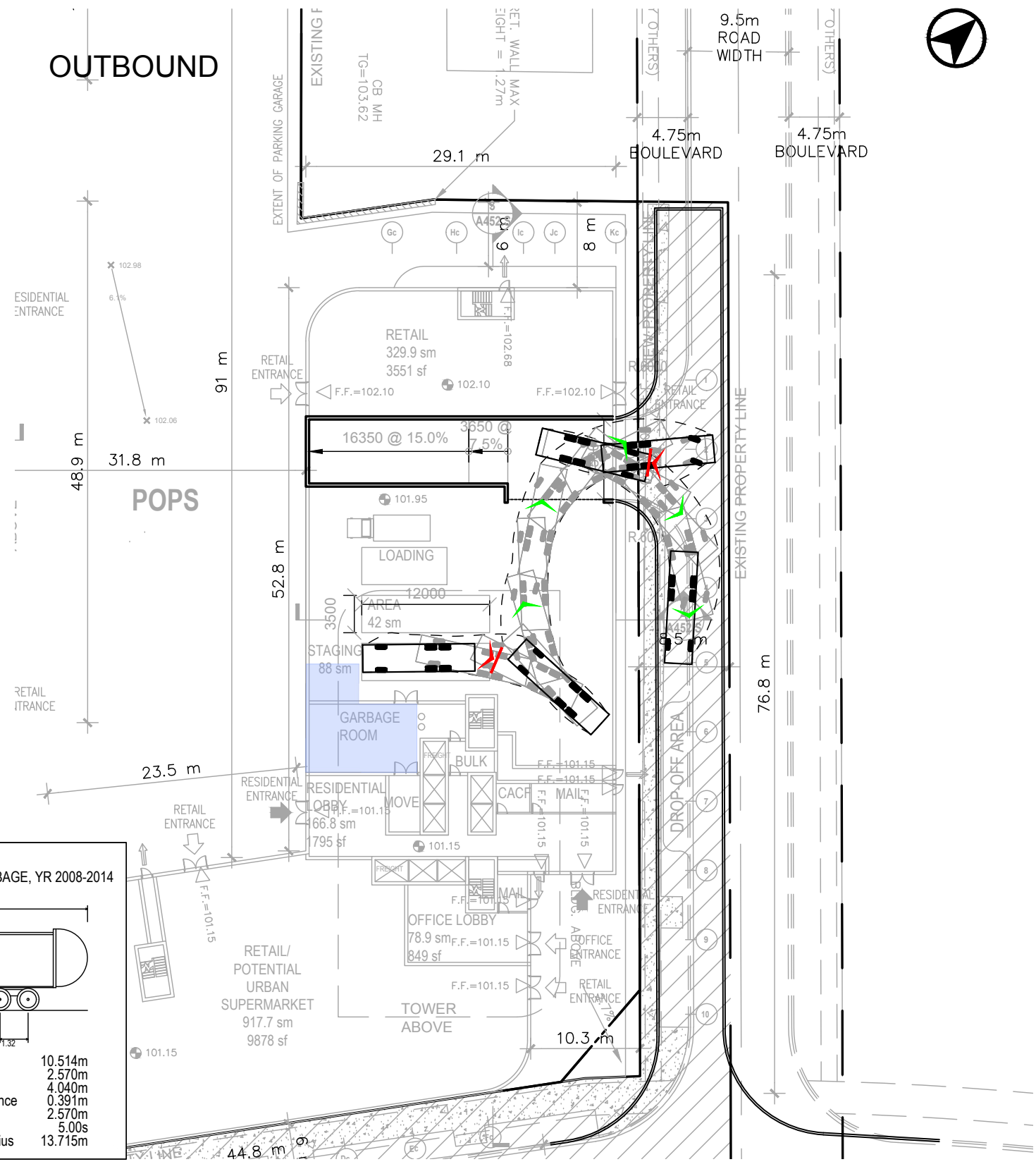
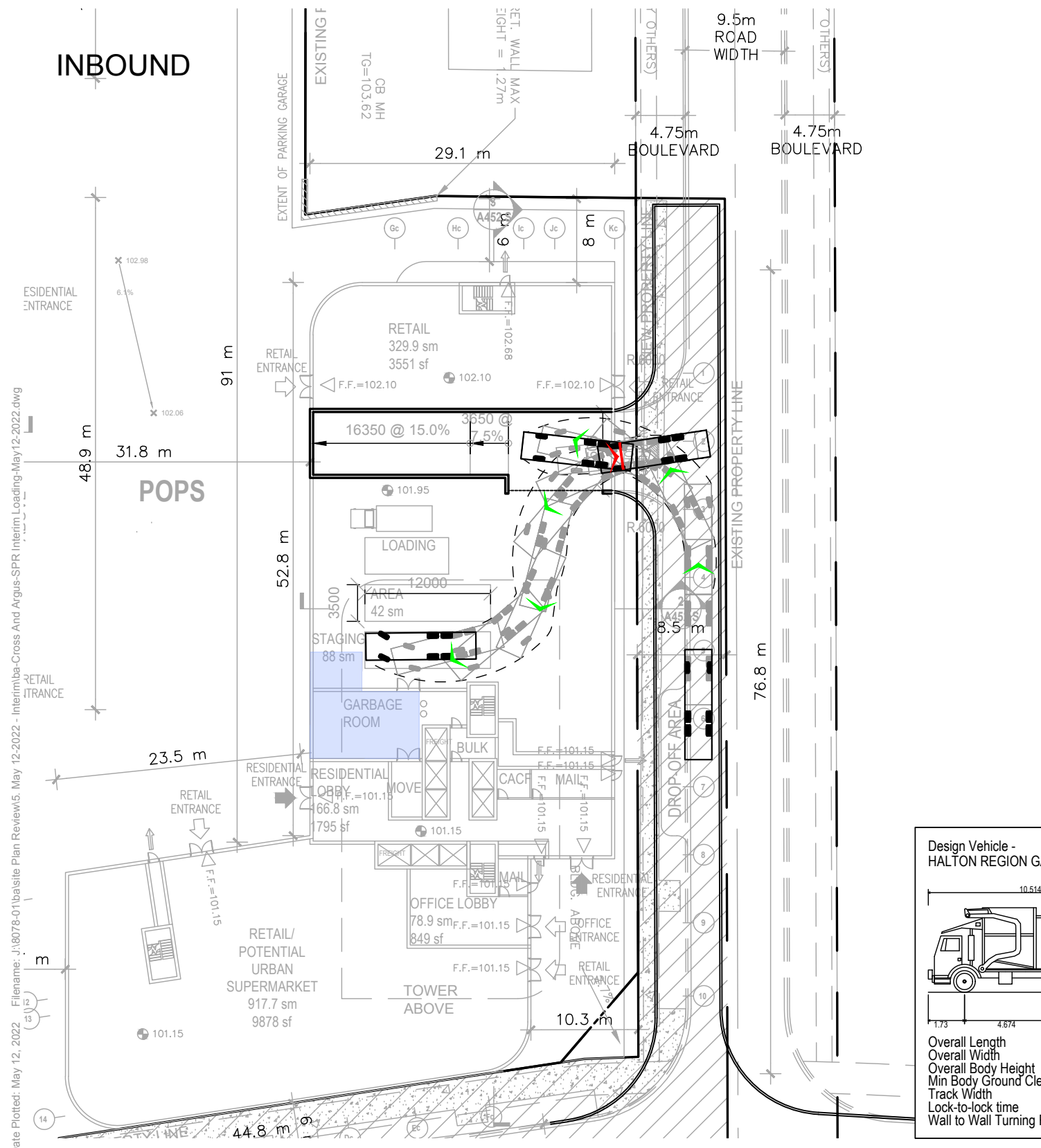
CROSS AND ARGUS

SITE PLAN REVIEW

GROUND FLOOR - INTERIM

Date: May 12, 2022
 Project No.: 8078-01
 Scale: 1:500

SPR-01



Date Plotted: May 12, 2022. Filename: J:\8078-01\ba\site Plan Review\5. May 12-2022 - Interim-Cross And Argus-SPR Interim Loading-May12-2022.dwg

INBOUND

OUTBOUND

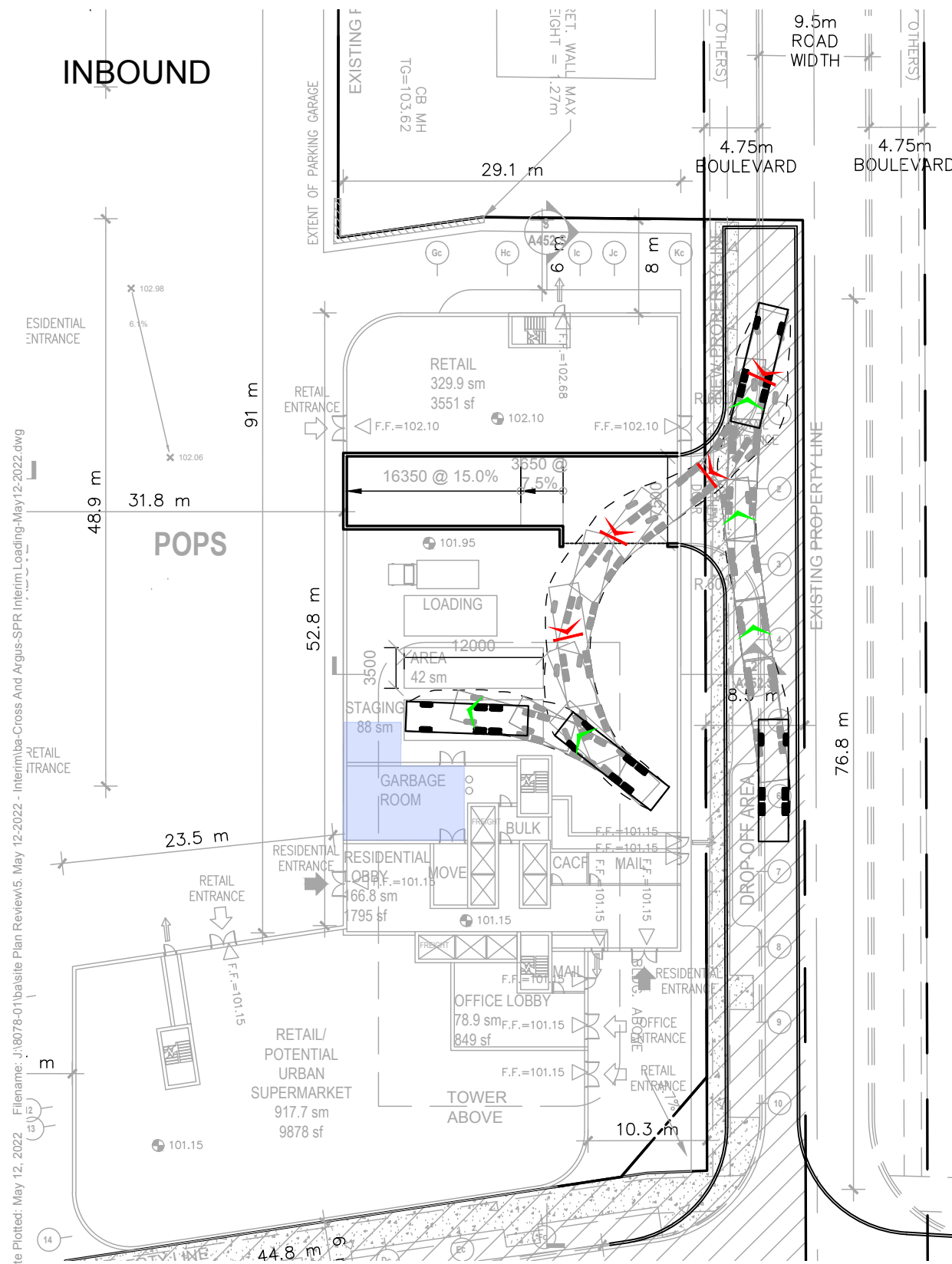


**CROSS AND ARGUS
VEHICLE MANOEUVRING DIAGRAM
HALTON REGION GARBAGE TRUCK
OPTION 1 - 1 CORRECTION**

Project: CROSS AND ARGUS
Project No. 8078-01
Date: May 12, 2022
Revised: --

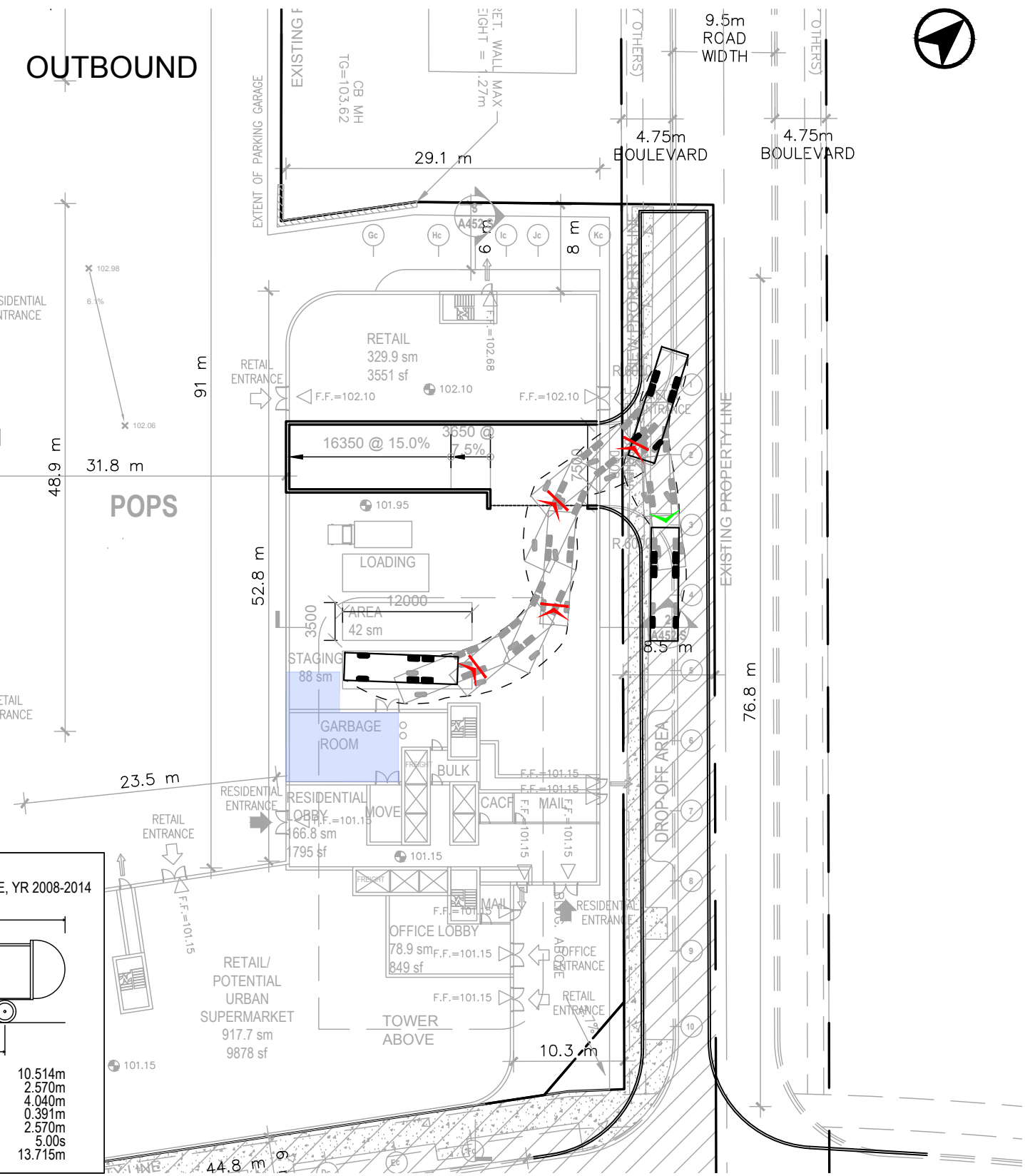
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Drawing No. **VMD-01a**



Design Vehicle - HALTON REGION GARBAGE, YR 2008-2014

Overall Length	10.514m
Overall Width	2.570m
Overall Body Height	4.040m
Min Body Ground Clearance	0.391m
Track Width	2.570m
Lock-to-lock time	5.00s
Wall to Wall Turning Radius	13.715m



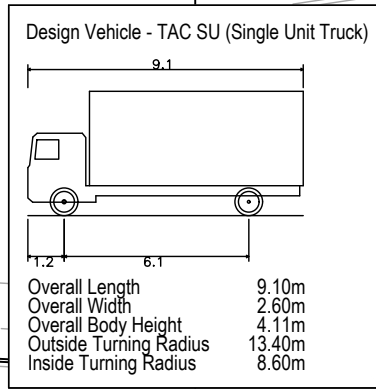
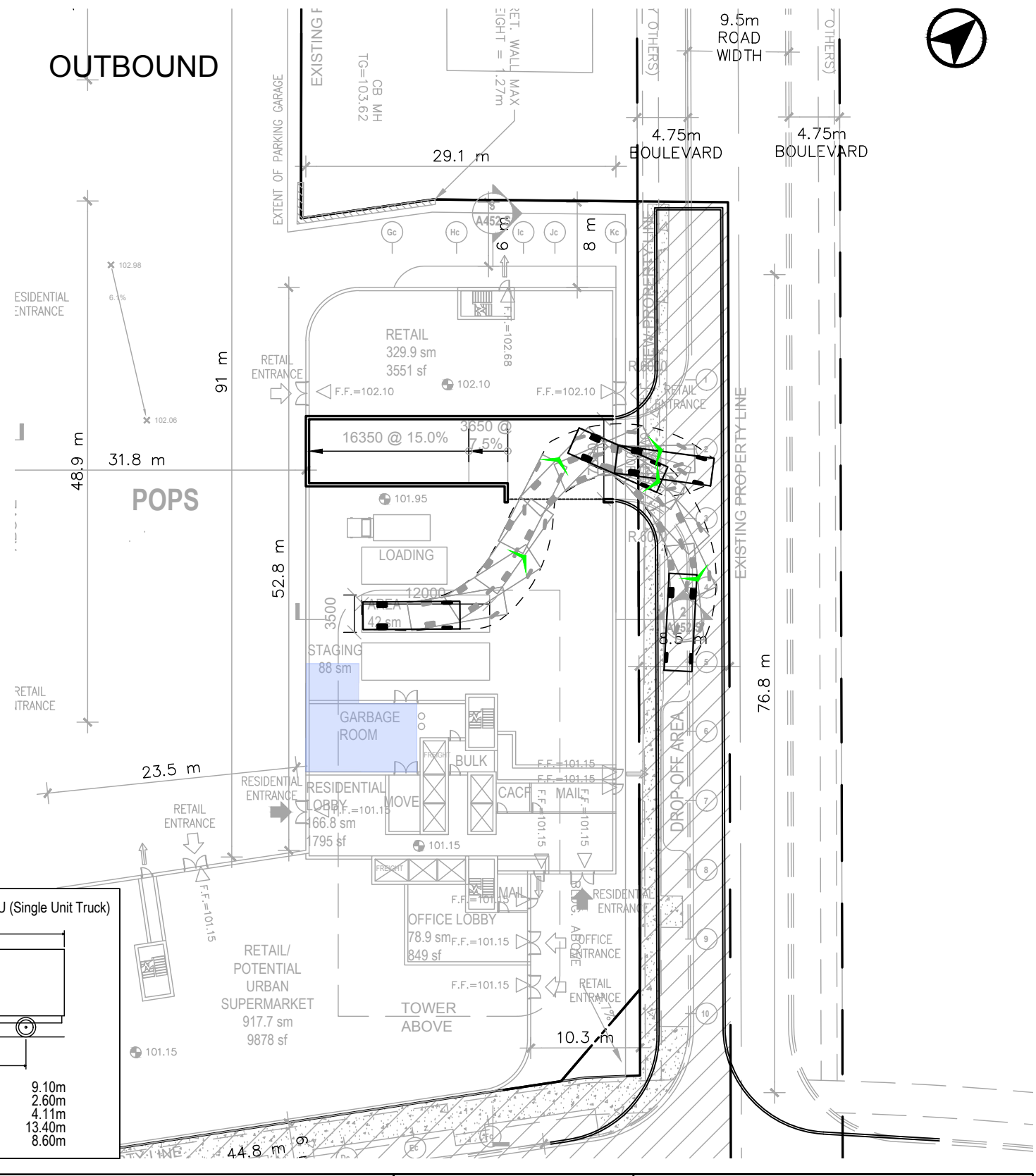
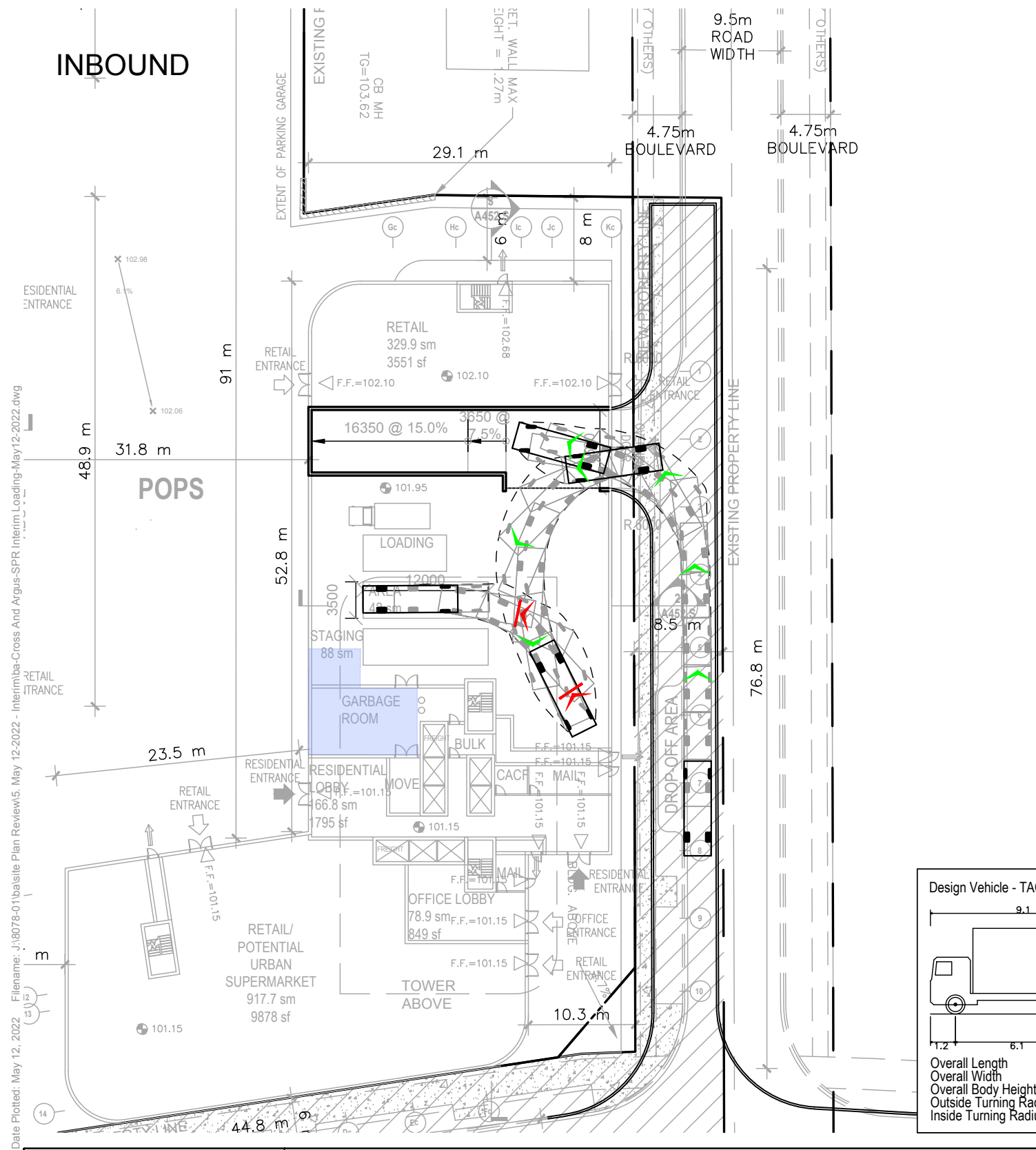
CROSS AND ARGUS
VEHICLE MANOEUVRING DIAGRAM
HALTON REGION GARBAGE TRUCK
OPTION 2 - BACKING IN AND OUT

Project: CROSS AND ARGUS
 Project No. 8078-01
 Date: May 12, 2022
 Revised: --

Scale 1:500

Drawing No. **VMD-01b**

Date Plotted: May 12, 2022. Filename: J:\8078-01\ba\site Plan Review\5. May 12-2022 - Interim-Cross And Argus-SPR Interim Loading-May12-2022.dwg



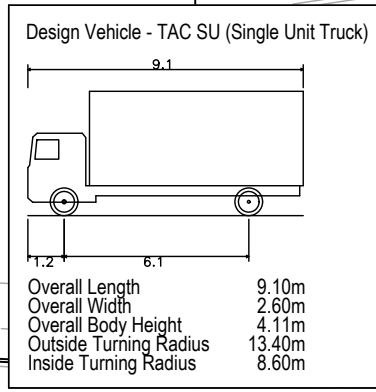
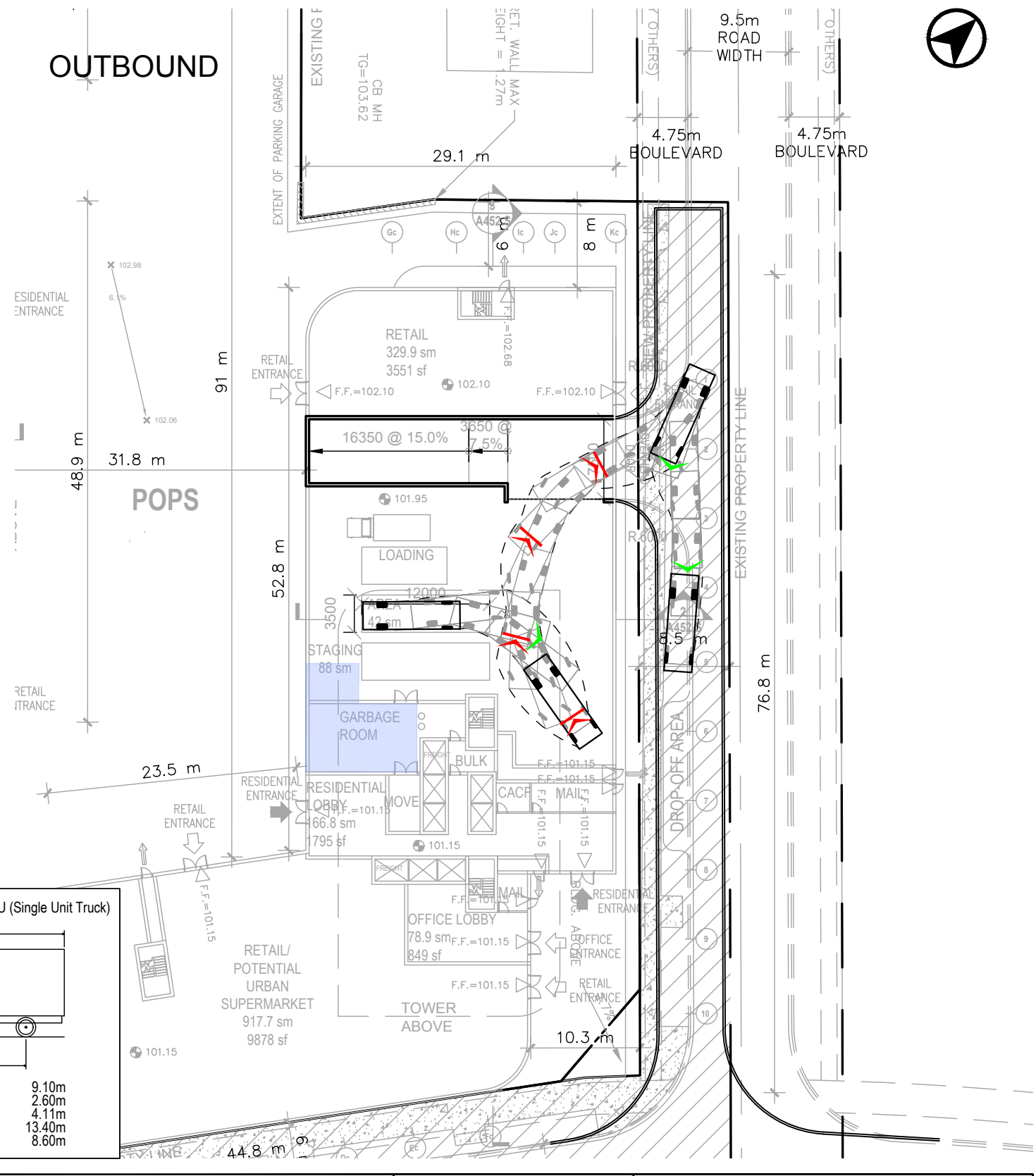
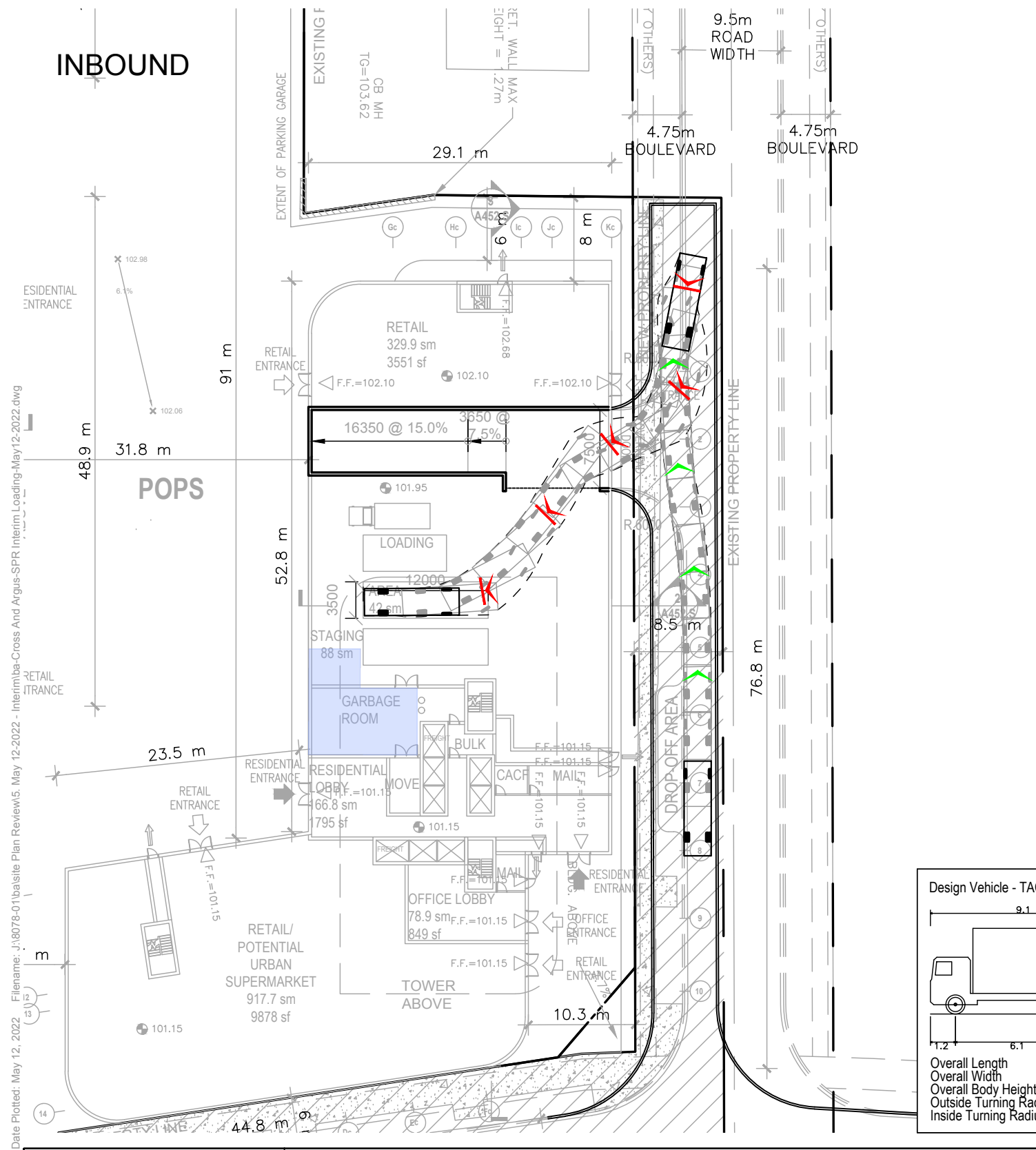
**CROSS AND ARGUS
VEHICLE MANOEUVRING DIAGRAM
SINGLE UNIT TRUCK
OPTION 1 - ONE CORRECTION**

Project: CROSS AND ARGUS
Project No. 8078-01
Date: May 12, 2022
Revised: --

Scale 1:500

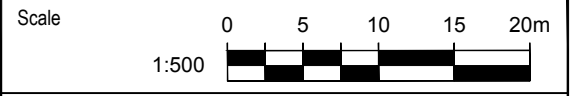
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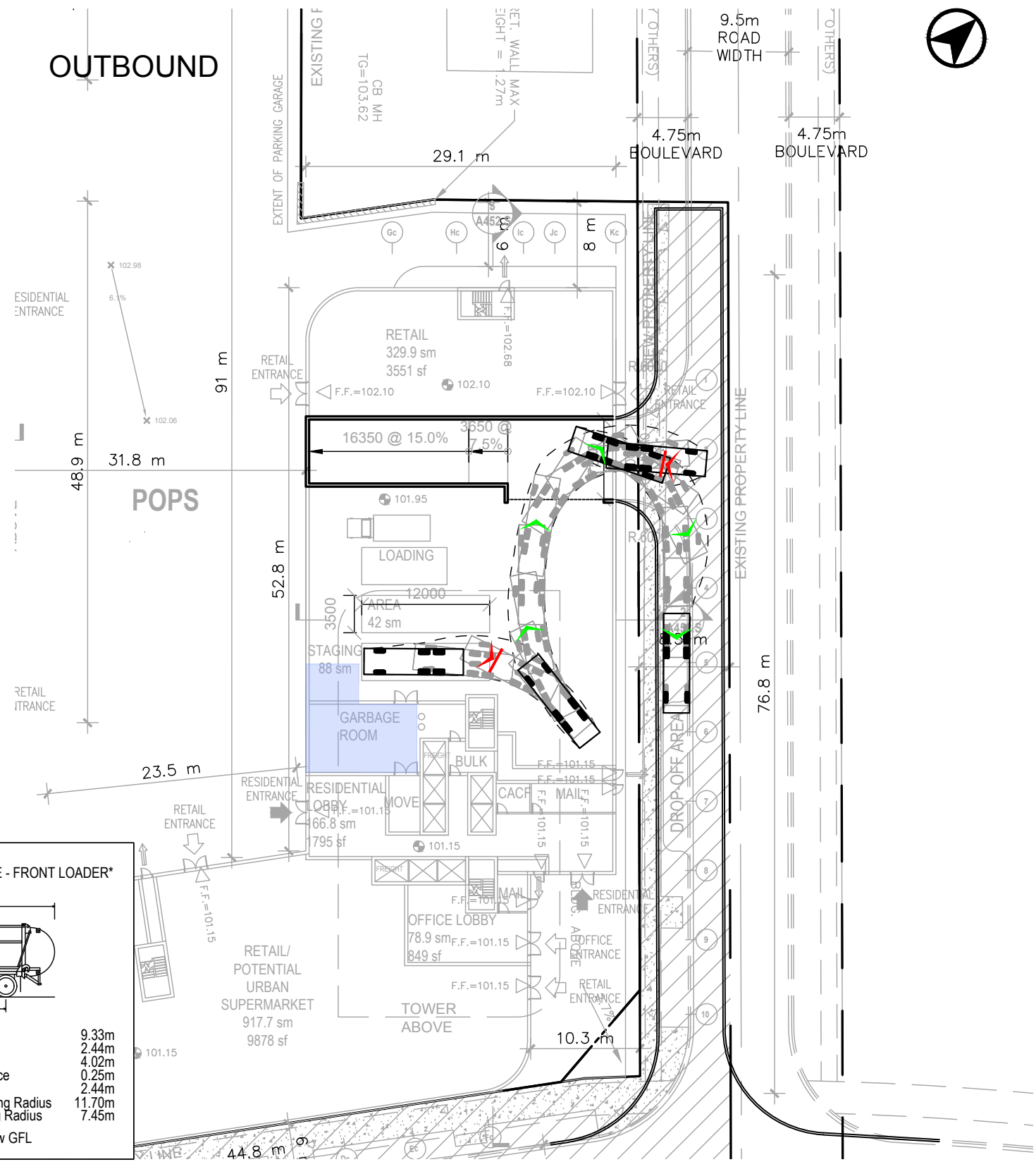
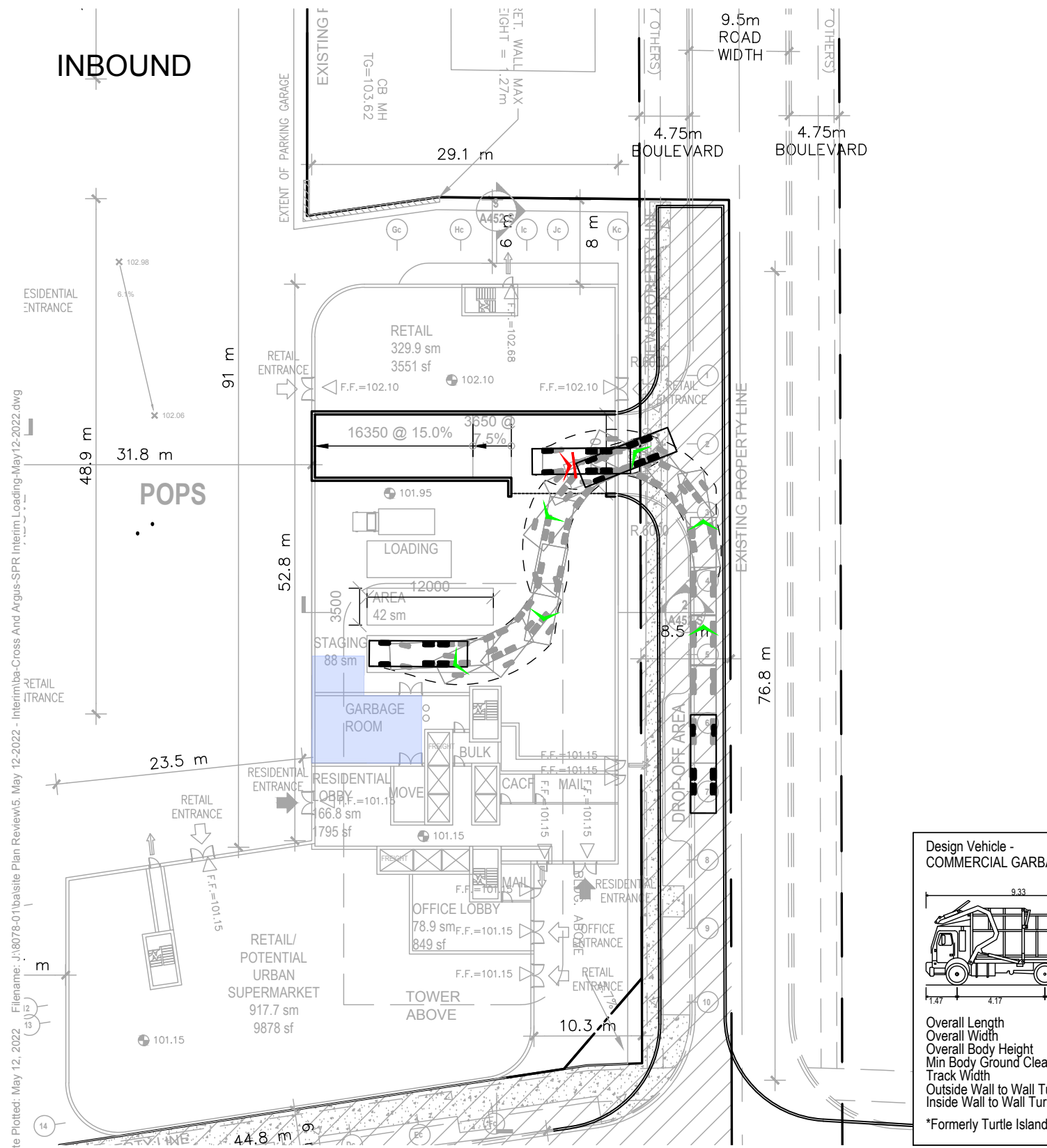
**CROSS AND ARGUS
VEHICLE MANOEUVRING DIAGRAM
SINGLE UNIT TRUCK
OPTION 2 - BACKING IN AND OUT**

Project: CROSS AND ARGUS
Project No. 8078-01
Date: May 12, 2022
Revised: --



Drawing No. **VMD-02b**

Date Plotted: May 12, 2022. Filename: J:\8078-01\ba\site Plan Review\5. May 12-2022 - Interim-Cross And Argus-SPR Interim Loading-May12-2022.dwg



**Design Vehicle -
COMMERCIAL GARBAGE - FRONT LOADER***

Overall Length	9.33m
Overall Width	2.44m
Overall Body Height	4.02m
Min Body Ground Clearance	0.25m
Track Width	2.44m
Outside Wall to Wall Turning Radius	11.70m
Inside Wall to Wall Turning Radius	7.45m

*Formerly Turtle Island now GFL



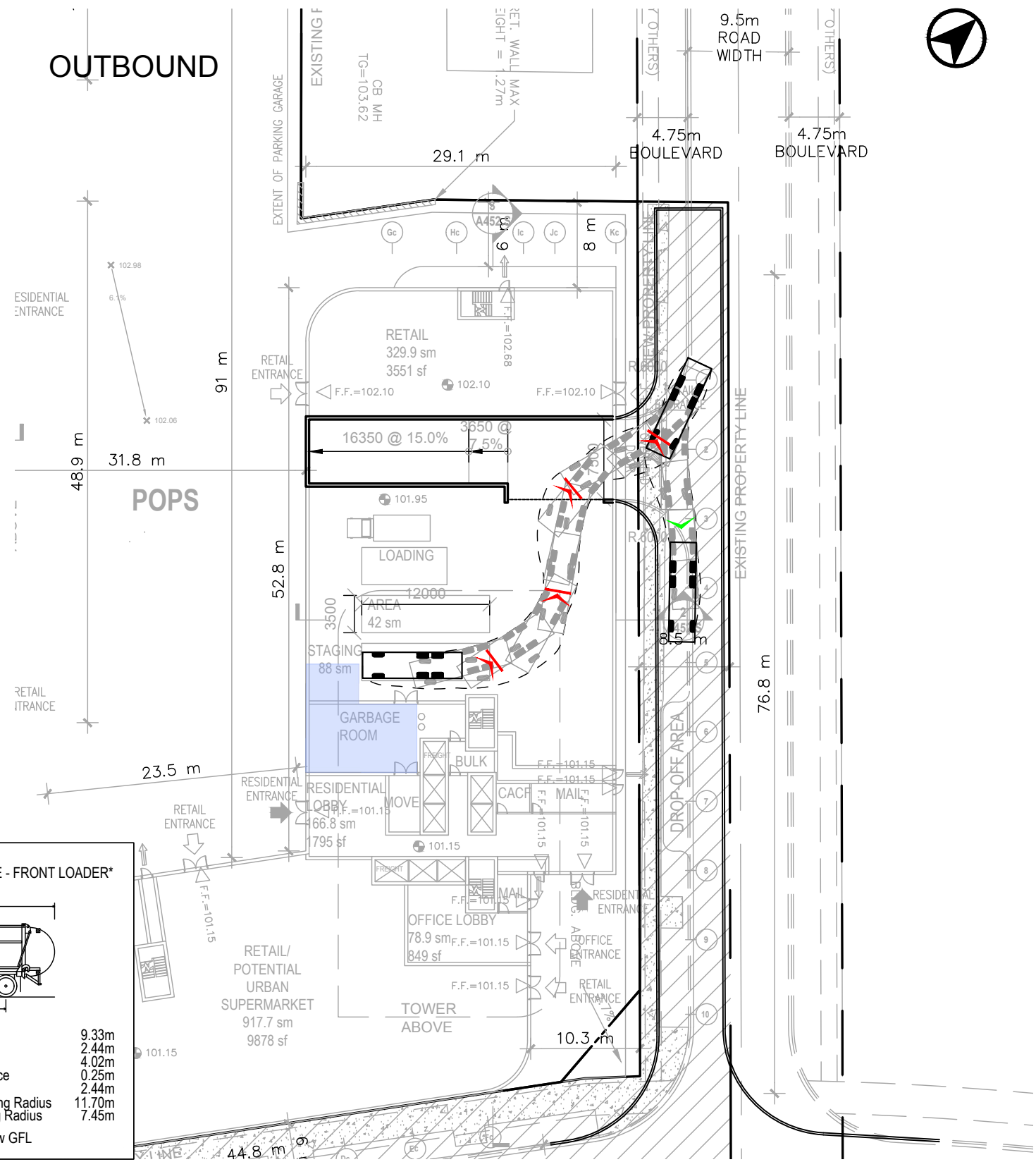
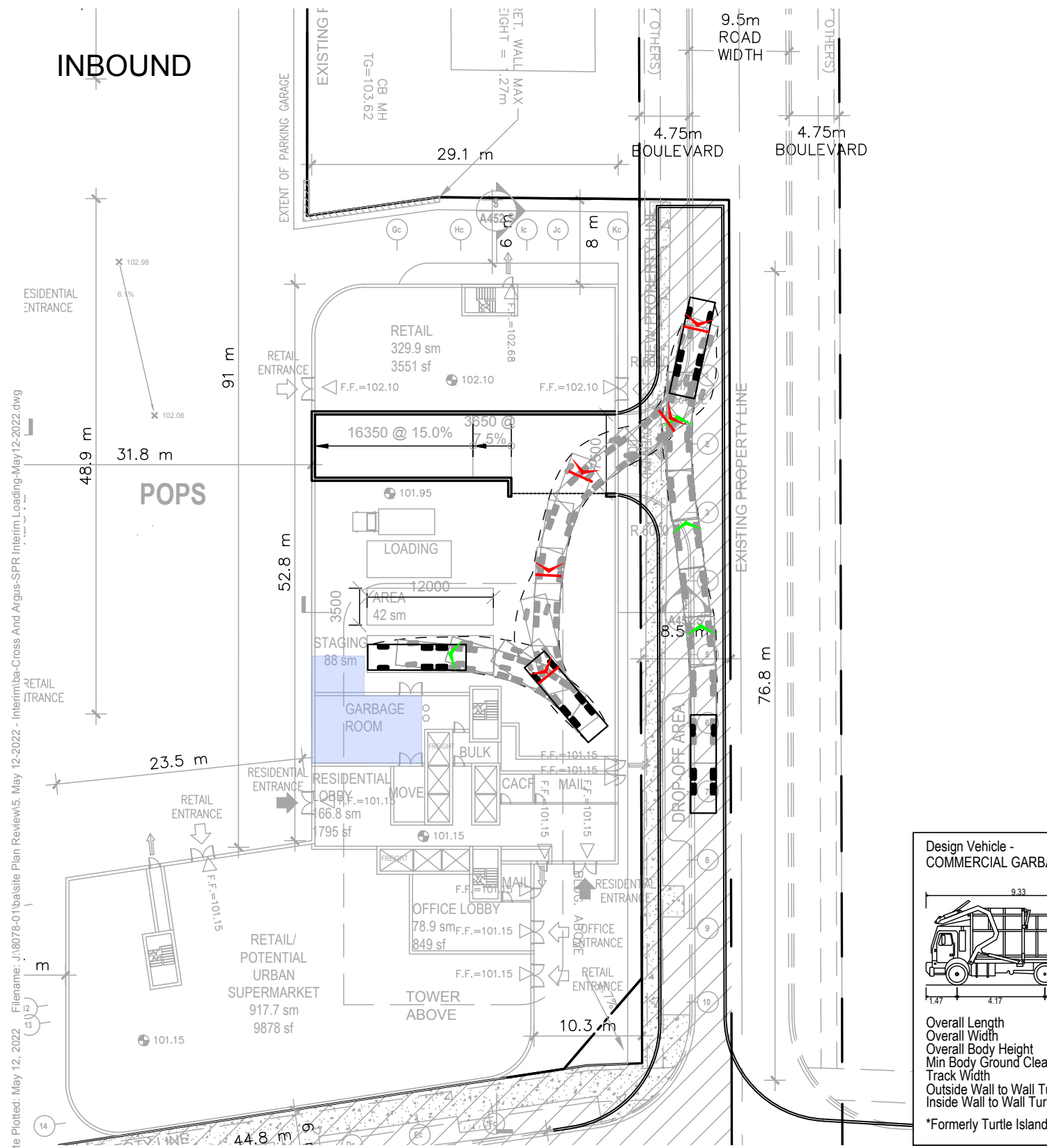
**CROSS AND ARGUS
VEHICLE MANOEUVRING DIAGRAM
TURTLE ISLAND TRUCK
OPTION 1 - ONE CORRECTION**

Project: CROSS AND ARGUS
Project No. 8078-01
Date: May 12, 2022
Revised: --

Scale 1:500

Drawing No. **VMD-03a**

Date Plotted: May 12, 2022. Filename: J:\8078-01\ba\site Plan Review\5. May 12-2022 - Interim-Cross And Argus-SPR Interim Loading-May12-2022.dwg



Design Vehicle - COMMERCIAL GARBAGE - FRONT LOADER*

Overall Length	9.33m
Overall Width	2.44m
Overall Body Height	4.02m
Min Body Ground Clearance	0.25m
Track Width	2.44m
Outside Wall to Wall Turning Radius	11.70m
Inside Wall to Wall Turning Radius	7.45m

*Formerly Turtle Island now GFL



**CROSS AND ARGUS
VEHICLE MANOEUVRING DIAGRAM
TURTLE ISLAND TRUCK
OPTION 2 - BACKING IN AND OUT**

Project: CROSS AND ARGUS
Project No. 8078-01
Date: May 12, 2022
Revised: --

Scale 1:500

Drawing No. **VMD-03b**

Date Plotted: May 12, 2022. Filename: J:\8078-01\ba\site Plan Review\5. May 12-2022 - Interim-Cross And Argus-SPR Interim Loading-May12-2022.dwg

Appendix E

ITE Internal Capture Calculations



NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	210403 - 571 Argus Road	Organization:	Paradigm Transportation Solutions Limited
Project Location:	Oakville	Performed By:	
Scenario Description:		Date:	
Analysis Year:	Site Generated Traffic	Checked By:	
Analysis Period:	AM Street Peak Hour	Date:	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips		
	ITE LUCs ¹	Quantity	Units	Total	Entering	Exiting
Office	710	23,575	Square Feet	36	32	4
Retail	820	15,569	Square Feet	37	22	15
Restaurant				0		
Cinema/Entertainment				0		
Residential	222	1,748	Units	385	42	343
Hotel				0		
All Other Land Uses ²				0		
Total				458	96	362

Table 2-A: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses ²						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	0	0	0	0
Retail	1		0	0	1	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	3	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	458	96	362
Internal Capture Percentage	3%	7%	2%
External Vehicle-Trips ³	444	89	355
External Transit-Trips ⁴	0	0	0
External Non-Motorized Trips ⁴	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	6%	25%
Retail	18%	13%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	2%	1%
Hotel	N/A	N/A

¹Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

²Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

³Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

⁴Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	210403 - 571 Argus Road
Analysis Period:	AM Street Peak Hour

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	32	32	1.00	4	4
Retail	1.00	22	22	1.00	15	15
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	42	42	1.00	343	343
Hotel	1.00	0	0	1.00	0	0

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	3	0	0	0
Retail	4		2	0	2	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	7	3	69	0		0
Hotel	0	0	0	0	0	

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		7	0	0	0	0
Retail	1		0	0	1	0
Restaurant	4	2		0	2	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	4	0	0		0
Hotel	1	1	0	0	0	

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	2	30	32	30	0	0
Retail	4	18	22	18	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	41	42	41	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	0	0	0	0	0

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	1	3	4	3	0	0
Retail	2	13	15	13	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	4	339	343	339	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	0	0	0	0	0

¹Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A
²Person-Trips
³Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator
*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	210403 - 571 Argus Road	Organization:	Paradigm Transportation Solutions Limited
Project Location:	Oakville	Performed By:	
Scenario Description:		Date:	
Analysis Year:	Site Generated Traffic	Checked By:	
Analysis Period:	PM Street Peak Hour	Date:	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips		
	ITE LUCs ¹	Quantity	Units	Total	Entering	Exiting
Office	710	23,575	Square Feet	34	6	28
Retail	820	15,569	Square Feet	104	52	52
Restaurant				0		
Cinema/Entertainment				0		
Residential	222	1,748	Units	334	229	105
Hotel				0		
All Other Land Uses ²				0		
Total				472	287	185

Table 2-P: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses ²						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		4	0	0	1	0
Retail	1		0	0	14	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	3	5	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	472	287	185
Internal Capture Percentage	12%	10%	15%
External Vehicle-Trips ³	416	259	157
External Transit-Trips ⁴	0	0	0
External Non-Motorized Trips ⁴	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	67%	18%
Retail	17%	29%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	7%	8%
Hotel	N/A	N/A

¹Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

²Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

³Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

⁴Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	210403 - 571 Argus Road
Analysis Period:	PM Street Peak Hour

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends						
Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	6	6	1.00	28	28
Retail	1.00	52	52	1.00	52	52
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	229	229	1.00	105	105
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		6	1	0	1	0
Retail	1		15	2	14	3
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	4	44	22	0		3
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		4	0	0	9	0
Retail	2		0	0	105	0
Restaurant	2	26		0	37	0
Cinema/Entertainment	0	2	0		9	0
Residential	3	5	0	0		0
Hotel	0	1	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)						
Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	4	2	6	2	0	0
Retail	9	43	52	43	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	15	214	229	214	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)						
Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	5	23	28	23	0	0
Retail	15	37	52	37	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	8	97	105	97	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	0	0	0	0	0

¹Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

²Person-Trips

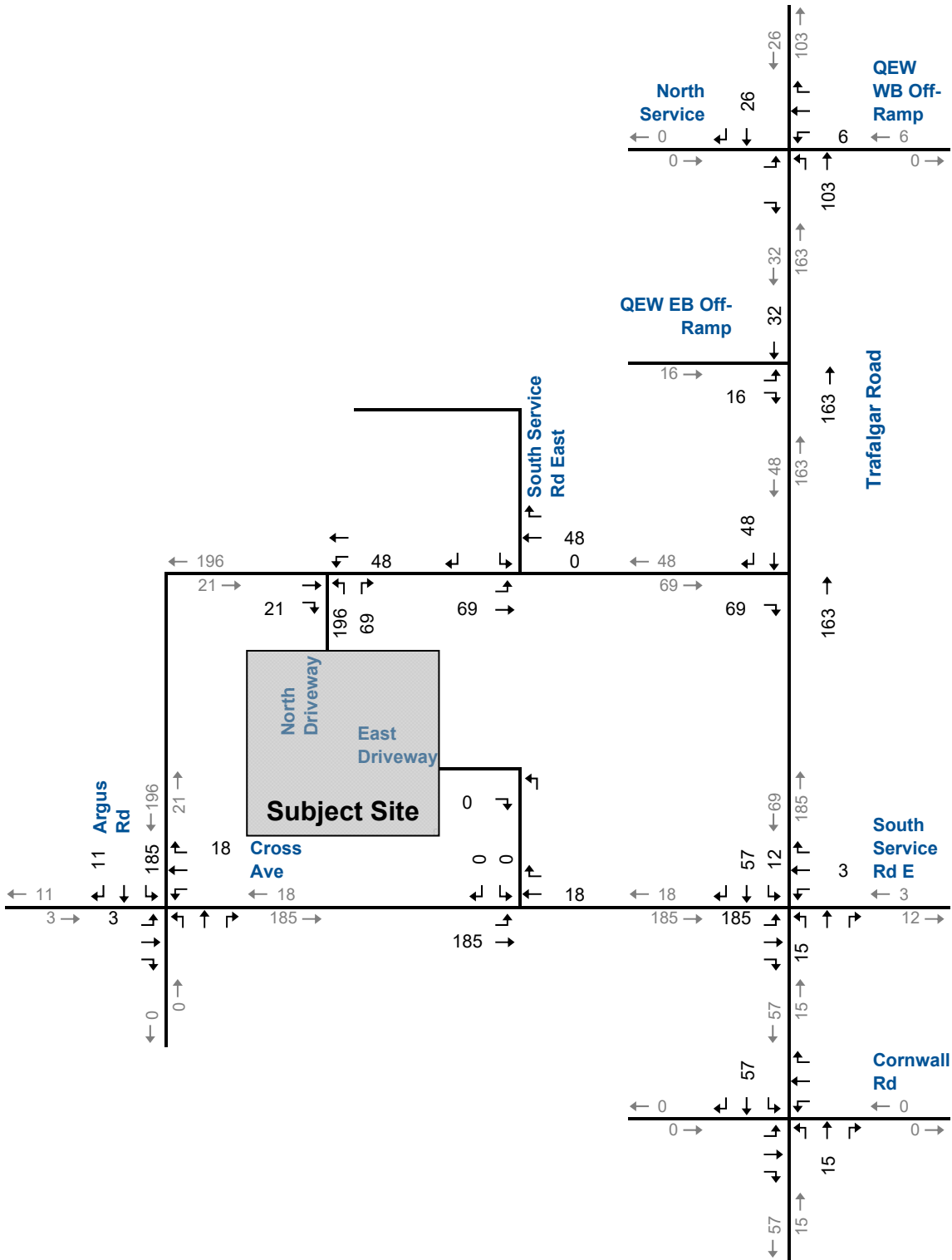
³Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

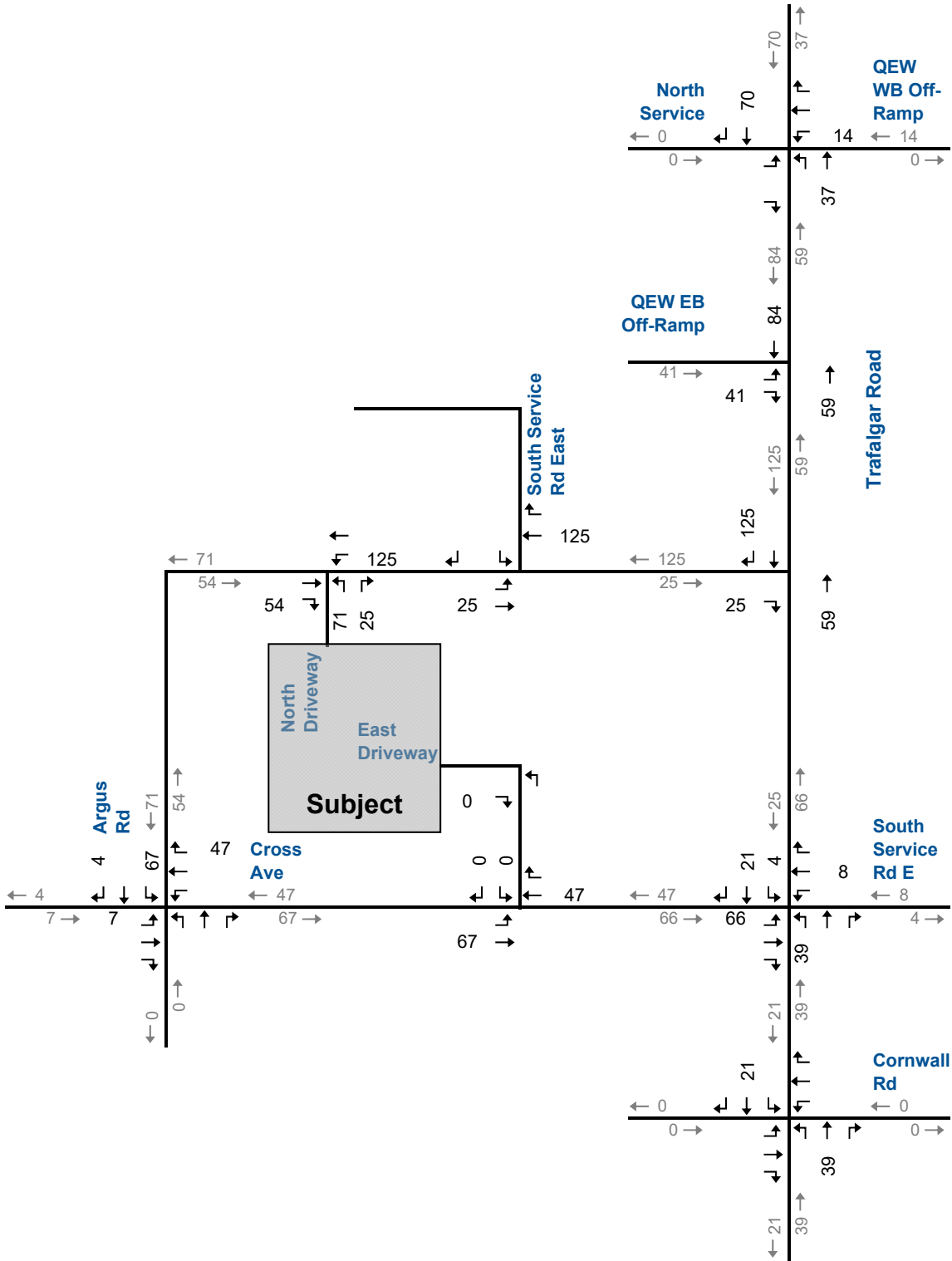
Appendix F

Site Generated Traffic

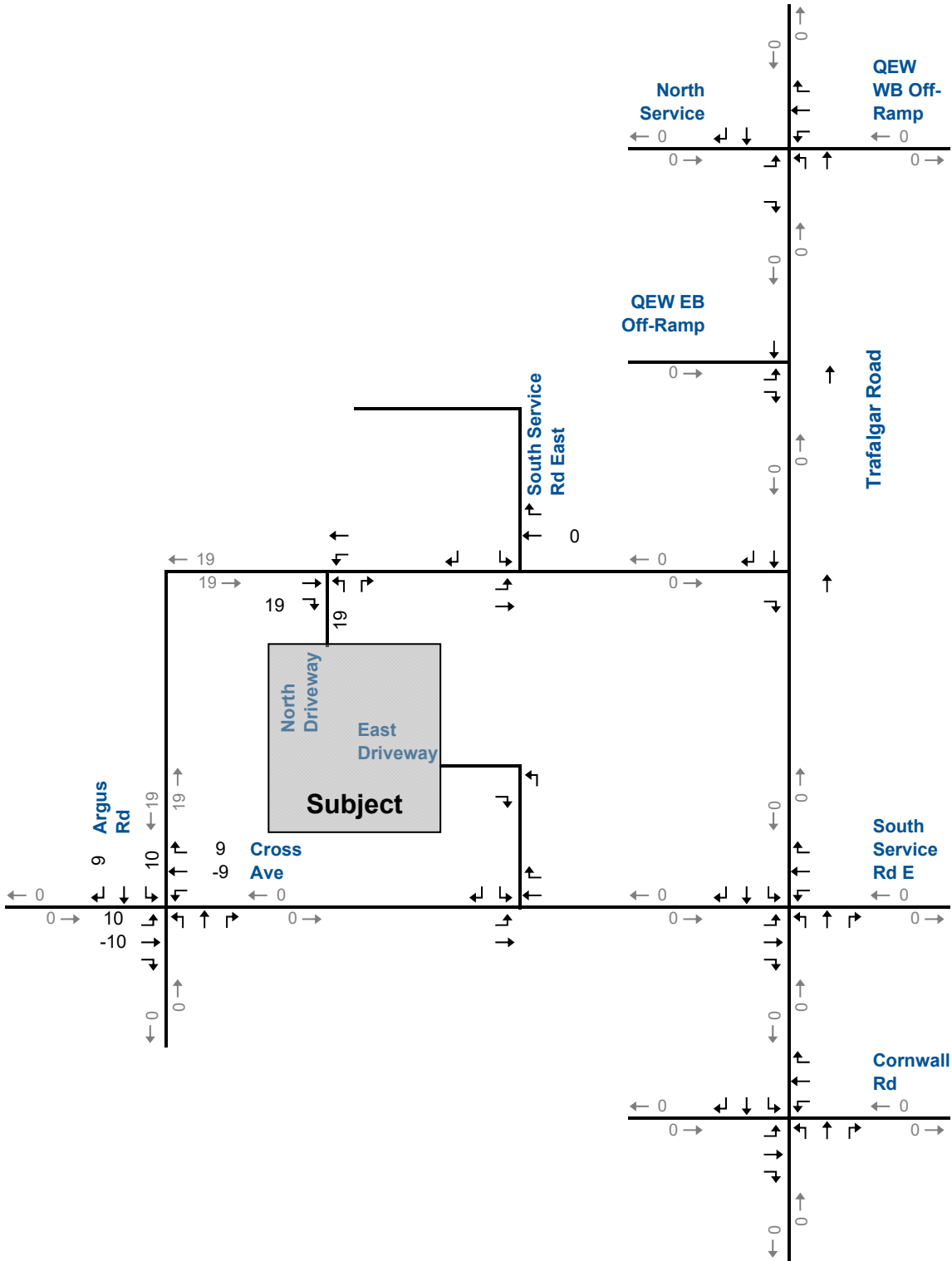




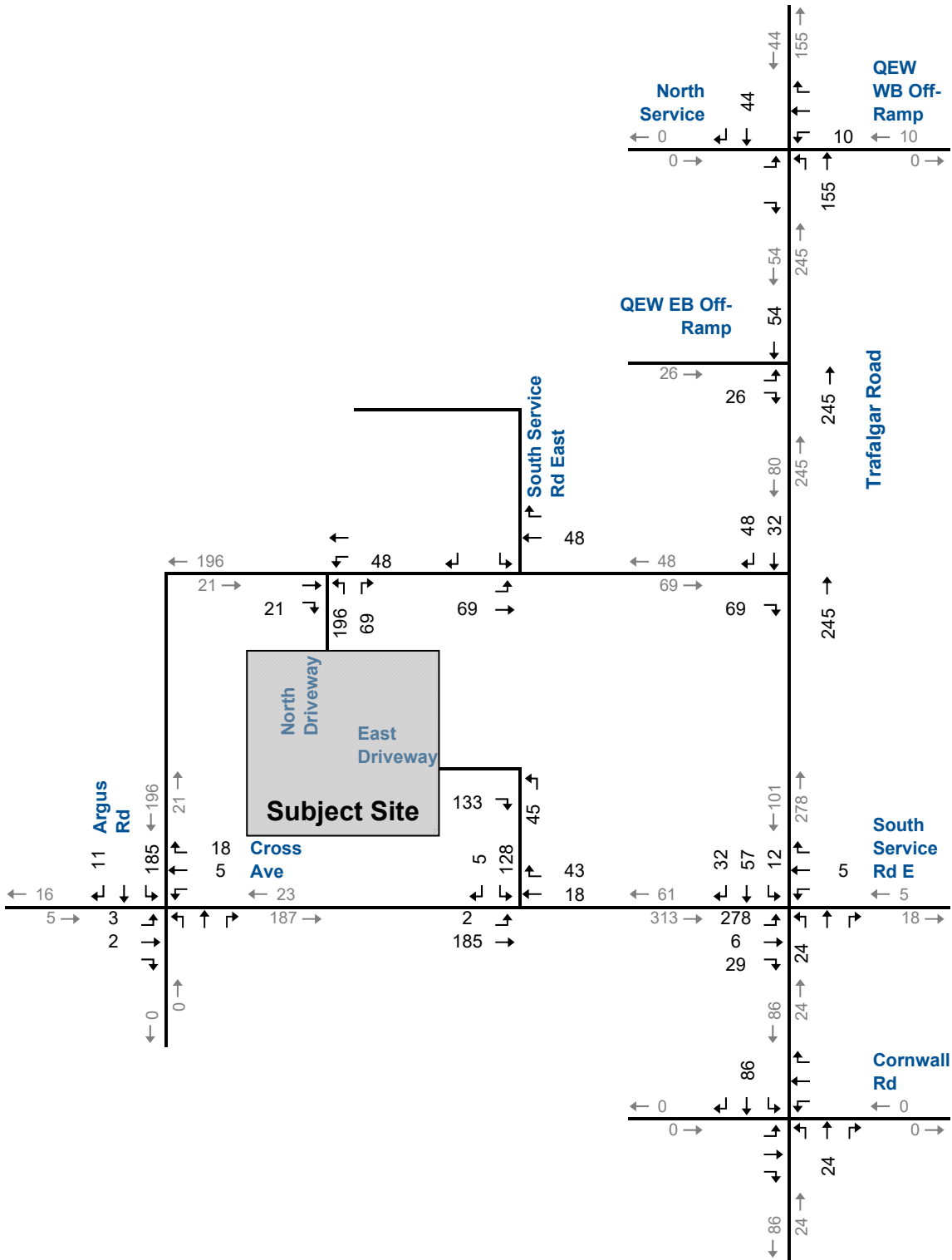
Site Generated Traffic - Phase 1 – New Trips - AM Peak Hour



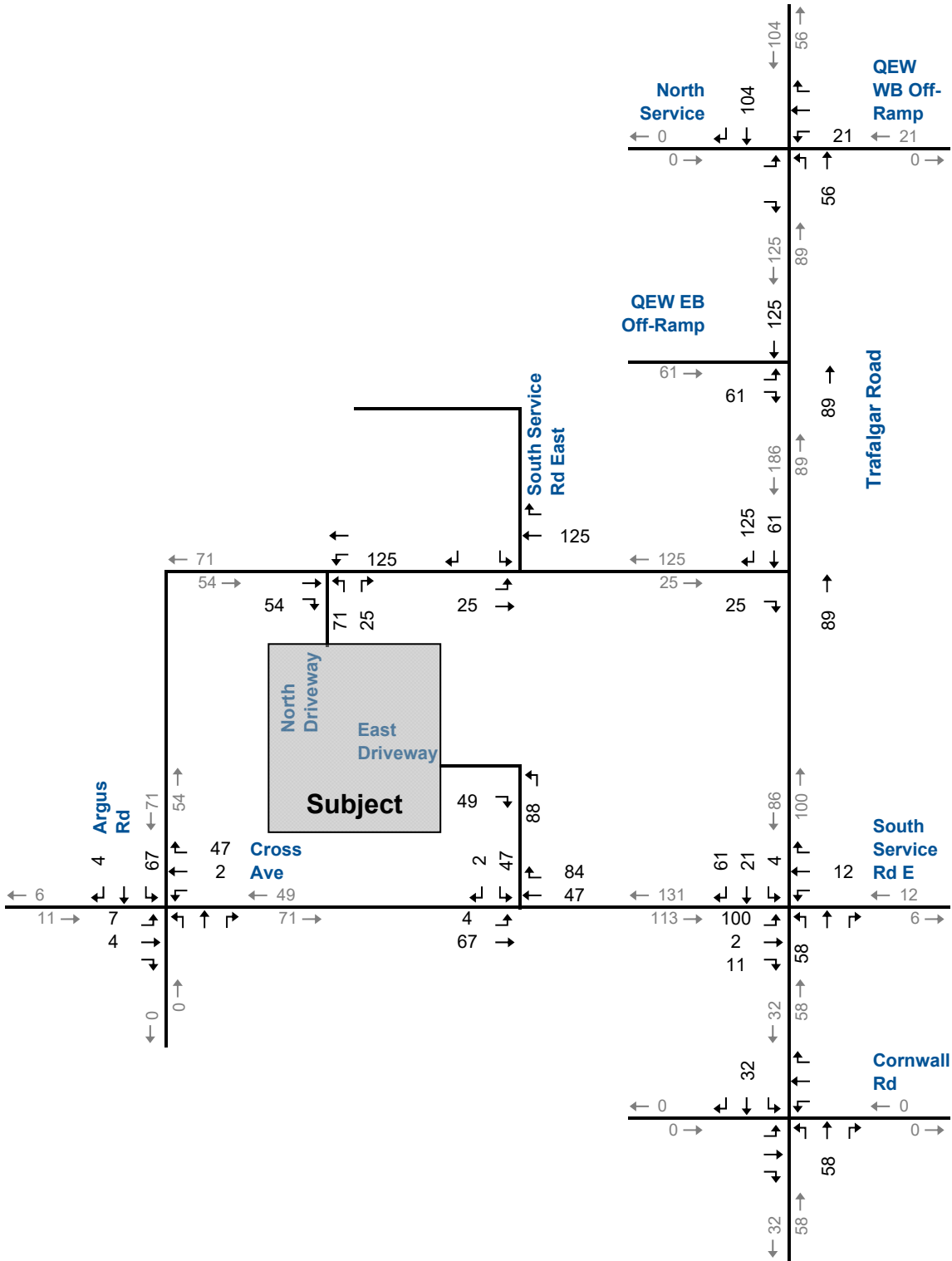
Site Generated Traffic - Phase 1 – New Trips - PM Peak Hour



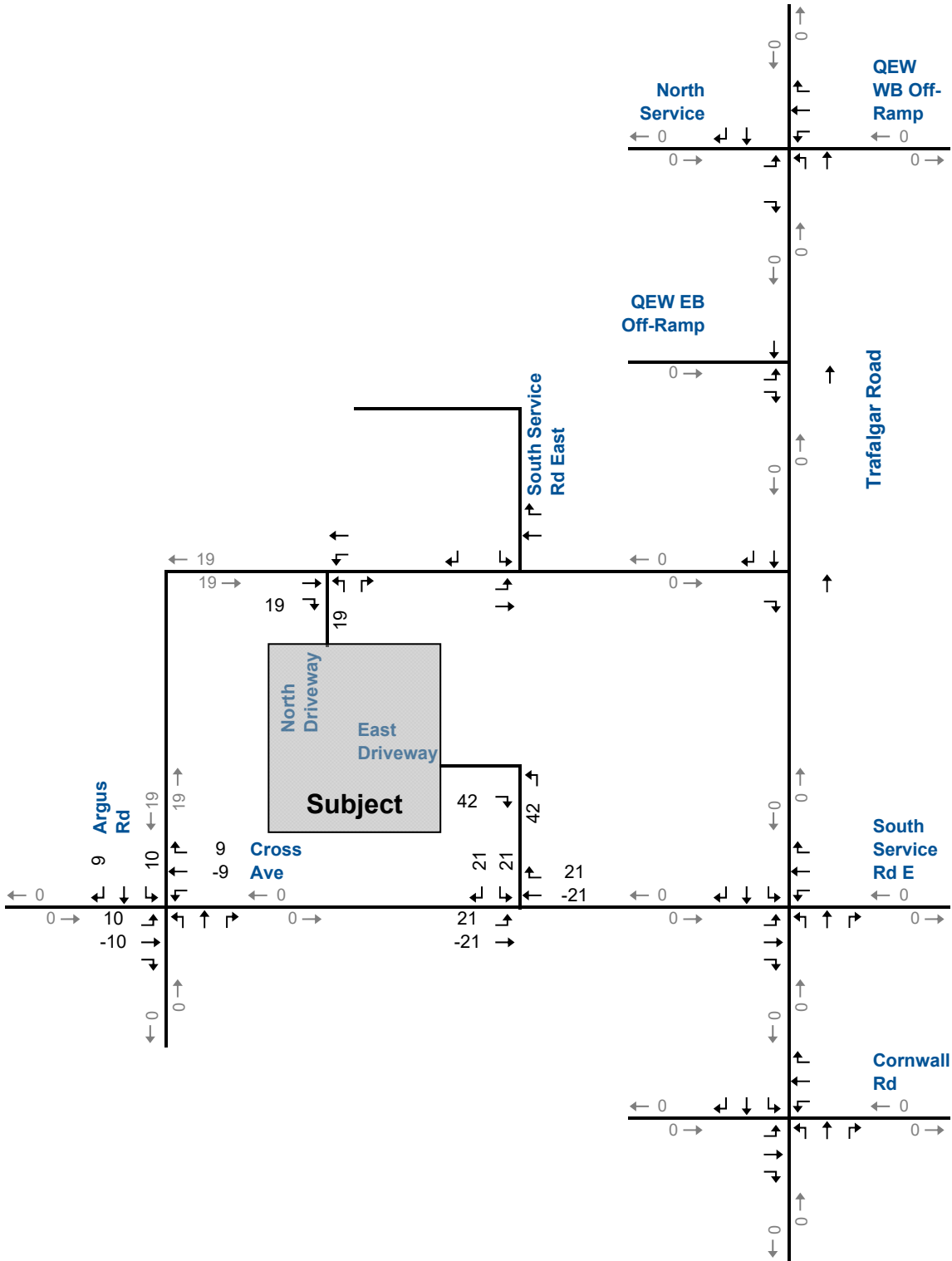
Site Generated Traffic - Phase 1 – Pass-by Trips - PM Peak Hour



Site Generated Traffic – Full Build-Out – New Trips - AM Peak Hour



Site Generated Traffic – Full Build-Out – New Trips - PM Peak Hour

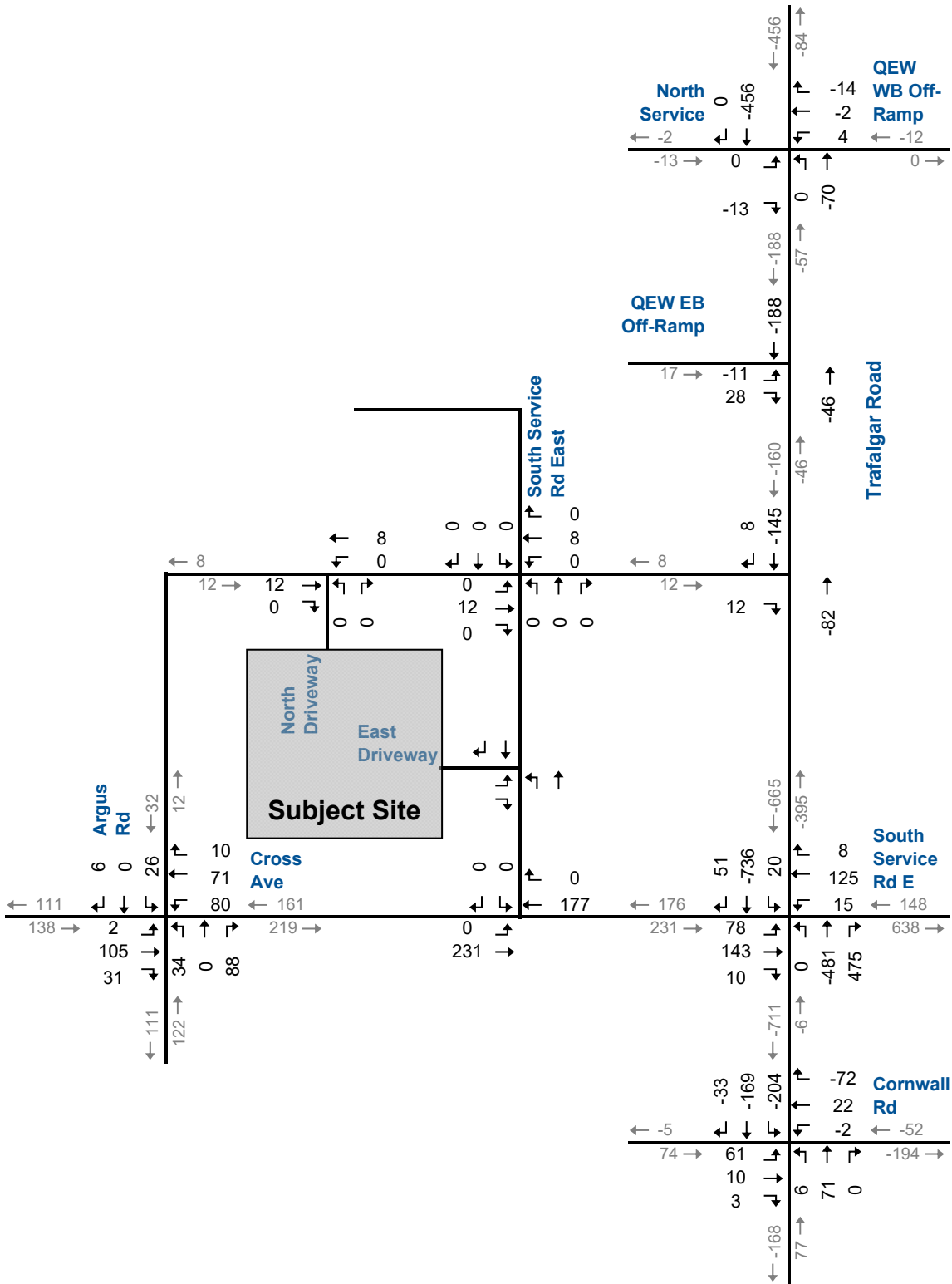


Site Generated Traffic – Full Build-Out – Pass-by Trips - PM Peak Hour

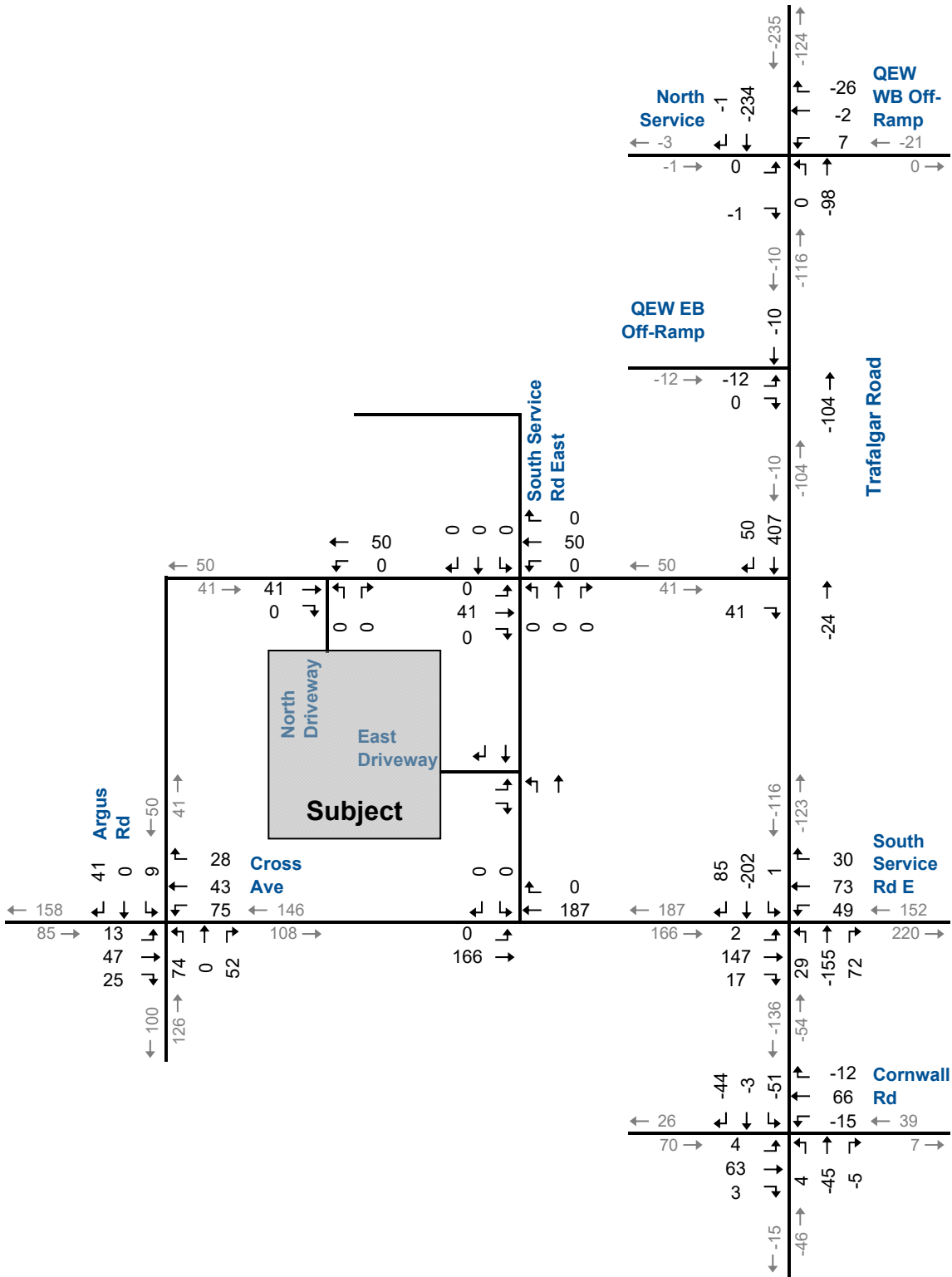
Appendix G

Midtown Oakville Background Traffic

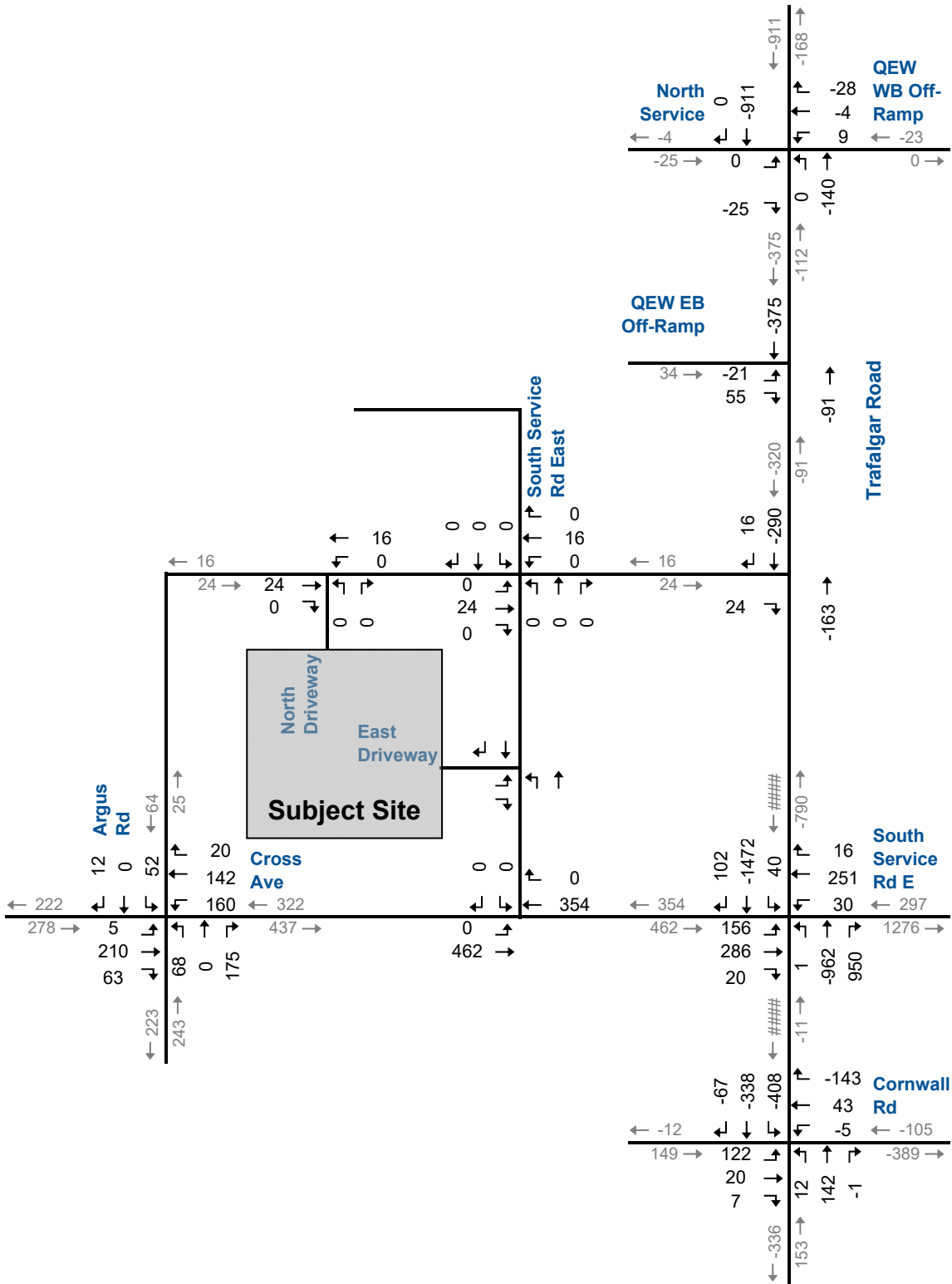




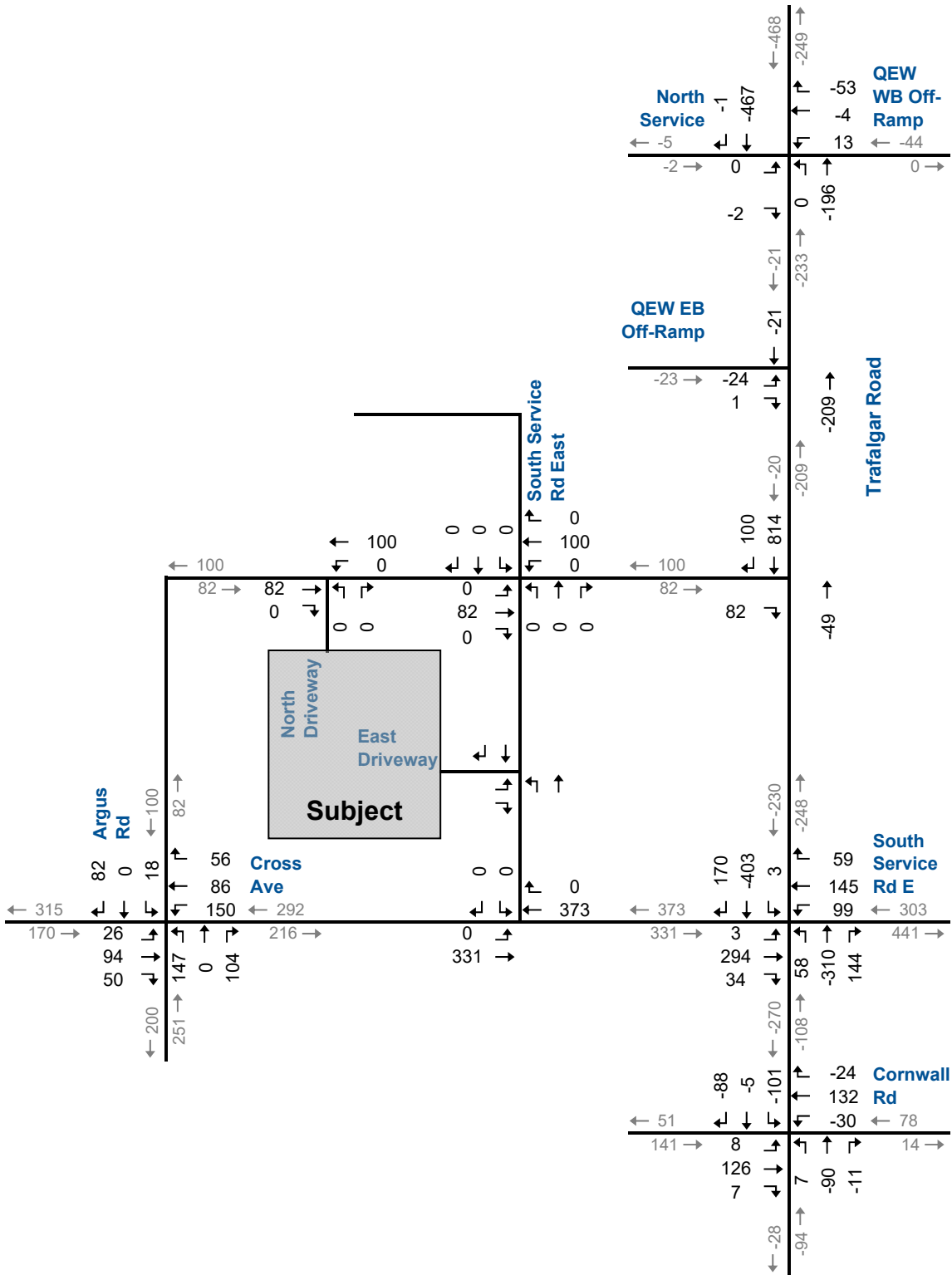
MOEA Traffic Volumes (20%) AM Peak Hour



MOEA Traffic Volumes (20%) PM Peak Hour



MOEA Traffic Volumes (40%) AM Peak Hour



MOEA Traffic Volumes (40%) PM Peak Hour

Appendix H

Synchro Analysis



Queues
101: Tatalgar Rd & Cross Ave/South Service Rd

Base
AM Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group	470	294	57	114	164	146	1464	321	2191
Lane Group Flow (vph)	0.83	0.76	0.23	0.55	0.49	0.85	0.91	0.93	1.07
v/c Ratio	67.5	52.1	32.4	66.9	10.8	44.0	49.4	57.1	76.1
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	67.5	52.1	32.4	66.9	10.8	44.0	49.4	57.1	76.1
Queue Length 50th (m)	67.9	64.0	10.8	31.3	0.0	30.2	126.2	81.5	~259.9
Queue Length 95th (m)	85.3	77.5	17.4	43.5	7.7	m31.7	m122.0	m#82.8	m#232.5
Internal Link Dist (m)	106.9		306.4			126.2		246.2	
Turn Bay Length (m)	130.0		25.0			50.0		25.0	
Base Capacity (vph)	578	413	258	237	356	172	1606	344	2047
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.71	0.22	0.48	0.46	0.85	0.91	0.93	1.07
Intersection Summary									
~ Volume exceeds capacity, queue is theoretically infinite.									
Queue shown is maximum after two cycles.									
# 95th percentile volume exceeds capacity, queue may be longer.									
Queue shown is maximum after two cycles.									
m Volume for 95th percentile queue is metered by upstream signal.									

HCM Signalized Intersection Capacity Analysis
101: Tatalgar Rd & Cross Ave/South Service Rd

Base
AM Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	TT	TT	TT	TT	TT	TT	TT	TT	TT
Traffic Volume (vph)	409	85	118	44	88	126	118	1227	56
Future Volume (vph)	409	85	118	44	88	126	118	1227	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.5	3.3	3.6	3.3
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00
Frbp. ped/bikes	1.00	0.99	1.00	1.00	0.99	1.00	0.99	1.00	0.99
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.95	1.00	0.91	1.00	0.85	1.00	0.99	1.00	0.96
Flt Protected	0.95	1.00	0.95	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	2785	1393	1520	1583	1362	1428	4469	1525	4324
Flt Permitted	0.95	1.00	0.56	1.00	1.00	0.08	1.00	0.08	1.00
Satd. Flow (perm)	2795	1393	897	1583	1362	127	4469	125	4324
Peak-hour factor, PHF	0.87	0.77	0.64	0.77	0.77	0.81	0.88	0.80	0.84
Adj. Flow (vph)	470	110	184	57	114	164	146	1394	70
RTOR Reduction (vph)	0	44	0	0	0	143	0	4	0
Lane Group Flow (vph)	470	250	0	57	114	21	146	1460	0
Conf. Peds. (#/hr)	1	4	4	4	4	1	10	52	10
Heavy Vehicles (%)	9%	6%	12%	3%	8%	4%	10%	3%	0%
Turn Type	Prot	NA	pm-pt	NA	Perm	pm-pt	NA	pm-pt	NA
Protected Phases	7	4	3	8	8	5	2	1	6
Permitted Phases			8		8	2		6	
Actuated Green, G (s)	25.2	31.4	27.4	15.3	15.3	59.7	47.3	78.5	62.1
Effective Green, g (s)	28.2	34.4	27.4	18.3	18.3	59.7	50.3	78.5	65.1
Actuated G/C Ratio	0.20	0.25	0.20	0.13	0.13	0.43	0.36	0.56	0.46
Clearance Time (s)	7.0	7.0	4.0	7.0	7.0	4.0	7.0	4.0	7.0
Vehicle Extension (s)	3.0	4.0	3.5	4.0	4.0	3.0	5.0	3.0	5.0
Lane Grp Cap (vph)	562	342	229	206	178	169	1602	342	2010
v/s Ratio Prot	c0.17	c0.18	0.02	0.07	0.02	0.08	0.33	c0.18	c0.50
v/s Ratio Perm			0.03		0.02	0.29		0.34	
v/c Ratio	0.84	0.73	0.25	0.55	0.12	0.86	0.91	0.94	1.07
Uniform Delay, d1	53.7	48.6	47.0	57.0	53.7	36.7	42.7	43.9	37.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	0.82	1.09	1.00	1.17
Incremental Delay, d2	10.4	8.4	0.7	3.9	0.4	12.4	3.0	15.9	36.0
Delay (s)	64.1	56.9	47.7	61.0	54.2	42.6	49.4	59.7	80.0
Level of Service	E	E	D	E	D	D	D	E	E
Approach Delay (s)	61.3		55.4		48.8			77.4	
Approach LOS	E		E		D			E	
Intersection Summary									
HCM 2000 Control Delay	64.8								
HCM 2000 Volume to Capacity ratio	0.98								
Actuated Cycle Length (s)	140.0								
Intersection Capacity Utilization	83.7%								
Analysis Period (min)	15								
c Critical Lane Group	E								

Lanes, Volumes, Timings
102: GO Bus Terminal/Argus Rd & Cross Ave

Base AM Peak Hour

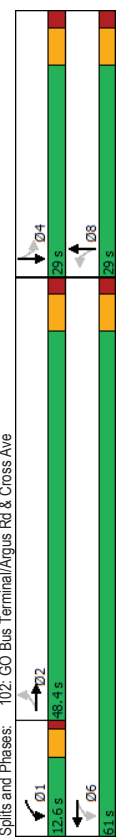
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	31	377	14	39	585	23	20	0	48	56	16
Traffic Volume (vph)	31	377	14	39	585	23	20	0	48	56	16
Future Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	3.3	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6	3.3	3.6
Lane Width (m)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Storage Length (m)	0	1	0	1	0	1	0	1	0	1	0
Taper Length (m)	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.96	0.96	0.98	0.99	0.99
Frt	0.993	0.993	0.994	0.994	0.994	0.994	0.950	0.950	0.950	0.857	0.857
Flt Protected	1570	3046	0	818	3189	0	805	734	0	1570	1386
Satd. Flow (prot)	0.388	0.361	0	0.160	0.160	0	0.160	0.160	0	0.712	0.712
Flt Permitted	641	3046	0	310	3189	0	136	734	0	1152	1386
Satd. Flow (perm)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Right Turn on Red	8	50	50	9	50	50	410	410	277	277	277
Satd. Flow (RTOR)	50	207.1	207.1	92.7	92.7	81.9	180.7	180.7	180.7	180.7	180.7
Link Speed (k/h)	14.9	14.9	14.9	6.7	6.7	5.9	13.0	13.0	13.0	13.0	13.0
Link Distance (m)	0.52	0.87	0.84	0.88	0.79	0.53	0.25	0.70	0.78	0.62	0.89
Peak Hour Factor	0%	1%	100%	92%	1%	5%	95%	0%	91%	0%	93%
Heavy Vehicles (%)	60	433	22	46	665	29	38	0	69	72	26
Adj. Flow (vph)	60	433	22	46	665	29	38	0	69	72	26
Shared Lane Traffic (%)	60	455	0	46	694	0	38	69	0	72	578
Lane Group Flow (vph)	No	No	No	No	No	No	No	No	No	No	No
Enter Blocked Intersection	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right
Lane Alignment	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
Median Width (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Link Offset (m)	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Crosswalk Width (m)	1.19	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Two way Left Turn Lane	24	14	14	24	24	14	24	24	14	24	14
Headway Factor	1	2	1	2	2	1	2	2	1	2	2
Turning Speed (k/h)	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left
Number of Detectors	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0
Detector Template	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0
Detector 1 Size (m)	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 1 Type	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4	0.6	9.4	0.6	9.4	0.6	9.4	0.6	9.4	0.6	9.4
Detector 2 Size (m)	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 2 Type	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Detector 2 Channel	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6

571 Argus Road
Paradigm Transportation Solutions Limited
Synchro 10 Report
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Lanes, Volumes, Timings
102: GO Bus Terminal/Argus Rd & Cross Ave

Base AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA	NA
Protected Phases	2	1	6	1	6	8	8	8	8	4	4
Permitted Phases	2	2	2	1	6	8	8	8	8	4	4
Detector Phase	2	2	2	1	6	8	8	8	8	4	4
Switch Phase	22.0	22.0	8.0	22.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Initial (s)	45.0	45.0	12.5	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0
Minimum Split (s)	48.4	48.4	12.6	61.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0
Total Split (%)	53.8%	53.8%	14.0%	67.8%	32.2%	32.2%	32.2%	32.2%	32.2%	32.2%	32.2%
Maximum Green (s)	42.4	42.4	8.6	55.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	5.0	5.0	2.5	5.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Recall Mode	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0
Ad Effct Green (s)	24.3	24.3	36.4	36.4	25.0	25.0	25.0	25.0	25.0	25.0	25.0
Actuated g/C Ratio	0.35	0.35	0.52	0.52	0.36	0.36	0.36	0.36	0.36	0.36	0.36
v/c Ratio	0.27	0.43	0.21	0.41	0.78	0.13	0.17	0.17	0.17	0.86	0.86
Control Delay	20.2	18.4	10.7	10.8	107.2	0.5	16.8	16.8	16.8	25.5	25.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.2	18.4	10.7	10.8	107.2	0.5	16.8	16.8	16.8	25.5	25.5
LOS	C	B	B	B	F	A	B	C	B	C	C
Approach Delay	18.6	18.6	10.8	10.8	38.4	0.5	24.5	24.5	24.5	38.4	38.4
Approach LOS	B	B	B	B	D	C	B	C	B	C	C



571 Argus Road
Paradigm Transportation Solutions Limited
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Queues
102: GO Bus Terminal/Argus Rd & Cross Ave

HCM Signalized Intersection Capacity Analysis
102: GO Bus Terminal/Argus Rd & Cross Ave

Base
AM Peak Hour

Base
AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	60	455	46	694	38	69	72	578
v/c Ratio	0.27	0.43	0.21	0.41	0.78	0.13	0.17	0.86
Control Delay	20.2	18.4	10.7	10.8	107.2	0.5	16.8	25.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.2	18.4	10.7	10.8	107.2	0.5	16.8	25.5
Queue Length 50th (m)	5.7	23.9	2.9	27.6	4.5	0.0	6.5	37.3
Queue Length 95th (m)	7.9	35.0	7.3	38.1	#10.1	0.0	13.3	30.9
Internal Link Dist (m)	183.1		68.7		57.9		156.7	
Turn Bay Length (m)	20.0		20.0		15.0			
Base Capacity (vph)	410	1952	225	2621	49	526	415	676
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	0.15	0.23	0.20	0.26	0.78	0.13	0.17	0.86
Intersection Summary								
#	95th percentile volume exceeds capacity, queue may be longer.							
	Queue shown is maximum after two cycles.							

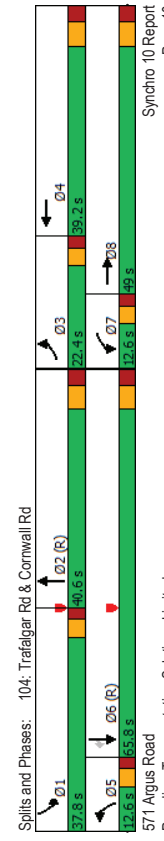
	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Traffic Volume (vph)	31	377	14	39	585	23	20	0
Future Volume (vph)	31	377	14	39	585	23	20	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.3	3.6	3.3
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Flt Protected	1569	3045	817	3189	805	738	1545	1387
Satd. Flow (prot)	0.39	1.00	0.36	1.00	0.16	1.00	0.71	1.00
Flt Permitted	641	3045	310	3189	136	738	1158	1387
Satd. Flow (perm)	0.52	0.87	0.65	0.84	0.88	0.79	0.53	0.25
Peak-hour factor, PHF	60	433	22	46	665	29	38	0
Adj. Flow (vph)	0	5	0	0	4	0	44	0
RTOR Reduction (vph)	60	450	0	46	690	0	38	25
Lane Group Flow (vph)	1	3	3	3	1	3	20	20
Conf. Peds. (#/hr)	0%	1%	100%	92%	1%	5%	95%	0%
Heavy Vehicles (%)	Perm	NA	NA	pm-pt	NA	Perm	NA	Perm
Turn Type	2	6	1	6	8	8	8	4
Protected Phases	2	6	1	6	8	8	8	4
Permitted Phases	2	6	1	6	8	8	8	4
Actuated Green, G (s)	23.3	22.3	34.4	34.4	23.0	23.0	23.0	23.0
Effective Green, g (s)	24.3	24.3	34.4	36.4	25.0	25.0	25.0	25.0
Actuated g/C Ratio	0.35	0.35	0.50	0.52	0.36	0.36	0.36	0.36
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	5.0	5.0	2.5	5.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	224	1066	212	1672	48	265	417	499
v/s Ratio Prot	0.15	0.15	0.03	c0.22	0.03	0.03	0.06	c0.29
v/s Ratio Perm	0.09	0.09	0.08	0.08	0.28	0.28	0.06	0.06
v/c Ratio	0.27	0.42	0.22	0.41	0.79	0.09	0.17	0.80
Uniform Delay, d1	16.2	17.2	9.7	10.0	19.9	14.7	15.1	20.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.3	0.6	0.4	0.3	61.0	0.2	0.3	9.6
Delay (s)	17.5	17.8	10.1	10.4	80.8	14.9	15.4	29.6
Level of Service	B	B	B	B	F	B	B	C
Approach Delay (s)	17.7	17.7	10.3	10.3	38.3	12.0	12.0	28.0
Approach LOS	B	B	B	B	D	D	D	C
Intersection Summary								
HCM 2000 Control Delay	19.4							
HCM 2000 Volume to Capacity ratio	0.61							
Actuated Cycle Length (s)	69.4							
Intersection Capacity Utilization	77.7%							
Analysis Period (min)	15							
c Critical Lane Group	B							

Lanes, Volumes, Timings
104: Trafalgar Rd & Cornwall Rd

Lanes, Volumes, Timings
104: Trafalgar Rd & Cornwall Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Prot
Protected Phases	3	8	7	4	7	4	5	2	1	6	6
Permitted Phases	3	8	7	4	7	4	5	2	1	6	6
Detector Phase	3	8	7	4	7	4	5	2	1	6	6
Switch Phase	7.0	10.0	7.0	10.0	7.0	10.0	7.0	10.0	7.0	10.0	7.0
Minimum Initial (s)	12.0	37.0	12.0	37.0	12.0	37.0	12.0	37.0	12.0	37.0	12.0
Minimum Split (s)	22.4	49.0	12.6	39.2	12.6	39.2	12.6	40.6	37.8	65.8	65.8
Total Split (%)	16.0%	35.0%	9.0%	28.0%	9.0%	28.0%	9.0%	29.0%	27.0%	47.0%	47.0%
Maximum Green (s)	17.4	42.0	7.6	32.2	7.6	32.2	7.6	33.6	32.8	58.8	58.8
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	4.0
All-Red Time (s)	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-3.0	-1.0	-3.0	-1.0	-3.0	-1.0	-3.0	-1.0	-3.0	-3.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0
Ad Effct Green (s)	18.4	45.0	8.6	35.2	8.6	35.2	8.6	36.6	33.8	61.8	61.8
Actuated Cycle Length (s)	110.5	110.5	110.5	110.5	110.5	110.5	110.5	110.5	110.5	110.5	110.5
v/c Ratio	0.13	0.32	0.06	0.25	0.06	0.25	0.06	0.26	0.24	0.44	0.44
Control Delay	115.5	44.7	71.9	185.3	71.9	185.3	140.9	46.8	82.3	29.1	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	115.5	44.7	71.9	185.3	71.9	185.3	140.9	46.8	82.3	29.1	8.1
LOS	F	D	E	F	F	F	F	D	F	C	A
Approach Delay	71.1	182.8	61.5	182.8	61.5	182.8	61.5	182.8	61.5	182.8	182.8
Approach LOS	E	E	F	E	F	E	E	E	F	D	D
Intersection Summary	CBD										
Area Type:	CBD										
Cycle Length:	140										
Actuated Cycle Length:	140										
Offset:	0 (0%); Referenced to phase 2:NBT and 6:SBT. Start of Green, Master Intersection										
Natural Cycle:	150										
Control Type:	Actuated-Coordinated										
Maximum v/c Ratio:	1.32										
Intersection Signal Delay:	89.1										
Intersection Capacity Utilization:	106.2%										
Analysis Period (min):	15										

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT
Traffic Volume (vph)	381	510	79	20	417	615	53	351	50	565	520
Future Volume (vph)	381	510	79	20	417	615	53	351	50	565	520
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.3	3.6	3.3	3.6	3.3	3.6	3.3	3.6	3.3
Storage Length (m)	80.0	0.0	80.0	0.0	25.0	0.0	80.0	0.0	80.0	0.0	1.0
Storage Lanes	2	0	1	0	1	0	1	0	1	0	1
Taper Length (m)	7.5	0.95	7.5	0.95	7.5	0.95	7.5	0.95	7.5	0.95	7.5
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	1.00	0.95	0.97	1.00	1.00	1.00
Ped Bike Factor	0.99	0.99	0.99	0.97	0.99	1.00	0.99	0.98	0.98	0.98	0.98
Frt	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971
Frt Protected	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (prot)	2987	3029	0	1481	2799	0	1540	3138	0	2929	1676
Flt Permitted	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (perm)	2966	3029	0	1472	2799	0	1532	3138	0	2870	1676
Right Turn on Red	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Satd. Flow (RTOR)	22	242	242	242	242	242	13	13	13	13	321
Link Speed (k/h)	50	50	50	50	50	50	50	50	50	50	50
Link Distance (m)	285.8	285.8	142.3	142.3	311.4	311.4	130.3	130.3	130.3	130.3	130.3
Travel Time (s)	20.6	20.6	10.2	10.2	22.4	22.4	9.4	9.4	9.4	9.4	9.4
Conf. Peds. (#/hr)	25	7	7	7	25	9	18	18	18	18	9
Peak Hour Factor	0.93	0.91	0.60	0.75	0.86	0.90	0.60	0.86	0.75	0.84	0.86
Heavy Vehicles (%)	2%	4%	1%	6%	3%	3%	2%	1%	0%	4%	2%
Adj. Flow (vph)	410	560	132	27	485	683	88	408	67	673	605
Shared Lane Traffic (%)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	410	692	0	27	1168	0	88	475	0	673	605
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right
Median Width (m)	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
Link Offset (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width (m)	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Two way Left Turn Lane	1.19	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Headway Factor	24	14	14	24	14	14	24	14	14	24	14
Turning Speed (k/h)	24	14	14	24	14	14	24	14	14	24	14
Number of Detectors	1	2	1	2	1	2	1	2	1	2	1
Detector Template	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0
Detector 1 Type	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex
Detector 1 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
Detector 2 Size (m)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Detector 2 Type	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex
Detector 2 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



Queues
104: Tatalgar Rd & Cornwall Rd

Base
AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	410	692	27	1168	88	475	673	605	440
Lane Group Flow (vph)	1.05	0.70	0.30	1.32	0.94	0.57	0.95	0.82	0.58
v/c Ratio	115.5	44.7	71.9	185.3	140.9	46.8	82.3	29.1	8.1
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	115.5	44.7	71.9	185.3	140.9	46.8	82.3	29.1	8.1
Total Delay	-66.5	90.2	7.7	-202.5	26.0	61.8	106.8	81.3	25.4
Queue Length 50th (m)	#101.2	113.7	15.3	#229.0	#31.9	76.5	m102.0	m78.3	m23.5
Queue Length 95th (m)									
Internal Link Dist (m)	261.8		118.3		287.4			106.3	
Turn Bay Length (m)	80.0		80.0		25.0		80.0		
Base Capacity (vph)	392	988	90	884	94	829	707	739	763
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.05	0.70	0.30	1.32	0.94	0.57	0.95	0.82	0.58
Intersection Summary									
~ Volume exceeds capacity, queue is theoretically infinite.									
Queue shown is maximum after two cycles.									
# 95th percentile volume exceeds capacity, queue may be longer.									
Queue shown is maximum after two cycles.									
m Volume for 95th percentile queue is metered by upstream signal.									

HCM Signalized Intersection Capacity Analysis
104: Tatalgar Rd & Cornwall Rd

Base
AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	FF	FF	FF	FF	FF	FF	FF	FF	FF
Traffic Volume (vph)	381	510	79	20	417	615	53	351	50
Future Volume (vph)	381	510	79	20	417	615	53	351	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.3	3.6	3.3	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.95	1.00	0.95	0.97	1.00	1.00
Frb. ped/bikes	1.00	0.99	1.00	0.97	1.00	0.97	1.00	1.00	0.98
Frb. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97	1.00	0.91	1.00	0.98	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	2987	3030	1481	2800	1540	3138	2929	1676	1324
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	2987	3030	1481	2800	1540	3138	2929	1676	1324
Peak-hour factor, PHF	0.93	0.91	0.60	0.75	0.86	0.90	0.60	0.86	0.75
Adj. Flow (vph)	410	560	132	27	485	683	88	408	67
RTOR Reduction (vph)	0	15	0	0	181	0	0	10	0
Lane Group Flow (vph)	410	677	0	27	987	0	88	465	0
Conf. Peds. (#/hr)	25	7	7	7	25	9	18	18	9
Heavy Vehicles (%)	2%	4%	1%	6%	3%	3%	2%	1%	0%
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Prot
Protected Phases	3	8	7	4	5	2	2	1	6
Permitted Phases									
Actuated Green, G (s)	17.4	42.0	7.6	32.2	7.6	33.6	32.8	58.8	68.8
Effective Green, g (s)	18.4	45.0	8.6	35.2	8.6	36.6	33.8	61.8	61.8
Actuated g/C Ratio	0.13	0.32	0.06	0.25	0.06	0.26	0.24	0.44	0.44
Clearance Time (s)	5.0	7.0	5.0	7.0	5.0	7.0	5.0	7.0	7.0
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Lane Grp Cap (vph)	392	973	90	704	94	820	707	739	564
v/s Ratio Prot	c0.14	0.22	0.02	c0.35	0.06	0.15	c0.23	c0.36	0.20
v/s Ratio Perm									
v/c Ratio	1.05	0.70	0.30	1.40	0.94	0.57	0.95	0.82	0.45
Uniform Delay, d1	60.8	41.5	62.8	52.4	65.4	44.8	52.3	34.2	27.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.53	0.80	1.04
Incremental Delay, d2	58.0	4.1	8.4	189.3	70.8	2.8	3.9	1.0	0.2
Delay (s)	118.8	45.6	71.2	241.7	136.3	47.7	84.1	28.3	28.4
Level of Service	F	D	E	F	F	D	F	C	C
Approach Delay (s)		72.8		237.9		61.5		50.2	
Approach LOS		E		F		E		D	
Intersection Summary									
HCM 2000 Control Delay	106.0 HCM 2000 Level of Service F								
HCM 2000 Volume to Capacity ratio	1.07								
Actuated Cycle Length (s)	140.0 Sum of lost time (s) 16.0								
Intersection Capacity Utilization	106.2% ICU Level of Service G								
Analysis Period (min)	15								
c Critical Lane Group									

Lanes, Volumes, Timings
105: Trafalgar Rd & QEII EB-Off Ramp

Base
AM Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	908	661	0	1174	2259	0
Future Volume (vph)	908	661	0	1174	2259	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.5	3.6	3.6	3.6	3.6
Lane Util. Factor	0.97	1.00	1.00	0.91	0.91	1.00
Flt Protected	0.950					
Satd. Flow (prot)	2958	1423	0	4404	4489	0
Flt Permitted	0.950					
Satd. Flow (perm)	2958	1423	0	4404	4489	0
Right Turn on Red	Yes					Yes
Satd. Flow (RTOR)	2					
Link Speed (k/h)	50			50	50	
Link Distance (m)	199.2			51.4	324.8	
Travel Time (s)	14.3			3.7	23.4	
Peak Hour Factor	0.98	0.92	0.25	0.91	0.90	0.25
Heavy Vehicles (%)	3%	1%	0%	6%	4%	0%
Adj. Flow (vph)	927	718	0	1290	2510	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	927	718	0	1290	2510	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Right
Median Width(m)	6.6			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.19	1.16	1.14	1.14	1.14	1.14
Turning Speed (k/h)	24	14	24		14	
Number of Detectors	1	Right	Thru	2	2	
Detector Template	2.0	2.0	10.0	10.0	10.0	
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	2.0	2.0	0.6	0.6	0.6	
Detector 1 Size(m)	2.0	2.0	0.6	0.6	0.6	
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)			9.4	9.4		
Detector 2 Size(m)			0.6	0.6		
Detector 2 Type			Ch+Ex	Ch+Ex		
Detector 2 Channel						
Detector 2 Extend (s)			0.0	0.0		
Turn Type	Prot	Perm	NA	NA	NA	
Protected Phases	4		2	2	2	
Permitted Phases	4	4	2	2	2	
Detector Phase	4	4	2	2	2	

Lanes, Volumes, Timings
105: Trafalgar Rd & QEII EB-Off Ramp

Base
AM Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	10.0	10.0		29.0	29.0	
Minimum Split (s)	38.0	38.0		36.0	36.0	
Total Split (s)	57.4	57.4		82.6	82.6	
Total Split (%)	41.0%	41.0%		59.0%	59.0%	
Maximum Green (s)	50.4	50.4		75.6	75.6	
Yellow Time (s)	4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	24.0	24.0		22.0	22.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Ad Effct Green (s)	53.4	53.4		78.6	78.6	
Actuated g/C Ratio	0.38	0.38		0.56	0.56	
v/c Ratio	0.82	1.32		0.52	1.00	
Control Delay	46.3	192.3		11.0	19.8	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	46.3	192.3		11.0	19.8	
LOS	D	F		B	B	
Approach Delay						
Approach LOS	F			B	B	
Intersection Summary	CBD					
Area Type:	CBD					
Cycle Length:	140					
Actuated Cycle Length:	140					
Offset:	133.6 (95%), Referenced to phase 2,NBSB and 6:, Start of Green					
Natural Cycle:	120					
Control Type:	Actuated-Coordinated					
Maximum v/c Ratio:	1.32					
Intersection Signal Delay:	45.0					
Intersection Capacity Utilization:	100.6%					
Analysis Period (min):	15					
Splits and Phases:	105: Trafalgar Rd & QEII EB-Off Ramp					

	EBL	EBR	NBT	SBT
Lane Group	927	718	1290	2510
Lane Group Flow (vph)	0.82	1.32	0.52	1.00
v/c Ratio	46.3	192.3	11.0	19.8
Control Delay	0.0	0.0	0.0	0.0
Queue Delay	46.3	192.3	11.0	19.8
Total Delay	124.7	~270.8	29.5	207.8
Queue Length 50th (m)	153.2	#350.6	m36.8	m37.3
Queue Length 95th (m)	175.2		27.4	300.8
Internal Link Dist (m)				
Turn Bay Length (m)	1128	544	2472	2520
Base Capacity (vph)	0	0	0	0
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.82	1.32	0.52	1.00
Intersection Summary				
~ Volume exceeds capacity, queue is theoretically infinite.				
Queue shown is maximum after two cycles.				
# 95th percentile volume exceeds capacity, queue may be longer.				
Queue shown is maximum after two cycles.				
m Volume for 95th percentile queue is metered by upstream signal.				

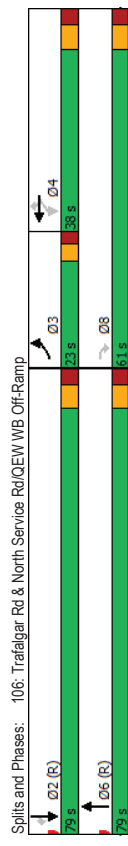
	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	TT	TT	TT	TT	TT	TT
Traffic Volume (vph)	908	661	0	1174	2259	0
Future Volume (vph)	908	661	0	1174	2259	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.5	3.6	3.6	3.6	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	0.00	0.91	0.91	0.00
Frt	1.00	0.85	1.00	1.00	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	2958	1423	4404	4489	4489	4489
Flt Permitted	0.95	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	2958	1423	4404	4489	4489	4489
Peak-hour factor, PHF	0.98	0.92	0.25	0.91	0.90	0.25
Adj. Flow (vph)	927	718	0	1290	2510	0
RTOR Reduction (vph)	0	1	0	0	0	0
Lane Group Flow (vph)	927	717	0	1290	2510	0
Heavy Vehicles (%)	3%	1%	0%	6%	4%	0%
Turn Type	Prot	Perm	NA	NA	NA	NA
Protected Phases	4			2	2	
Permitted Phases		4				
Actuated Green, G (s)	50.4	50.4		75.6	75.6	
Effective Green, g (s)	53.4	53.4		78.6	78.6	
Actuated g/C Ratio	0.38	0.38		0.56	0.56	
Clearance Time (s)	7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	1128	542		2472	2520	
v/s Ratio Prot	0.31			0.29	0.56	
v/s Ratio Perm	0.82	1.32		0.52	1.00	
Uniform Delay, d1	39.0	43.3		19.0	30.5	
Progression Factor	1.00	1.00		0.55	0.46	
Incremental Delay, d2	4.9	157.6		0.4	4.5	
Delay (s)	43.9	200.9		10.9	18.6	
Level of Service	D	F		B	B	
Approach Delay (s)	112.5			10.9	18.6	
Approach LOS	F			B	B	
Intersection Summary						
HCM 2000 Control Delay	45.2		HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio	1.13					
Actuated Cycle Length (s)	140.0		Sum of lost time (s)		8.0	
Intersection Capacity Utilization	100.6%		ICU Level of Service		G	
Analysis Period (min)	15					
c Critical Lane Group						

Lanes, Volumes, Timings
106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	1	0	200	402	33	250	0	1789	0	0	3406
Traffic Volume (vph)	1	0	200	402	33	250	0	1789	0	0	3406
Future Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	3.3	3.6	3.5	3.3	3.6	3.5	3.6	3.6	3.6	3.6	3.5
Lane Width (m)	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Storage Length (m)	1	1	1	1	1	1	0	0	0	0	1
Taper Length (m)	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	0.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91
Ped Bike Factor											0.96
Frt	0.950	0.850	0.850	0.950	0.961	0.850	0.950	0.961	0.850	0.950	0.850
Satd. Flow (prot)	1570	0	1395	1421	1439	1356	0	4446	0	0	4532
FRT Permitted	0.950	0.950	0.950	0.950	0.961	0.950	0.950	0.961	0.950	0.950	0.950
Satd. Flow (perm)	1570	0	1395	1421	1439	1356	0	4446	0	0	4532
Right Turn on Red	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Satd. Flow (RTOR)	50	31	50	50	50	50	50	50	50	50	70
Link Speed (k/h)	142.1	192.6	13.9	23.4	28.2	28.2	28.2	28.2	28.2	28.2	28.2
Link Distance (m)	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2
Travel Time (s)	8	8	8	8	8	8	8	8	8	8	8
Confl. Peds. (#/hr)	0.25	0.25	0.91	0.88	0.73	0.25	0.93	0.97	0.25	0.90	0.63
Peak Hour Factor	0%	0%	3%	5%	23%	6%	0%	5%	5%	0%	3%
Heavy Vehicles (%)	4	0	220	457	49	342	0	1924	0	0	3764
Adj. Flow (vph)	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%
Shared Lane Traffic (%)	4	0	220	251	255	342	0	1924	0	0	3764
Lane Group Flow (vph)	No	No	No	No	No	No	No	No	No	No	No
Enter Blocked Intersection	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right
Lane Alignment	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
Median Width (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Link Offset (m)	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Crosswalk Width (m)	1.19	1.14	1.19	1.14	1.14	1.16	1.14	1.14	1.14	1.14	1.16
Two way Left Turn Lane	24	14	14	24	14	24	14	14	14	24	14
Headway Factor	1	1	1	1	1	1	1	1	1	1	1
Turning Speed (k/h)	1	1	1	1	1	1	1	1	1	1	1
Number of Detectors	Left	Right	Thru	Right	Thru	Right	Thru	Right	Thru	Right	Right
Detector Template	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Detector 1 Size (m)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Detector 1 Type	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex
Detector 1 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
Detector 2 Size (m)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Detector 2 Type	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex
Detector 2 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Lanes, Volumes, Timings
106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	Perm	NA	Perm	NA	Perm	NA	NA	NA	NA	Perm
Protected Phases	3			4			4			6	2
Permitted Phases	3			4			4			6	2
Switch Phase	3			4			4			6	2
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0	10.0	5.0	5.0	5.0	28.0	28.0
Minimum Split (s)	23.0	38.0	38.0	38.0	38.0	38.0	35.0	35.0	35.0	35.0	35.0
Total Split (s)	23.0	61.0	38.0	38.0	38.0	38.0	79.0	79.0	79.0	79.0	79.0
Total Split (%)	16.4%	43.6%	27.1%	27.1%	27.1%	27.1%	56.4%	56.4%	56.4%	56.4%	56.4%
Maximum Green (s)	18.0	54.0	31.0	31.0	31.0	31.0	72.0	72.0	72.0	72.0	72.0
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.5	4.5	4.5	4.5	4.5
Recall Mode	Min	Min	Min	Min	Min	Min	C-Min	C-Min	C-Min	C-Min	C-Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	24.0	24.0	24.0	24.0	24.0	24.0	21.0	21.0	21.0	21.0	21.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0
Ad Effct Green (s)	8.0	46.0	34.0	34.0	34.0	34.0	86.0	86.0	86.0	86.0	86.0
Actuated Cycle Length (s)	0.06	0.33	0.24	0.24	0.24	0.24	0.61	0.61	0.61	0.61	0.61
v/c Ratio	0.04	0.46	0.73	0.73	0.73	0.73	0.70	0.70	0.70	1.36	0.01
Control Delay	64.0	33.5	60.3	60.3	60.3	23.8	21.9	21.9	21.9	190.4	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.0	33.5	60.3	60.3	60.3	23.8	21.9	21.9	21.9	190.4	0.0
LOS	E	C	C	E	E	C	C	C	C	F	A
Approach Delay	34.1	C	45.6	D	D	D	21.9	21.9	21.9	189.9	F
Approach LOS	C	C	D	D	D	D	C	C	C	F	F
Intersection Summary	CBD										
Area Type:	CBD										
Cycle Length:	140										
Actuated Cycle Length:	140										
Offset:	115.4 (82%), Referenced to phase 2:SBT and 6:NBT, Start of Green										
Natural Cycle:	150										
Control Type:	Actuated-Coordinated										
Maximum v/c Ratio:	1.36										
Intersection Signal Delay:	119.1										
Intersection Capacity Utilization:	110.2%										
Analysis Period (min):	15										



Queues
106: Tatalgar Rd & North Service Rd/QEW WB Off-Ramp

Base AM Peak Hour

	EBL	EBR	WBL	WBR	NBT	SBT	SBR
Lane Group	4	220	251	255	342	1924	3784
Lane Group Flow (vph)	0.04	0.46	0.73	0.73	0.70	0.70	1.36
v/c Ratio	64.0	33.5	60.3	60.3	23.8	21.9	190.4
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	64.0	33.5	60.3	60.3	23.8	21.9	190.4
Total Delay	1.1	43.5	71.4	72.6	33.7	153.2	-529.0
Queue Length 50th (m)	1.4	60.9	92.1	67.3	35.6	173.3	4587.2
Queue Length 95th (m)							
Internal Link Dist (m)	50.0			168.6	300.8	244.2	
Turn Bay Length (m)	213	566	376	380	517	2730	2783
Base Capacity (vph)	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.38	0.67	0.67	0.66	0.70	1.36
Intersection Summary							
~ Volume exceeds capacity, queue is theoretically infinite.							
Queue shown is maximum after two cycles.							
# 95th percentile volume exceeds capacity, queue may be longer.							
Queue shown is maximum after two cycles.							

HCM Signalized Intersection Capacity Analysis
106: Tatalgar Rd & North Service Rd/QEW WB Off-Ramp

Base AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	1	0	200	402	33	250	0	1789	0	0	3406	6
Lane Configurations	1	0	200	402	33	250	0	1789	0	0	3406	6
Traffic Volume (vph)	1	0	200	402	33	250	0	1789	0	0	3406	6
Future Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	3.3	3.6	3.5	3.3	3.6	3.5	3.6	3.6	3.6	3.6	3.6	3.5
Lane Width	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.91	0.91	0.91	0.91	0.91	0.91	1.00
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.96
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	0.96	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	1570	1395	1421	1440	1356	4446						4532
Flt Permitted	0.95	1.00	0.95	0.96	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	1570	1395	1421	1440	1356	4446						4532
Peak-hour factor, PHF	0.25	0.25	0.91	0.88	0.68	0.73	0.25	0.93	0.97	0.25	0.90	0.63
Adj. Flow (vph)	4	0	220	457	49	342	0	1924	0	0	3784	10
RTOR Reduction (vph)	0	0	21	0	0	164	0	0	0	0	0	4
Lane Group Flow (vph)	4	0	199	251	255	178	0	1924	0	0	3784	6
Conf. Peds. (#/hr)							8		5			8
Heavy Vehicles (%)	0%	0%	3%	5%	23%	6%	0%	5%	5%	0%	3%	0%
Turn Type	Prot	Perm	Perm	NA	Perm	NA	Perm	NA	NA	Perm	NA	Perm
Protected Phases	3		4		4		6					2
Permitted Phases	8		4		4		6					2
Actuated Green, G (s)	7.0	43.0	31.0	31.0	31.0	31.0	83.0	83.0	83.0	83.0	83.0	83.0
Effective Green, g (s)	8.0	46.0	34.0	34.0	34.0	34.0	86.0	86.0	86.0	86.0	86.0	86.0
Actuated g/C Ratio	0.06	0.33	0.24	0.24	0.24	0.24	0.61	0.61	0.61	0.61	0.61	0.61
Clearance Time (s)	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.5	4.5	4.5	4.5	4.5	4.5
Lane Grp Cap (vph)	89	458	345	349	329	2731						2783
v/s Ratio Prot	0.00					0.43						60.83
v/s Ratio Perm	0.04	0.43	0.73	0.73	0.54	0.70	0.70	0.70	0.70	0.70	0.70	0.00
v/c Ratio	62.4	36.8	48.7	48.8	46.2	18.4	18.4	18.4	18.4	18.4	18.4	10.5
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.04	1.04	1.04	1.04	1.04	1.04	1.00
Progression Factor	0.2	0.7	7.5	7.7	1.8	1.2	1.2	1.2	1.2	1.2	1.2	164.3
Incremental Delay, d2	62.6	37.5	56.2	56.4	48.0	20.3	20.3	20.3	20.3	20.3	20.3	191.3
Delay (s)	E	D	E	E	D	C	C	C	C	C	C	F
Level of Service	E	D	E	E	D	C	C	C	C	C	C	F
Approach Delay (s)	37.9					53.0	20.3	20.3	20.3	20.3	20.3	190.8
Approach LOS	D					D	C	C	C	C	C	F
Intersection Summary												
HCM 2000 Control Delay	120.2											F
HCM 2000 Volume to Capacity ratio	1.14											
Actuated Cycle Length (s)	140.0											12.0
Intersection Capacity Utilization	110.2%											H
Analysis Period (min)	15											
c Critical Lane Group												

Lanes, Volumes, Timings
203: Argus Rd & South Service Rd

Base
AM Peak Hour

EBL	EBT	WBT	WBR	SBL	SBR
↖	→	←	↗	↖	↗
1	5	572	120	4	3
1	5	572	120	4	3
1900	1900	1900	1900	1900	1900
1.00	1.00	1.00	1.00	1.00	1.00
0.988	0.988	0.973	0.942	0.972	0.972
0	1352	1625	0	1566	0
0	1352	1625	0	1566	0
50	50	50	50	50	50
116.7	145.7	51.8	51.8	3.7	3.7
1	8.4	10.5	1	5	1
0.25	0.42	0.86	0.72	0.25	0.25
100%	0%	3%	0%	0%	0%
4	12	665	167	16	12
0	16	832	0	28	0
No	No	No	No	No	No
Left	Left	Right	Right	Right	Right
0.0	0.0	0.0	3.6	3.6	3.6
4.8	4.8	4.8	4.8	4.8	4.8
1.14	1.14	1.14	1.14	1.14	1.14
24	Free	Free	Free	Stop	Stop
Intersection Summary					
Area Type: CBD					
Control Type: Unsignalized					
Intersection Capacity Utilization 51.9%					
Analysis Period (min) 15					
ICU Level of Service A					

HCM Unsignalized Intersection Capacity Analysis
203: Argus Rd & South Service Rd

Base
AM Peak Hour

EBL	EBT	WBT	WBR	SBL	SBR
↖	→	←	↗	↖	↗
1	5	572	120	4	3
1	5	572	120	4	3
Free	Free	Free	Stop	Stop	Stop
0%	0%	0%	0%	0%	0%
0.25	0.42	0.86	0.72	0.25	0.25
4	12	665	167	16	12
1	5	5	3.6	3.6	3.6
1.2	1.2	1.2	1.2	1.2	1.2
0	0	0	0	0	0
None	None	None	None	None	None
358	358	358	358	358	358
833	833	833	774	750	750
833	833	833	774	750	750
5.1	5.1	5.1	6.4	6.2	6.2
3.1	3.1	3.1	3.5	3.3	3.3
99	99	99	96	97	97
500	500	500	365	414	414
Direction_Lane #					
EB 1 WB 1 SB 1					
16	832	28	16	16	16
4	0	16	0	167	12
0	167	12	0	167	12
500	1700	384	500	1700	384
0.01	0.49	0.07	0.01	0.49	0.07
0.2	0.0	1.9	0.2	0.0	1.9
3.1	0.0	15.1	3.1	0.0	15.1
A	A	C	A	A	C
3.1	0.0	15.1	3.1	0.0	15.1
Approach LOS					
C					
Intersection Summary					
Average Delay 0.5					
Intersection Capacity Utilization 51.9%					
ICU Level of Service A					
Analysis Period (min) 15					

Lanes, Volumes, Timings
204: Trafalgar Rd & Argus Rd

Base
AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	17	0	1761	2134	713
Future Volume (vph)	0	17	0	1761	2134	713
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.5	3.6	3.6	3.6	3.6
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	0.91
Ped. Bike Factor		0.865			0.957	
Flt Protected						
Satd. Flow (prot)	0	1367	0	4363	4319	0
Flt Permitted						
Satd. Flow (perm)	0	1367	0	4363	4319	0
Link Speed (k/h)	50		50	50	50	
Link Distance (m)	145.7		270.2	51.4		
Travel Time (s)	10.5		19.5	3.7		
Confl. Peds. (#/hr)						11
Peak Hour Factor	0.25	0.54	0.25	0.92	0.97	0.82
Heavy Vehicles (%)	0%	7%	0%	7%	4%	2%
Adj. Flow (vph)	0	31	0	1914	2200	870
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	31	0	1914	3070	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width (m)	0.0	3.3	3.3	3.3		
Link Offset (m)	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width (m)	4.8		4.8	4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.14	1.16	1.14	1.14	1.14	1.14
Turning Speed (k/h)	24	14	24			14
Sign Control	Stop		Free	Free	Free	
Intersection Summary						
Area Type:	CBD					
Control Type:	Unsignalized					
Intersection Capacity Utilization	73.8%					
Analysis Period (min)	15					
				ICU Level of Service D		

HCM Unsignalized Intersection Capacity Analysis
204: Trafalgar Rd & Argus Rd

Base
AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	17	0	1761	2134	713
Future Volume (Veh/h)	0	17	0	1761	2134	713
Sign Control	Stop		Free	Free	Free	
Grade	0%		0%	0%	0%	
Peak Hour Factor	0.25	0.54	0.25	0.92	0.97	0.82
Hourly flow rate (vph)	0	31	0	1914	2200	870
Pedestrians	11					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	1					
Right turn flare (veh)				None	None	
Median type						
Median storage (veh)						
Upstream signal (m)				270	52	
pX, platoon unblocked	0.59	0.45	0.45			
vC, conflicting volume	3284	1179	3081			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	1341			
iC, single (s)	6.8	7.0	4.1			
iC, 2 stage (s)						
IF (s)	3.5	3.4	2.2			
p0 queue free %	100	93	100			
d0 capacity (veh/h)	599	476	232			
Direction_Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2 SB 3
Volume Total	31	638	638	880	880	1310
Volume Left	0	0	0	0	0	0
Volume Right	31	0	0	0	0	870
vSH	476	1700	1700	1700	1700	1700
Volume to Capacity	0.07	0.38	0.38	0.38	0.52	0.52 0.77
Queue Length 95th (m)	1.7	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	13.1	0.0	0.0	0.0	0.0	0.0
Lane LOS	B					
Approach Delay (s)	13.1	0.0			0.0	
Approach LOS	B					
Intersection Summary						
Average Delay	0.1					
Intersection Capacity Utilization				73.8%		
Analysis Period (min)				15		
				ICU Level of Service D		

Lanes, Volumes, Timings
302: Cross Ave & East Driveway Access

Base
AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group						
Lane Configurations		4↑	4↑		W	
Traffic Volume (vph)	0	612	640	0	0	0
Future Volume (vph)	0	612	640	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Flt Protected						
Satd. Flow (prot)	0	3185	3185	0	1676	0
Flt Permitted						
Satd. Flow (perm)	0	3185	3185	0	1676	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		92.7	130.9		41.6	
Travel Time (s)		6.7	9.4		3.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	665	696	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	665	696	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Right
Median Width(m)		3.3	3.3		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25	Free	Free	Free	Stop	Stop
Sign Control						
Intersection Summary						
Area Type:	CBD					
Control Type:	Unsignalized					
Intersection Capacity Utilization	23.0%					
Analysis Period (min)	15					
	ICU Level of Service A					

HCM Unsignalized Intersection Capacity Analysis
302: Cross Ave & East Driveway Access

Base
AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement						
Lane Configurations		4↑	4↑		W	
Traffic Volume (veh/h)	0	612	640	0	0	0
Future Volume (Veh/h)	0	612	640	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Grade	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	665	696	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None	None	None	None	None	None
Median storage (veh)						
Upstream signal (m)		93	131			
pX, platoon unblocked					0.91	
VC, conflicting volume	696				1028	348
VC1, stage 1 conf vol						
VC2, stage 2 conf vol						
VCu, unblocked vol	696				833	348
IC, single (s)	4.1				6.8	6.9
IC, 2 stage (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
CM capacity (veh/h)	896				280	648
Direction_Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 1
Volume Total	222	443	464	232	0	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
CSH	896	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.26	0.27	0.14	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS					A	A
Approach Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Approach LOS					A	A
Intersection Summary						
Average Delay					0.0	
Intersection Capacity Utilization					23.0%	ICU Level of Service A
Analysis Period (min)					15	

Lanes, Volumes, Timings
303: North Driveway & Argus Rd

Base
AM Peak Hour

	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	6	0	0	0	575	0
Traffic Volume (vph)	6	0	0	0	575	0
Future Volume (vph)	6	0	0	0	575	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	61.0			116.7	66.7	
Travel Time (s)	4.4			8.4	4.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	7	0	0	625	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	7	0	0	625	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Right
Median Width (m)	0.0			0.0	3.6	
Link Offset (m)	0.0			0.0	0.0	
Crosswalk Width (m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	15	25	25	25	25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	33.6%					
Analysis Period (min)	15					
ICU Level of Service A						

HCM Unsignalized Intersection Capacity Analysis
303: North Driveway & Argus Rd

Base
AM Peak Hour

	EBT	EBR	WBL	WBT	NBL	NBR
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	6	0	0	0	575	0
Traffic Volume (veh/h)	6	0	0	0	575	0
Future Volume (Veh/h)	6	0	0	0	575	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	0	0	625	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (m)	242					
pK platoon unblocked						
vC, conflicting volume	7					
vC1, stage 1 conf vol	632					
vC2, stage 2 conf vol	7					
vCu, unblocked vol	4.1					
IC, single (s)	2.2					
IC, 2 stage (s)	3.5					
p0 queue free %	100					
ICM capacity (veh/h)	1614					
Direction_Lane #	EB 1	WB 1	NB 1			
Volume Total	7	625	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
CSH	1700	1614	1700			
Volume to Capacity	0.00	0.00	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					
Approach LOS	A					
Intersection Summary						
Average Delay	0.0					
Intersection Capacity Utilization	33.6%					
ICU Level of Service	A					
Analysis Period (min)	15					

Intersection: 104: Trafalgar Rd & Cornwall Rd

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	WB	TR	TR	TR	TR	TR	TR	SB	SB	SB	SB	
Directions Served	L	L	T	TR	L	L	T	TR	L	L	T	TR	L	L	T	TR	L	L	L	L	L	L
Maximum Queue (m)	79.7	87.2	131.7	115.4	68.9	124.7	129.0	32.3	74.6	66.5	84.8	106.7										
Average Queue (m)	55.0	64.9	61.4	59.3	8.0	75.7	89.2	17.3	41.2	31.1	52.4	56.8										
95th Queue (m)	85.5	91.5	117.0	101.9	33.8	117.3	150.2	37.3	67.4	56.0	79.8	91.1										
Link Distance (m)																						
Upstream Blk Time (%)					266.8	266.8												289.9	289.9			
Queuing Penalty (veh)					0	0												10	10			
Storage Bay Dist (m)	80.0	80.0			80.0													25.0	25.0			
Storage Blk Time (%)	1	5			1													5	28			
Queuing Penalty (veh)	1	14			3													9	15			

Intersection: 104: Trafalgar Rd & Cornwall Rd

Movement	SB	SB	B34
Directions Served	T	R	T
Maximum Queue (m)	70.4	32.9	1.2
Average Queue (m)	33.3	11.7	0.0
95th Queue (m)	57.7	26.1	0.8
Link Distance (m)	101.5	101.5	128.1
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 105: Trafalgar Rd & QEW EB-Off Ramp

Movement	EB	EB	EB	EB	EB	NB	NB	NB	NB	NB	NB	TR	TR	TR	TR	TR	TR	SB	SB	SB	SB
Directions Served	L	L	R	T	L	L	T	T	L	L	T	TR	L	L	T	TR	L	L	L	L	L
Maximum Queue (m)	175.1	185.4	189.3	34.3	41.5	36.8	283.1	304.4	288.7												
Average Queue (m)	100.8	176.2	180.8	24.5	27.3	27.9	85.5	134.4	154.1												
95th Queue (m)	160.1	209.0	196.2	37.0	37.9	35.2	182.0	271.0	266.0												
Link Distance (m)	176.9	176.9	176.9	27.8	27.8	27.8	27.8	300.4	300.4												
Upstream Blk Time (%)																					
Queuing Penalty (veh)	0	39	79	17	22	25	0	0	0												
Storage Bay Dist (m)																					
Storage Blk Time (%)																					
Queuing Penalty (veh)																					

Intersection: 101: Trafalgar Rd & Cross Ave/South Service Rd

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	WB	TR	TR	TR	TR	TR	TR	SB	SB	SB	SB
Directions Served	L	L	T	TR	L	L	T	TR	L	L	T	TR	L	L	T	TR	L	L	L	L	L
Maximum Queue (m)	77.7	88.6	76.2	30.2	48.6	39.3	57.3	93.5	112.9	117.1	14.2	32.3									
Average Queue (m)	50.1	54.9	40.5	11.2	23.1	17.0	33.0	61.8	73.1	78.0	0.5	31.7									
95th Queue (m)	74.0	80.2	70.6	26.5	43.2	31.1	64.5	90.3	103.9	108.3	10.0	35.1									
Link Distance (m)																					
Upstream Blk Time (%)						313.2	313.2											126.1	128.1	128.1	101.5
Queuing Penalty (veh)						0	0											0	0		
Storage Bay Dist (m)	130.0				25.0				50.0									25.0			
Storage Blk Time (%)	0				1				1									18			
Queuing Penalty (veh)	0				1				4									22			

Intersection: 101: Trafalgar Rd & Cross Ave/South Service Rd

Movement	SB	SB	SB
Directions Served	T	T	TR
Maximum Queue (m)	221.3	215.2	186.0
Average Queue (m)	135.4	119.4	121.1
95th Queue (m)	209.4	184.2	170.1
Link Distance (m)	238.9	238.9	238.9
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 102: GO Bus Terminal/Argus Rd & Cross Ave

Movement	EB	EB	EB	WB	WB	WB	WB	WB	WB	WB	WB	TR	TR	TR	TR	TR	TR	SB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	TR	L	T	TR	L	T	TR	L	T	L	L	L	L
Maximum Queue (m)	24.7	50.7	44.0	27.1	40.4	32.6	33.8	35.4	22.4	58.5											
Average Queue (m)	6.8	26.3	18.1	10.0	16.4	17.4	6.5	12.0	9.9	30.3											
95th Queue (m)	18.4	44.2	35.0	25.3	31.7	30.5	22.4	28.2	23.9	48.6											
Link Distance (m)																					
Upstream Blk Time (%)																					
Queuing Penalty (veh)																					
Storage Bay Dist (m)	20.0				20.0				15.0									4	30		
Storage Blk Time (%)	0	13			2				4									4			
Queuing Penalty (veh)	0	4			5				2									18	17		

Queuing and Blocking Report

Base
AM Peak Hour

Intersection: 106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

Movement	EB	EB	WB	WB	NB	NB	T	T	SB	SB	T	T	SB	SB
	L	R	L	LT	T	T								
Directions Served														
Maximum Queue (m)	1.5	80.5	80.9	84.4	78.7	91.0	85.6	269.8	271.9	270.8	268.5			
Average Queue (m)	0.1	42.8	51.7	52.3	35.0	43.0	43.4	260.6	261.6	261.2	260.2			
95th Queue (m)	1.1	74.1	76.1	77.7	65.0	75.3	72.0	268.0	268.0	267.0	264.7			
Link Distance (m)					119.7	173.2	173.2	300.4	300.4	254.7	254.7	254.7	254.7	
Upstream Blk Time (%)								42	61	90	57			
Queuing Penalty (veh)								0	0	0	0			
Storage Bay Dist (m)								50.0						
Storage Blk Time (%)								10						
Queuing Penalty (veh)								0						

Intersection: 203: Argus Rd & South Service Rd

Movement	EB	WB	SB
	LT	TR	LR
Directions Served			
Maximum Queue (m)	2.9	3.1	8.8
Average Queue (m)	0.2	0.3	1.8
95th Queue (m)	2.6	3.2	7.5
Link Distance (m)		102.8	112.4
Upstream Blk Time (%)			43.0
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 204: Trafalgar Rd & Argus Rd

Movement	EB	NB	NB	SB	SB	SB	TR
	R	T	T	T	T	T	
Directions Served							
Maximum Queue (m)	14.2	43.3	42.2	54.4	4.5	20.6	33.5
Average Queue (m)	3.4	11.8	11.7	18.3	0.2	1.2	5.7
95th Queue (m)	10.5	35.1	32.1	42.6	2.3	8.8	22.4
Link Distance (m)	112.4	238.9	238.9	238.9	27.8	27.8	27.8
Upstream Blk Time (%)					0	0	
Queuing Penalty (veh)					0	4	
Storage Bay Dist (m)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Queuing and Blocking Report

Base
AM Peak Hour

Intersection: 302: Cross Ave & East Driveway Access

Movement
Directions Served
Maximum Queue (m)
Average Queue (m)
95th Queue (m)
Link Distance (m)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (m)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 303: North Driveway & Argus Rd

Movement
Directions Served
Maximum Queue (m)
Average Queue (m)
95th Queue (m)
Link Distance (m)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (m)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 886

Lanes, Volumes, Timings
101: Trafalgar Rd & Cross Ave/South Service Rd

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1
Traffic Volume (vph)	956	86	132	151	144	274	128	1382	41	131	1390
Future Volume (vph)	956	86	132	151	144	274	128	1382	41	131	1390
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.6	3.3	3.6	3.5	3.3	3.6	3.6	3.3	3.6
Storage Length (m)	130.0	0.0	25.0	0.0	25.0	0.0	50.0	0.0	25.0	0.0	25.0
Storage Lanes	1	0	1	1	1	1	1	1	0	1	0
Taper Length (m)	7.5	1.0	7.5	7.5	1.0	1.0	7.5	7.5	1.0	7.5	1.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Frt	0.903			0.850			0.995			0.972	
Flt Protected	0.950			0.950			0.950			0.950	
Satd. Flow (prot)	2795	1386	0	1525	1583	1382	1428	4483	0	1525	4368
Flt Permitted	0.950			0.568			0.071			0.087	
Satd. Flow (perm)	2790	1386	0	906	1583	1362	107	4483	0	108	4368
Right Turn on Red	Yes			Yes			Yes		Yes		Yes
Satd. Flow (RTOR)	77			235			4		4		50
Link Speed (k/h)	50			50			50		50		50
Link Distance (m)	122.6			330.4			150.2		270.2		270.2
Travel Time (s)	8.8			23.8			10.8		19.5		19.5
Conf. Peds. (#/hr)	1			4			10		52		52
Peak Hour Factor	0.87	0.77	0.64	0.77	0.77	0.77	0.81	0.88	0.80	0.84	0.84
Heavy Vehicles (%)	9%	12%	3%	8%	4%	4%	10%	3%	0%	3%	4%
Adj. Flow (vph)	1099	112	206	196	187	356	158	1570	51	156	1655
Shared Lane Traffic (%)											
Lane Group Flow (vph)	1099	318	0	196	187	356	158	1621	0	156	2041
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Right	Left	Right	Right	Left	Right	Left	Left	Right
Median Width (m)	6.6			6.6			3.3		3.3		3.3
Link Offset (m)	0.0			0.0			0.0		0.0		0.0
Crosswalk Width (m)	4.8			4.8			4.8		4.8		4.8
Two way Left Turn Lane											
Headway Factor	1.19	1.14	1.14	1.14	1.14	1.16	1.19	1.14	1.14	1.19	1.14
Turning Speed (k/h)	24	14	24	24	24	14	24	14	24	24	14
Number of Detectors	1	2	1	1	2	1	1	2	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 1 Channel											
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4			9.4			9.4		9.4		9.4
Detector 2 Size (m)	0.6			0.6			0.6		0.6		0.6
Detector 2 Type	Ch+Ex			Ch+Ex			Ch+Ex		Ch+Ex		Ch+Ex
Detector 2 Channel											

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Lanes, Volumes, Timings
101: Trafalgar Rd & Cross Ave/South Service Rd

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Detector 2 Extend (s)	0.0			0.0			0.0		0.0		0.0
Turn Type	Prot	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4		8	8	2	5	2	1	6	
Permitted Phases	7	4		8	8	2	5	2	1	6	
Detector Phase	7	4		8	8	2	5	2	1	6	
Switch Phase											
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	7.0	27.0	7.0	27.0	7.0
Minimum Split (s)	17.0	25.0	25.0	25.0	25.0	25.0	11.5	34.0	11.5	34.0	11.5
Total Split (s)	33.0	58.0	58.0	25.0	25.0	25.0	15.2	54.0	28.0	66.8	47.7%
Total Split (%)	23.6%	41.4%	41.4%	17.9%	17.9%	17.9%	10.9%	38.6%	20.0%	47.7%	
Maximum Green (s)	26.0	51.0	18.0	18.0	18.0	18.0	11.2	47.0	24.0	59.8	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	3.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	1.0	3.0	1.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	0.0	-3.0	0.0	-3.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lead	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	4.0	4.0	4.0	4.0	4.0	3.0	5.0	3.0	5.0	
Recall Mode	Min	Min	Min	Min	Min	Min	Min	C-Max	Min	C-Max	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	
Act Effct Green (s)	29.0	54.0	18.0	21.0	21.0	21.0	70.4	59.2	75.8	62.8	
Actuated v/c Ratio	0.21	0.39	0.13	0.15	0.15	0.15	0.50	0.42	0.54	0.45	
v/c Ratio	1.90	0.55	1.69	0.79	0.88	0.88	0.99	0.85	0.75	1.03	
Control Delay	442.4	28.9	380.4	80.6	80.6	43.0	56.6	46.1	50.9	63.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	442.4	28.9	380.4	80.6	80.6	43.0	56.6	46.1	50.9	63.1	
LOS	F	C	F	F	F	D	E	D	D	E	
Approach Delay	349.6			142.0			47.0		62.2		
Approach LOS	F			F			D		D		
Intersection Summary											
Area Type:	CBD										
Cycle Length:	140										
Actuated Cycle Length:	140										
Offset: 128 (91%), Referenced to phase 2:NBTL and 6:SRTL, Start of Green											
Natural Cycle:	150										
Control Type:	Actuated-Coordinated										
Maximum v/c Ratio:	1.90										
Intersection Signal Delay:	133.8										
Intersection Capacity Utilization:	98.1%										
Analysis Period (min):	15										
ICU Level of Service:	F										

Splits and Phases: 101: Trafalgar Rd & Cross Ave/South Service Rd

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Queues
101: Tatalgar Rd & Cross Ave/South Service Rd

Base
PM Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group	1099	318	196	187	356	158	1621	156	2041
Lane Group Flow (vph)	1.90	0.55	1.69	0.79	0.88	0.99	0.85	0.75	1.03
v/c Ratio	442.4	28.9	380.4	80.6	43.0	56.6	46.1	50.9	63.1
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	44.24	28.9	380.4	80.6	43.0	56.6	46.1	50.9	63.1
Total Delay	~252.3	54.3	-83.3	53.3	37.0	37.3	143.8	32.2	-224.2
Queue Length 50th (m)	#282.8	66.6	#110.5	68.3	52.2	m29.5	m111.6	m45.9	#204.1
Queue Length 95th (m)	98.6		306.4			126.2		246.2	
Internal Link Dist (m)	130.0		25.0			50.0		25.0	
Turn Bay Length (m)	578	581	116	237	404	159	1899	303	1986
Base Capacity (vph)	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.90	0.55	1.69	0.79	0.88	0.99	0.85	0.75	1.03

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

HCM Signalized Intersection Capacity Analysis
101: Tatalgar Rd & Cross Ave/South Service Rd

Base
PM Peak Hour

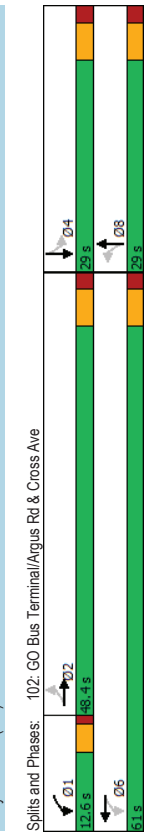
	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	FF	FF	FF	FF	FF	FF	FF	FF	FF
Traffic Volume (vph)	956	86	132	151	144	274	128	1382	41
Future Volume (vph)	956	86	132	151	144	274	128	1382	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.5	3.3	3.6	3.3
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00
Frbp. ped/bikes	1.00	0.99	1.00	1.00	0.99	1.00	0.99	1.00	0.99
Frbp. ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.95	1.00	0.90	1.00	0.85	1.00	1.00	1.00	0.97
Flt Protected	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95
Satd. Flow (prot)	2785	1386	1515	1583	1362	1428	4484	1525	4367
Flt Permitted	0.95	1.00	0.57	1.00	1.00	0.07	1.00	0.07	1.00
Satd. Flow (perm)	2795	1386	905	1583	1362	107	4484	107	4367
Peak-hour factor, PHF	0.87	0.77	0.64	0.77	0.77	0.81	0.88	0.80	0.84
Adj. Flow (vph)	1099	112	206	196	187	356	158	1570	51
RTOR Reduction (vph)	0	47	0	0	0	200	0	2	0
Lane Group Flow (vph)	1099	271	0	196	187	156	158	1619	0
Conf. Peds. (#/hr)	1	4	4	4	4	1	10	52	10
Heavy Vehicles (%)	9%	6%	12%	3%	8%	4%	10%	3%	0%
Turn Type	Prot	NA	Perm	NA	Perm	NA	Perm	pm-pt	NA
Protected Phases	7	4	8	8	5	2	1	6	6
Permitted Phases	8	8	8	8	2	2	6	6	6
Actuated Green, G (s)	26.0	51.0	18.0	18.0	18.0	67.4	56.2	74.6	59.8
Effective Green, g (s)	29.0	54.0	18.0	21.0	21.0	67.4	59.2	74.6	62.8
Actuated G/C Ratio	0.21	0.39	0.13	0.15	0.15	0.48	0.42	0.53	0.45
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	4.0	7.0	4.0	7.0
Vehicle Extension (s)	3.0	4.0	4.0	4.0	4.0	3.0	5.0	3.0	5.0
Lane Grp Cap (vph)	578	534	116	237	204	157	1896	206	1958
v/s Ratio Prot	c0.39	0.20	c0.22	0.12	0.12	c0.08	0.36	c0.08	c0.46
v/s Ratio Perm	1.90	0.51	1.69	0.79	0.77	1.01	0.85	0.76	1.03
Uniform Delay, d1	55.5	32.8	61.0	57.4	57.1	41.8	36.5	36.6	38.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	0.98	1.24	1.05	1.02
Incremental Delay, d2	412.1	1.0	344.6	16.7	16.6	23.1	0.5	11.9	25.8
Delay (s)	467.6	33.9	405.6	74.1	73.7	64.1	45.6	50.2	65.0
Level of Service	F	C	F	E	E	E	D	D	E
Approach Delay (s)	370.3	F	161.8	F	F	47.2	D	64.0	E
Approach LOS	F	F	F	F	F	D	D	E	E

Intersection Summary	
HCM 2000 Control Delay	141.7
HCM 2000 Volume to Capacity ratio	1.30
Actuated Cycle Length (s)	140.0
Sum of lost time (s)	16.0
Intersection Capacity Utilization	98.1%
ICU Level of Service	F
Analysis Period (min)	15
Critical Lane Group	c

Lanes, Volumes, Timings
102: GO Bus Terminal/Argus Rd & Cross Ave

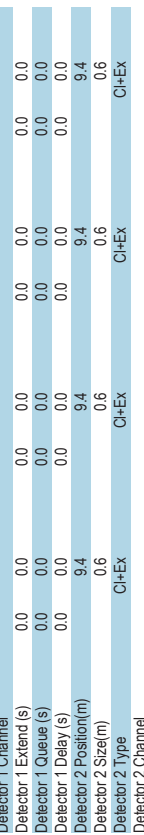
Lanes, Volumes, Timings
102: GO Bus Terminal/Argus Rd & Cross Ave

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)												
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	2	2	1	6	8	8	4	4	4	4	4	4
Permitted Phases	2	2	2	1	6	8	8	8	8	4	4	4
Detector Phase	2	2	2	1	6	8	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	22.0	22.0	8.0	22.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	45.0	45.0	12.5	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0
Total Split (s)	48.4	48.4	12.6	61.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0
Total Split (%)	53.8%	53.8%	14.0%	67.8%	32.2%	32.2%	32.2%	32.2%	32.2%	32.2%	32.2%	32.2%
Maximum Green (s)	42.4	42.4	8.6	55.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Vehicle Extension (s)	5.0	5.0	2.5	5.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Recall Mode	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Ad Effct Green (s)	35.3	35.3	47.8	47.8	19.4	19.4	19.4	19.4	19.4	19.4	19.4	19.4
Actuated g/C Ratio	0.07	0.47	0.63	0.63	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
v/c Ratio	0.27	0.67	0.26	0.22	0.22	0.22	0.29	0.62	0.40	0.40	0.40	0.40
Control Delay	12.4	18.5	10.2	6.2	29.3	11.5	36.4	10.1	10.1	10.1	10.1	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.4	18.5	10.2	6.2	29.3	11.5	36.4	10.1	10.1	10.1	10.1	10.1
LOS	B	B	B	A	C	B	D	B	B	D	B	B
Approach Delay	18.3		6.5									
Approach LOS	B		A									
Intersection Summary												
Area Type:	CBD											
Cycle Length:	90											
Actuated Cycle Length:	75.4											
Natural Cycle:	90											
Control Type:	Semi Act-Uncoordinated											
Maximum v/c Ratio:	0.67											
Intersection Signal Delay:	16.2											
Intersection LOS:	B											
Intersection Capacity Utilization:	56.3%											
Analysis Period (min):	15											



Lanes, Volumes, Timings
102: GO Bus Terminal/Argus Rd & Cross Ave

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	835	16	36	347	41	15	2	46	142	19	128
Future Volume (vph)	14	835	16	36	347	41	15	2	46	142	19	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.6
Storage Length (m)	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	15.0	0.0	0.0	0.0
Storage Lanes	1											
Taper Length (m)	7.5			7.5			7.5		7.5			
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00	1.00	1.00	1.00	0.97	0.98	0.99	0.98	0.99	0.99	0.99
Frt	0.996			0.983			0.866		0.877			
Flt Protected	0.950			0.950			0.950		0.950			
Satd. Flow (prot)	1570	3124	0	818	3140	0	805	792	0	1570	1271	0
FltP Permitted	0.494			0.166			0.560		0.709			
Satd. Flow (perm)	816	3124	0	143	3140	0	490	792	0	1147	1271	0
Right Turn on Red			Yes		Yes		Yes		Yes		Yes	
Satd. Flow (RTOR)	4			31			66		144			
Link Speed (k/h)	50			50			50		50			
Link Distance (m)	207.1			100.7			81.9		180.7			
Travel Time (s)	14.9			7.3			5.9		13.0			
Confl. Peds. (#/hr)	1		3	3		1	3		20		20	3
Peak Hour Factor	0.52	0.87	0.65	0.84	0.88	0.79	0.53	0.25	0.70	0.78	0.62	0.89
Heavy Vehicles (%)	0%	1%	100%	92%	1%	5%	95%	0%	91%	0%	93%	0%
Adj. Flow (vph)	27	960	25	43	394	52	28	8	66	182	31	144
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	985	0	43	446	0	28	74	0	182	175	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width (m)	3.3			3.3			3.3		3.3		3.3	
Link Offset (m)	0.0			0.0			0.0		0.0		0.0	
Crosswalk Width (m)	4.8			4.8			4.8		4.8		4.8	
Two way Left Turn Lane												
Headway Factor	1.19	1.14	1.14	1.19	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	24	14	24	24	14	24	24	14	24	14	24	14
Number of Detectors	1	2	1	2	1	2	1	2	1	2	1	2
Detector Template	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru
Leading Detector (m)	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Type	Ci+Ex	Ci+Ex	Ci+Ex	Ci+Ex	Ci+Ex	Ci+Ex	Ci+Ex	Ci+Ex	Ci+Ex	Ci+Ex	Ci+Ex	Ci+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4			9.4			9.4		9.4		9.4	
Detector 2 Size (m)	0.6			0.6			0.6		0.6		0.6	
Detector 2 Type	Ci+Ex			Ci+Ex			Ci+Ex		Ci+Ex		Ci+Ex	
Detector 2 Channel												



Queues
102: GO Bus Terminal/Argus Rd & Cross Ave

Base
PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group	27	985	43	446	28	74	182	175
Lane Group Flow (vph)	0.07	0.67	0.26	0.22	0.22	0.29	0.62	0.40
v/c Ratio	12.4	18.5	10.2	6.2	29.3	11.5	36.4	10.1
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	12.4	18.5	10.2	6.2	29.3	11.5	36.4	10.1
Total Delay	2.1	57.4	2.3	12.5	3.4	0.9	24.3	3.6
Queue Length 50th (m)	3.9	83.0	6.3	21.3	6.4	0.0	42.1	6.8
Queue Length 95th (m)	183.1		76.7		57.9		156.7	
Internal Link Dist (m)	20.0						15.0	
Turn Bay Length (m)	496	1900	170	2446	167	314	392	529
Base Capacity (vph)	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.52	0.25	0.18	0.17	0.24	0.46	0.33
Intersection Summary								

HCM Signalized Intersection Capacity Analysis
102: GO Bus Terminal/Argus Rd & Cross Ave

Base
PM Peak Hour

Movement	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	←	←	←	←	←	←	←	←	←
Traffic Volume (vph)	14	835	16	36	347	41	15	2	46
Future Volume (vph)	14	835	16	36	347	41	15	2	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.3	3.6	3.3	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.98	1.00
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98	1.00
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98	1.00
Frt	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.88
Flt Protected	1569	3125	818	3138	804	795	1543	1271	
Satd. Flow (prot)	0.49	1.00	0.17	1.00	0.58	1.00	0.71	1.00	
Flt Permitted	816	3125	143	3138	490	795	1151	1271	
Satd. Flow (perm)	0.52	0.87	0.65	0.84	0.88	0.79	0.53	0.25	0.70
Peak-hour factor, PHF	27	960	25	43	394	52	28	8	66
Adj. Flow (vph)	0	2	0	0	11	0	0	49	0
RTOR Reduction (vph)	27	983	0	43	435	0	28	25	0
Lane Group Flow (vph)	1	3	3	3	1	3	20	20	3
Conf. Peds. (#/hr)	0%	1%	100%	92%	1%	5%	95%	0%	91%
Heavy Vehicles (%)	Perm	NA	NA	pm-pt	NA	Perm	NA	Perm	NA
Turn Type	2	6	1	6	8	8	8	4	4
Permitted Phases	33.3	33.3	45.7	45.7	17.3	17.3	17.3	17.3	17.3
Actuated Green, G (s)	35.3	35.3	45.7	47.7	19.3	19.3	19.3	19.3	19.3
Effective Green, g (s)	0.47	0.47	0.61	0.64	0.26	0.26	0.26	0.26	0.26
Actuated g/C Ratio	6.0	6.0	4.0	6.0	6.0	6.0	6.0	6.0	6.0
Clearance Time (s)	5.0	5.0	2.5	5.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	384	1470	162	1995	126	204	296	327	0.05
Lane Grp Cap (vph)	0.03	0.03	0.13	0.14	0.06	0.03	0.16	0.21	0.05
v/s Ratio Prot	0.07	0.67	0.27	0.22	0.22	0.12	0.61	0.21	0.05
v/s Ratio Perm	10.9	15.3	8.1	5.8	21.9	21.4	24.6	21.9	0.05
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Progression Factor	0.2	1.5	0.6	0.1	1.2	0.4	4.3	0.4	0.4
Incremental Delay, d2	11.0	16.9	8.8	5.9	23.2	21.7	28.9	22.3	2.3
Delay (s)	B	B	A	A	C	C	C	C	C
Level of Service	B	B	A	A	C	C	C	C	C
Approach Delay (s)	16.7	16.7	6.1	6.1	22.1	22.1	25.6	25.6	25.6
Approach LOS	B	B	A	A	C	C	C	C	C
Intersection Summary									
HCM 2000 Control Delay	16.0		HCM 2000 Level of Service		B				
HCM 2000 Volume to Capacity ratio	0.60								
Actuated Cycle Length (s)	75.0								
Sum of lost time (s)	12.0								
Intersection Capacity Utilization	56.3%		ICU Level of Service		B				
Analysis Period (min)	15								
c. Critical Lane Group									

Lanes, Volumes, Timings
104: Trafalgar Rd & Cornwall Rd

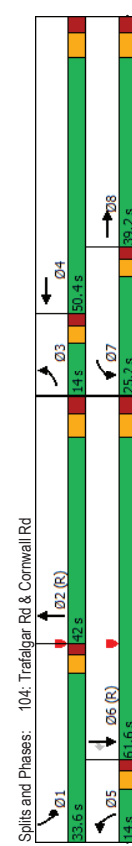
														Base PM Peak Hour							
														←		→		←		→	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR									
Lane Configurations	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT									
Traffic Volume (vph)	474	507	179	63	707	623	126	449	43	538	581	519									
Future Volume (vph)	474	507	179	63	707	623	126	449	43	538	581	519									
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900									
Lane Width (m)	3.3	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.5									
Storage Length (m)	80.0	0.0	80.0	0.0	80.0	0.0	25.0	0.0	80.0	0.0	80.0	0.0									
Storage Lanes	2		0	1	0	0	1	0	1	0	1	0									
Taper Length (m)	7.5		0.95	7.5		7.5	0.95	7.5	0.95	7.5	0.95	7.5									
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	1.00	0.95	1.00	0.95	0.97	1.00	1.00									
Ped Bike Factor	1.00	0.99	1.00	0.98	1.00	0.98	1.00	1.00	0.98	1.00	0.98	0.98									
Frt	0.948		0.931		0.931		0.985		0.985		0.850										
Flt Protected	0.950		0.950		0.950		0.950		0.950		0.950										
Satd. Flow (prot)	2987	2954	0	1481	2875	0	1540	3161	0	2929	1676	1356									
Flt Permitted	0.950		0.950		0.950		0.950		0.950		0.950										
Satd. Flow (perm)	2974	2954	0	1474	2875	0	1532	3161	0	2878	1676	1324									
Right Turn on Red			Yes		Yes		Yes		Yes		Yes										
Satd. Flow (RTOR)	67		162		162		8		8		198										
Link Speed (k/h)	50		50		50		50		50		50										
Link Distance (m)	285.8		142.3		142.3		311.4		311.4		130.3										
Travel Time (s)	20.6		10.2		10.2		22.4		22.4		9.4										
Confl. Peds. (#/hr)	25		7		7		25		25		18										
Peak Hour Factor	0.93	0.91	0.60	0.75	0.86	0.90	0.60	0.86	0.75	0.84	0.86	0.80									
Heavy Vehicles (%)	2%	4%	1%	6%	3%	3%	2%	1%	0%	4%	2%	6%									
Adj. Flow (vph)	510	557	288	84	822	692	210	522	57	640	676	649									
Shared Lane Traffic (%)																					
Lane Group Flow (vph)	510	855	0	84	1514	0	210	579	0	640	676	649									
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No									
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Left	Right									
Median Width (m)	6.6		6.6		6.6		6.6		6.6		6.6										
Link Offset (m)	0.0		0.0		0.0		0.0		0.0		0.0										
Crosswalk Width (m)	4.8		4.8		4.8		4.8		4.8		4.8										
Two way Left Turn Lane																					
Headway Factor	1.19	1.14	1.14	1.19	1.14	1.14	1.19	1.14	1.14	1.19	1.14	1.16									
Turning Speed (k/h)	24	14	14	24	14	14	24	14	14	24	14	14									
Number of Detectors	1	2		1	2		1	2		1	2	1									
Detector Template	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Right	Left	Thru	Right									
Leading Detector (m)	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	2.0									
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0									
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0									
Detector 1 Type	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6									
Detector 1 Channel	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex									
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0									
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0									
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0									
Detector 2 Position (m)	9.4		9.4		9.4		9.4		9.4		9.4										
Detector 2 Size (m)	0.6		0.6		0.6		0.6		0.6		0.6										
Detector 2 Type	C+Ex		C+Ex		C+Ex		C+Ex		C+Ex		C+Ex										

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Lanes, Volumes, Timings
104: Trafalgar Rd & Cornwall Rd

														Base PM Peak Hour							
														←		→		←		→	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR									
Detector 2 Extend (s)	0.0		0.0		0.0		0.0		0.0		0.0										
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Prot	NA									
Protected Phases	3	8	7	4	7	4	5	2	5	2	1	6									
Permitted Phases	3	8	7	4	7	4	5	2	5	2	1	6									
Switch Phase	7.0	10.0	7.0	10.0	7.0	10.0	7.0	10.0	7.0	10.0	7.0	10.0									
Minimum Initial (s)	12.0	37.0	12.0	37.0	12.0	37.0	12.0	37.0	12.0	37.0	12.0	37.0									
Minimum Split (s)	14.0	39.2	25.2	50.4	14.0	42.0	33.6	61.6	33.6	61.6	33.6	61.6									
Total Split (%)	10.0%	28.0%	18.0%	36.0%	10.0%	30.0%	24.0%	44.0%	24.0%	44.0%	24.0%	44.0%									
Maximum Green (s)	9.0	32.2	20.2	43.4	9.0	35.0	28.6	54.6	28.6	54.6	28.6	54.6									
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0									
All-Red Time (s)	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0									
Lost Time Adjust (s)	-1.0	-3.0	-1.0	-3.0	-1.0	-3.0	-1.0	-3.0	-1.0	-3.0	-1.0	-3.0									
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0									
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag									
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes									
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2									
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max									
Walk Time (s)	7.0		7.0		7.0		7.0		7.0		7.0										
Flash Dont Walk (s)	23.0		23.0		23.0		25.0		25.0		25.0										
Pedestrian Calls (#/hr)	0		0		0		0		0		0										
Act Effct Green (s)	10.0	35.2	21.2	46.4	10.0	38.0	29.6	57.6	29.6	57.6	29.6	57.6									
Actuated v/c Ratio	0.07	0.25	0.15	0.33	0.15	0.27	0.21	0.41	0.21	0.41	0.21	0.41									
v/c Ratio	2.39	1.08	0.38	1.43	0.38	1.43	0.91	0.67	0.91	0.67	1.03	0.98									
Control Delay	667.6	100.7	59.0	229.7	473.8	49.3	96.7	390	96.7	390	27.7										
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0									
Total Delay	667.6	100.7	59.0	229.7	473.8	49.3	96.7	390	96.7	390	27.7										
LOS	F	F	E	F	F	D	F	D	F	D	F	D									
Approach Delay			312.5		220.7		162.3		162.3		54.1										
Approach LOS			F		F		F		F		D										
Intersection Summary																					
Area Type:	CBD																				
Cycle Length:	140																				
Actuated Cycle Length:	140																				
Offset: 0 (0%):	Referenced to phase 2:NBT and 6:SBT. Start of Green, Master Intersection																				
Control Type:	Actuated-Coordinated																				
Natural Cycle:	150																				
Maximum v/c Ratio:	2.39																				
Intersection Signal Delay:	177.3																				
Intersection Capacity Utilization:	117.1%																				
Analysis Period (min):	15																				

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Queues 104: Tatalgar Rd & Cornwall Rd

Base PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	510	855	84	1514	210	579	640	676	649
Lane Group Flow (vph)	2.39	1.08	0.38	1.43	1.91	0.67	1.03	0.98	0.98
v/c Ratio	667.6	100.7	59.0	229.7	473.8	49.3	96.7	39.0	27.7
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	667.6	100.7	59.0	229.7	473.8	49.3	96.7	39.0	27.7
Total Delay	~125.7	~138.0	22.3	~297.3	~93.7	78.4	~105.5	142.6	58.4
Queue Length 50th (m)	#162.4	#181.2	32.7	#319.2	#87.1	94.4	m96.8	m121.1	m53.1
Queue Length 95th (m)									
Internal Link Dist (m)	261.8		118.3		287.4			106.3	
Turn Bay Length (m)	80.0		80.0		25.0		80.0		
Base Capacity (vph)	213	792	224	1061	110	863	619	689	661
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	2.39	1.08	0.38	1.43	1.91	0.67	1.03	0.98	0.98

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis 104: Tatalgar Rd & Cornwall Rd

Base PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	TT	TT	T	TT	TT	TT	TT	TT	T
Traffic Volume (vph)	474	507	179	63	707	623	126	449	43
Future Volume (vph)	474	507	179	63	707	623	126	449	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.3	3.6	3.3	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.95	1.00	0.95	1.00	0.97	1.00
Frbp. ped/bikes	1.00	0.99	1.00	0.98	1.00	0.99	1.00	1.00	0.98
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.95	1.00	0.93	1.00	0.99	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	2987	2953	1481	2876	1540	3161	2929	1676	1324
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	2987	2953	1481	2876	1540	3161	2929	1676	1324
Peak-hour factor, PHF	0.93	0.91	0.60	0.75	0.86	0.90	0.60	0.86	0.75
Adj. Flow (vph)	510	557	298	84	822	692	210	522	57
RTOR Reduction (vph)	0	50	0	0	108	0	0	0	0
Lane Group Flow (vph)	510	805	0	84	1406	0	210	573	0
Conf. Peds. (#/hr)	25	7	7	7	25	9	18	18	9
Heavy Vehicles (%)	2%	4%	1%	6%	3%	2%	1%	0%	4%
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Prot
Protected Phases	3	8	7	4	5	2	2	1	6
Permitted Phases									
Actuated Green, G (s)	9.0	32.2	20.2	43.4	9.0	35.0	28.6	54.6	54.6
Effective Green, g (s)	10.0	35.2	21.2	46.4	10.0	36.0	28.6	57.6	57.6
Actuated g/C Ratio	0.07	0.25	0.15	0.33	0.07	0.27	0.21	0.41	0.41
Clearance Time (s)	5.0	7.0	5.0	7.0	5.0	7.0	5.0	7.0	7.0
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Lane Grp Cap (vph)	213	742	224	953	110	857	619	689	544
v/s Ratio Prot	c0.17	0.27	0.06	c0.49	c0.14	0.18	c0.22	c0.40	0.40
v/s Ratio Perm									
v/c Ratio	2.39	1.08	0.38	1.48	1.91	0.67	1.03	0.98	0.98
Uniform Delay, d1	65.0	52.4	53.4	46.8	65.0	45.4	55.2	40.7	40.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.47	0.77	0.88
Incremental Delay, d2	641.7	58.4	4.7	219.5	441.0	4.1	21.1	6.8	7.6
Delay (s)	706.7	110.8	58.2	266.3	506.0	49.5	102.3	38.1	35.3
Level of Service	F	F	E	F	F	D	F	D	D
Approach Delay (s)									
Approach LOS	F	F	F	F	F	F	F	E	E

Intersection Summary

HCM 2000 Control Delay	194.5	F
HCM 2000 Volume to Capacity ratio	1.37	F
Actuated Cycle Length (s)	140.0	16.0
Intersection Capacity Utilization	117.1%	H
Analysis Period (min)	15	
c Critical Lane Group		

Lanes, Volumes, Timings
105: Trafalgar Rd & QEW EB-Off Ramp

Base
PM Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	984	463	0	2190	1640	0
Future Volume (vph)	984	463	0	2190	1640	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.5	3.6	3.6	3.6	3.6
Lane Util. Factor	0.97	1.00	1.00	0.91	0.91	1.00
Flt Protected	0.950					
Satd. Flow (prot)	2958	1423	0	4404	4489	0
Flt Permitted	0.950					
Satd. Flow (perm)	2958	1423	0	4404	4489	0
Right Turn on Red	Yes					Yes
Satd. Flow (RTOR)	14					
Link Speed (k/h)	50			50	50	
Link Distance (m)	199.2			51.4	324.8	
Travel Time (s)	14.3			3.7	23.4	
Peak Hour Factor	0.98	0.92	0.25	0.91	0.90	0.25
Heavy Vehicles (%)	3%	1%	0%	6%	4%	0%
Adj. Flow (vph)	1004	503	0	2407	1822	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1004	503	0	2407	1822	0
Either Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Right
Median Width(m)	6.6			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.19	1.16	1.14	1.14	1.14	1.14
Turning Speed (k/h)	24	14	24		14	
Number of Detectors	1	Right	Thru	2	2	
Detector Template	2.0	2.0	10.0	10.0	10.0	
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	2.0	2.0	0.6	0.6	0.6	
Detector 1 Size(m)	2.0	2.0	0.6	0.6	0.6	
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)	9.4	9.4	0.6	0.6	0.6	
Detector 2 Size(m)	0.6	0.6	0.6	0.6	0.6	
Detector 2 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	
Detector 2 Channel						
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Turn Type	Prot	Perm	NA	NA	NA	
Protected Phases	4			2	2	
Permitted Phases	4	4		2	2	
Detector Phase	4	4		2	2	

Lanes, Volumes, Timings
105: Trafalgar Rd & QEW EB-Off Ramp

Base
PM Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	10.0	10.0		29.0	29.0	
Minimum Split (s)	38.0	38.0		36.0	36.0	
Total Split (s)	56.0	56.0		84.0	84.0	
Total Split (%)	40.0%	40.0%		60.0%	60.0%	
Maximum Green (s)	49.0	49.0		77.0	77.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	24.0	24.0		22.0	22.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Ad Effct Green (s)	51.4	51.4		80.6	80.6	
Actuated g/C Ratio	0.37	0.37		0.58	0.58	
v/c Ratio	0.93	0.95		0.95	0.70	
Control Delay	57.0	70.0		26.8	8.1	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	57.0	70.0		26.8	8.1	
LOS	E	E		C	A	
Approach Delay	61.3			26.8	8.1	
Approach LOS	E			C	A	
Intersection Summary	CBD					
Area Type:	CBD					
Cycle Length:	140					
Actuated Cycle Length:	140					
Offset:	133.6 (95%), Referenced to phase 2,NBSB and 6:, Start of Green					
Natural Cycle:	90					
Control Type:	Actuated-Coordinated					
Maximum v/c Ratio:	0.95					
Intersection Signal Delay:	29.9					
Intersection Capacity Utilization:	84.9%					
Analysis Period (min):	15					

Queues 105: Tatalgar Rd & QEW EB-Off Ramp

Base PM Peak Hour

	EBL	EBR	NBT	SBT
Lane Group	1004	503	2407	1822
Lane Group Flow (vph)	0.93	0.95	0.95	0.70
v/c Ratio	57.0	70.0	26.8	8.1
Control Delay	0.0	0.0	0.0	0.0
Queue Delay	57.0	70.0	26.8	8.1
Total Delay	142.8	137.5	222.0	52.5
Queue Length 50th (m)	#184.4	#211.0	m91.4	m43.2
Queue Length 95th (m)	175.2	27.4	300.8	
Internal Link Dist (m)				
Turn Bay Length (m)				
Base Capacity (vph)	1098	537	2536	2585
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.91	0.94	0.95	0.70

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

HCM Signalized Intersection Capacity Analysis 105: Tatalgar Rd & QEW EB-Off Ramp

Base PM Peak Hour

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↑↑	↑		↑↑↑	↑↑↑	↑
Traffic Volume (vph)	984	463	0	2190	1640	0
Future Volume (vph)	984	463	0	2190	1640	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.5	3.6	3.6	3.6	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	0.97	1.00		0.91	0.91	
Flt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	2958	1423		4404	4489	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	2958	1423		4404	4489	
Peak-hour factor, PHF	0.98	0.92	0.25	0.91	0.90	0.25
Adj. Flow (vph)	1004	503	0	2407	1822	0
RTOR Reduction (vph)	0	9	0	0	0	0
Lane Group Flow (vph)	1004	494	0	2407	1822	0
Heavy Vehicles (%)	3%	1%	0%	6%	4%	0%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	2	
Permitted Phases		4				
Actuated Green, G (s)	48.4	48.4		77.6	77.6	
Effective Green, g (s)	51.4	51.4		80.6	80.6	
Actuated g/C Ratio	0.37	0.37		0.58	0.58	
Clearance Time (s)	7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	1086	522		2535	2584	
v/s Ratio Prot	0.34			c0.55	0.41	
v/s Ratio Perm		c0.35				
v/c Ratio	0.92	0.95		0.95	0.71	
Uniform Delay, d1	42.4	43.0		27.8	21.2	
Progression Factor	1.00	1.00		0.91	0.37	
Incremental Delay, d2	12.8	26.4		1.1	0.1	
Delay (s)	55.3	69.3		26.3	8.0	
Level of Service	E	E		C	A	
Approach Delay (s)	60.0			26.3	8.0	
Approach LOS	E			C	A	
Intersection Summary						
HCM 2000 Control Delay			29.3		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.95			
Actuated Cycle Length (s)			140.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			84.9%		ICU Level of Service	E
Analysis Period (min)			15			

c Critical Lane Group

Lanes, Volumes, Timings
106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

Base PM Peak Hour

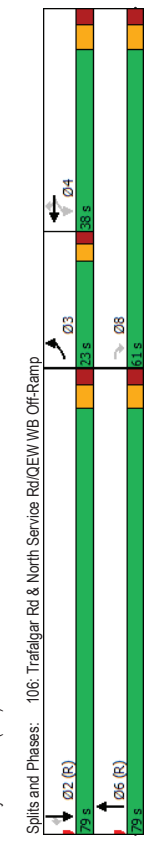
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1
Traffic Volume (vph)	19	0	247	457	129	360	0	2651	0	0	2506
Future Volume (vph)	19	0	247	457	129	360	0	2651	0	0	2506
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.5	3.3	3.6	3.5	3.6	3.6	3.6	3.6	3.5
Storage Length (m)	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Storage Lanes	1	1	1	1	1	1	0	0	0	0	1
Taper Length (m)	7.5	1.0	1.0	0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91
Ped Bike Factor											0.96
Frt	0.950		0.850		0.950	0.977		0.850			0.850
Satd. Flow (prot)	1570	0	1395	1421	1386	1356	0	4446	0	0	4532
Flt Protected											
Satd. Flow (perm)	0.950		0.950	0.977							1380
Right Turn on Red	1570	0	1395	1421	1386	1356	0	4446	0	0	4532
Satd. Flow (RTOR)			31		Yes	Yes	Yes	Yes	Yes	Yes	70
Link Speed (km/h)	50		50		50		50		50		50
Link Distance (m)	1421		192.6		324.8		288.2		288.2		288.2
Travel Time (s)	10.2		13.9		23.4		19.3		19.3		19.3
Conf. Peds. (#/hr)											
Peak Hour Factor	0.25	0.25	0.91	0.88	0.68	0.73	0.25	0.93	0.97	0.25	0.90
Heavy Vehicles (%)	0%	0%	3%	5%	23%	6%	0%	5%	5%	0%	3%
Adj. Flow (vph)	76	0	271	519	130	493	0	2851	0	0	2784
Shared Lane Traffic (%)			33%								
Lane Group Flow (vph)	76	0	271	348	361	493	0	2851	0	0	2784
Enter Blocked Intersection	Left	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right
Median Width (m)	3.3		3.3		3.3		3.3		3.3		3.3
Link Offset (m)	0.0		0.0		0.0		0.0		0.0		0.0
Crosswalk Width (m)	4.8		4.8		4.8		4.8		4.8		4.8
Two way Left Turn Lane	1.19	1.14	1.16	1.19	1.14	1.16	1.14	1.14	1.14	1.14	1.16
Headway Factor	24	14	14	24	14	24	14	24	14	24	14
Turning Speed (km/h)	1	1	1	1	1	1	1	1	1	1	1
Number of Detectors	1	1	1	1	1	1	1	1	1	1	1
Detector Template	Left	Right	Thru	Left	Thru	Right	Thru	Left	Thru	Right	Right
Leading Detector (m)	2.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	2.0	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0
Detector 1 Type	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex
Detector 1 Channel											
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	0.0	0.0	0.0	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
Detector 2 Size (m)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Detector 2 Type	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex
Detector 2 Channel											

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Lanes, Volumes, Timings
106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

Base PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Detector 2 Extend (s)											
Turn Type	Prot	Perm	NA	Perm	NA	Perm	NA	NA	NA	NA	Perm
Protected Phases	3			4			6				2
Permitted Phases	3		8	4		4	6				2
Detector Phase	3		8	4		4	6				2
Switch Phase											
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0	10.0	5.0				28.0
Minimum Split (s)	23.0	38.0	38.0	38.0	38.0	38.0	35.0				35.0
Total Split (s)	23.0	61.0	38.0	38.0	38.0	38.0	79.0				79.0
Total Split (%)	16.4%	43.6%	27.1%	27.1%	27.1%	27.1%	56.4%				56.4%
Maximum Green (s)	18.0	54.0	31.0	31.0	31.0	31.0	72.0				72.0
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	4.0				4.0
All-Red Time (s)	2.0	3.0	3.0	3.0	3.0	3.0	3.0				3.0
Lost Time Adjust (s)	-1.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0				-3.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0				4.0
Lead/Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lag				Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes				Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.5				4.5
Recall Mode	Min	Min	Min	Min	Min	Min	C-Min				C-Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0				7.0
Flash Dont Walk (s)	24.0	24.0	24.0	24.0	24.0	24.0	21.0				21.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0				0
Ad Effect Green (s)	13.1	57.0	39.9	39.9	39.9	39.9	75.0				75.0
Actuated g/C Ratio	0.09	0.41	0.28	0.28	0.28	0.28	0.54				0.54
v/c Ratio	0.52	0.46	0.86	0.91	1.07	1.20	1.20				1.15
Control Delay	72.2	29.7	69.0	77.1	97.8	121.3	121.3				102.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0				0.0
Total Delay	72.2	29.7	69.0	77.1	97.8	121.3	121.3				102.9
LOS	E	C	C	E	E	F	F				F
Approach Delay	39.0			83.2			121.3				102.3
Approach LOS	D			F			F				F
Intersection Summary	CBD										
Area Type:	CBD										
Cycle Length:	140										
Actuated Cycle Length:	140										
Offset:	115.4 (82%), Referenced to phase 2:SBT and 6:NBT, Start of Green										
Natural Cycle:	150										
Control Type:	Actuated-Coordinated										
Maximum v/c Ratio:	1.20										
Intersection Signal Delay:	103.6										
Intersection Capacity Utilization:	98.6%										
Analysis Period (min):	15										



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Queues
106: Tatalgar Rd & North Service Rd/QEW WB Off-Ramp

Base
PM Peak Hour

	EBL	EBR	WBL	WBR	NBT	SBT	SBR
Lane Group	76	271	348	361	493	2851	2784
Lane Group Flow (vph)	0.52	0.46	0.86	0.91	1.07	1.20	1.15
v/c Ratio	72.2	29.7	69.0	77.1	97.8	121.3	102.9
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	72.2	29.7	69.0	77.1	97.8	121.3	102.9
Total Delay	21.5	50.5	101.4	107.4	-134.6	-366.7	-347.7
Queue Length 50th (m)	9.8	77.5	#163.8	#114.7	#148.5	#393.0	#373.8
Queue Length 95th (m)							
Internal Link Dist (m)	50.0		168.6		300.8	244.2	
Turn Bay Length (m)	213	586	404	395	462	2381	2427
Base Capacity (vph)	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.46	0.86	0.91	1.07	1.20	1.15
Intersection Summary							
~ Volume exceeds capacity, queue is theoretically infinite.							
Queue shown is maximum after two cycles.							
# 95th percentile volume exceeds capacity, queue may be longer.							
Queue shown is maximum after two cycles.							

HCM Signalized Intersection Capacity Analysis
106: Tatalgar Rd & North Service Rd/QEW WB Off-Ramp

Base
PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	19	0	247	457	129	360	0	2651	0	0	2506	11
Traffic Volume (vph)	19	0	247	457	129	360	0	2651	0	0	2506	11
Future Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	3.3	3.6	3.5	3.3	3.6	3.5	3.6	3.6	3.6	3.6	3.6	3.5
Lane Width	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor	1.00	1.00	0.85	1.00	0.95	1.00	0.85	1.00	1.00	1.00	0.91	1.00
Frb. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frb. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt	0.95	1.00	0.85	1.00	0.98	1.00	0.85	1.00	1.00	1.00	0.85	1.00
Flt Protected	1570	1395	1421	1386	1356	1446	4446	4446	4446	4532	1380	1380
Satd. Flow (prot)	0.95	1.00	0.95	0.98	1.00	1.00	0.95	1.00	1.00	1.00	0.95	1.00
Flt Permitted	1570	1395	1421	1386	1356	1446	4446	4446	4446	4532	1380	1380
Satd. Flow (perm)	0.25	0.25	0.91	0.88	0.68	0.73	0.25	0.93	0.97	0.25	0.90	0.63
Peak-hour factor, PHF	76	0	271	519	190	493	0	2851	0	0	2784	17
Adj. Flow (vph)	0	0	18	0	0	77	0	0	0	0	0	8
RTOR Reduction (vph)	76	0	253	348	361	416	0	2851	0	0	2784	9
Lane Group Flow (vph)												
Conf. Peds. (#/hr)	0%	0%	3%	5%	23%	6%	0%	5%	5%	0%	3%	0%
Heavy Vehicles (%)	Prot	Perm	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Turn Type	3	4	4	4	4	4	6	6	6	6	6	2
Protected Phases	8	4	4	4	4	4	4	4	4	4	4	2
Permitted Phases	12.1	54.0	36.9	36.9	36.9	36.9	72.0	72.0	72.0	72.0	72.0	72.0
Actuated Green, G (s)	13.1	57.0	39.9	39.9	39.9	39.9	75.0	75.0	75.0	75.0	75.0	75.0
Effective Green, g (s)	0.09	0.41	0.28	0.28	0.28	0.28	0.54	0.54	0.54	0.54	0.54	0.54
Actuated G/C Ratio	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Clearance Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Vehicle Extension (s)	146	567	404	395	386	386	2381	2381	2381	2427	739	739
Lane Grp Cap (vph)	c0.05						c0.64					
v/s Ratio Prot	0.52	0.45	0.86	0.91	1.08	1.08	1.20	1.20	1.20	1.15	1.01	0.61
v/s Ratio Perm	60.5	30.1	47.4	48.4	50.0	50.0	32.5	32.5	32.5	32.5	32.5	15.2
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Progression Factor	3.3	0.6	16.9	25.1	68.6	90.4	71.5	71.5	71.5	71.5	71.5	71.5
Incremental Delay, d2	63.8	30.6	64.3	73.5	118.6	122.9	104.0	104.0	104.0	104.0	104.0	152
Delay (s)	E	C	E	E	F	F	F	F	F	F	F	B
Level of Service	37.9	D	89.4	F	F	F	F	F	F	F	F	F
Approach Delay (s)												
Approach LOS												
Intersection Summary												
HCM 2000 Control Delay	105.7											F
HCM 2000 Volume to Capacity ratio	1.09											F
Actuated Cycle Length (s)	140.0									12.0		
Intersection Capacity Utilization	98.6%											F
Analysis Period (min)	15											
c Critical Lane Group												

Lanes, Volumes, Timings
203: Argus Rd & South Service Rd

Base
PM Peak Hour

EBL	EBT	WBT	WBR	SBL	SBR
↖	→	←	↗	↖	↗
EBL	EBT	WBT	WBR	SBL	SBR
10	8	279	82	13	14
10	8	279	82	13	14
1900	1900	1900	1900	1900	1900
1.00	1.00	1.00	1.00	1.00	1.00
0.967	0.965	0.965	0.930	0.976	0.976
0	985	1614	0	1552	0
0.967	0.967	0.976	0.976	0.976	0.976
0	985	1614	0	1552	0
50	50	50	50	50	50
122.3	145.7	51.8	51.8	3.7	3.7
1	8.8	10.5	1	5	1
0.25	0.42	0.86	0.72	0.25	0.25
100%	0%	3%	0%	0%	0%
40	19	324	114	52	56
0	59	438	0	108	0
No	No	No	No	No	No
Left	Left	Right	Left	Right	Right
0.0	0.0	0.0	3.6	3.6	3.6
4.8	4.8	4.8	4.8	4.8	4.8
1.14	1.14	1.14	1.14	1.14	1.14
24	Free	Free	Free	Stop	Stop

Intersection Summary

Area Type: CBD

Control Type: Unsignalized

Intersection Capacity Utilization 32.2%

Analysis Period (min) 15

ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis
203: Argus Rd & South Service Rd

Base
PM Peak Hour

EBL	EBT	WBT	WBR	SBL	SBR
↖	→	←	↗	↖	↗
EBL	EBT	WBT	WBR	SBL	SBR
10	8	279	82	13	14
10	8	279	82	13	14
Free	Free	Free	Stop	Stop	Stop
0%	0%	0%	0%	0%	0%
0.25	0.42	0.86	0.72	0.25	0.25
40	19	324	114	52	56
1	5	5	3.6	3.6	3.6
1.2	1.2	1.2	1.2	1.2	1.2
0	0	0	0	0	0
None	None	None	None	None	None
358	358	358	358	358	358
439	439	439	439	439	439
439	439	439	439	439	439
5.1	5.1	5.1	5.1	5.1	5.1
3.1	3.1	3.1	3.1	3.1	3.1
95	95	95	95	95	95
748	748	748	748	748	748
EB 1	WB 1	SB 1	EB 1	WB 1	SB 1
59	438	108	59	438	108
40	0	52	40	0	52
0	114	56	0	114	56
748	1700	583	748	1700	583
0.05	0.26	0.19	0.05	0.26	0.19
1.4	0.0	5.4	1.4	0.0	5.4
7.0	0.0	12.6	7.0	0.0	12.6
A	A	B	A	A	B
7.0	0.0	12.6	7.0	0.0	12.6
B	B	B	B	B	B
Intersection Summary	Intersection Summary	Intersection Summary	Intersection Summary	Intersection Summary	Intersection Summary
Average Delay	Average Delay	Average Delay	Average Delay	Average Delay	Average Delay
32.2%	32.2%	32.2%	32.2%	32.2%	32.2%
15	15	15	15	15	15
A	A	A	A	A	A

Intersection Summary

Average Delay 2.9

Intersection Capacity Utilization 32.2%

ICU Level of Service A

Analysis Period (min) 15

Lanes, Volumes, Timings
204: Trafalgar Rd & Argus Rd

Base
PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	42	0	2612	1727	375
Future Volume (vph)	0	42	0	2612	1727	375
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.5	3.6	3.6	3.6	3.6
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	0.91
Ped Bike Factor		0.865			0.969	
Flt Protected						
Satd. Flow (prot)	0	1367	0	4363	4367	0
Flt Permitted						
Satd. Flow (perm)	0	1367	0	4363	4367	0
Link Speed (k/h)	50		50	50	50	
Link Distance (m)	145.7		270.2	51.4		
Travel Time (s)	10.5		19.5	3.7		
Conf. Peds. (#/hr)						11
Peak Hour Factor	0.25	0.54	0.25	0.92	0.97	0.82
Heavy Vehicles (%)	0%	7%	0%	7%	4%	2%
Adj. Flow (vph)	0	78	0	2839	1780	457
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	78	0	2839	2237	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0	3.3	3.3	3.3		
Link Offset(m)	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width(m)	4.8		4.8	4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.14	1.16	1.14	1.14	1.14	1.14
Turning Speed (k/h)	24	14	24			14
Sign Control	Stop		Free	Free	Free	
Intersection Summary						
Area Type:	CBD					
Control Type:	Unsignalized					
Intersection Capacity Utilization	59.4%					
Analysis Period (min)	15					
ICU Level of Service	B					

HCM Unsignalized Intersection Capacity Analysis
204: Trafalgar Rd & Argus Rd

Base
PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	42	0	2612	1727	375
Future Volume (Veh/h)	0	42	0	2612	1727	375
Sign Control	Stop		Free	Free	Free	
Grade	0%		0%	0%	0%	
Peak Hour Factor	0.25	0.54	0.25	0.92	0.97	0.82
Hourly flow rate (vph)	0	78	0	2839	1780	457
Pedestrians						
Lane Width (m)		3.5				
Walking Speed (m/s)		1.2				
Percent Blockage		1				
Right turn flare (veh)			None	None	None	
Median type						
Median storage (veh)				270	52	
Upstream signal (m)						
pX, platoon unblocked	0.85	0.71	0.71			
vC, conflicting volume	2966	833	2248			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	418	0	1349			
IC, single (s)	6.8	7.0	4.1			
IC, 2 stage (s)						
p0 queue free %	100	90	100			
IC, 2 stage (s)	3.5	3.4	2.2			
p0 capacity (veh/h)	478	757	366			
Direction_Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2 SB 3
Volume Total	78	946	946	946	712	712 813
Volume Left	0	0	0	0	0	0
Volume Right	78	0	0	0	0	457
CSH	757	1700	1700	1700	1700	1700
Volume to Capacity	0.10	0.56	0.56	0.56	0.42	0.42 0.48
Queue Length 95th (m)	2.7	0.0	0.0	0.0	0.0	0.0 0.0
Control Delay (s)	10.3	0.0	0.0	0.0	0.0	0.0 0.0
Lane LOS	B					
Approach Delay (s)	10.3	0.0			0.0	
Approach LOS	B					
Intersection Summary						
Average Delay	0.2					
Intersection Capacity Utilization	59.4%					
ICU Level of Service	B					
Analysis Period (min)	15					

Lanes, Volumes, Timings
302: Cross Ave & East Driveway Access

Base
PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group						
Lane Configurations		4↑	4↑		W	
Traffic Volume (vph)	0	1175	592	0	0	0
Future Volume (vph)	0	1175	592	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Flt Protected						
Satd. Flow (prot)	0	3185	3185	0	1676	0
Flt Permitted						
Satd. Flow (perm)	0	3185	3185	0	1676	0
Link Speed (k/h)	50	50	50	50	50	50
Link Distance (m)	100.7	122.6	66.8	66.8	66.8	66.8
Travel Time (s)	7.3	8.8	4.8	4.8	4.8	4.8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1277	643	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1277	643	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Right	Left	Right
Median Width(m)	3.3	3.3	3.6	3.6	3.6	3.6
Link Offset(m)	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width(m)	4.8	4.8	4.8	4.8	4.8	4.8
Two way Left Turn Lane						
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25	Free	Free	Free	15	25
Sign Control						Stop
Intersection Summary						
Area Type:	CBD					
Control Type:	Unsignalized					
Intersection Capacity Utilization	39.4%					
Analysis Period (min)	15					
	ICU Level of Service A					

HCM Unsignalized Intersection Capacity Analysis
302: Cross Ave & East Driveway Access

Base
PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement						
Lane Configurations		4↑	4↑		W	
Traffic Volume (veh/h)	0	1175	592	0	0	0
Future Volume (Veh/h)	0	1175	592	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1277	643	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)			None	None		
Median type						
Median storage (veh)						
Upstream signal (m)		101	123			
pX, platoon unblocked					0.77	
VC, conflicting volume	643				1282	322
VC1, stage 1 conf vol						
VC2, stage 2 conf vol						
VCu, unblocked vol	643				762	322
IC, single (s)	4.1				6.8	6.9
IC, 2 stage (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
CM capacity (veh/h)	938				262	674
Direction_Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 1
Volume Total	426	851	429	214	0	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
CSH	938	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.50	0.25	0.13	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS					A	A
Approach Delay (s)	0.0		0.0		0.0	
Approach LOS					A	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			39.4%			
ICU Level of Service						A
Analysis Period (min)			15			

Lanes, Volumes, Timings
303: North Driveway & Argus Rd

Base
PM Peak Hour

	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	18	0	0	293	0	0
Traffic Volume (vph)	18	0	0	293	0	0
Future Volume (vph)	18	0	0	293	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	55.4			122.3	54.4	
Travel Time (s)	4.0			8.8	3.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	0	0	318	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	20	0	0	318	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	15			25	25	15
Sign Control	Free			Free	Stop	Stop
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	18.8%					
Analysis Period (min)	15					
ICU Level of Service A						

HCM Unsignalized Intersection Capacity Analysis
303: North Driveway & Argus Rd

Base
PM Peak Hour

	EBT	EBR	WBL	WBT	NBL	NBR
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	18	0	0	293	0	0
Traffic Volume (veh/h)	18	0	0	293	0	0
Future Volume (Veh/h)	18	0	0	293	0	0
Sign Control	Free			Free	Stop	Stop
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	20	0	0	318	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	236					
pX platoon unblocked						
vC, conflicting volume		20		338	20	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		20		338	20	
iC, single (s)		4.1		6.4	6.2	
iC, 2 stage (s)						
p0 queue free %		2.2		3.5	3.3	
IF (s)		100		100	100	
qM capacity (veh/h)		1596		658	1058	
Direction_Lane #	EB 1	WB 1	NB 1			
Volume Total	20	318	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
ESH	1700	1596	1700			
Volume to Capacity	0.01	0.00	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	18.8%					
ICU Level of Service	A					
Analysis Period (min)	15					

Queuing and Blocking Report

Base
PM Peak Hour

Intersection: 101: Trafalgar Rd & Cross Ave/South Service Rd

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L
Directions Served	96.1	103.3	59.9	32.4	299.5	269.8	57.3	80.9	95.5	99.4	32.4	227.0			
Maximum Queue (m)	93.3	98.6	21.5	31.1	210.5	110.8	26.7	48.8	61.0	64.8	25.1	146.9			
Average Queue (m)	98.8	101.8	48.0	35.9	380.9	313.3	51.3	73.9	86.9	88.4	38.9	244.4			
95th Queue (m)															
Link Distance (m)	96.2	96.2		313.2	313.2		126.0	128.0	128.0			239.0			
Upstream Blk Time (%)	10	62		19	5										
Queuing Penalty (veh)	0	364		0	0										
Storage Bay Dist (m)	130.0		25.0		43		50		3	5		25.0			
Storage Blk Time (%)	10	62		64	43		3		5			16			
Queuing Penalty (veh)	49	296		92	65		12		6			76			

Intersection: 101: Trafalgar Rd & Cross Ave/South Service Rd

Movement	SB	SB	TR
Directions Served	235.0	233.5	
Maximum Queue (m)	159.4	174.0	
Average Queue (m)	257.9	267.6	
95th Queue (m)	239.0	239.0	
Link Distance (m)	2	5	
Upstream Blk Time (%)	12	30	
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 102: GO Bus Terminal/Argus Rd & Cross Ave

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB	B14
	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	T
Directions Served	27.3	209.5	212.2	26.8	28.8	27.4	27.3	67.8	22.4	188.6					
Maximum Queue (m)	3.4	201.3	200.7	8.4	7.8	11.0	7.1	21.8	21.0	156.0					
Average Queue (m)	17.6	204.9	214.2	24.0	20.0	22.6	22.2	51.4	25.9	228.9					
95th Queue (m)															
Link Distance (m)	196.3	196.3		79.5	79.5	65.7	65.7	159.0	159.0	35.2					
Upstream Blk Time (%)	95	77		1											
Queuing Penalty (veh)	0	0		0											
Storage Bay Dist (m)	20.0		20.0					15.0		86		11			
Storage Blk Time (%)	0	89		2		1									
Queuing Penalty (veh)	0	12		3		0									

Queuing and Blocking Report

Base
PM Peak Hour

Intersection: 104: Trafalgar Rd & Cornwall Rd

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L
Directions Served	83.7	87.4	280.8	276.2	87.3	135.0	136.9	32.5	280.9	274.6	86.6	111.3			
Maximum Queue (m)	82.9	87.2	272.3	217.5	35.0	118.6	126.8	32.2	201.9	186.8	58.6	66.4			
Average Queue (m)	85.5	87.9	276.3	366.6	90.2	143.0	138.8	32.9	304.2	288.7	88.1	104.3			
95th Queue (m)															
Link Distance (m)	266.8	266.8		122.1	122.1							289.9			
Upstream Blk Time (%)	98	7		20	51										
Queuing Penalty (veh)	0	0		0	0										
Storage Bay Dist (m)	80.0	80.0		80.0			25.0		94	11		80.0			
Storage Blk Time (%)	17	88		1			36		11			1			
Queuing Penalty (veh)	44	222		6			23		14			3			

Intersection: 104: Trafalgar Rd & Cornwall Rd

Movement	SB	SB	B34	B34
Directions Served	104.1	69.9	8.1	14.0
Maximum Queue (m)	55.4	32.2	0.7	1.1
Average Queue (m)	98.8	61.7	8.7	10.6
95th Queue (m)	101.5	101.5	128.0	128.0
Link Distance (m)	2			
Upstream Blk Time (%)	11			
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 105: Trafalgar Rd & QEW EB-Off Ramp

Movement	EB	EB	EB	NB	NB	NB	NB	SB	SB	SB	SB
	L	L	R	T	T	T	T	L	T	T	T
Directions Served	175.1	181.9	184.2	35.2	43.9	38.2	306.4	309.4	270.9		
Maximum Queue (m)	105.8	121.8	142.4	28.5	30.7	29.6	112.1	132.7	142.8		
Average Queue (m)	179.8	199.9	216.9	32.0	37.8	34.4	280.5	308.6	304.3		
95th Queue (m)	176.9	176.9	176.9	27.8	27.8	27.8	300.4	300.4	300.4		
Link Distance (m)	2	17	34	32	34	34	2	3	5		
Upstream Blk Time (%)	0	0	0	283	300	295	26	35	54		
Queuing Penalty (veh)											
Storage Bay Dist (m)											
Storage Blk Time (%)											
Queuing Penalty (veh)											

Queuing and Blocking Report

Base
PM Peak Hour

Intersection: 106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

Movement	EB	EB	WB	WB	WB	NB	NB	NB	T	T	T	SB	SB	SB	SB	SB	SB
Directions Served	L	R	L	LT	R	LT	T	T	T	T	T	T	T	T	T	T	R
Maximum Queue (m)	56.6	112.0	110.1	130.2	34.1	110.6	121.1	124.0	266.6	269.0	270.8	265.1	265.1	265.1	265.1	265.1	265.1
Average Queue (m)	7.9	48.4	66.8	81.7	1.1	69.6	81.2	81.1	238.2	237.2	233.8	190.7	190.7	190.7	190.7	190.7	190.7
95th Queue (m)	29.2	90.4	106.1	123.4	24.0	104.7	119.2	117.9	312.6	316.5	322.5	379.5	379.5	379.5	379.5	379.5	379.5
Link Distance (m)	119.7	173.2	173.2	173.2	173.2	300.4	300.4	300.4	254.7	254.7	254.7	254.7	254.7	254.7	254.7	254.7	254.7
Upstream Blk Time (%)	1	0	0	0	0	0	0	0	40	52	65	42	42	42	42	42	42
Queuing Penalty (veh)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Storage Bay Dist (m)	50.0																
Storage Blk Time (%)	0	13															
Queuing Penalty (veh)	0	2															

Intersection: 203: Argus Rd & South Service Rd

Movement	EB	WB	SB	SB
Directions Served	LT	TR	LR	
Maximum Queue (m)	20.6	74.1	24.6	
Average Queue (m)	1.5	46.3	9.3	
95th Queue (m)	9.8	137.1	23.0	
Link Distance (m)	108.5	112.4	43.0	
Upstream Blk Time (%)	21			
Queuing Penalty (veh)	77			
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 204: Trafalgar Rd & Argus Rd

Movement	EB	NB	NB	SB	SB	SB	SB	SB	SB	SB	SB
Directions Served	R	T	T	T	T	TR					
Maximum Queue (m)	24.6	89.8	98.2	95.6	24.8	34.1	35.2	35.2	35.2	35.2	35.2
Average Queue (m)	7.9	44.7	52.2	56.9	2.8	9.6	16.8	16.8	16.8	16.8	16.8
95th Queue (m)	19.0	75.1	82.7	85.0	15.8	31.2	40.4	40.4	40.4	40.4	40.4
Link Distance (m)	112.4	239.0	239.0	239.0	27.8	27.8	27.8	27.8	27.8	27.8	27.8
Upstream Blk Time (%)					0	1	17	17	17	17	17
Queuing Penalty (veh)					1	7	117	117	117	117	117
Storage Bay Dist (m)											
Storage Blk Time (%)											
Queuing Penalty (veh)											

Queuing and Blocking Report

Base
PM Peak Hour

Intersection: 302: Cross Ave & East Driveway Access

Movement	EB	EB	LT	T
Directions Served	LT	T		
Maximum Queue (m)	92.9	101.9		
Average Queue (m)	84.1	56.0		
95th Queue (m)	88.3	119.1		
Link Distance (m)	79.5	79.5		
Upstream Blk Time (%)	59	17		
Queuing Penalty (veh)	301	88		
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 303: North Driveway & Argus Rd

Movement	WB	LT
Directions Served	LT	
Maximum Queue (m)	97.7	
Average Queue (m)	53.2	
95th Queue (m)	140.5	
Link Distance (m)	108.5	
Upstream Blk Time (%)	31	
Queuing Penalty (veh)	91	
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 3770

Lanes, Volumes, Timings
101: Trafalgar Rd & Cross Ave/South Service Rd

Background 2027
AM Peak Hour

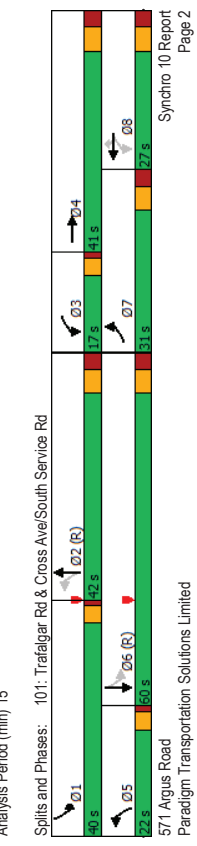
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT
Traffic Volume (vph)	402	94	130	49	97	139	130	805	62	298	797	479
Future Volume (vph)	402	94	130	49	97	139	130	805	62	298	797	479
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.6	3.3	3.6	3.5	3.3	3.6	3.6	3.3	3.6	3.6
Storage Length (m)	130.0	0.0	25.0	0.0	50.0	0.0	50.0	0.0	25.0	0.0	50.0	0.0
Storage Lanes	1		0	1	1	1	1	1	0	1	1	0
Taper Length (m)	7.5		7.5		7.5		7.5		7.5		7.5	
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91	0.91
Ped Bike Factor	1.00	0.99	0.99	0.99	0.99	1.00	0.98	0.98	1.00	0.99	0.99	0.99
Frt	0.906		0.950		0.850		0.988		0.988		0.943	
Flt Protected	0.950		0.950		0.950		0.950		0.950		0.950	
Satd. Flow (prot)	2795	1393	0	1525	1583	1382	1428	4411	0	1525	4202	0
Flt Permitted	0.950		0.404		0.105		0.138		0.138		0.138	
Satd. Flow (perm)	2789	1393	0	645	1583	1362	158	4411	0	221	4202	0
Right Turn on Red	Yes		Yes		Yes		Yes		Yes		Yes	
Satd. Flow (RTOR)	58		181		181		10		10		131	
Link Speed (km/h)	50		50		50		50		50		50	
Link Distance (m)	130.9		330.4		330.4		150.2		150.2		270.2	
Travel Time (s)	9.4		23.8		23.8		10.8		10.8		19.5	
Confl. Peds. (#/hr)	1		4		4		10		10		52	
Peak Hour Factor	0.87	0.77	0.64	0.77	0.77	0.77	0.81	0.88	0.80	0.84	0.84	0.83
Heavy Vehicles (%)	9%	12%	3%	8%	4%	10%	3%	0%	3%	3%	4%	4%
Adj. Flow (vph)	462	122	203	64	126	181	160	915	78	355	949	577
Shared Lane Traffic (%)												
Lane Group Flow (vph)	462	325	0	64	126	181	160	993	0	355	1526	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width(m)	6.6		6.6		6.6		3.3		3.3		3.3	
Link Offset(m)	0.0		0.0		0.0		0.0		0.0		0.0	
Crosswalk Width(m)	4.8		4.8		4.8		4.8		4.8		4.8	
Two way Left Turn Lane	1.19	1.14	1.14	1.19	1.14	1.16	1.19	1.14	1.14	1.19	1.14	1.14
Headway Factor	24	14	14	24	24	14	24	14	14	24	24	14
Turning Speed (km/h)	1	2	14	1	2	14	1	2	14	1	2	14
Number of Detectors	1	2	1	1	2	1	1	2	1	2	1	2
Detector Template	Left	Thru	Left	Right	Left	Right	Thru	Left	Thru	Left	Thru	Left
Leading Detector (m)	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Type	C+Ex	Ch+Ex	C+Ex	Ch+Ex	C+Ex	Ch+Ex	C+Ex	Ch+Ex	C+Ex	Ch+Ex	C+Ex	Ch+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4		9.4		9.4		9.4		9.4		9.4	
Detector 2 Size(m)	0.6		0.6		0.6		0.6		0.6		0.6	
Detector 2 Type	Ch+Ex		Ch+Ex		Ch+Ex		Ch+Ex		Ch+Ex		Ch+Ex	
Detector 2 Channel												

571 Angus Road
Paradigm Transportation Solutions Limited
Synchro 10 Report
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Lanes, Volumes, Timings
101: Trafalgar Rd & Cross Ave/South Service Rd

Background 2027
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)	0.0		0.0		0.0		0.0		0.0		0.0	0.0
Turn Type	Prot	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8	8	5	2	1	6		6	
Permitted Phases	7	4	3	8	8	5	2	1	6		6	
Detector Phase	7	4	3	8	8	5	2	1	6		6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	12.0	10.0	10.0	10.0	7.0	27.0	7.0	27.0	7.0	27.0
Minimum Split (s)	17.0	25.0	17.0	25.0	25.0	11.5	34.0	11.5	34.0	11.5	34.0	34.0
Total Split (s)	31.0	41.0	17.0	27.0	27.0	22.0	42.0	40.0	60.0	40.0	60.0	60.0
Total Split (%)	22.1%	29.3%	12.1%	19.3%	19.3%	15.7%	30.0%	28.5%	42.9%	28.5%	42.9%	42.9%
Maximum Green (s)	24.0	34.0	13.0	20.0	20.0	18.0	35.0	36.0	53.0	36.0	53.0	53.0
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	4.0
All-Red Time (s)	3.0	3.0	1.0	3.0	3.0	1.0	3.0	1.0	3.0	1.0	3.0	3.0
Lost Time Adjust (s)	-3.0	-3.0	0.0	-3.0	-3.0	0.0	-3.0	0.0	-3.0	0.0	-3.0	-3.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	4.0	3.5	4.0	4.0	3.0	5.0	3.0	5.0	3.0	5.0	5.0
Recall Mode	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0		0		0		0		0		0	0
Ad Effct Green (s)	26.6	34.5	32.2	20.0	20.0	60.9	46.4	81.3	62.9	81.3	62.9	62.9
Actuated g/C Ratio	0.19	0.25	0.23	0.14	0.14	0.44	0.33	0.58	0.45	0.58	0.45	0.45
v/c Ratio	0.87	0.84	0.28	0.56	0.52	0.80	0.68	0.85	0.78	0.85	0.78	0.78
Control Delay	72.5	60.3	33.3	64.9	12.5	45.8	55.2	48.1	44.1	48.1	44.1	44.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.5	60.3	33.3	64.9	12.5	45.8	55.2	48.1	44.1	48.1	44.1	44.1
LOS	E	E	C	E	B	D	E	D	D	D	D	D
Approach Delay	67.5		33.9		53.9		44.9		44.9		44.9	
Approach LOS	E		C		D		D		D		D	



	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group	462	325	64	126	181	160	993	355	1526
Lane Group Flow (vph)	0.87	0.84	0.28	0.56	0.52	0.80	0.68	0.85	0.78
v/c Ratio	72.5	60.3	33.3	64.9	12.5	45.8	55.2	48.1	44.1
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	72.5	60.3	33.3	64.9	12.5	45.8	55.2	48.1	44.1
Queue Length 50th (m)	67.8	73.7	12.0	33.9	0.0	31.8	102.3	80.3	136.0
Queue Length 95th (m)	#89.9	89.0	19.2	46.7	11.5	m38.2	m120.0	m90.9	142.2
Internal Link Dist (m)	106.9		306.4			126.2		246.2	
Turn Bay Length (m)	130.0		25.0			50.0		25.0	
Base Capacity (vph)	539	413	234	260	375	236	1468	463	1958
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.79	0.27	0.48	0.48	0.68	0.68	0.77	0.78

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	FF	FF	FF	F	F	F	FF	FF	FF	FF	FF	FF
Traffic Volume (vph)	402	94	130	49	97	139	130	805	62	298	797	479
Future Volume (vph)	402	94	130	49	97	139	130	805	62	298	797	479
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.5	3.3	3.6	3.6	3.3	3.6	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.91	1.00	0.91
Frbp. ped/bikes	1.00	0.99	1.00	1.00	1.00	0.99	1.00	0.98	1.00	0.99	1.00	0.99
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.95	1.00	0.91	1.00	1.00	0.85	1.00	0.99	1.00	0.94	1.00	0.94
Flt Protected	0.95	1.00	0.91	1.00	1.00	0.85	1.00	0.99	1.00	0.95	1.00	0.95
Satd. Flow (prot)	2795	1393	1522	1583	1362	1427	4412	1525	4203	1525	4203	1525
Flt Permitted	0.95	1.00	0.40	1.00	1.00	0.11	1.00	0.14	1.00	0.14	1.00	0.14
Satd. Flow (perm)	2795	1393	647	1583	1362	159	4412	222	4203	647	1583	1362
Peak-hour factor, PHF	0.87	0.77	0.64	0.77	0.77	0.77	0.81	0.88	0.80	0.84	0.84	0.83
Adj. Flow (vph)	462	122	203	64	126	181	160	915	78	355	949	577
RTOR Reduction (vph)	0	44	0	0	0	155	0	7	0	0	72	0
Lane Group Flow (vph)	462	281	0	64	126	26	160	986	0	355	1454	0
Conf. Peds. (#/hr)	1	4	4	4	4	1	10	52	52	52	10	10
Heavy Vehicles (%)	9%	6%	12%	3%	8%	4%	10%	3%	0%	3%	3%	4%
Turn Type	Prot	NA	NA	pm-pt	NA	Perm	pm-pt	NA	pm-pt	NA	pm-pt	NA
Protected Phases	7	4		3	8	8	5	2	1	6		
Permitted Phases						8		2		6		
Actuated Green, G (s)	23.6	31.5		29.3	17.1	17.1	57.9	43.4	78.3	59.8		
Effective Green, g (s)	26.6	34.5		29.3	20.1	20.1	57.9	46.4	78.3	62.8		
Actuated G/C Ratio	0.19	0.25		0.21	0.14	0.14	0.41	0.33	0.56	0.45		
Clearance Time (s)	7.0	7.0		4.0	7.0	7.0	4.0	7.0	4.0	7.0		
Vehicle Extension (s)	3.0	4.0		3.5	4.0	4.0	3.0	5.0	3.0	5.0		
Lane Grp Cap (vph)	531	343		211	227	195	197	1462	411	1885		
v/s Ratio Prot	c0.17	c0.20		0.03	0.08	0.04	0.08	0.22	c0.19	0.35		
v/s Ratio Perm				0.04	0.02	0.02	0.25		c0.29			
v/c Ratio	0.87	0.82		0.30	0.56	0.13	0.81	0.67	0.86	0.77		
Uniform Delay, d1	55.0	49.8		45.8	55.8	52.3	29.7	40.3	33.8	32.5		
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.88	1.29	1.16	1.35		
Incremental Delay, d2	14.4	15.1		1.0	3.6	0.4	11.7	1.2	11.6	2.0		
Delay (s)	69.4	64.9		46.7	59.4	52.8	37.8	53.1	50.8	46.0		
Level of Service	E	E		D	E	D	D	D	D	D		
Approach Delay (s)												
Approach LOS												

Intersection Summary	Value	Unit
HCM 2000 Control Delay	52.5	s
HCM 2000 Volume to Capacity ratio	0.87	
Actuated Cycle Length (s)	140.0	s
Intersection Capacity Utilization	77.4%	%
Analysis Period (min)	15	min
c Critical Lane Group		

Lanes, Volumes, Timings
102: GO Bus Terminal/Argus Rd & Cross Ave

Lanes, Volumes, Timings
102: GO Bus Terminal/Argus Rd & Cross Ave

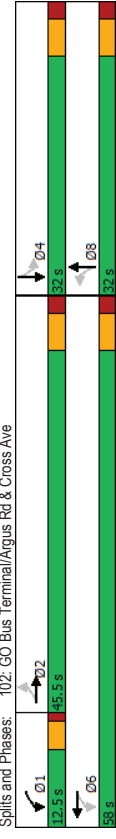
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	4	4	4	4	4	4	4	4	4	4	4	4
Traffic Volume (vph)	34	416	15	43	646	25	22	0	53	62	18	542
Future Volume (vph)	34	416	15	43	646	25	22	0	53	62	18	542
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.3	3.6	3.6	3.6
Storage Length (m)	20.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	15.0	0.0	0.0	0.0
Storage Lanes	1	0	1	0	1	0	1	0	1	0	1	0
Taper Length (m)	7.5	0.95	0.95	7.5	0.95	1.00	1.00	1.00	1.00	7.5	1.00	1.00
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	0.96	0.98	0.99	0.99
Ped Bike Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.96	0.98	0.99	0.99
Frt	0.993			0.994			0.950		0.850		0.857	
Flt Protected	0.950			0.950			0.950		0.950		0.950	
Satd. Flow (prot)	1570	3053	0	818	3189	0	805	734	0	1570	1385	0
FltP Permitted	0.361			0.323			0.143		0.708		0.708	
Satd. Flow (perm)	596	3053	0	277	3189	0	121	734	0	1146	1385	0
Right Turn on Red	Yes			Yes			Yes		Yes		Yes	
Satd. Flow (RTOR)	7			9			359		219		219	
Link Speed (k/h)	50			50			50		50		50	
Link Distance (m)	207.1			92.7			81.9		180.7		180.7	
Travel Time (s)	14.9			6.7			5.9		13.0		13.0	
Confl. Peds. (#/hr)	1			3			3		20		20	
Peak Hour Factor	0.52	0.87	0.65	0.84	0.88	0.79	0.53	0.25	0.70	0.78	0.62	0.89
Heavy Vehicles (%)	0%	1%	100%	92%	1%	5%	95%	0%	91%	0%	93%	0%
Adj. Flow (vph)	65	478	23	51	734	32	42	0	76	79	29	609
Shared Lane Traffic (%)												
Lane Group Flow (vph)	65	501	0	51	766	0	42	76	0	79	638	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right
Median Width (m)	3.3			3.3			3.3		3.3		3.3	
Link Offset (m)	0.0			0.0			0.0		0.0		0.0	
Crosswalk Width (m)	4.8			4.8			4.8		4.8		4.8	
Two way Left Turn Lane												
Headway Factor	1.19	1.14	1.14	1.19	1.14	1.14	1.14	1.14	1.14	1.19	1.14	1.14
Turning Speed (k/h)	24	14	14	24	14	14	24	14	24	14	24	14
Number of Detectors	1	2	1	1	2	1	2	1	2	1	2	1
Detector Template	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru
Leading Detector (m)	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Type	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4			9.4			9.4		9.4		9.4	
Detector 2 Size (m)	0.6			0.6			0.6		0.6		0.6	
Detector 2 Type	C+Ex			C+Ex			C+Ex		C+Ex		C+Ex	
Detector 2 Channel												

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Lanes, Volumes, Timings
102: GO Bus Terminal/Argus Rd & Cross Ave

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)	0.0			0.0			0.0		0.0		0.0	0.0
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	2			1			6		8		4	4
Permitted Phases	2	2	2	6	6	6	8	8	8	4	4	4
Detector Phase	2	2	2	1	6	6	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	22.0	22.0	8.0	22.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	45.0	45.0	12.5	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0
Total Split (s)	45.5	45.5	12.5	58.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0
Total Split (%)	50.6%	50.6%	13.9%	64.4%	35.6%	35.6%	35.6%	35.6%	35.6%	35.6%	35.6%	35.6%
Maximum Green (s)	39.5	39.5	8.5	52.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead									
Lead-Lag Optimize?	Yes	Yes	Yes									
Vehicle Extension (s)	5.0	5.0	2.5	5.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Recall Mode	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Act Effct Green (s)	24.7	24.7	36.9	36.9	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0
Act Effct g/C Ratio	0.34	0.34	0.51	0.51	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38
v/c Ratio	0.32	0.48	0.26	0.47	0.91	0.15	0.15	0.15	0.15	0.18	0.18	0.18
Control Delay	23.3	20.6	12.8	12.7	141.7	0.6	16.7	43.0	16.7	43.0	16.7	43.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.3	20.6	12.8	12.7	141.7	0.6	16.7	43.0	16.7	43.0	16.7	43.0
LOS	C	C	B	B	F	A	B	D	B	D	B	D
Approach Delay	20.9		12.7		50.8		40.1		40.1		40.1	
Approach LOS	C		B		D		D		D		D	
Intersection Summary												
Area Type:	CBD											
Cycle Length:	90											
Actuated Cycle Length:	72.9											
Natural Cycle:	100											
Control Type:	Semi Act-Uncoordinated											
Maximum v/c Ratio:	0.96											
Intersection Signal Delay:	25.7											
Intersection LOS:	C											
Intersection Capacity Utilization:	85.0%											
ICU Level of Service:	E											
Analysis Period (min):	15											

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Queues
102: GO Bus Terminal/Argus Rd & Cross Ave

Background 2027
AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group	65	501	51	766	42	76	79	638
Lane Group Flow (vph)	0.32	0.48	0.26	0.47	0.91	0.15	0.18	0.96
v/c Ratio	23.3	20.6	12.8	12.7	141.7	0.6	16.7	43.0
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	23.3	20.6	12.8	12.7	141.7	0.6	16.7	43.0
Total Delay	6.8	28.9	3.6	34.8	5.4	0.0	7.2	60.3
Queue Length 50th (m)	8.9	41.0	8.6	47.0	#12.4	0.0	14.9	51.5
Queue Length 95th (m)	183.1		68.7		57.9		156.7	
Internal Link Dist (m)	20.0		20.0		15.0		15.0	
Turn Bay Length (m)	339	1741	203	2365	46	502	440	667
Base Capacity (vph)	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.29	0.25	0.32	0.91	0.15	0.18	0.96

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

HCM Signalized Intersection Capacity Analysis
102: GO Bus Terminal/Argus Rd & Cross Ave

Background 2027
AM Peak Hour

Movement	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑	↑	↑
Traffic Volume (vph)	34	416	15	43	646	25	22	0	53
Future Volume (vph)	34	416	15	43	646	25	22	0	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.86
Flt Protected	1569	3054	817	3189	805	738	1543	1386	
Flt Permitted	0.36	1.00	0.32	1.00	0.14	1.00	0.71	1.00	
Satd. Flow (perm)	597	3054	278	3189	121	738	1150	1386	
Peak-hour factor, PHF	0.52	0.87	0.65	0.84	0.88	0.79	0.53	0.25	0.70
Adj. Flow (vph)	65	478	23	51	734	32	42	0	76
RTOR Reduction (vph)	0	5	0	0	4	0	0	47	0
Lane Group Flow (vph)	65	496	0	51	762	0	42	29	0
Conf. Peds. (#/hr)	1	3	3	3	1	3	20	20	3
Heavy Vehicles (%)	0%	1%	100%	92%	1%	5%	95%	0%	91%
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA	Perm
Protected Phases	2	6	6	6	8	8	4	4	4
Permitted Phases	2	22.7	34.9	34.9	26.0	26.0	26.0	26.0	26.0
Actuated Green, G (s)	24.7	24.7	34.9	36.9	28.0	28.0	28.0	28.0	28.0
Effective Green, g (s)	0.34	0.34	0.48	0.51	0.38	0.38	0.38	0.38	0.38
Actuated g/C Ratio	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Clearance Time (s)	5.0	5.0	2.5	5.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	202	1034	193	1614	46	283	441	532	
Lane Grp Cap (vph)	0.16	0.16	0.03	c0.24	0.35	0.04	0.07	c0.36	
v/s Ratio Prot	0.11	0.11	0.10	0.10	0.35	0.04	0.07	0.07	
v/c Ratio	0.32	0.48	0.26	0.47	0.91	0.10	0.18	0.95	
Uniform Delay, d1	17.9	19.0	11.1	11.7	21.3	14.4	14.8	21.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.9	0.7	0.5	0.5	100.6	0.2	0.3	26.1	
Delay (s)	19.8	19.8	11.6	12.1	121.9	14.6	15.1	47.8	
Level of Service	B	B	B	B	F	B	B	D	
Approach Delay (s)	19.8	19.8	12.1	12.1	52.8	12.1	44.2	44.2	
Approach LOS	B	B	B	B	D	D	D	D	
Intersection Summary									
HCM 2000 Control Delay	26.6				HCM 2000 Level of Service				C
HCM 2000 Volume to Capacity ratio	0.72								
Actuated Cycle Length (s)	72.9								
Sum of lost time (s)	12.0								
Intersection Capacity Utilization	85.0%				ICU Level of Service				E
Analysis Period (min)	15								
Critical Lane Group	c								

Queues
104: Tatalgar Rd & Cornwall Rd

HCM Signalized Intersection Capacity Analysis
104: Tatalgar Rd & Cornwall Rd

Background 2027
AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	431	661	29	1065	82	524	386	435	361
v/c Ratio	0.92	0.52	0.35	0.98	0.78	0.64	0.92	0.78	0.54
Control Delay	83.5	29.7	75.1	59.3	106.9	49.4	91.4	37.4	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.5	29.7	75.1	59.3	106.9	49.4	91.4	37.4	3.2
Queue Length 50th (m)	64.5	72.4	8.3	134.3	23.9	70.3	54.0	87.3	1.2
Queue Length 95th (m)	#96.3	91.6	16.3	#167.5	27.9	85.8	#77.3	118.8	6.0
Internal Link Dist (m)	261.8								
Turn Bay Length (m)	80.0								
Base Capacity (vph)	469								
Starvation Cap Reductn	0								
Spillback Cap Reductn	0								
Storage Cap Reductn	0								
Reduced v/c Ratio	0.92	0.52	0.35	0.98	0.75	0.64	0.92	0.78	0.54

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

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Traffic Volume (vph)	401	488	87	22	410	529	49	388	55
Future Volume (vph)	401	488	87	22	410	529	49	388	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.3	3.6	3.3	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.95	1.00	0.95	1.00	0.97	1.00
Frbp. ped/bikes	1.00	0.99	1.00	0.97	1.00	0.97	1.00	1.00	0.98
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97	1.00	0.92	1.00	0.98	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	2987	3020	1481	2819	1540	3139	2929	1676	1324
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	2987	3020	1481	2819	1540	3139	2929	1676	1324
Peak-hour factor, PHF	0.93	0.91	0.60	0.75	0.86	0.90	0.60	0.86	0.75
Adj. Flow (vph)	481	536	145	29	477	588	82	451	73
RTOR Reduction (vph)	0	18	0	0	159	0	0	9	0
Lane Group Flow (vph)	431	663	0	29	906	0	82	515	0
Conf. Peds. (#/hr)	25	7	7	7	25	9	18	18	9
Heavy Vehicles (%)	2%	4%	1%	6%	3%	2%	1%	0%	4%
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Prot
Protected Phases	3	8	7	4	5	2	2	1	6
Permitted Phases									
Actuated Green, G (s)	21.0	57.0	7.0	43.0	8.5	33.0	19.0	43.5	43.5
Effective Green, g (s)	22.0	60.0	8.0	46.0	9.5	36.0	20.0	46.5	46.5
Actuated g/C Ratio	0.16	0.43	0.06	0.33	0.07	0.26	0.14	0.33	0.33
Clearance Time (s)	5.0	7.0	5.0	7.0	5.0	7.0	5.0	7.0	7.0
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Lane Grp Cap (vph)	469	1294	84	926	104	807	418	556	439
v/s Ratio Prot	c0.14	0.22	0.02	c0.32	0.05	0.16	c0.13	c0.26	0.10
v/c Ratio	0.92	0.51	0.35	0.98	0.79	0.64	0.92	0.78	0.29
Uniform Delay, d1	58.1	29.3	63.5	46.5	64.3	46.2	59.2	42.2	34.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.21	0.70	0.30
Incremental Delay, d2	25.6	1.5	10.9	24.8	29.5	3.8	20.7	6.9	1.1
Delay (s)	83.7	30.7	74.4	71.3	93.8	50.1	92.5	36.5	11.4
Level of Service	F	C	E	E	F	D	F	D	B
Approach Delay (s)	51.3								
Approach LOS	D								
Intersection Summary									
HCM 2000 Control Delay	56.3								
HCM 2000 Volume to Capacity ratio	0.92								
Actuated Cycle Length (s)	140.0								
Intersection Capacity Utilization	95.8%								
Analysis Period (min)	15								
c. Critical Lane Group									

Lanes, Volumes, Timings
105: Trafalgar Rd & QEII EB-Off Ramp

Background 2027
AM Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	903	730	0	996	1394	0
Future Volume (vph)	903	730	0	996	1394	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.5	3.6	3.6	3.6	3.6
Lane Util. Factor	0.97	1.00	1.00	0.91	0.91	1.00
Flt Protected	0.950					
Satd. Flow (prot)	2958	1423	0	4404	4489	0
Flt Permitted	0.950					
Satd. Flow (perm)	2958	1423	0	4404	4489	0
Right Turn on Red	Yes					Yes
Satd. Flow (RTOR)			3			
Link Speed (k/h)	50			50	50	
Link Distance (m)	199.2			51.4	324.8	
Travel Time (s)	14.3			3.7	23.4	
Peak Hour Factor	0.98	0.92	0.25	0.91	0.90	0.25
Heavy Vehicles (%)	3%	1%	0%	6%	4%	0%
Adj. Flow (vph)	921	793	0	1095	1549	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	921	793	0	1095	1549	0
Either Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Right
Median Width (m)	6.6			0.0	0.0	
Link Offset (m)	0.0			0.0	0.0	
Crosswalk Width (m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.19	1.16	1.14	1.14	1.14	1.14
Turning Speed (k/h)	24	14	24		14	
Number of Detectors	1	Right	Thru	2	2	
Detector Template	2.0	2.0	10.0	10.0	10.0	
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position (m)	2.0	2.0	0.6	0.6	0.6	
Detector 1 Size (m)	2.0	2.0	0.6	0.6	0.6	
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position (m)			9.4	9.4		
Detector 2 Size (m)			0.6	0.6		
Detector 2 Type			Ch+Ex	Ch+Ex		
Detector 2 Channel						
Detector 2 Extend (s)			0.0	0.0		
Turn Type	Prot	Perm	NA	NA	NA	
Protected Phases	4		2	2	2	
Permitted Phases	4	4	2	2	2	
Detector Phase	4	4	2	2	2	

Lanes, Volumes, Timings
105: Trafalgar Rd & QEII EB-Off Ramp

Background 2027
AM Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	10.0	10.0		29.0	29.0	
Minimum Split (s)	38.0	38.0		36.0	36.0	
Total Split (s)	84.0	84.0		56.0	56.0	
Total Split (%)	60.0%	60.0%		40.0%	40.0%	
Maximum Green (s)	77.0	77.0		49.0	49.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	24.0	24.0		22.0	22.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	79.8	79.8		52.2	52.2	
Actuated g/C Ratio	0.57	0.57		0.37	0.37	
v/c Ratio	0.65	0.98		0.67	0.93	
Control Delay	20.3	55.8		33.5	51.2	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	20.3	55.8		33.5	51.2	
LOS	C	E		C	D	
Approach Delay	36.7			33.5	51.2	
Approach LOS	D			C	D	
Intersection Summary	CBD					
Area Type:	CBD					
Cycle Length:	140					
Actuated Cycle Length:	140					
Offset:	133.6 (95%), Referenced to phase 2:NBSB and 6:, Start of Green					
Natural Cycle:	80					
Control Type:	Actuated-Coordinated					
Maximum v/c Ratio:	0.98					
Intersection Signal Delay:	41.1					
Intersection Capacity Utilization:	66.8%					
Analysis Period (min):	15					



	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	921	793	1095	1549
v/c Ratio	0.55	0.98	0.67	0.93
Control Delay	20.3	55.8	33.5	51.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	20.3	55.8	33.5	51.2
Queue Length 50th (m)	82.7	214.3	51.0	186.1
Queue Length 95th (m)	101.7	#313.7	62.8	#191.8
Internal Link Dist (m)	175.2	27.4	300.8	
Turn Bay Length (m)				
Base Capacity (vph)	1690	814	1641	1673
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.54	0.97	0.67	0.93

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

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↑↑	↑	↑↑↑	↑↑↑	↑↑↑	↑
Traffic Volume (vph)	903	730	0	996	1394	0
Future Volume (vph)	903	730	0	996	1394	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.5	3.6	3.6	3.6	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	0.00	0.91	0.91	0.00
Flt	1.00	0.85	1.00	1.00	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	2958	1423	4404	4489	4489	4489
Flt Permitted	0.95	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	2958	1423	4404	4489	4489	4489
Peak-hour factor, PHF	0.98	0.92	0.25	0.91	0.90	0.25
Adj. Flow (vph)	921	793	0	1095	1549	0
RTOR Reduction (vph)	0	1	0	0	0	0
Lane Group Flow (vph)	921	792	0	1095	1549	0
Heavy Vehicles (%)	3%	1%	0%	6%	4%	0%
Turn Type	Prot	Perm	NA	NA	NA	NA
Protected Phases	4			2	2	
Permitted Phases		4				
Actuated Green, G (s)	76.8	76.8	49.2	49.2	49.2	
Effective Green, g (s)	79.8	79.8	52.2	52.2	52.2	
Actuated g/C Ratio	0.57	0.57	0.37	0.37	0.37	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	1686	811	1642	1673	1673	
v/s Ratio Prot	0.31		0.25	0.25	0.35	
v/s Ratio Perm	0.55	0.98		0.67	0.93	
Uniform Delay, d1	18.8	29.2		36.6	42.0	
Progression Factor	1.00	1.00		0.86	1.00	
Incremental Delay, d2	0.4	25.6		1.5	9.1	
Delay (s)	19.2	54.8		33.2	51.0	
Level of Service	B	D		C	D	
Approach Delay (s)	35.6		33.2	51.0		
Approach LOS	D		C	D		

Intersection Summary

HCM 2000 Control Delay	40.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	86.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

Lanes, Volumes, Timings
106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	1	0	221	444	36	276	0	1475	0	0	1260
Traffic Volume (vph)	1	0	221	444	36	276	0	1475	0	0	1260
Future Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	3.3	3.6	3.5	3.3	3.6	3.5	3.6	3.6	3.6	3.6	3.5
Lane Width (m)	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Storage Length (m)	1	1	1	1	1	1	0	0	0	0	0
Storage Lanes	7.5	7.5	7.5	7.5	7.5	7.5	0	0	0	0	0
Taper Length (m)	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91
Lane Util. Factor	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850
Fit Protected	0.950	0.950	0.950	0.961	0.961	0.961	0.961	0.961	0.961	0.961	0.961
Satd. Flow (prot)	1570	0	1395	1421	1440	1356	0	4446	0	0	4532
Flt Permitted	0.950	0.950	0.950	0.961	0.961	0.961	0.961	0.961	0.961	0.961	0.961
Satd. Flow (perm)	1570	0	1395	1421	1440	1356	0	4446	0	0	4532
Right Turn on Red	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Satd. Flow (RTOR)	50	31	50	50	50	50	50	50	50	50	50
Link Speed (k/h)	142.1	192.6	13.9	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4
Link Distance (m)	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2
Travel Time (s)	8	8	8	8	8	8	8	8	8	8	8
Conf. Peds. (#/hr)	0.25	0.25	0.91	0.88	0.88	0.73	0.25	0.93	0.97	0.25	0.90
Peak Hour Factor	0%	0%	3%	5%	23%	6%	0%	5%	5%	0%	3%
Heavy Vehicles (%)	4	0	243	505	53	378	0	1586	0	0	1400
Adj. Flow (vph)	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%
Shared Lane Traffic (%)	4	0	243	278	280	378	0	1586	0	0	1400
Lane Group Flow (vph)	No	No	No	No	No	No	No	No	No	No	No
Enter Blocked Intersection	Left	Left	Left	Left	Left	Left	Left	Left	Left	Left	Left
Lane Alignment	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
Median Width(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Link Offset(m)	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Crosswalk Width(m)	1.19	1.14	1.19	1.14	1.14	1.16	1.14	1.14	1.14	1.14	1.16
Two way Left Turn Lane	24	14	24	24	14	24	14	24	14	24	14
Headway Factor	1	1	1	1	1	1	1	1	1	1	1
Turning Speed (k/h)	2	2	2	2	2	2	2	2	2	2	2
Number of Detectors	Left	Right	Thru	Right	Thru	Right	Thru	Right	Thru	Right	Right
Detector Template	2.0	2.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Detector 1 Size(m)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Detector 1 Type	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex
Detector 1 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
Detector 2 Size(m)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Detector 2 Type	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex
Detector 2 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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Lanes, Volumes, Timings
106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	Perm	NA	Perm	NA	Perm	NA	NA	NA	NA	Perm
Protected Phases	3	8	4	4	4	4	6	6	6	2	2
Permitted Phases	3	8	4	4	4	4	6	6	6	2	2
Switch Phase	7.0	10.0	10.0	10.0	10.0	10.0	5.0	5.0	5.0	28.0	28.0
Minimum Initial (s)	23.0	38.0	38.0	38.0	38.0	38.0	35.0	35.0	35.0	35.0	35.0
Minimum Split (s)	23.0	70.0	47.0	47.0	47.0	47.0	70.0	70.0	70.0	70.0	70.0
Total Split (%)	16.4%	50.0%	33.6%	33.6%	33.6%	33.6%	50.0%	50.0%	50.0%	50.0%	50.0%
Maximum Green (s)	18.0	63.0	40.0	40.0	40.0	40.0	63.0	63.0	63.0	63.0	63.0
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.5	4.5	4.5	4.5	4.5
Recall Mode	Min	Min	Min	Min	Min	Min	C-Min	C-Min	C-Min	C-Min	C-Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	24.0	24.0	24.0	24.0	24.0	24.0	21.0	21.0	21.0	21.0	21.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0
Ad Effct Green (s)	8.0	48.6	36.6	36.6	36.6	36.6	83.4	83.4	83.4	83.4	83.4
Actuated Cycle Length (s)	0.06	0.35	0.26	0.26	0.26	0.26	0.60	0.60	0.60	0.60	0.60
v/c Ratio	0.04	0.48	0.75	0.74	0.71	0.71	0.60	0.60	0.60	0.52	0.01
Control Delay	64.0	33.0	59.4	58.9	22.8	22.8	26.3	26.3	26.3	18.5	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.0	33.0	59.4	58.9	22.8	22.8	26.3	26.3	26.3	18.5	0.0
LOS	E	C	C	E	E	C	C	C	C	B	A
Approach Delay	33.5	C	C	44.5	D	D	26.3	26.3	26.3	18.3	B
Approach LOS	C	C	C	D	D	D	C	C	C	B	B
Intersection Summary	CBD										
Area Type:	CBD										
Cycle Length:	140										
Actuated Cycle Length:	140										
Offset:	115.4 (82%), Referenced to phase 2 SBT and 6 NBT, Start of Green										
Natural Cycle:	00										
Control Type:	Actuated-Coordinated										
Maximum v/c Ratio:	0.75										
Intersection Signal Delay:	28.1										
Intersection Capacity Utilization:	67.0%										
Analysis Period (min):	15										

Splits and Phases: 106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

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	EBL	EBR	WBL	WBR	NBT	SBT	SBR
Lane Group	4	243	278	280	378	1586	1400
Lane Group Flow (vph)	0.04	0.48	0.75	0.74	0.60	0.52	0.01
v/c Ratio	64.0	33.0	59.4	58.9	22.8	26.3	18.5
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	64.0	33.0	59.4	58.9	22.8	26.3	18.5
Total Delay	1.1	47.9	78.3	78.7	36.1	116.1	84.5
Queue Length 50th (m)	1.4	66.2	100.5	72.4	36.8	127.2	116.4
Queue Length 95th (m)			168.6		300.8	244.2	
Internal Link Dist (m)	50.0						
Turn Bay Length (m)	213	674	445	451	591	2647	2688
Base Capacity (vph)	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.36	0.62	0.62	0.64	0.60	0.52
Intersection Summary							

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	1	0	221	444	36	276	0	1475	0	0	1260	7
Lane Configurations	1	0	221	444	36	276	0	1475	0	0	1260	7
Traffic Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Future Volume (vph)	3.3	3.6	3.5	3.3	3.6	3.5	3.6	3.6	3.6	3.6	3.6	3.5
Ideal Flow (vphpl)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor	1.00	1.00	0.85	1.00	0.95	1.00	0.91	1.00	1.00	1.00	0.91	1.00
Frb. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frb. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt	0.95	1.00	0.85	1.00	0.95	1.00	0.85	1.00	1.00	1.00	0.85	1.00
Flt Protected	1570	1395	1421	1440	1356	4446					4532	1380
Satd. Flow (prot)	0.95	1.00	0.95	0.96	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00
Flt Permitted	1570	1395	1421	1440	1356	4446					4532	1380
Satd. Flow (perm)	0.25	0.25	0.91	0.88	0.68	0.73	0.25	0.93	0.97	0.25	0.90	0.63
Peak-hour factor, PHF	4	0	243	505	53	378	0	1586	0	0	1400	11
Adj. Flow (vph)	0	0	20	0	0	179	0	0	0	0	0	4
RTOR Reduction (vph)	4	0	223	278	280	199	0	1586	0	0	1400	7
Lane Group Flow (vph)	0%	0%	3%	5%	23%	6%	0%	5%	5%	0%	3%	0%
Conf. Peds. (#/hr)	Prot	Perm	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Heavy Vehicles (%)	3	4	4	4	4	4	4	4	4	4	4	2
Turn Type	8	4	4	4	4	4	4	4	4	4	4	2
Protected Phases	7.0	45.6	33.6	33.6	33.6	33.6	80.4	80.4	80.4	80.4	80.4	80.4
Permitted Phases	8.0	48.6	36.6	36.6	36.6	36.6	83.4	83.4	83.4	83.4	83.4	83.4
Actuated Green, G (s)	0.06	0.35	0.26	0.26	0.26	0.26	0.60	0.60	0.60	0.60	0.60	0.60
Effective Green, g (s)	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Actuated g/C Ratio	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Clearance Time (s)	89	484	371	376	354	2648					2699	822
Vehicle Extension (s)	0.00	0.16	0.20	0.19	0.15	0.36					0.31	0.00
Lane Grp Cap (vph)	0.04	0.46	0.75	0.74	0.56	0.60					0.52	0.00
v/s Ratio Prot	62.4	35.5	47.5	47.4	44.8	17.8					16.6	11.5
v/s Ratio Perm	1.00	1.00	1.00	1.00	1.00	1.33					1.00	1.00
Uniform Delay, d1	0.2	0.7	8.1	7.8	2.0	0.8					0.7	0.0
Progression Factor	62.6	36.2	55.6	55.2	46.8	24.5					17.3	11.5
Incremental Delay, d2	E	D	E	E	D	D					B	B
Delay (s)	36.6	D	51.9	D	D	D					17.2	B
Level of Service	D	D	D	D	D	D					B	B
Approach Delay (s)	D	D	D	D	D	D					B	B
Approach LOS												
Intersection Summary												
HCM 2000 Control Delay	28.9						HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio	0.64											
Actuated Cycle Length (s)	140.0						Sum of lost time (s)				12.0	
Intersection Capacity Utilization	67.0%						ICU Level of Service				C	
Analysis Period (min)	15											
c. Critical Lane Group												

EBL	EBT	WBT	WBR	SBL	SBR
↖	→	←	↗	↖	↗
1	6	632	132	4	3
1	6	632	132	4	3
1900	1900	1900	1900	1900	1900
1.00	1.00	1.00	1.00	1.00	1.00
0.989	0.973	0.942			
0	1384	1625	0	1566	0
0	1384	1625	0	1566	0
50	50	50			
116.7	145.7	51.8			
8.4	10.5	3.7			
1	1	5			1
0.25	0.42	0.86	0.72	0.25	0.25
100%	0%	3%	0%	0%	0%
4	14	735	183	16	12
0	18	918	0	28	0
No	No	No	No	No	No
Left	Left	Right	Left	Right	Right
0.0	0.0	0.0			
4.8	4.8	4.8			
1.14	1.14	1.14	1.14	1.14	1.14
24	Free	Free	Free	Stop	Stop

Intersection Summary	
Area Type:	CBD
Control Type:	Unsignalized
Intersection Capacity Utilization	56.2%
Analysis Period (min)	15
ICU Level of Service B	

EBL	EBT	WBT	WBR	SBL	SBR
↖	→	←	↗	↖	↗
1	6	632	132	4	3
1	6	632	132	4	3
Free	Free	Free	Stop	Stop	Stop
0%	0%	0%			
0.25	0.42	0.86	0.72	0.25	0.25
4	14	735	183	16	12
1	5	1			
3.6	3.6	3.6			
1.2	1.2	1.2			
0	0	0			
None	None	None			
358					
919			854		828
919			854		828
5.1			6.4		6.2
3.1			3.5		3.3
99			95		97
457			327		373
EB 1	WB 1	SB 1			
18	918	28			
4	0	16			
0	183	12			
457	1700	345			
0.01	0.54	0.08			
0.2	0.0	2.1			
3.0	0.0	16.3			
A		C			
3.0	0.0	16.3			
C		C			

Intersection Summary	
Average Delay	0.5
Intersection Capacity Utilization	56.2%
ICU Level of Service	B
Analysis Period (min)	15

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	19	0	1394	1456	687
Future Volume (vph)	0	19	0	1394	1456	687
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.5	3.6	3.6	3.6	3.6
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	0.91
Ped. Bike Factor		0.865			0.946	
Flt Protected						
Satd. Flow (prot)	0	1367	0	4363	4276	0
Flt Permitted						
Satd. Flow (perm)	0	1367	0	4363	4276	0
Link Speed (k/h)	50		50	50	50	
Link Distance (m)	145.7		270.2	51.4		
Travel Time (s)	10.5		19.5	3.7		
Confl. Peds. (#/hr)						11
Peak Hour Factor	0.25	0.54	0.25	0.92	0.97	0.82
Heavy Vehicles (%)	0%	7%	0%	7%	4%	2%
Adj. Flow (vph)	0	35	0	1515	1501	838
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	35	0	1515	2339	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width (m)	0.0	3.3	3.3	3.3		
Link Offset (m)	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width (m)	4.8		4.8	4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.14	1.16	1.14	1.14	1.14	1.14
Turning Speed (k/h)	24	14	24			14
Sign Control	Stop		Free	Free	Free	
Intersection Summary						
Area Type:	CBD					
Control Type:	Unsignalized					
Intersection Capacity Utilization	58.7%					
Analysis Period (min)	15					
ICU Level of Service	B					

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	19	0	1394	1456	687
Future Volume (Veh/h)	0	19	0	1394	1456	687
Sign Control	Stop		Free	Free	Free	
Grade	0%		0%	0%	0%	
Peak Hour Factor	0.25	0.54	0.25	0.92	0.97	0.82
Hourly flow rate (vph)	0	35	0	1515	1501	838
Pedestrians	11					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	1					
Right turn flare (veh)						
Median type			None	None	None	
Median storage (veh)						
Upstream signal (m)			270	52		
pX, platoon unblocked	0.75	0.67	0.67			
VC, conflicting volume	2436	930	2350			
VC1, stage 1 conf vol						
VC2, stage 2 conf vol						
VCu, unblocked vol	376	0	1308			
IC, single (s)	6.8	7.0	4.1			
IC, 2 stage (s)						
p0 queue free %	100	95	100			
IC, 2 stage (s)	3.5	3.4	2.2			
p0 capacity (veh/h)	448	713	358			
Direction_Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2 SB 3
Volume Total	35	505	505	505	600	600 1138
Volume Left	0	0	0	0	0	0 0
Volume Right	35	0	0	0	0	0 838
CSH	713	1700	1700	1700	1700	1700
Volume to Capacity	0.05	0.30	0.30	0.30	0.35	0.35 0.67
Queue Length 95th (m)	1.2	0.0	0.0	0.0	0.0	0.0 0.0
Control Delay (s)	10.3	0.0	0.0	0.0	0.0	0.0 0.0
Lane LOS	B					
Approach Delay (s)	10.3	0.0			0.0	
Approach LOS	B					
Intersection Summary						
Average Delay	0.1					
Intersection Capacity Utilization	58.7%					
ICU Level of Service	B					
Analysis Period (min)	15					

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group						
Lane Configurations		4↑	4↑		W	
Traffic Volume (vph)	0	626	706	0	0	0
Future Volume (vph)	0	626	706	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Flt Protected						
Satd. Flow (prot)	0	3185	3185	0	1676	0
Flt Permitted						
Satd. Flow (perm)	0	3185	3185	0	1676	0
Link Speed (k/h)	50	50	50	50	41.6	41.6
Link Distance (m)	92.7	130.9				
Travel Time (s)	6.7	9.4			3.0	3.0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	680	767	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	680	767	0	0	0
Enter Blocked Intersection	No	No	No	No	Left	Right
Lane Alignment	Left	Left	Right	Right	Left	Right
Median Width(m)	3.3	3.3	3.3	3.6	0.0	0.0
Link Offset(m)	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width(m)	4.8	4.8	4.8	4.8		
Two way Left Turn Lane						
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25	Free	Free	Free	Stop	Stop
Sign Control						
Intersection Summary						
Area Type:	CBD					
Control Type:	Unsignalized					
Intersection Capacity Utilization	25.0%					
Analysis Period (min)	15					
ICU Level of Service A						

	EBL	EBT	WBT	WBR	SBL	SBR
Movement						
Lane Configurations		4↑	4↑		W	
Traffic Volume (veh/h)	0	626	706	0	0	0
Future Volume (Veh/h)	0	626	706	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Grade	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	680	767	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None	None	None	None		
Median storage (veh)						
Upstream signal (m)	93	131				
pX, platoon unblocked					0.89	
vC, conflicting volume	767				1107	384
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	767				877	384
IC, single (s)	4.1				6.8	6.9
IC, 2 stage (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
CM capacity (veh/h)	842				257	615
Direction_Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	227	453	511	256	0	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
CSH	842	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.27	0.30	0.15	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS					A	A
Approach Delay (s)	0.0		0.0		0.0	
Approach LOS					A	
Intersection Summary						
Average Delay	0.0					
Intersection Capacity Utilization	25.0%					
ICU Level of Service	A					
Analysis Period (min)	15					

	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	7	0	0	0	635	0
Traffic Volume (vph)	7	0	0	0	635	0
Future Volume (vph)	7	0	0	0	635	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected						
Satd. Flow (prot)	1863	0	0	0	1863	1863
Flt Permitted						
Satd. Flow (perm)	1863	0	0	0	1863	1863
Link Speed (k/h)	50				50	50
Link Distance (m)	61.0				116.7	66.7
Travel Time (s)	4.4				8.4	4.8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	8	0	0	0	690	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	8	0	0	0	690	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width (m)	0.0				0.0	3.6
Link Offset (m)	0.0				0.0	0.0
Crosswalk Width (m)	4.8				4.8	4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	15				25	25
Sign Control	Free				Free	Stop
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	36.8%					
Analysis Period (min)	15					
	ICU Level of Service A					

	EBT	EBR	WBL	WBT	NBL	NBR
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	7	0	0	0	635	0
Traffic Volume (veh/h)	7	0	0	0	635	0
Future Volume (Veh/h)	7	0	0	0	635	0
Sign Control	Free				Stop	
Grade	0%				0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	0	0	0	690	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (m)	242					
pX platoon unblocked						
vC, conflicting volume	8					
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	8					
IC, single (s)	4.1					
IC, 2 stage (s)	2.2					
p0 queue free %	100					
IF (s)	3.5					
ICM capacity (veh/h)	1612					
ICM capacity (veh/h)	407					
Direction_Lane #	EB 1	WB 1	NB 1			
Volume Total	8	690	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
CSH	1700	1612	1700			
Volume to Capacity	0.00	0.00	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					
Approach LOS	A					
Intersection Summary						
Average Delay	0.0					
Intersection Capacity Utilization	36.8%					
ICU Level of Service	A					
Analysis Period (min)	15					

Intersection: 101: Trafalgar Rd & Cross Ave/South Service Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	TR	TR	TR	TR	TR	B34	B34	B34
Directions Served	L	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	T	T	T
Maximum Queue (m)	75.9	81.0	91.3	32.2	73.9	33.4	57.3	85.0	95.9	104.0	15.2	16.6					
Average Queue (m)	50.1	53.1	46.8	14.5	28.9	14.9	29.9	52.3	62.1	71.5	0.5	0.6					
95th Queue (m)	74.8	78.8	81.3	32.0	66.7	26.7	57.8	78.8	88.8	98.3	10.7	11.7					
Link Distance (m)	104.4	104.4	0	313.2	313.2	0	128.1	128.1	128.1	128.1	101.5	101.5					
Upstream Blk Time (%)	0	0	0	0	0	0	0	0	0	0	0	0					
Queuing Penalty (veh)	0	0	0	0	0	0	0	0	0	0	0	0					
Storage Bay Dist (m)	130.0	0	0	25.0	50.0	0	1	10									
Storage Blk Time (%)	0	0	0	2	20	0	1	10									
Queuing Penalty (veh)	0	0	0	1	10	0	3	13									

Intersection: 101: Trafalgar Rd & Cross Ave/South Service Rd

Movement	SB	SB	SB	SB	SB	SB	SB	SB
Directions Served	L	T	T	T	TR			
Maximum Queue (m)	32.3	138.5	142.0	170.7				
Average Queue (m)	29.6	71.0	68.3	105.7				
95th Queue (m)	37.6	132.5	123.9	159.9				
Link Distance (m)	238.9	238.9	238.9					
Upstream Blk Time (%)	0	0	0	0				
Queuing Penalty (veh)	0	0	0	0				
Storage Bay Dist (m)	25.0							
Storage Blk Time (%)	34	18						
Queuing Penalty (veh)	91	53						

Intersection: 102: GO Bus Terminal/Argus Rd & Cross Ave

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	TR	TR	TR	TR	TR	SB	SB	SB
Directions Served	L	T	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	T	T	T
Maximum Queue (m)	27.2	51.9	48.2	27.4	51.5	44.1	28.6	36.0	22.4	107.6							
Average Queue (m)	7.1	27.8	21.3	12.5	24.8	23.5	7.4	14.6	11.0	48.2							
95th Queue (m)	19.1	45.5	39.6	28.4	44.1	39.5	21.8	29.4	26.3	84.9							
Link Distance (m)	196.3	196.3	0	72.4	72.4	66.0	66.0			158.9							
Upstream Blk Time (%)	0	0	0	0	0	0	0			0							
Queuing Penalty (veh)	0	0	0	0	0	0	0			0							
Storage Bay Dist (m)	20.0	20.0	20.0	20.0	20.0	15.0	15.0			44							
Storage Blk Time (%)	0	17	3	9	9	4	4			21							
Queuing Penalty (veh)	1	6	10	4	4	21	27										

Intersection: 104: Trafalgar Rd & Cornwall Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	TR	TR	TR	TR	TR	SB	SB	SB
Directions Served	L	L	T	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	L	L
Maximum Queue (m)	78.6	83.5	92.5	81.0	38.9	102.7	127.9	32.3	80.0	68.1	50.5	56.8					
Average Queue (m)	51.1	60.1	44.3	44.6	7.4	58.3	62.7	14.9	46.6	37.3	24.1	29.7					
95th Queue (m)	77.2	83.2	78.5	71.4	23.2	86.0	114.8	35.6	71.3	61.7	46.0	50.1					
Link Distance (m)	266.8	266.8	0	122.1	122.1	0	289.9	289.9	101.5	101.5							
Upstream Blk Time (%)	0	0	0	0	0	0	0	0	0	0							
Queuing Penalty (veh)	0	0	0	0	0	0	0	0	0	0							
Storage Bay Dist (m)	80.0	80.0	0	80.0	0	25.0	4	35									
Storage Blk Time (%)	0	2	0	1	0	7	17										
Queuing Penalty (veh)	1	5	0	0	0	7	17										

Intersection: 104: Trafalgar Rd & Cornwall Rd

Movement	SB	SB	SB	SB	SB	SB	SB	SB
Directions Served	T	R						
Maximum Queue (m)	95.1	37.4						
Average Queue (m)	37.0	10.0						
95th Queue (m)	76.8	24.6						
Link Distance (m)	101.5	101.5						
Upstream Blk Time (%)	0	0						
Queuing Penalty (veh)	1	1						
Storage Bay Dist (m)	0	0						
Storage Blk Time (%)	0	0						
Queuing Penalty (veh)	0	0						

Intersection: 105: Trafalgar Rd & QEW EB-Off Ramp

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB	SB	SB	SB	SB	SB	SB	SB	SB
Directions Served	L	L	R	T	T	T	T	T	T	T	T	T	T	T	T	T	T
Maximum Queue (m)	110.1	169.3	181.5	36.0	45.4	37.9	320.1	320.7	315.4								
Average Queue (m)	68.6	70.6	128.9	27.7	31.0	29.4	283.5	308.2	306.5								
95th Queue (m)	101.1	141.2	194.1	34.1	39.3	33.7	354.9	317.3	312.4								
Link Distance (m)	176.9	176.9	176.9	27.8	27.8	27.8	300.4	300.4	300.4								
Upstream Blk Time (%)	1	7	32	39	41	15	32	45									
Queuing Penalty (veh)	0	0	149	180	191	94	205	288									
Storage Bay Dist (m)	0	0	0	0	0	0	0	0									
Storage Blk Time (%)	0	0	0	0	0	0	0	0									
Queuing Penalty (veh)	0	0	0	0	0	0	0	0									

Intersection: 106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

Movement	EB	EB	WB	WB	NB	NB	T	T	SB	SB	T	T	SB	SB
	L	R	L	TR	LT	TR	LT	TR	L	TR	LT	TR	L	TR
Directions Served	1.5	113.5	116.4	129.3	99.7	102.6	100.4	267.4	269.7	268.3	264.2			
Maximum Queue (m)	0.0	58.1	63.0	73.3	62.1	67.0	62.5	239.9	239.0	239.1	187.7			
Average Queue (m)	1.1	105.7	103.9	116.1	94.8	96.0	92.3	320.3	318.7	315.1	377.4			
95th Queue (m)		119.7	173.2	173.2	300.4	300.4	300.4	254.7	254.7	254.7	254.7			
Link Distance (m)								59	74	77	56			
Upstream Blk Time (%)								0	0	0	0			
Queuing Penalty (veh)								28						
Storage Bay Dist (m)								0						
Storage Blk Time (%)														
Queuing Penalty (veh)								0						

Intersection: 203: Argus Rd & South Service Rd

Movement	EB	WB	SB
	LT	TR	LR
Directions Served	14.1	16.5	8.8
Maximum Queue (m)	0.6	0.8	2.1
Average Queue (m)	5.8	7.1	8.2
95th Queue (m)	102.8	112.4	43.0
Link Distance (m)			
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 204: Trafalgar Rd & Argus Rd

Movement	EB	NB	NB	SB	SB	T	T	TR
	R	T	T	T	T	TR		
Directions Served	11.5	91.1	95.8	98.0	1.9	24.5	37.1	
Maximum Queue (m)	3.2	40.6	47.8	52.3	0.1	1.5	6.8	
Average Queue (m)	9.7	82.4	90.3	91.1	1.3	11.0	26.1	
95th Queue (m)	112.4	238.9	238.9	278	27.8	27.8	27.8	
Link Distance (m)								
Upstream Blk Time (%)						0	1	
Queuing Penalty (veh)						0	4	
Storage Bay Dist (m)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 302: Cross Ave & East Driveway Access

Movement	EB
Directions Served	T
Maximum Queue (m)	1.8
Average Queue (m)	0.1
95th Queue (m)	1.3
Link Distance (m)	72.4
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 303: North Driveway & Argus Rd

Movement
Directions Served
Maximum Queue (m)
Average Queue (m)
95th Queue (m)
Link Distance (m)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (m)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 1383

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group	1099	351	217	206	329	174	1790	173
Lane Group Flow (vph)	1.45	0.46	1.28	0.61	0.86	1.27	1.19	1.18
v/c Ratio	246.9	17.3	209.5	58.4	55.6	181.7	130.3	163.9
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	246.9	17.3	209.5	58.4	55.6	181.7	130.3	163.9
Total Delay	~224.3	45.0	~80.0	54.7	62.5	~49.6	~226.5	~45.5
Queue Length 50th (m)	#254.8	54.2	#107.2	69.0	78.2	m#52.1	m#86.5	#85.9
Queue Length 95th (m)	98.6		306.4		126.2		246.2	
Internal Link Dist (m)	130.0		25.0		50.0		25.0	
Turn Bay Length (m)	758	760	169	339	383	137	1507	147
Base Capacity (vph)	0	0	0	0	0	0	0	0
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	1.45	0.46	1.28	0.61	0.86	1.27	1.19	1.18

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
Traffic Volume (vph)	966	95	146	167	159	253	141	1526	45	145	1185	353
Future Volume (vph)	956	95	146	167	159	253	141	1526	45	145	1185	353
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.5	3.3	3.6	3.6	3.3	3.6	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.91	1.00	0.91
Frbp. ped/bikes	1.00	0.99	1.00	1.00	0.99	1.00	0.99	1.00	0.99	1.00	0.99	1.00
Frbp. ped/bikes	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.95	1.00	0.90	1.00	0.90	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Flt Protected	0.95	1.00	0.90	1.00	0.90	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	2785	1385		1516	1583	1362	1428	4484		1525	4830	
Flt Permitted	0.95	1.00		0.55	1.00	1.00	0.09	1.00		0.09	1.00	
Satd. Flow (perm)	2795	1385		879	1583	1362	137	4484		146	4330	
Peak-hour factor, PHF	0.87	0.77	0.64	0.77	0.77	0.77	0.81	0.88	0.80	0.84	0.84	0.83
Adj. Flow (vph)	1089	123	228	217	206	329	174	1734	56	173	1411	425
RTOR Reduction (vph)	0	48	0	0	0	92	0	3	0	0	39	0
Lane Group Flow (vph)	1089	303	0	217	206	237	174	1787	0	173	1797	0
Conf. Peds. (#/hr)	1	4	4	4	4	1	10	52	52	52	10	10
Heavy Vehicles (%)	9%	6%	12%	3%	8%	4%	10%	3%	0%	3%	3%	4%
Turn Type	Prot	NA	Perm	NA	Perm	NA	pm-pt	NA	pm-pt	pm-pt	NA	NA
Protected Phases	7	4		8	8	5	2	1	6			
Permitted Phases				8	8	2						
Actuated Green, G (s)	35.0	69.0		27.0	27.0	27.0	53.0	44.0	53.0	44.0	44.0	44.0
Effective Green, g (s)	38.0	72.0		27.0	30.0	30.0	53.0	47.0	53.0	47.0	53.0	47.0
Actuated g/C Ratio	0.27	0.51		0.19	0.21	0.21	0.38	0.34	0.38	0.34	0.38	0.34
Clearance Time (s)	7.0	7.0		7.0	7.0	7.0	4.0	7.0	4.0	7.0	4.0	7.0
Vehicle Extension (s)	3.0	4.0		4.0	4.0	4.0	3.0	5.0	3.0	5.0	3.0	5.0
Lane Grp Cap (vph)	768	712		169	339	291	134	1505	143	1453		
v/s Ratio Prot	c0.39	0.22		0.13	0.13	0.17	0.41	0.38	0.08	c0.42		
v/s Ratio Perm				c0.25	0.17	0.17	0.41					
v/c Ratio	1.45	0.43		1.28	0.61	0.81	1.30	1.19	1.21	1.24		
Uniform Delay, d1	51.0	21.1		56.5	49.7	52.4	36.1	46.5	36.1	46.5		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.25	1.03	1.48	0.96		
Incremental Delay, d2	209.8	0.6		165.1	3.5	16.6	160.5	88.3	137.8	112.1		
Delay (s)	260.8	21.7		221.6	53.2	69.0	205.5	136.3	191.2	156.7		
Level of Service	F	C		F	D	E	F	F	F	F		
Approach Delay (s)												
Approach LOS												

Intersection Summary	Value	Unit
HCM 2000 Control Delay	158.1	s
HCM 2000 Volume to Capacity ratio	1.28	
Actuated Cycle Length (s)	140.0	s
Intersection Capacity Utilization	96.2%	%
Analysis Period (min)	15	min
c Critical Lane Group		

Lanes, Volumes, Timings
102: GO Bus Terminal/Argus Rd & Cross Ave

Lanes, Volumes, Timings
102: GO Bus Terminal/Argus Rd & Cross Ave

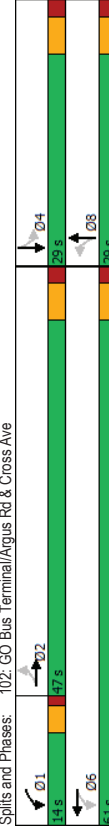
Background 2027
PM Peak Hour

Background 2027
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1	1
Traffic Volume (vph)	15	922	18	40	383	45	17	2	51	157	21	141
Future Volume (vph)	15	922	18	40	383	45	17	2	51	157	21	141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.6
Storage Length (m)	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	15.0	0.0	0.0
Storage Lanes	1	0	0	1	0	0	1	0	0	1	0	0
Taper Length (m)	7.5	0.95	0.95	7.5	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.97	0.98	0.99	0.99	0.99
Ped Bike Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.98	0.99	0.98	0.99	0.99
Frt	0.996			0.983			0.865			0.877		
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1570	3123	0	818	3140	0	805	787	0	1570	1271	0
FltP Permitted	0.472			0.136			0.546			0.704		
Satd. Flow (perm)	779	3123	0	117	3140	0	462	787	0	1139	1271	0
Right Turn on Red	Yes			Yes			Yes			Yes		
Satd. Flow (RTOR)	4			31			73			158		
Link Speed (k/h)	50			50			50			50		
Link Distance (m)	207.1			100.7			81.9			180.7		
Travel Time (s)	14.9			7.3			5.9			13.0		
Confl. Peds. (#/hr)	1	3	3	3	3	1	3	20	20	20	3	3
Peak Hour Factor	0.52	0.87	0.65	0.84	0.88	0.79	0.53	0.25	0.70	0.78	0.62	0.89
Heavy Vehicles (%)	0%	1%	100%	92%	1%	5%	95%	0%	91%	0%	93%	0%
Adj. Flow (vph)	29	1060	28	48	435	57	32	8	73	201	34	158
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	1088	0	48	492	0	32	81	0	201	192	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width (m)	3.3			3.3			3.3			3.3		
Link Offset (m)	0.0			0.0			0.0			0.0		
Crosswalk Width (m)	4.8			4.8			4.8			4.8		
Two way Left Turn Lane												
Headway Factor	1.19	1.14	1.14	1.19	1.14	1.14	1.14	1.14	1.14	1.19	1.14	1.14
Turning Speed (k/h)	24	14	14	24	14	14	24	14	24	24	14	14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru
Leading Detector (m)	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Type	C+Ex	Ch+Ex	C+Ex	Ch+Ex	C+Ex	Ch+Ex	C+Ex	Ch+Ex	C+Ex	Ch+Ex	C+Ex	Ch+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4			9.4			9.4			9.4		
Detector 2 Size (m)	0.6			0.6			0.6			0.6		
Detector 2 Type	Ch+Ex			Ch+Ex			Ch+Ex			Ch+Ex		
Detector 2 Channel												

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Spills and Phases: 102: GO Bus Terminal/Argus Rd & Cross Ave

Queues Background 2027
102: GO Bus Terminal/Argus Rd & Cross Ave

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group	29	1088	48	492	32	81	201	192
Lane Group Flow (vph)	0.08	0.73	0.32	0.25	0.27	0.31	0.68	0.43
v/c Ratio	12.9	20.5	12.1	6.5	31.5	11.3	40.1	10.2
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	12.9	20.5	12.1	6.5	31.5	11.3	40.1	10.2
Total Delay	2.5	71.8	2.8	15.7	4.3	1.0	30.3	4.4
Queue Length 50th (m)	4.2	98.6	6.9	23.6	7.0	0.0	46.7	6.8
Queue Length 95th (m)	183.1		76.7			57.9	156.7	
Internal Link Dist (m)	20.0		20.0			150		
Turn Bay Length (m)	435	1747	165	2334	150	305	370	519
Base Capacity (vph)	0	0	0	0	0	0	0	0
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	0.07	0.62	0.29	0.21	0.21	0.27	0.54	0.37

Intersection Summary

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	15	922	18	40	383	45	17	2
Traffic Volume (vph)	15	922	18	40	383	45	17	2
Future Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	3.3	3.6	3.6	3.3	3.6	3.3	3.6	3.6
Lane Width	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.99
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1569	3124	818	3139	804	789	1542	1271
Flt Permitted	0.47	1.00	0.14	1.00	0.55	1.00	0.70	1.00
Satd. Flow (perm)	780	3124	117	3139	461	789	1143	1271
Peak-hour factor, PHF	0.52	0.87	0.65	0.84	0.88	0.79	0.53	0.25
Adj. Flow (vph)	29	1060	28	48	435	57	32	8
RTOR Reduction (vph)	0	2	0	0	1	0	0	54
Lane Group Flow (vph)	29	1086	0	48	481	0	32	27
Conf. Peds. (#/hr)	1	3	3	3	1	3	20	20
Heavy Vehicles (%)	0%	1%	100%	92%	1%	5%	95%	0%
Turn Type	Perm	NA	NA	pm+pt	NA	Perm	NA	Perm
Protected Phases	2	6	6	6	8	8	8	4
Permitted Phases	2	6	6	6	8	8	8	4
Actuated Green, G (s)	35.6	35.6	48.1	48.1	48.1	18.5	18.5	18.5
Effective Green, g (s)	37.6	37.6	48.1	50.1	50.1	20.5	20.5	20.5
Actuated g/C Ratio	0.48	0.48	0.61	0.64	0.64	0.26	0.26	0.26
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	5.0	5.0	2.5	5.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	373	1494	147	2000	147	205	298	331
v/s Ratio Prot	c0.35	c0.04	0.15	0.15	0.03	0.07	c0.18	0.06
v/s Ratio Perm	0.04	0.16	0.16	0.16	0.07	0.07	c0.18	0.06
v/c Ratio	0.08	0.73	0.33	0.24	0.27	0.13	0.67	0.23
Uniform Delay, d1	11.1	16.4	9.2	6.1	23.1	22.2	26.1	22.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	2.2	0.9	0.1	1.6	0.4	6.4	0.5
Delay (s)	11.3	18.6	10.2	6.2	24.7	22.6	32.5	23.3
Level of Service	B	B	B	A	C	C	C	C
Approach Delay (s)	18.4	18.4	6.6	6.6	23.2	23.2	28.0	28.0
Approach LOS	B	B	A	A	C	C	C	C

Intersection Summary

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
HCM 2000 Control Delay	17.5							
HCM 2000 Volume to Capacity ratio	0.66							
Actuated Cycle Length (s)	78.6							
Sum of lost time (s)	61.0%							
ICU Level of Service	15							
Analysis Period (min)	B							
Critical Lane Group	B							

HCM Signalized Intersection Capacity Analysis Background 2027
102: GO Bus Terminal/Argus Rd & Cross Ave

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	15	922	18	40	383	45	17	2
Traffic Volume (vph)	15	922	18	40	383	45	17	2
Future Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	3.3	3.6	3.6	3.3	3.6	3.3	3.6	3.6
Lane Width	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.99
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1569	3124	818	3139	804	789	1542	1271
Flt Permitted	0.47	1.00	0.14	1.00	0.55	1.00	0.70	1.00
Satd. Flow (perm)	780	3124	117	3139	461	789	1143	1271
Peak-hour factor, PHF	0.52	0.87	0.65	0.84	0.88	0.79	0.53	0.25
Adj. Flow (vph)	29	1060	28	48	435	57	32	8
RTOR Reduction (vph)	0	2	0	0	1	0	0	54
Lane Group Flow (vph)	29	1086	0	48	481	0	32	27
Conf. Peds. (#/hr)	1	3	3	3	1	3	20	20
Heavy Vehicles (%)	0%	1%	100%	92%	1%	5%	95%	0%
Turn Type	Perm	NA	NA	pm+pt	NA	Perm	NA	Perm
Protected Phases	2	6	6	6	8	8	8	4
Permitted Phases	2	6	6	6	8	8	8	4
Actuated Green, G (s)	35.6	35.6	48.1	48.1	48.1	18.5	18.5	18.5
Effective Green, g (s)	37.6	37.6	48.1	50.1	50.1	20.5	20.5	20.5
Actuated g/C Ratio	0.48	0.48	0.61	0.64	0.64	0.26	0.26	0.26
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	5.0	5.0	2.5	5.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	373	1494	147	2000	147	205	298	331
v/s Ratio Prot	c0.35	c0.04	0.15	0.15	0.03	0.07	c0.18	0.06
v/s Ratio Perm	0.04	0.16	0.16	0.16	0.07	0.07	c0.18	0.06
v/c Ratio	0.08	0.73	0.33	0.24	0.27	0.13	0.67	0.23
Uniform Delay, d1	11.1	16.4	9.2	6.1	23.1	22.2	26.1	22.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	2.2	0.9	0.1	1.6	0.4	6.4	0.5
Delay (s)	11.3	18.6	10.2	6.2	24.7	22.6	32.5	23.3
Level of Service	B	B	B	A	C	C	C	C
Approach Delay (s)	18.4	18.4	6.6	6.6	23.2	23.2	28.0	28.0
Approach LOS	B	B	A	A	C	C	C	C

Intersection Summary

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
HCM 2000 Control Delay	17.5							
HCM 2000 Volume to Capacity ratio	0.66							
Actuated Cycle Length (s)	78.6							
Sum of lost time (s)	61.0%							
ICU Level of Service	15							
Analysis Period (min)	B							
Critical Lane Group	B							

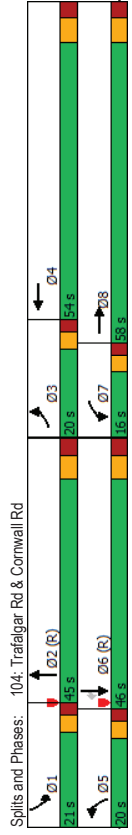
Lanes, Volumes, Timings
104: Trafalgar Rd & Cornwall Rd

Lanes, Volumes, Timings
104: Trafalgar Rd & Cornwall Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT
Traffic Volume (vph)	423	560	198	70	781	513	139	396	47	444	491
Future Volume (vph)	423	560	198	70	781	513	139	396	47	444	491
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.3	3.6	3.6
Storage Length (m)	80.0	0.0	80.0	0.0	80.0	0.0	80.0	0.0	80.0	0.0	80.0
Storage Lanes	2	0	1	0	1	0	1	0	1	0	1
Taper Length (m)	7.5	0.95	0.95	7.5	0.95	1.00	0.95	0.95	0.95	7.5	7.5
Lane Util. Factor	0.97	0.95	0.95	1.00	0.98	0.99	1.00	0.98	0.98	1.00	1.00
Ped Bike Factor	1.00	0.99	1.00	0.98	0.99	1.00	0.98	1.00	0.98	1.00	0.98
Frt	0.948			0.942			0.982			0.850	
Flt Protected	0.950			0.950			0.950			0.950	
Satd. Flow (prot)	2987	2954	0	1481	2918	0	1540	3149	0	2929	1676
Flt Permitted	0.950			0.950			0.950			0.950	
Satd. Flow (perm)	2973	2954	0	1475	2918	0	1531	3149	0	2874	1676
Right Turn on Red	Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)	83			110			11			198	
Link Speed (k/h)	50			50			50			50	
Link Distance (m)	285.8			142.3			311.4			130.3	
Travel Time (s)	20.6			10.2			22.4			9.4	
Confl. Peds. (#/hr)	25			7			25			18	
Peak Hour Factor	0.93	0.91	0.60	0.75	0.86	0.90	0.60	0.86	0.75	0.84	0.86
Heavy Vehicles (%)	2%	4%	1%	6%	3%	3%	2%	1%	0%	4%	2%
Adj. Flow (vph)	455	615	330	93	908	570	232	460	63	529	571
Shared Lane Traffic (%)											
Lane Group Flow (vph)	455	945	0	93	1478	0	232	523	0	529	571
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width (m)	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
Link Offset (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width (m)	4.8			4.8			4.8			4.8	
Two way Left Turn Lane	1.19	1.14	1.14	1.19	1.14	1.14	1.19	1.14	1.14	1.19	1.14
Headway Factor	24	14	14	24	14	14	24	14	14	24	14
Turning Speed (k/h)	1	2	1	1	2	1	1	2	1	2	1
Number of Detectors	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Right
Detector Template	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 1 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4			9.4			9.4			9.4	
Detector 2 Size (m)	0.6			0.6			0.6			0.6	
Detector 2 Type	Ch+Ex			Ch+Ex			Ch+Ex			Ch+Ex	
Detector 2 Channel	0.6			0.6			0.6			0.6	

Lanes, Volumes, Timings
104: Trafalgar Rd & Cornwall Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Detector 2 Extend (s)	0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Prot
Protected Phases	3	8	8	7	4	4	5	2	1	6	6
Permitted Phases	3	8	8	7	4	4	5	2	1	6	6
Switch Phase											
Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	10.0	7.0	10.0	7.0	10.0	20.0
Minimum Split (s)	12.0	37.0	12.0	37.0	12.0	37.0	12.0	39.0	12.0	39.0	39.0
Total Split (s)	20.0	88.0	16.0	54.0	20.0	45.0	20.0	45.0	21.0	46.0	46.0
Total Split (%)	14.3%	41.4%	11.4%	38.6%	14.3%	32.1%	15.0%	32.9%	15.0%	32.9%	32.9%
Maximum Green (s)	15.0	51.0	11.0	47.0	15.0	38.0	15.0	38.0	16.0	39.0	39.0
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	4.0
All-Red Time (s)	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-3.0	-1.0	-3.0	-1.0	-3.0	-1.0	-3.0	-1.0	-3.0	-3.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimizer?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Recall Mode	Max	Max	Max	Max	Max	Max	None	C-Max	Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	23.0	23.0	23.0	23.0	23.0	23.0	25.0	25.0	25.0	25.0	25.0
Pedestrian Calls (#/hr)	0			0			0			0	
Act Effct Green (s)	16.0	54.0	12.0	50.0	16.0	41.0	17.0	42.0	17.0	42.0	42.0
Actuated Cycle Length (s)	0.11	0.39	0.09	0.36	0.11	0.29	0.12	0.29	0.12	0.30	0.30
v/c Ratio	1.33	0.79	0.74	1.33	1.32	0.66	1.49	1.14	1.14	1.14	1.10
Control Delay	215.2	40.5	94.4	188.5	223.8	43.8	271.0	100.2	271.0	100.2	72.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	215.2	40.5	94.4	188.5	223.8	43.8	271.0	100.2	271.0	100.2	72.0
LOS	F	D	F	F	F	F	F	D	F	F	F
Approach Delay	97.2			182.9			99.1			143.8	
Approach LOS	F			F			F			F	
Intersection Summary	CBD										
Area Type:	CBD										
Cycle Length:	140										
Actuated Cycle Length:	140										
Offset: 0 (0%):	Referenced to phase 2:NBT and 6:SBT, Start of Green, Master Intersection										
Natural Cycle:	150										
Control Type:	Actuated-Coordinated										
Maximum v/c Ratio:	1.49										
Intersection Signal Delay:	136.9										
Intersection Capacity Utilization:	110.7%										
Analysis Period (min):	15										
ICU Level of Service:	H										



	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	455	945	93	1478	232	523	529	571	591
Lane Group Flow (vph)	1.33	0.79	0.74	1.33	1.32	0.56	1.49	1.14	1.10
v/c Ratio	215.2	40.5	94.4	188.5	233.8	43.8	271.0	100.2	72.0
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	215.2	40.5	94.4	188.5	233.8	43.8	271.0	100.2	72.0
Queue Length 50th (m)	-88.6	117.7	26.9	-283.4	-87.1	66.7	-112.6	-188.0	-65.8
Queue Length 95th (m)	#124.4	146.3	#40.2	#305.6	#76.8	81.4	m#86.8	m100.9	m34.7
Internal Link Dist (m)	261.8		118.3		287.4			106.3	
Turn Bay Length (m)	80.0		80.0		25.0		80.0		
Base Capacity (vph)	341	1190	126	1112	176	929	355	502	535
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.33	0.79	0.74	1.33	1.32	0.56	1.49	1.14	1.10
Intersection Summary									
~ Volume exceeds capacity, queue is theoretically infinite.									
Queue shown is maximum after two cycles.									
# 95th percentile volume exceeds capacity, queue may be longer.									
Queue shown is maximum after two cycles.									
m Volume for 95th percentile queue is metered by upstream signal.									

Movement	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	TT	TT	T	T	T	T	TT	TT	T
Traffic Volume (vph)	423	560	198	70	781	513	139	396	47
Future Volume (vph)	423	560	198	70	781	513	139	396	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.3	3.6	3.3	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.95	1.00	0.95	0.97	1.00	1.00
Frbp. ped/bikes	1.00	0.99	1.00	0.98	1.00	1.00	1.00	1.00	0.98
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.95	1.00	0.94	1.00	0.98	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	2987	2953	1481	2919	1540	3149	2929	1676	1324
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	2987	2953	1481	2919	1540	3149	2929	1676	1324
Peak-hour factor, PHF	0.93	0.91	0.60	0.75	0.86	0.90	0.86	0.75	0.84
Adj. Flow (vph)	465	615	330	93	908	570	232	460	63
RTOR Reduction (vph)	0	51	0	0	71	0	0	8	0
Lane Group Flow (vph)	455	894	0	93	1407	0	232	515	0
Conf. Peds. (#/hr)	25	7	7	7	25	9	18	18	9
Heavy Vehicles (%)	2%	4%	1%	6%	3%	2%	1%	0%	4%
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Prot
Protected Phases	3	8	7	4	5	2	1	6	6
Permitted Phases	15.0	51.0	11.0	47.0	15.0	38.0	16.0	39.0	39.0
Actuated Green, G (s)	16.0	54.0	12.0	50.0	16.0	41.0	17.0	42.0	42.0
Effective Green, g (s)	0.11	0.39	0.09	0.36	0.11	0.29	0.12	0.30	0.30
Actuated g/C Ratio	5.0	7.0	5.0	7.0	5.0	7.0	5.0	7.0	7.0
Clearance Time (s)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Vehicle Extension (s)	341	1139	126	1042	176	922	355	502	397
Lane Grp Cap (vph)	c0.15	c0.30	0.06	c0.48	0.15	0.16	c0.18	0.34	c0.34
v/s Ratio Prot	1.33	0.78	0.74	1.35	1.32	0.56	1.49	1.14	1.14
v/c Ratio	62.0	37.9	62.5	45.0	62.0	41.9	61.5	49.0	49.0
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	1.30	0.77	0.63
Progression Factor	169.2	5.5	31.7	164.1	177.4	2.4	221.9	64.4	66.0
Incremental Delay, d2	231.2	43.3	94.2	209.1	239.4	44.3	301.6	102.1	97.1
Delay (s)	F	D	F	F	F	D	F	F	F
Level of Service	104.4	F	202.3	F	104.2	F	162.8	F	F
Approach Delay (s)	F	F	F	F	F	F	F	F	F
Approach LOS	F	F	F	F	F	F	F	F	F
Intersection Summary									
HCM 2000 Control Delay	151.0 HCM 2000 Level of Service F								
HCM 2000 Volume to Capacity ratio	1.29								
Actuated Cycle Length (s)	140.0 Sum of lost time (s) 16.0								
Intersection Capacity Utilization	110.7% ICU Level of Service H								
Analysis Period (min)	15								
c Critical Lane Group									

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	886	411	0	1668	1461	0
Future Volume (vph)	886	411	0	1668	1461	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.5	3.6	3.6	3.6	3.6
Lane Util. Factor	0.97	1.00	1.00	0.91	0.91	1.00
Flt Protected	0.950					
Satd. Flow (prot)	2958	1423	0	4404	4489	0
Flt Permitted	0.950					
Satd. Flow (perm)	2958	1423	0	4404	4489	0
Right Turn on Red	Yes					Yes
Satd. Flow (RTOR)	15					
Link Speed (k/h)	50			50	50	
Link Distance (m)	199.2			51.4	324.8	
Travel Time (s)	14.3			3.7	23.4	
Peak Hour Factor	0.98	0.92	0.25	0.91	0.90	0.25
Heavy Vehicles (%)	3%	1%	0%	6%	4%	0%
Adj. Flow (vph)	904	447	0	1833	1623	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	904	447	0	1833	1623	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Right
Median Width(m)	6.6			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.19	1.16	1.14	1.14	1.14	1.14
Turning Speed (k/h)	24	14	24		14	
Number of Detectors	1	Right	Thru	2	2	
Detector Template	2.0	2.0	10.0	10.0	10.0	
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	2.0	2.0	0.6	0.6	0.6	
Detector 1 Size(m)	2.0	2.0	0.6	0.6	0.6	
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)			9.4	9.4		
Detector 2 Size(m)			0.6	0.6		
Detector 2 Type			Ch+Ex	Ch+Ex		
Detector 2 Channel						
Detector 2 Extend (s)			0.0	0.0		
Turn Type	Prot	Perm	NA	NA	NA	
Protected Phases	4		2	2	2	
Permitted Phases	4	4	2	2	2	
Detector Phase	4	4	2	2	2	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	10.0	10.0		29.0	29.0	
Minimum Split (s)	38.0	38.0		36.0	36.0	
Total Split (s)	64.0	64.0		76.0	76.0	
Total Split (%)	45.7%	45.7%		54.3%	54.3%	
Maximum Green (s)	57.0	57.0		69.0	69.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	24.0	24.0		22.0	22.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Ad Effct Green (s)	53.1	53.1		78.9	78.9	
Actuated g/C Ratio	0.38	0.38		0.56	0.56	
v/c Ratio	0.81	0.81		0.74	0.64	
Control Delay	44.6	49.8		21.2	14.5	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	44.6	49.8		21.2	14.5	
LOS	D	D		C	B	
Approach Delay	46.4			21.2	14.5	
Approach LOS	D			C	B	
Intersection Summary	CBD					
Area Type:	CBD					
Cycle Length:	140					
Actuated Cycle Length:	140					
Offset:	133.6 (95%), Referenced to phase 2,NBSB and 6:, Start of Green					
Natural Cycle:	75					
Control Type:	Actuated-Coordinated					
Maximum v/c Ratio:	0.81					
Intersection Signal Delay:	26.0					
Intersection Capacity Utilization:	70.6%					
Analysis Period (min):	15					

	EBL	EBR	NBT	SBT
Lane Group	904	447	1833	1623
Lane Group Flow (vph)	0.81	0.81	0.74	0.64
v/c Ratio	44.6	49.8	21.2	14.5
Control Delay	0.0	0.0	0.0	0.0
Queue Delay	44.6	49.8	21.2	14.5
Total Delay	120.1	112.4	84.7	63.8
Queue Length 50th (m)	135.9	147.9	m69.4	124.5
Queue Length 95th (m)	175.2	27.4	300.8	
Internal Link Dist (m)				
Turn Bay Length (m)				
Base Capacity (vph)	1267	618	2481	2529
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.71	0.72	0.74	0.64

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

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	TT	TT	TT	TT	TT	TT
Traffic Volume (vph)	886	411	0	1668	1461	0
Future Volume (vph)	886	411	0	1668	1461	0
Ideal Flow (vphpb)	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.5	3.6	3.6	3.6	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	1.00	0.91	0.91	0.91
Frt	1.00	0.85	1.00	1.00	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	2958	1423	4404	4489	4489	4489
Flt Permitted	0.95	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	2958	1423	4404	4489	4489	4489
Peak-hour factor, PHF	0.98	0.92	0.25	0.91	0.90	0.25
Adj. Flow (vph)	904	447	0	1833	1623	0
RTOR Reduction (vph)	0	9	0	0	0	0
Lane Group Flow (vph)	904	438	0	1833	1623	0
Heavy Vehicles (%)	3%	1%	0%	6%	4%	0%
Turn Type	Prot	Perm	NA	NA	NA	NA
Protected Phases	4			2	2	
Permitted Phases		4				
Actuated Green, G (s)	50.1	50.1	75.9	75.9	75.9	
Effective Green, g (s)	53.1	53.1	78.9	78.9	78.9	
Actuated g/C Ratio	0.38	0.38	0.56	0.56	0.56	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	1121	639	2481	2529	2529	
v/s Ratio Prot	0.31		c0.42	0.36		
v/s Ratio Perm	c0.31					
v/c Ratio	0.81	0.81	0.74	0.64	0.64	
Uniform Delay, d1	38.9	39.0	22.8	20.9	20.9	
Progression Factor	1.00	1.00	0.87	0.62	0.62	
Incremental Delay, d2	4.3	9.1	0.2	0.9	0.9	
Delay (s)	43.2	48.0	20.1	13.8	13.8	
Level of Service	D	D	C	B	B	
Approach Delay (s)	44.8		20.1	13.8		
Approach LOS	D		C	B		
Intersection Summary						
HCM 2000 Control Delay		24.9		HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio		0.77				
Actuated Cycle Length (s)		140.0		Sum of lost time (s)		8.0
Intersection Capacity Utilization		70.6%		ICU Level of Service		C
Analysis Period (min)		15				
c Critical Lane Group						

Lanes, Volumes, Timings
106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

Lanes, Volumes, Timings
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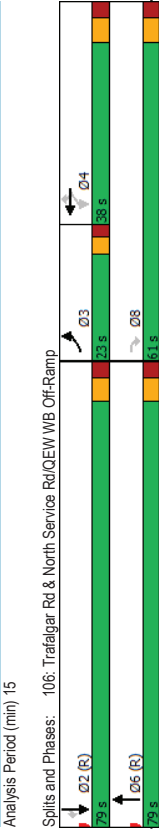
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	←	←	←	←	←	←	←	←	←	←	←
Traffic Volume (vph)	21	0	198	455	92	197	0	2227	0	0	1467
Future Volume (vph)	21	0	198	455	92	197	0	2227	0	0	1467
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.5	3.3	3.6	3.5	3.6	3.6	3.6	3.6	3.5
Storage Length (m)	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Storage Lanes	1		1	1	1	1	0	0	0	0	1
Taper Length (m)	7.5		7.5	7.5	7.5	7.5	0	0	0	7.5	0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91
Ped Bike Factor											0.96
Frt	0.950	0.850	0.850	0.950	0.971	0.850					0.850
Satd. Flow (prot)	1570	0	1395	1421	1404	1356	0	4446	0	0	4532
Flt Protected											
Satd. Flow (perm)	0.950	0.950	0.971								
Right Turn on Red	1570	0	1395	1421	1404	1356	0	4446	0	0	4532
Satd. Flow (RTOR)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Link Speed (km/h)	50		31	50	50	50	50	50	50	50	50
Link Distance (m)	142.1		10.2	192.6	13.9	23.4	324.8	268.2	19.3		
Travel Time (s)	10.2		10.2	13.9	13.9	23.4	324.8	268.2	19.3		
Conf. Peds. (#/hr)	8		8	8	8	5	5	5	5	8	8
Peak Hour Factor	0.25	0.25	0.91	0.88	0.88	0.73	0.25	0.93	0.97	0.25	0.90
Heavy Vehicles (%)	0%	0%	3%	5%	23%	6%	0%	5%	5%	0%	3%
Adj. Flow (vph)	84	0	218	517	135	270	0	2395	0	0	1630
Shared Lane Traffic (%)			38%								
Lane Group Flow (vph)	84	0	218	321	331	270	0	2395	0	0	1630
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	3.3		3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
Link Offset(m)	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width(m)	4.8		4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Two way Left Turn Lane	1.19	1.14	1.16	1.19	1.14	1.16	1.14	1.14	1.14	1.14	1.16
Headway Factor	24	14	14	24	14	24	14	24	14	24	14
Turning Speed (km/h)	1	1	1	1	1	1	1	1	1	1	1
Number of Detectors	1		1	1	2	1	2	2	2	2	1
Detector Template	Left	Right	Thru	Left	Thru	Right	Thru	Thru	Thru	Right	Right
Leading Detector (m)	2.0	2.0	2.0	2.0	10.0	2.0	10.0	10.0	10.0	2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	2.0	2.0	0.6	2.0	0.6	0.6	0.6	0.6	2.0
Detector 1 Type	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex
Detector 1 Channel											
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4			9.4		9.4		9.4
Detector 2 Size(m)				0.6			0.6		0.6		0.6
Detector 2 Type				C+Ex			C+Ex		C+Ex		C+Ex
Detector 2 Channel											

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Lanes, Volumes, Timings
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Lanes, Volumes, Timings
106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Detector 2 Extend (s)											
Turn Type	Prot	Perm	NA	Perm	NA	Perm	NA	NA	NA	NA	Perm
Protected Phases	3			4			6				2
Permitted Phases	3		8	4		4	6				2
Detector Phase	3		8	4		4	6				2
Switch Phase											
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0	10.0	5.0			28.0	28.0
Minimum Split (s)	23.0	38.0	38.0	38.0	38.0	38.0	35.0			35.0	35.0
Total Split (s)	23.0	61.0	38.0	38.0	38.0	38.0	79.0			79.0	79.0
Total Split (%)	16.4%	43.6%	27.1%	27.1%	27.1%	27.1%	56.4%			56.4%	56.4%
Maximum Green (s)	18.0	54.0	31.0	31.0	31.0	31.0	72.0			72.0	72.0
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	4.0			4.0	4.0
All-Red Time (s)	2.0	3.0	3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lost Time Adjust (s)	-1.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0			-3.0	-3.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0			4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lag			Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.5			4.5	4.5
Recall Mode	Min	Min	Min	Min	Min	Min	C-Min			C-Min	C-Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0			7.0	7.0
Flash Dont Walk (s)	24.0	24.0	24.0	24.0	24.0	24.0	21.0			21.0	21.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0			0	0
Act Effct Green (s)	13.8	56.6	37.8	37.8	37.8	37.8	76.4			76.4	76.4
Actuated g/C Ratio	0.10	0.40	0.27	0.27	0.27	0.27	0.55			0.55	0.55
v/c Ratio	0.65	0.38	0.84	0.87	0.62	0.62	0.99			0.66	0.62
Control Delay	72.4	27.3	68.1	72.7	34.9	42.6	24.4			24.4	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay	72.4	27.3	68.1	72.7	34.9	42.6	24.4			24.4	0.1
LOS	E	C	C	E	C	C	D			D	C
Approach Delay		39.9					60.0				24.2
Approach LOS		D					D				C
Intersection Summary											
Area Type:	CBD										
Cycle Length:	140										
Actuated Cycle Length:	140										
Offset:	115.4 (82%), Referenced to phase 2 SBT and 6 NBT, Start of Green										
Control Type:	Actuated-Coordinated										
Maximum v/c Ratio:	0.99										
Intersection Signal Delay:	39.7										
Intersection Capacity Utilization:	77.8%										
Analysis Period (min):	15										



Splits and Phases: 106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp
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	EBL	EBR	WBL	WBR	NBT	SBT	SBR
Lane Group	84	218	321	331	270	2395	1630
Lane Group Flow (vph)	0.55	0.38	0.84	0.87	0.62	0.99	0.66
v/c Ratio	72.4	27.3	66.1	72.7	34.9	42.6	24.4
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	72.4	27.3	66.1	72.7	34.9	42.6	24.4
Total Delay	23.7	37.4	92.0	96.1	43.0	~247.2	122.2
Queue Length 50th (m)	10.5	60.0	#153.6	100.2	54.4	#292.6	139.5
Queue Length 95th (m)							
Internal Link Dist (m)			168.6		300.8	244.2	
Turn Bay Length (m)	50.0						
Base Capacity (vph)	213	566	383	379	438	2427	2474
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.37	0.84	0.87	0.62	0.99	0.66

Intersection Summary
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	21	0	198	455	92	197	0	2227	0	0	1467	12
Traffic Volume (vph)	21	0	198	455	92	197	0	2227	0	0	1467	12
Future Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	3.3	3.6	3.5	3.3	3.6	3.5	3.6	3.6	3.6	3.6	3.6	3.5
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	0.91	0.91	0.91	0.91	0.91	1.00
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.96
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	1570	1395	1421	1404	1356	4446					4532	1380
Flt Permitted	0.95	1.00	1.00	0.95	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	1570	1395	1421	1404	1356	4446					4532	1380
Peak-hour factor, PHF	0.25	0.25	0.81	0.88	0.68	0.73	0.25	0.93	0.97	0.25	0.90	0.63
Adj. Flow (vph)	64	0	218	517	135	270	0	2395	0	0	1630	19
RTOR Reduction (vph)	0	0	19	0	0	73	0	0	0	0	0	9
Lane Group Flow (vph)	84	0	199	321	331	197	0	2395	0	0	1630	10
Conf. Peds. (#/hr)							8		5			8
Heavy Vehicles (%)	0%	0%	3%	5%	23%	6%	0%	5%	5%	0%	0%	3%
Turn Type	Prot	Perm	Perm	NA	Perm	NA	Perm	NA	NA	Perm	NA	Perm
Protected Phases	3			4			6					2
Permitted Phases	8	4			4							2
Actuated Green, G (s)	12.8	52.6	34.8	34.8	34.8	34.8	73.4				73.4	73.4
Effective Green, g (s)	13.8	55.6	37.8	37.8	37.8	37.8	76.4				76.4	76.4
Actuated g/C Ratio	0.10	0.40	0.27	0.27	0.27	0.27	0.55				0.55	0.55
Clearance Time (s)	5.0	7.0	7.0	7.0	7.0	7.0	7.0				7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.5				4.5	4.5
Lane Grp Cap (vph)	154	554	383	379	366	2426					2473	753
v/s Ratio Prot	c0.05					c0.54						0.36
v/s Ratio Perm	0.65	0.36	0.84	0.87	0.54	0.99					0.66	0.01
Uniform Delay, d1	60.1	29.7	48.2	48.8	43.6	31.3					22.6	14.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	0.96					1.00	1.00
Incremental Delay, d2	3.9	0.4	14.7	19.4	1.5	12.2					1.4	0.0
Delay (s)	64.0	30.1	62.9	68.2	45.2	42.3					24.0	14.6
Level of Service	E	C	E	E	E	D					C	B
Approach Delay (s)		39.5		59.6		42.3					23.8	
Approach LOS		D		E		D					C	

Intersection Summary
 HCM 2000 Control Delay 39.4 HCM 2000 Level of Service D
 HCM 2000 Volume to Capacity ratio 0.91
 Actuated Cycle Length (s) 140.0 Sum of lost time (s) 12.0
 Intersection Capacity Utilization 77.8% ICU Level of Service D
 Analysis Period (min) 15
 Critical Lane Group c

EBL	EBT	WBT	WBR	SBL	SBR
↖	→	←	↗	↖	↗
EBL	EBT	WBT	WBR	SBL	SBR
11	9	308	91	14	15
Lane Configurations					
Traffic Volume (veh/h)					
11	9	308	91	14	15
Future Volume (veh/h)					
1900	1900	1900	1900	1900	1900
Ideal Flow (veh/h)					
1.00	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor					
Ped Bike Factor					
Ped					
Bike					
Factor					
0.967					
Flt Protected					
Flt Flow (prot)					
0	986	1614	0	1552	0
Flt Permitted					
Flt Flow (perm)					
0	986	1614	0	1552	0
Link Speed (k/h)					
Link Distance (m)					
Travel Time (s)					
Conf. Peds. (#/hr)					
Peak Hour Factor					
0.25	0.42	0.86	0.72	0.25	0.25
Heavy Vehicles (%)					
100%	0%	3%	0%	0%	0%
Adj. Flow (vph)					
44	21	358	126	56	60
Shared Lane Traffic (%)					
Lane Group Flow (vph)					
0	65	484	0	116	0
Enter Blocked Intersection					
No	No	No	No	No	No
Lane Alignment					
Left	Left	Right	Left	Right	Right
Median Width(m)					
Link Offset(m)					
0.0	0.0	0.0	0.0	3.6	3.6
Crosswalk Width(m)					
4.8	4.8	4.8	4.8	4.8	4.8
Two way Left Turn Lane					
Headway Factor					
1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)					
24	Free	Free	Free	Stop	Stop
Sign Control					
Intersection Summary					
Area Type: CBD					
Control Type: Unsignalized					
Intersection Capacity Utilization 34.5%					
Analysis Period (min) 15					
ICU Level of Service A					

EBL	EBT	WBT	WBR	SBL	SBR	
↖	→	←	↗	↖	↗	
EBL	EBT	WBT	WBR	SBL	SBR	
11	9	308	91	14	15	
Lane Configurations						
Traffic Volume (veh/h)						
11	9	308	91	14	15	
Future Volume (veh/h)						
Free	Free	Free	Stop	Stop	Stop	
Sign Control						
Grade						
0%						
0%						
Peak Hour Factor						
0.25	0.42	0.86	0.72	0.25	0.25	
Hourly flow rate (vph)						
44	21	358	126	56	60	
Pedestrians						
Lane Width (m)						
3.6	3.6	3.6	3.6	3.6	3.6	
Walking Speed (m/s)						
1.2	1.2	1.2	1.2	1.2	1.2	
Percent Blockage						
0						
0						
Right turn flare (veh)						
Median type						
None						
None						
Median storage (veh)						
Upstream signal (m)						
358						
pX platoon unblocked						
VC, conflicting volume						
485					536	423
VC1, stage 1 conf vol						
VC2, stage 2 conf vol						
VCu, unblocked vol						
485					536	423
IC, single (s)						
5.1					6.4	6.2
IC, 2 stage (s)						
3.1					3.5	3.3
p0 queue free %						
94					88	91
p0 capacity (veh/h)						
714					475	634
Direction, Lane #						
EB 1		WB 1		SB 1		
Volume Total						
65	484					116
Volume Left						
44	0					56
Volume Right						
0	126					60
cSH						
714	1700					546
Volume to Capacity						
0.06	0.28					0.21
Queue Length 95th (m)						
1.6	0.0					6.4
Control Delay (s)						
7.2	0.0					13.4
Lane LOS						
A					B	B
Approach Delay (s)						
7.2	0.0					13.4
Approach LOS						
B						
Intersection Summary						
Average Delay						
3.0						
Intersection Capacity Utilization						
34.5%						
ICU Level of Service						
A						
Analysis Period (min)						
15						

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	46	0	2584	1507	414
Future Volume (vph)	0	46	0	2584	1507	414
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.5	3.6	3.6	3.6	3.6
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	0.91
Ped Bike Factor		0.865			0.963	
Flt Protected						
Satd. Flow (prot)	0	1367	0	4363	4343	0
Flt Permitted						
Satd. Flow (perm)	0	1367	0	4363	4343	0
Link Speed (k/h)	50		50	50	50	
Link Distance (m)	145.7		270.2	51.4		
Travel Time (s)	10.5		19.5	3.7		
Confl. Peds. (#/hr)						11
Peak Hour Factor	0.25	0.54	0.25	0.92	0.97	0.82
Heavy Vehicles (%)	0%	7%	0%	7%	4%	2%
Adj. Flow (vph)	0	85	0	2809	1554	505
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	85	0	2809	2059	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0	3.3	3.3	3.3	3.3	0.0
Link Offset(m)	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width(m)	4.8		4.8	4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.14	1.16	1.14	1.14	1.14	1.14
Turning Speed (k/h)	24	14	24			14
Sign Control	Stop		Free	Free	Free	
Intersection Summary						
Area Type:	CBD					
Control Type:	Unsignalized					
Intersection Capacity Utilization	58.8%					
Analysis Period (min)	15					
ICU Level of Service	B					

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	46	0	2584	1507	414
Future Volume (Veh/h)	0	46	0	2584	1507	414
Sign Control	Stop		Free	Free	Free	
Grade	0%		0%	0%	0%	0%
Peak Hour Factor	0.25	0.54	0.25	0.92	0.97	0.82
Hourly flow rate (vph)	0	85	0	2809	1554	505
Pedestrians	11					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	1					
Right turn flare (veh)			None	None	None	
Median type						
Median storage (veh)						
Upstream signal (m)			270	52		
pX, platoon unblocked	0.81	0.76	0.76			
VC, conflicting volume	2754	782	2070			
VC1, stage 1 conf vol						
VC2, stage 2 conf vol						
VCu, unblocked vol	337	0	1289			
IC, single (s)	6.8	7.0	4.1			
IC, 2 stage (s)						
p0 queue free %	100	89	100			
IC, 2 stage (s)	3.5	3.4	2.2			
p0 capacity (veh/h)	515	801	409			
Direction_Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2 SB 3
Volume Total	85	936	936	936	622	622 816
Volume Left	0	0	0	0	0	0
Volume Right	85	0	0	0	0	505
CSH	801	1700	1700	1700	1700	1700
Volume to Capacity	0.11	0.55	0.55	0.55	0.37	0.37 0.48
Queue Length 95th (m)	2.8	0.0	0.0	0.0	0.0	0.0 0.0
Control Delay (s)	10.0	0.0	0.0	0.0	0.0	0.0 0.0
Lane LOS	B					
Approach Delay (s)	10.0	0.0			0.0	
Approach LOS	B					
Intersection Summary						
Average Delay	0.2					
Intersection Capacity Utilization	58.8%					
ICU Level of Service	B					
Analysis Period (min)	15					

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group						
Lane Configurations		4↑	4↑		W	
Traffic Volume (vph)	0	1197	653	0	0	0
Future Volume (vph)	0	1197	653	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Flt Protected						
Satd. Flow (prot)	0	3185	3185	0	1676	0
Flt Permitted						
Satd. Flow (perm)	0	3185	3185	0	1676	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		100.7	122.6		66.8	
Travel Time (s)		7.3	8.8		4.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1301	710	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1301	710	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Right
Median Width(m)		3.3	3.3		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25	Free	Free	Free	Stop	Stop
Sign Control						
Intersection Summary						
Area Type:	CBD					
Control Type:	Unsignalized					
Intersection Capacity Utilization	40.1%					
Analysis Period (min)	15					
	ICU Level of Service A					

	EBL	EBT	WBT	WBR	SBL	SBR
Movement						
Lane Configurations		4↑	4↑		W	
Traffic Volume (veh/h)	0	1197	653	0	0	0
Future Volume (Veh/h)	0	1197	653	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1301	710	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)			None			
Median type			None			
Median storage (veh)						
Upstream signal (m)		101	123			
pX, platoon unblocked					0.73	
vC, conflicting volume	710				1360	355
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	710				766	355
iC, single (s)	4.1				6.8	6.9
iC, 2 stage (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
qM capacity (veh/h)	885				249	641
Direction_Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	434	867	473	237	0	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
CSH	885	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.51	0.28	0.14	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	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			40.1%			
ICU Level of Service						A
Analysis Period (min)			15			

	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	W				W	
Traffic Volume (vph)	20	0	0	323	0	0
Future Volume (vph)	20	0	0	323	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	55.4			122.3	54.4	
Travel Time (s)	4.0			8.8	3.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	0	0	351	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	22	0	0	351	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	15			25	25	15
Sign Control	Free			Free	Stop	Stop
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	20.3%					
Analysis Period (min)	15					
	ICU Level of Service A					

	EBT	EBR	WBL	WBT	NBL	NBR
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	W				W	
Traffic Volume (veh/h)	20	0	0	323	0	0
Future Volume (veh/h)	20	0	0	323	0	0
Sign Control	Free			Free	Stop	Stop
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	0	0	351	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	236					
pX platoon unblocked						
vC, conflicting volume		22		373	22	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		22		373	22	
IC, single (s)		4.1		6.4	6.2	
IC, 2 stage (s)		2.2		3.5	3.3	
p0 queue free %		100		100	100	
qM capacity (veh/h)		1593		628	1055	
Direction_Lane #	EB 1	WB 1	NB 1			
Volume Total	22	351	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
CSH	1700	1593	1700			
Volume to Capacity	0.01	0.00	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	20.3%					
ICU Level of Service	A					
Analysis Period (min)	15					

Intersection: 101: Trafalgar Rd & Cross Ave/South Service Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	TR	NB	NB	B34	B34
	L	L	TR	L	TR	R	L	T	T	TR	T	T	T	T
Directions Served														
Maximum Queue (m)	96.0	103.1	68.6	32.3	164.0	64.8	57.3	132.5	148.6	152.5	9.1	17.9		
Average Queue (m)	93.2	98.4	26.2	29.5	76.6	32.5	38.9	110.7	121.8	125.9	0.4	1.5		
95th Queue (m)	99.8	101.2	54.3	38.2	144.7	56.2	68.5	140.4	153.5	156.7	4.0	9.3		
Link Distance (m)			96.2	96.2	313.2	313.2		128.0	128.0	128.0	101.5	101.5		
Upstream Blk Time (%)	9	48						1	6	12				
Queuing Penalty (veh)	0	286						5	27	54				
Storage Bay Dist (m)	130.0			25.0			50.0							
Storage Blk Time (%)	9	48		42	31		7	55						
Queuing Penalty (veh)	42	229		67	51		37	77						

Intersection: 101: Trafalgar Rd & Cross Ave/South Service Rd

Movement	SB	SB	SB	SB	SB	TR
	L	T	T	TR	TR	
Directions Served						
Maximum Queue (m)	32.3	254.0	256.7	249.7		
Average Queue (m)	27.5	218.1	237.6	241.4		
95th Queue (m)	39.3	288.3	275.7	252.0		
Link Distance (m)		239.0	239.0	239.0		
Upstream Blk Time (%)		5	17	42		
Queuing Penalty (veh)		23	90	217		
Storage Bay Dist (m)	25.0					
Storage Blk Time (%)	30		47			
Queuing Penalty (veh)	120	68				

Intersection: 102: GO Bus Terminal/Argus Rd & Cross Ave

Movement	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB	B14	B14
	L	T	TR	L	TR	L	TR	L	TR	L	TR	T	T
Directions Served													
Maximum Queue (m)	27.3	211.0	210.3	27.2	40.8	33.8	35.8	53.3	22.4	162.0	17.4		
Average Queue (m)	5.3	201.3	200.8	12.3	11.6	13.1	8.9	18.4	19.9	70.8	1.7		
95th Queue (m)	21.8	216.3	217.0	27.5	29.7	26.3	26.3	38.1	26.1	155.9	13.4		
Link Distance (m)		196.3	196.3		79.5	79.5	65.7	65.7		159.0	35.2		
Upstream Blk Time (%)		91	73							4	0		
Queuing Penalty (veh)		0	0							14	2		
Storage Bay Dist (m)	20.0			20.0					15.0				
Storage Blk Time (%)	0	79		4	1				60	14			
Queuing Penalty (veh)	1	12		8	0				98	22			

Intersection: 104: Trafalgar Rd & Cornwall Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	TR	NB	NB	SB	SB
	L	L	TR	L	TR	L	T	T	T	TR	T	T	T	L
Directions Served														
Maximum Queue (m)	83.7	87.4	281.9	273.6	87.4	135.0	135.8	32.5	302.5	290.7	86.1	107.8		
Average Queue (m)	82.7	87.1	259.4	242.9	38.2	120.4	126.1	32.0	229.6	195.1	56.3	63.8		
95th Queue (m)	86.0	87.9	321.4	324.5	91.2	142.4	144.4	34.8	356.2	348.0	88.1	105.6		
Link Distance (m)			266.8	266.8		122.1	122.1		289.9	289.9	101.5	101.5		
Upstream Blk Time (%)			66	8		21	49		33	8				
Queuing Penalty (veh)			0	0		0	0		0	0				
Storage Bay Dist (m)	80.0	80.0		80.0			25.0							
Storage Blk Time (%)	62	77		2	0	40	93		7	3				
Queuing Penalty (veh)	22	216		6	0	28	184		9	6				

Intersection: 104: Trafalgar Rd & Cornwall Rd

Movement	SB	SB	B34
	T	R	T
Directions Served			
Maximum Queue (m)	87.2	56.3	17.2
Average Queue (m)	46.7	25.0	1.9
95th Queue (m)	73.5	47.5	14.1
Link Distance (m)		101.5	101.5
Upstream Blk Time (%)		0	128.0
Queuing Penalty (veh)		1	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 105: Trafalgar Rd & QEW EB-Off Ramp

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB	SB	SB	T	T
	L	L	R	T	T	T	T	T	T	T	T	T	T
Directions Served													
Maximum Queue (m)	148.1	167.8	173.8	36.2	43.5	34.6	319.3	320.3	313.8				
Average Queue (m)	89.2	102.4	126.4	28.8	30.7	29.1	292.6	298.5	297.5				
95th Queue (m)	141.5	187.5	210.6	32.4	37.9	32.7	372.6	366.2	352.9				
Link Distance (m)		176.9	176.9	27.8	27.8	27.8	300.4	300.4	300.4				
Upstream Blk Time (%)		0	9	21	33	36	37	18	33	43			
Queuing Penalty (veh)		0	0	0	288	310	315	129	236	306			
Storage Bay Dist (m)													
Storage Blk Time (%)													
Queuing Penalty (veh)													

Intersection: 106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB	SB	SB	SB
	L	R	L	LT	R	T	T	T	T	T	T	R
Directions Served												
Maximum Queue (m)	57.3	123.0	183.8	187.0	180.6	132.0	147.9	143.5	269.6	269.8	264.2	264.2
Average Queue (m)	12.6	65.9	124.5	135.4	59.9	87.5	99.8	97.5	212.9	211.8	208.2	156.8
95th Queue (m)	48.2	125.3	211.3	215.2	197.6	121.2	133.2	130.4	337.3	337.1	337.4	364.1
Link Distance (m)	119.7	173.2	173.2	173.2	173.2	300.4	300.4	300.4	254.7	254.7	254.7	254.7
Upstream Blk Time (%)	14	21	44	17					51	60	61	44
Queuing Penalty (veh)	0	0	0	0	0	0	0	0	0	0	0	0
Storage Bay Dist (m)	50.0											
Storage Blk Time (%)	37											
Queuing Penalty (veh)	8											

Intersection: 203: Argus Rd & South Service Rd

Movement	EB	WB	SB
	LT	TR	LR
Directions Served			
Maximum Queue (m)	18.0	3.0	11.9
Average Queue (m)	1.9	0.1	5.5
95th Queue (m)	10.6	1.5	12.8
Link Distance (m)	108.5	112.4	43.0
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 204: Trafalgar Rd & Argus Rd

Movement	EB	NB	NB	SB	SB	SB	SB	SB
	R	T	T	T	T	TR		
Directions Served								
Maximum Queue (m)	37.7	95.8	113.7	115.7	41.7	39.0	44.6	
Average Queue (m)	11.0	53.3	60.1	62.9	13.2	23.5	29.5	
95th Queue (m)	26.7	84.5	91.5	92.2	36.8	41.7	41.4	
Link Distance (m)	112.4	239.0	239.0	239.0	27.8	27.8	27.8	
Upstream Blk Time (%)					2	8	29	
Queuing Penalty (veh)					15	48	160	
Storage Bay Dist (m)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 302: Cross Ave & East Driveway Access

Movement	EB	EB
	LT	T
Directions Served		
Maximum Queue (m)	91.3	104.2
Average Queue (m)	83.3	46.4
95th Queue (m)	88.5	114.4
Link Distance (m)	79.5	79.5
Upstream Blk Time (%)	40	9
Queuing Penalty (veh)	225	52
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 303: North Driveway & Argus Rd

Movement	WB
	LT
Directions Served	
Maximum Queue (m)	4.4
Average Queue (m)	0.1
95th Queue (m)	3.1
Link Distance (m)	108.5
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 4221

Lanes, Volumes, Timings
101: Trafalgar Rd & Cross Ave/South Service Rd

Lanes, Volumes, Timings
101: Trafalgar Rd & Cross Ave/South Service Rd

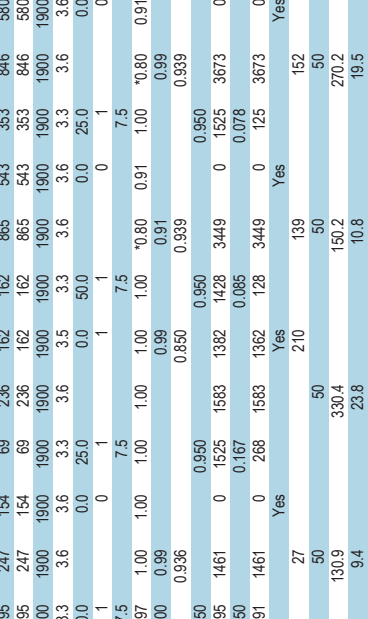
Background 2032
AM Peak Hour

Background 2032
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	595	247	154	69	236	162	162	865	543	353	846	580
Future Volume (vph)	595	247	154	69	236	162	162	865	543	353	846	580
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.6	3.3	3.6	3.5	3.3	3.6	3.6	3.3	3.6	3.6
Storage Length (m)	130.0	0.0	25.0	0.0	50.0	0.0	50.0	0.0	25.0	0.0	25.0	0.0
Storage Lanes	1			1			1			1		
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.80	0.91	1.00	0.80	0.91	
Ped Bike Factor	1.00	0.99			0.99		0.91			0.99		
Frt	0.936			0.950			0.939			0.939		
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2795	1461	0	1525	1583	1382	1428	3449	0	1525	3673	0
Flt Permitted	0.950			0.167			0.085			0.078		
Satd. Flow (perm)	2791	1461	0	268	1583	1362	128	3449	0	125	3673	0
Right Turn on Red												
Satd. Flow (RTOR)	27			Yes			Yes		Yes			Yes
Link Speed (km/h)	50			50			210		139		152	
Link Distance (m)	130.9			330.4			150.2		270.2		50	
Travel Time (s)	9.4			23.8			10.8		19.5		270.2	
Confl. Peds. (#/hr)	1			4			1		10		52	
Peak Hour Factor	0.87	0.77	0.64	0.77	0.77	0.77	0.81	0.88	0.80	0.84	0.84	0.83
Heavy Vehicles (%)	9%	12%	8%	3%	8%	4%	10%	3%	0%	3%	3%	4%
Adj. Flow (vph)	684	321	241	90	306	210	200	983	679	420	1007	699
Shared Lane Traffic (%)												
Lane Group Flow (vph)	684	562	0	90	306	210	200	1662	0	420	1706	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width (m)	6.6			6.6			3.3		3.3		3.3	
Link Offset (m)	0.0			0.0			0.0		0.0		0.0	
Crosswalk Width (m)	4.8			4.8			4.8		4.8		4.8	
Two way Left Turn Lane												
Headway Factor	1.19	1.14	1.14	1.19	1.14	1.16	1.19	1.14	1.14	1.19	1.14	1.14
Turning Speed (km/h)	24			14			24		14		24	
Number of Detectors	1			1			1		2		2	
Detector Template	Left	Thru	Right	Left	Thru	Left	Thru	Left	Thru	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	10.0	2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Type	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4			9.4			9.4		9.4		9.4	
Detector 2 Size (m)	0.6			0.6			0.6		0.6		0.6	
Detector 2 Type	C+Ex			C+Ex			C+Ex		C+Ex		C+Ex	
Detector 2 Channel												

Splits and Phases: 101: Trafalgar Rd & Cross Ave/South Service Rd

Synchro 10 Report
Page 1



Intersection Summary

Area Type:	CBD
Cycle Length:	140
Actuated Cycle Length:	140
Offset:	128 (91%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle:	150
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.46
Intersection Signal Delay:	138.2
Intersection Capacity Utilization:	103.8%
Analysis Period (min):	15
* User Entered Value	
dr Defacto Right Lane. Record with 1 through lane as a right lane.	
Approach Delay:	207.1
Approach LOS:	F
	63.7
	E
	F
	F

Queues
101: Tatalgar Rd & Cross Ave/South Service Rd

Background 2032
AM Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	684	562	90	306	210	200	1662	420	1706
v/c Ratio	1.37	1.30	0.48	1.00	0.49	1.04	1.45dr	1.46	1.29dr
Control Delay	221.7	189.4	37.6	108.1	10.1	66.1	157.4	252.2	76.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	221.7	189.4	37.6	108.1	10.1	66.1	157.4	252.2	76.1
Queue Length 50th (m)	~135.4	~202.9	16.6	~90.5	0.0	~48.4	~240.0	~154.1	~213.8
Queue Length 95th (m)	#166.9	#220.1	24.6	#118.1	11.1	m#42.4	m#203.1	m#146.4	m#153.4
Internal Link Dist (m)	106.9		306.4			126.2		246.2	
Turn Bay Length (m)	130.0		25.0			50.0		25.0	
Base Capacity (vph)	499	432	193	305	432	192	1321	287	1600
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.37	1.30	0.47	1.00	0.49	1.04	1.26	1.46	1.07

Intersection Summary
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 m Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.
 dr Defacto Right Lane. Recode with '1' though lane as a right lane.

HCM Signalized Intersection Capacity Analysis
101: Tatalgar Rd & Cross Ave/South Service Rd

Background 2032
AM Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT
Traffic Volume (vph)	595	247	154	69	236	162	162	865	543	353
Future Volume (vph)	595	247	154	69	236	162	162	865	543	353
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.3	3.6	3.3	3.6	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.80	1.00	0.80
Frbp. ped/bikes	1.00	0.99	1.00	1.00	0.99	1.00	0.91	1.00	0.99	1.00
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.95	1.00	0.94	1.00	0.94	1.00	0.94	1.00	0.94	1.00
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	2795	1460	1525	1583	1362	1428	3448	1525	3672	1525
Flt Permitted	0.95	1.00	0.17	1.00	1.00	0.09	1.00	0.08	1.00	0.08
Satd. Flow (perm)	2795	1460	267	1583	1362	128	3448	126	3672	126
Peak-hour factor, PHF	0.87	0.77	0.64	0.77	0.77	0.81	0.88	0.80	0.84	0.84
Adj. Flow (vph)	684	321	241	90	306	210	200	983	679	420
RTOR Reduction (vph)	0	19	0	0	170	0	89	0	0	89
Lane Group Flow (vph)	684	543	0	90	306	41	200	1573	0	420
Conf. Peds. (#/hr)	1	4	4	4	1	10	52	52	10	10
Heavy Vehicles (%)	9%	6%	12%	3%	8%	4%	10%	3%	0%	3%
Turn Type	Prot	NA	pm-pt	NA	Perm	pm-pt	NA	pm-pt	NA	NA
Protected Phases	7	4	3	8	8	5	2	1	6	6
Permitted Phases			8		8	2				
Actuated Green, G (s)	22.0	36.6	36.4	24.0	24.0	61.4	47.0	73.0	54.6	73.0
Effective Green, g (s)	25.0	39.6	36.4	27.0	27.0	61.4	50.0	73.0	57.6	73.0
Actuated g/C Ratio	0.18	0.28	0.26	0.19	0.19	0.44	0.36	0.52	0.41	0.52
Clearance Time (s)	7.0	7.0	4.0	7.0	7.0	4.0	7.0	4.0	7.0	4.0
Vehicle Extension (s)	3.0	4.0	3.5	4.0	4.0	3.0	5.0	3.0	5.0	3.0
Lane Grp Cap (vph)	499	412	180	305	262	189	1231	285	1510	285
v/s Ratio Prot	c0.24	c0.37	0.04	0.19	0.03	0.11	0.46	c0.23	0.44	c0.54
v/s Ratio Perm	1.37	1.32	0.50	1.00	0.15	1.06	1.45dr	1.47	1.29dr	1.47
Uniform Delay, d1	57.5	50.2	42.3	56.5	47.0	42.7	45.0	46.1	41.2	46.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	0.88	1.22	1.06	1.08	1.06
Incremental Delay, d2	179.2	159.0	2.6	52.4	0.4	37.2	125.5	223.0	39.4	223.0
Delay (s)	236.7	209.2	44.8	108.9	47.4	74.7	180.2	272.0	83.9	272.0
Level of Service	F	F	D	F	D	E	F	F	F	F
Approach Delay (s)	224.3		78.0		168.9			121.1		
Approach LOS	F		E		F			F		

Intersection Summary
 HCM 2000 Control Delay 153.9 HCM 2000 Level of Service F
 HCM 2000 Volume to Capacity ratio 1.44
 Actuated Cycle Length (s) 140.0 Sum of lost time (s) 16.0
 Intersection Capacity Utilization 103.8% ICU Level of Service G
 Analysis Period (min) 15
 dr Defacto Right Lane. Recode with '1' though lane as a right lane.
 c Critical Lane Group

Lanes, Volumes, Timings
102: GO Bus Terminal/Argus Rd & Cross Ave

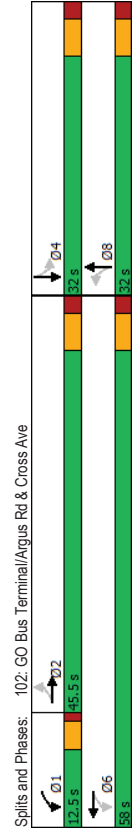
Lanes, Volumes, Timings
102: GO Bus Terminal/Argus Rd & Cross Ave

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group												
Lane Configurations	40	565	48	128	806	38	58	0	147	162	20	605
Traffic Volume (vph)	40	565	48	128	806	38	58	0	147	162	20	605
Future Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	3.3	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6
Lane Width (m)	20.0	0.0	20.0	0.0	20.0	0.0	0.0	0.0	20.0	0.0	15.0	0.0
Storage Lanes	1			1			0	1			0	1
Taper Length (m)	7.5		0.95	7.5		0.95	7.5		0.95		7.5	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.96	0.96	0.96	0.98	0.99	0.99
Frt	0.985			0.993			0.950		0.950		0.857	
Flt Protected	0.950			0.950			0.950		0.950		0.950	
Satd. Flow (prot)	1570	2872	0	818	3185	0	805	734	0	1570	1386	0
FltP Permitted	0.297			0.226			0.142		0.142		0.585	
Satd. Flow (perm)	491	2872	0	194	3185	0	120	734	0	919	1386	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)	18			10			269		269		145	
Link Speed (k/h)	50			50			50		50		50	
Link Distance (m)	207.1			92.7			81.9		81.9		180.7	
Travel Time (s)	14.9			6.7			5.9		5.9		13.0	
Confl. Peds. (#/hr)	1		3	3		1	3		3		20	3
Peak Hour Factor	0.52	0.87	0.65	0.84	0.88	0.79	0.53	0.25	0.70	0.78	0.62	0.89
Heavy Vehicles (%)	0%	1%	100%	92%	1%	5%	95%	0%	91%	0%	93%	0%
Adj. Flow (vph)	77	649	74	152	916	48	109	0	210	208	32	680
Shared Lane Traffic (%)												
Lane Group Flow (vph)	77	723	0	152	964	0	109	210	0	208	712	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width (m)	3.3			3.3			3.3		3.3		3.3	
Link Offset (m)	0.0			0.0			0.0		0.0		0.0	
Crosswalk Width (m)	4.8			4.8			4.8		4.8		4.8	
Two way Left Turn Lane												
Headway Factor	1.19	1.14	1.14	1.19	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	24	14	14	24	14	14	24	14	14	24	14	14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru
Leading Detector (m)	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Type	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4			9.4			9.4		9.4		9.4	
Detector 2 Size (m)	0.6			0.6			0.6		0.6		0.6	
Detector 2 Type	C+Ex			C+Ex			C+Ex		C+Ex		C+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings
102: GO Bus Terminal/Argus Rd & Cross Ave

Lanes, Volumes, Timings
102: GO Bus Terminal/Argus Rd & Cross Ave

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group												
Detector 2 Extend (s)	0.0			0.0			0.0		0.0		0.0	
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6		8		8		4	
Permitted Phases	2		2	6		6	8		8		4	
Detector Phase	2		2	1	6		8		8		4	
Switch Phase												
Minimum Initial (s)	22.0	22.0		8.0	22.0		10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	45.0	45.0		12.5	29.0		29.0	29.0	29.0	29.0	29.0	29.0
Total Split (s)	45.5	45.5		12.5	59.0		32.0	32.0	32.0	32.0	32.0	32.0
Total Split (%)	50.6%	50.6%		13.9%	64.4%		35.6%	35.6%	35.6%	35.6%	35.6%	35.6%
Maximum Green (s)	39.5	39.5		8.5	52.0		26.0	26.0	26.0	26.0	26.0	26.0
Yellow Time (s)	4.0	4.0		3.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		1.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		0.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	5.0	5.0		2.5	5.0		4.0	4.0	4.0	4.0	4.0	4.0
Recall Mode	Min	Min		Min			Min	Min	Min	Min	Min	Min
Walk Time (s)	7.0	7.0		7.0			7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	16.0	16.0		16.0			16.0	16.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	0	0		0			0	0	0	0	0	0
Act Effct Green (s)	30.7	30.7		43.3	43.3		28.2	28.2	28.2	28.2	28.2	28.2
Actuated g/C Ratio	0.39	0.39		0.54	0.54		0.35	0.35	0.35	0.35	0.35	0.35
v/c Ratio	0.41	0.64		0.88	0.55		2.60	0.48	0.64	1.22		
Control Delay	24.6	22.0		60.1	12.8		800.5	5.2	34.6	136.1		
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0		
Total Delay	24.6	22.0		60.1	12.8		800.5	5.2	34.6	136.1		
LOS	C	C		E	B		F	A	C	F		
Approach Delay	22.3			19.3			277.0					
Approach LOS	C			B			F					
Intersection Summary												
Area Type:	CBD											
Cycle Length:	90											
Actuated Cycle Length:	79.5											
Natural Cycle:	130											
Control Type:	Semi Act-Uncoordinated											
Maximum v/c Ratio:	2.60											
Intersection Signal Delay:	73.5											
Intersection LOS:	E											
Intersection Capacity Utilization:	109.2%											
Analysis Period (min):	15											



Queues Background 2032
All Peak Hour
102: GO Bus Terminal/Argus Rd & Cross Ave

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group	77	723	152	964	109	210	208	712
Lane Group Flow (vph)	0.41	0.64	0.88	0.55	2.60	0.48	0.64	1.22
v/c Ratio	24.6	22.0	60.1	12.8	800.5	5.2	34.6	136.1
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	24.6	22.0	60.1	12.8	800.5	5.2	34.6	136.1
Total Delay	8.6	46.7	12.5	47.8	~28.9	0.0	26.5	~122.9
Queue Length 50th (m)	10.0	60.8	#36.0	61.1	#37.2	0.0	49.9	#114.0
Queue Length 95th (m)	183.1			68.7		57.9		156.7
Internal Link Dist (m)	20.0		20.0			15.0		
Turn Bay Length (m)	257	1515	172	2178	42	433	325	584
Base Capacity (vph)	0	0	0	0	0	0	0	0
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	0.30	0.48	0.88	0.44	2.60	0.48	0.64	1.22

Intersection Summary
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis Background 2032
All Peak Hour
102: GO Bus Terminal/Argus Rd & Cross Ave

Movement	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	40	565	48	128	806	38	58	0	147
Future Volume (vph)	40	565	48	128	806	38	58	0	147
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.3	3.6	3.3	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.99
Frb. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00
Frb. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00
Frt	0.95	1.00	0.98	1.00	0.99	1.00	0.95	1.00	0.86
Flt Protected	1570	2871	818	3183	805	736	1547	1386	
Satd. Flow (prot)	0.30	1.00	0.23	1.00	0.14	1.00	0.56	1.00	
Flt Permitted	491	2871	195	3183	120	736	920	1386	
Satd. Flow (perm)	0.52	0.87	0.65	0.84	0.88	0.79	0.53	0.25	0.70
Peak-hour factor, PHF	77	649	74	152	916	48	109	0	210
Adj. Flow (vph)	0	11	0	0	5	0	136	0	94
RTOR Reduction (vph)	77	712	0	152	959	0	109	74	0
Lane Group Flow (vph)	1	3	3	3	1	3	20	20	3
Conf. Peds. (#/hr)	0%	1%	100%	92%	1%	5%	95%	0%	91%
Heavy Vehicles (%)	Perm	NA	NA	pm-pt	NA	Perm	NA	Perm	NA
Turn Type	2	6	6	6	8	8	4	4	4
Permitted Phases	2	28.7	41.3	41.3	26.2	26.2	26.2	26.2	26.2
Actuated Green, G (s)	30.7	30.7	41.3	43.3	28.2	28.2	28.2	28.2	28.2
Effective Green, g (s)	0.39	0.39	0.52	0.54	0.35	0.35	0.35	0.35	0.35
Actuated g/C Ratio	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Clearance Time (s)	5.0	5.0	2.5	5.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	189	1108	168	1733	42	261	326	491	
Lane Grp Cap (vph)	0.16	0.25	c0.10	0.30	0.10	0.10	0.23	0.45	
v/s Ratio Prot	0.41	0.64	0.90	0.55	2.60	0.29	0.64	1.26	
v/s Ratio Perm	17.8	19.9	13.5	11.8	25.7	18.4	21.4	25.7	
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Progression Factor	3.0	1.8	42.8	0.7	781.9	0.8	4.6	132.5	
Incremental Delay, d2	20.8	21.7	56.3	12.5	807.5	19.2	26.0	158.1	
Delay (s)	C	C	E	B	F	B	C	F	
Level of Service	C	C	E	B	F	B	C	F	
Approach Delay (s)	21.6		18.4		288.6		128.2		
Approach LOS	C		B		F		F		
Intersection Summary									
HCM 2000 Control Delay	78.6				HCM 2000 Level of Service				E
HCM 2000 Volume to Capacity ratio	1.61								
Actuated Cycle Length (s)	79.5								
Sum of lost time (s)	12.0								
Intersection Capacity Utilization	109.2%				ICU Level of Service				H
Analysis Period (min)	15								
Critical Lane Group	c								

Queues
104: Tatalgar Rd & Cornwall Rd

HCM Signalized Intersection Capacity Analysis
104: Tatalgar Rd & Cornwall Rd

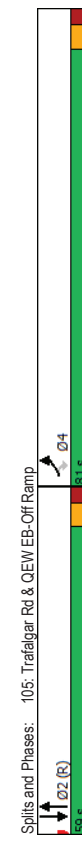
Background 2032
AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	543	777	29	1241	102	668	537	492	433
Lane Group Flow (vph)	1.21	0.62	0.35	1.19	1.16	0.92	1.22	1.01	0.63
v/c Ratio	163.5	34.3	75.1	129.1	200.5	68.0	166.2	63.0	10.0
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	163.5	34.3	75.1	129.1	200.5	68.0	166.2	63.0	10.0
Queue Length 50th (m)	-99.4	90.4	8.3	-203.7	-35.1	117.5	-101.2	-161.2	18.0
Queue Length 95th (m)	#136.8	113.2	16.3	#229.2	#41.1	#149.1	m#91.2	m138.3	m15.4
Internal Link Dist (m)	261.8		118.3		287.4			106.3	
Turn Bay Length (m)	80.0		80.0		25.0		80.0		
Base Capacity (vph)	448	1246	84	1044	88	725	439	488	688
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.21	0.62	0.35	1.19	1.16	0.92	1.22	1.01	0.63
Intersection Summary									
~	Volume exceeds capacity, queue is theoretically infinite.								
	Queue shown is maximum after two cycles.								
#	95th percentile volume exceeds capacity, queue may be longer.								
m	Queue shown is maximum after two cycles.								
	Volume for 95th percentile queue is metered by upstream signal.								

Movement	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	FF	FF	F	FF	FF	FF	FF	FF	F
Traffic Volume (vph)	505	557	99	22	480	615	61	505	61
Future Volume (vph)	505	557	99	22	480	615	61	505	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.6	3.6	3.3	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.95	1.00	0.90	0.97	0.80	1.00
Frbp. ped/bikes	1.00	0.99	1.00	0.97	1.00	1.00	1.00	1.00	0.98
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97	1.00	0.92	1.00	0.98	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	2987	3020	1481	2820	1540	2651	2929	1341	1324
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	2987	3020	1481	2820	1540	2651	2929	1341	1324
Peak-hour factor, PHF	0.93	0.91	0.60	0.75	0.86	0.90	0.86	0.75	0.84
Adj. Flow (vph)	543	612	165	29	558	683	102	587	81
RTOR Reduction (vph)	0	17	0	0	158	0	0	6	0
Lane Group Flow (vph)	543	760	0	29	1083	0	102	662	0
Conf. Peds. (#/hr)	25	7	7	7	25	9	18	18	9
Heavy Vehicles (%)	2%	4%	1%	6%	3%	3%	2%	1%	0%
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Prot
Protected Phases	3	8	7	4	5	2	1	6	6
Permitted Phases									
Actuated Green, G (s)	20.0	54.0	7.0	41.0	7.0	35.0	20.0	48.0	48.0
Effective Green, g (s)	21.0	57.0	8.0	44.0	8.0	38.0	21.0	51.0	51.0
Actuated g/C Ratio	0.15	0.41	0.06	0.31	0.06	0.27	0.15	0.36	0.36
Clearance Time (s)	5.0	7.0	5.0	7.0	5.0	7.0	5.0	7.0	7.0
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Lane Grp Cap (vph)	448	1229	84	886	88	719	439	488	462
v/s Ratio Prot	c0.18	0.25	0.02	c0.38	0.07	0.25	c0.18	c0.37	0.17
v/s Ratio	1.21	0.62	0.35	1.22	1.16	0.92	1.22	1.01	0.47
Uniform Delay, d1	59.5	32.9	63.5	48.0	66.0	49.5	59.5	44.5	34.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.30	0.89	0.96
Incremental Delay, d2	114.6	2.3	10.9	110.0	145.1	19.0	106.2	23.2	0.9
Delay (s)	174.1	35.2	74.4	158.0	211.1	68.6	183.3	62.8	33.7
Level of Service	F	D	E	F	F	E	F	E	C
Approach Delay (s)	92.3		156.1		87.4		98.4		F
Approach LOS	F		F		F		F		F
Intersection Summary									
HCM 2000 Control Delay	110.2								
HCM 2000 Volume to Capacity ratio	1.17								
Actuated Cycle Length (s)	140.0								
Intersection Capacity Utilization	108.3%								
Analysis Period (min)	15								
c. Critical Lane Group	F								

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	996	851	0	1147	1506	0
Future Volume (vph)	996	851	0	1147	1506	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.5	3.6	3.6	3.6	3.6
Lane Util. Factor	0.97	1.00	1.00	*0.80	*0.80	1.00
Flt Protected	0.950					
Satd. Flow (prot)	2958	1423	0	3872	3946	0
Flt Permitted	0.950					
Satd. Flow (perm)	2958	1423	0	3872	3946	0
Right Turn on Red	Yes					Yes
Satd. Flow (RTOR)	3					
Link Speed (k/h)	50			50	50	
Link Distance (m)	199.2			51.4	324.8	
Travel Time (s)	14.3			3.7	23.4	
Peak Hour Factor	0.98	0.92	0.25	0.91	0.90	0.25
Heavy Vehicles (%)	3%	1%	0%	6%	4%	0%
Adj. Flow (vph)	1016	925	0	1260	1673	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1016	925	0	1260	1673	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Right
Median Width(m)	6.6	0.0	0.0	0.0	0.0	0.0
Link Offset(m)	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.19	1.16	1.14	1.14	1.14	1.14
Turning Speed (k/h)	24	14	24		14	
Number of Detectors	1	Right	Thru	2	2	
Detector Template	2.0	2.0	10.0	10.0	10.0	
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	2.0	0.6	0.6	0.6	
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)			9.4	9.4		
Detector 2 Size(m)			0.6	0.6		
Detector 2 Type			Ch+Ex	Ch+Ex		
Detector 2 Channel						
Detector 2 Extend (s)			0.0	0.0		
Turn Type	Prot	Perm	NA	NA	NA	
Protected Phases	4		2	2	2	
Permitted Phases	4	4		2	2	
Detector Phase	4	4		2	2	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	10.0	10.0		29.0	29.0	
Minimum Split (s)	38.0	38.0		36.0	36.0	
Total Split (s)	81.0	81.0		59.0	59.0	
Total Split (%)	57.9%	57.9%		42.1%	42.1%	
Maximum Green (s)	74.0	74.0		52.0	52.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	24.0	24.0		22.0	22.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Ad Effct Green (s)	77.0	77.0		55.0	55.0	
v/c Ratio	0.62	1.18		0.83	1.08	
Actuated g/C Ratio	0.55	0.55		0.39	0.39	
Control Delay	23.7	124.2		44.3	79.6	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	23.7	124.2		44.3	79.6	
LOS	C	F		D	E	
Approach Delay	71.6			44.3	79.6	
Approach LOS	E			D	E	
Intersection Summary	CBD					
Area Type:	CBD					
Cycle Length:	140					
Actuated Cycle Length:	140					
Offset:	133.6 (95%), Referenced to phase 2,NBSB and 6:, Start of Green					
Natural Cycle:	75					
Control Type:	Actuated-Coordinated					
Maximum v/c Ratio:	1.18					
Intersection Signal Delay:	67.3					
Intersection Capacity Utilization:	97.5%					
Analysis Period (min):	15					
* User Entered Value						



	EBL	EBR	NBT	SBT
Lane Group	1016	925	1260	1673
Lane Group Flow (vph)	0.62	1.18	0.83	1.08
v/c Ratio	23.7	124.2	44.3	79.6
Control Delay	0.0	0.0	0.0	0.0
Queue Delay	23.7	124.2	44.3	79.6
Total Delay	101.0	~323.1	112.2	~228.8
Queue Length 50th (m)	123.6	#406.5	m80.7	#260.2
Queue Length 95th (m)	175.2	27.4	300.8	
Internal Link Dist (m)				
Turn Bay Length (m)				
Base Capacity (vph)	1626	784	1521	1550
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.62	1.18	0.83	1.08
Intersection Summary				
~ Volume exceeds capacity, queue is theoretically infinite.				
Queue shown is maximum after two cycles.				
# 95th percentile volume exceeds capacity, queue may be longer.				
Queue shown is maximum after two cycles.				
m Volume for 95th percentile queue is metered by upstream signal.				

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	TT	T		TT	TT	TT
Traffic Volume (vph)	996	851	0	1147	1506	0
Future Volume (vph)	996	851	0	1147	1506	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.5	3.6	3.6	3.6	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	*0.80	*0.80	*0.80	*0.80
Flt	1.00	0.85	1.00	1.00	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	2958	1423	3872	3946	3946	3946
Flt Permitted	0.95	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	2958	1423	3872	3946	3946	3946
Peak-hour factor, PHF	0.98	0.92	0.25	0.91	0.90	0.25
Adj. Flow (vph)	1016	925	0	1260	1673	0
RTOR Reduction (vph)	0	1	0	0	0	0
Lane Group Flow (vph)	1016	924	0	1260	1673	0
Heavy Vehicles (%)	3%	1%	0%	6%	4%	0%
Turn Type	Prot	Perm	NA	NA	NA	NA
Protected Phases	4			2	2	
Permitted Phases		4				
Actuated Green, G (s)	74.0	74.0		52.0	52.0	
Effective Green, g (s)	77.0	77.0		55.0	55.0	
Actuated g/C Ratio	0.65	0.55		0.39	0.39	
Clearance Time (s)	7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	1626	782		1521	1550	
v/s Ratio Prot	0.34			0.33	c0.42	
v/s Ratio Perm		c0.65				
v/c Ratio	0.62	1.18		0.83	1.08	
Uniform Delay, d1	21.6	31.5		38.3	42.5	
Progression Factor	1.00	1.00		1.13	0.86	
Incremental Delay, d2	0.8	94.5		0.5	44.0	
Delay (s)	22.4	126.0		43.9	80.7	
Level of Service	C	F		D	F	
Approach Delay (s)	71.7			43.9	80.7	
Approach LOS	E			D	F	
Intersection Summary						
HCM 2000 Control Delay			67.6		HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio			1.14			
Actuated Cycle Length (s)			140.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			97.5%		ICU Level of Service	F
Analysis Period (min)			15			
c Critical Lane Group						

Lanes, Volumes, Timings
106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

Background 2032
All Peak Hour

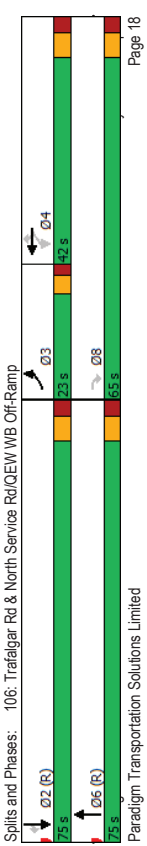
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	0	231	500	38	291	0	1652	0	0	1630	7
Traffic Volume (vph)	1	0	231	500	38	291	0	1652	0	0	1630	7
Future Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	3.3	3.6	3.5	3.3	3.6	3.5	3.6	3.6	3.6	3.6	3.6	3.5
Lane Width (m)	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Storage Length (m)	1	1	1	1	1	1	0	0	0	0	0	1
Taper Length (m)	7.5	1.00	1.00	0.95	0.95	1.00	1.00	0.80	1.00	1.00	0.80	1.00
Lead Utl. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.80	1.00	1.00	0.80	1.00
Ped Bike Factor												0.96
Frt	0.950	0.850	0.850	0.950	0.961	0.850						0.850
Satd. Flow (prot)	1570	0	1395	1421	1442	1356	0	3909	0	0	3984	1437
Flt Protected	0.950											
Satd. Flow (perm)	1570	0	1395	1421	1442	1356	0	3909	0	0	3984	1380
Right Turn on Red	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Satd. Flow (RTOR)	50	31	50	50	50	50	50	50	50	50	50	70
Link Speed (k/h)	142.1			192.6		324.8				288.2		
Link Distance (m)	10.2			13.9		23.4				19.3		
Travel Time (s)												
Conf. Peds. (#/hr)	0.25	0.25	0.91	0.88	0.73	0.25	0.93	0.97	0.25	0.90	0.63	0.8
Peak Hour Factor	0%	0%	3%	5%	23%	6%	0%	5%	5%	0%	3%	0%
Heavy Vehicles (%)	4	0	254	568	56	399	0	1776	0	0	1811	11
Adj. Flow (vph)				45%								
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	0	254	312	399	0	1776	0	0	1811	11	
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width(m)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
Link Offset(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width(m)	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Two way Left Turn Lane	1.19	1.14	1.16	1.19	1.14	1.16	1.14	1.14	1.14	1.14	1.14	1.16
Headway Factor	24	14	14	24	14	24	14	24	14	24	14	24
Turning Speed (k/h)	1	1	1	1	1	1	1	1	1	1	1	1
Number of Detectors	1	1	1	1	1	1	1	1	1	1	1	1
Detector Template	Left	Right	Thru	Right	Thru	Right	Thru	Right	Thru	Right	Thru	Right
Leading Detector (m)	2.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Type	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4		9.4		9.4		9.4		9.4
Detector 2 Size(m)				0.6		0.6		0.6		0.6		0.6
Detector 2 Type				C+Ex		C+Ex		C+Ex		C+Ex		C+Ex

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Paradigm Transportation Solutions Limited
Synchro 10 Report
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Lanes, Volumes, Timings
106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

Background 2032
All Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)												
Turn Type	Prot	Perm	NA	Perm	NA	Perm	NA	NA	NA	NA	NA	Perm
Protected Phases	3			4			6					2
Permitted Phases	3			4			6					2
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0	10.0	5.0					28.0
Minimum Split (s)	23.0	38.0	38.0	38.0	38.0	38.0	35.0					35.0
Total Split (s)	23.0	65.0	42.0	42.0	42.0	42.0	75.0					75.0
Total Split (%)	16.4%	46.4%	30.0%	30.0%	30.0%	30.0%	53.6%					53.6%
Maximum Green (s)	18.0	58.0	35.0	35.0	35.0	35.0	68.0					68.0
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	4.0					4.0
All-Red Time (s)	2.0	3.0	3.0	3.0	3.0	3.0	3.0					3.0
Lost Time Adjust (s)	-1.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0					-3.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0					4.0
Lead/Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lag					Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes					Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.5					4.5
Recall Mode	Min	Min	Min	Min	Min	Min	C-Min					C-Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0					7.0
Flash Dont Walk (s)	24.0	24.0	24.0	24.0	24.0	24.0	21.0					21.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0					0
Ad Effct Green (s)	8.0	52.0	40.0	40.0	40.0	40.0	80.0					80.0
Actuated Cycle Length	0.06	0.37	0.29	0.29	0.29	0.29	0.57					0.57
v/c Ratio	0.04	0.47	0.77	0.76	0.73	0.80	0.80					0.80
Control Delay	64.0	31.1	58.0	57.0	25.9	28.6	28.3					28.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0					0.0
Total Delay	64.0	31.1	58.0	57.0	25.9	28.6	28.3					28.3
LOS	E	C	E	E	C	C	C					C
Approach Delay	31.6	C	45.2	D	D	D	28.6					C
Approach LOS	C	C	D	D	D	D	C					C
Intersection Summary	CBD											
Area Type:	CBD											
Cycle Length:	140											
Actuated Cycle Length:	140											
Offset:	115.4 (82%), Referenced to phase 2:SBT and 6:NBT, Start of Green											
Natural Cycle:	110											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	0.80											
Intersection Signal Delay:	32.1											
Intersection Capacity Utilization:	77.4%											
Analysis Period (min):	15											
* User Entered Value												



Paradigm Transportation Solutions Limited
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Queues Background 2032
 All Peak Hour

106: Tatalgar Rd & North Service Rd/QEW WB Off-Ramp

	EBL	EBR	WBL	WBR	NBT	SBT	SBR
Lane Group	4	254	312	399	1776	1811	11
Lane Group Flow (vph)	0.04	0.47	0.77	0.76	0.73	0.80	0.01
v/c Ratio	64.0	31.1	56.0	57.0	25.9	28.6	28.3
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	64.0	31.1	56.0	57.0	25.9	28.6	28.3
Total Delay	1.1	48.7	87.0	86.7	46.2	138.0	168.7
Queue Length 50th (m)	1.4	68.0	112.2	79.2	46.2	176.6	222.6
Queue Length 95th (m)			168.6		300.8	244.2	
Internal Link Dist (m)	50.0						
Turn Bay Length (m)	213	625	429	435	567	2233	2276
Base Capacity (vph)	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.41	0.73	0.72	0.70	0.80	0.80
Intersection Summary							

HCM Signalized Intersection Capacity Analysis Background 2032
 All Peak Hour

106: Tatalgar Rd & North Service Rd/QEW WB Off-Ramp

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	0	231	500	38	291	0	1652	0	0	1630	7
Traffic Volume (vph)	1	0	231	500	38	291	0	1652	0	0	1630	7
Future Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	3.3	3.6	3.5	3.3	3.6	3.5	3.6	3.6	3.6	3.6	3.6	3.5
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	0.95	1.00	0.80	0.80	0.80	0.80	0.80	1.00
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.96
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.85	1.00	0.85	1.00	0.85	1.00	0.85	1.00
Flt Protected	0.95	1.00	0.95	0.96	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	1570	1395	1421	1442	1356	3909	3909	3909	3909	3984	1380	1380
Flt Permitted	0.95	1.00	0.95	0.96	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	1570	1395	1421	1442	1356	3909	3909	3909	3909	3984	1380	1380
Peak-hour factor, PHF	0.25	0.25	0.91	0.88	0.68	0.73	0.25	0.93	0.97	0.25	0.90	0.63
Adj. Flow (vph)	4	0	254	568	56	399	0	1776	0	0	1811	11
RTOR Reduction (vph)	0	0	19	0	0	162	0	0	0	0	0	5
Lane Group Flow (vph)	4	0	235	312	312	237	0	1776	0	0	1811	6
Conf. Peds. (#/hr)							8		5			8
Heavy Vehicles (%)	0%	0%	3%	5%	23%	6%	0%	5%	5%	0%	0%	3%
Turn Type	Prot	Perm	Perm	NA	Perm	NA	Perm	NA	NA	Perm	NA	Perm
Protected Phases	3			4			6					2
Permitted Phases	8	4			4							2
Actuated Green, G (s)	7.0	49.0	37.0	37.0	37.0	37.0	77.0	77.0	77.0	77.0	77.0	77.0
Effective Green, g (s)	8.0	52.0	40.0	40.0	40.0	40.0	80.0	80.0	80.0	80.0	80.0	80.0
Actuated g/C Ratio	0.06	0.37	0.29	0.29	0.29	0.29	0.57	0.57	0.57	0.57	0.57	0.57
Clearance Time (s)	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.5	4.5	4.5	4.5	4.5	4.5
Lane Grp Cap (vph)	89	518	406	412	387	2233	2233	2233	2233	2276	788	788
v/s Ratio Prot	0.00						0.45					0.45
v/s Ratio Perm	0.04	0.45	0.77	0.76	0.61	0.80	0.80	0.80	0.80	0.80	0.80	0.01
Uniform Delay, d1	62.4	33.2	45.8	45.6	43.3	23.6	23.6	23.6	23.6	23.6	23.6	12.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.05	1.05	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.6	8.5	7.8	2.9	2.0	2.0	2.0	2.0	2.0	2.0	3.0
Delay (s)	62.6	33.9	54.3	53.3	46.1	26.9	26.9	26.9	26.9	26.6	26.6	12.9
Level of Service	E	C	C	D	D	D	C	C	C	C	C	B
Approach Delay (s)		34.3					26.9			26.5		
Approach LOS		C					C			C		
Intersection Summary												
HCM 2000 Control Delay		32.1								C		
HCM 2000 Volume to Capacity ratio		0.77										
Actuated Cycle Length (s)		140.0								12.0		
Intersection Capacity Utilization		77.4%								D		
Analysis Period (min)		15										
c. Critical Lane Group												

EBL	EBT	WBT	WBR	SBL	SBR
1	18	705	229	33	72
1	18	705	229	33	72
1900	1900	1900	1900	1900	1900
1.00	1.00	1.00	1.00	1.00	1.00
0.996	0.996	0.962	0.907		
0	1570	1610	0	1528	0
0	1570	1610	0	1528	0
50	50	50	50	50	50
116.7	145.7	51.8			
8.4	10.5	3.7			
1	1	5	1		
0.25	0.42	0.86	0.72	0.25	0.25
100%	0%	3%	0%	0%	0%
4	43	820	318	132	288
0	47	1138	0	420	0
No	No	No	No	No	No
Left	Left	Right	Left	Right	
0.0	0.0	0.0	3.6		
0.0	0.0	0.0	4.8		
1.14	1.14	1.14	1.14	1.14	1.14
24	Free	Free	Stop	Stop	

EB1	WB1	SB1
47	1138	420
4	0	132
0	318	288
363	1700	287
0.01	0.67	1.46
0.3	0.0	186.9
1.4	0.0	260.0
A		F
1.4	0.0	260.0
F		F
Intersection Summary		
Average Delay	68.1	
Intersection Capacity Utilization	70.6%	ICU Level of Service C
Analysis Period (min)	15	

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	61	0	1577	1556	834
Future Volume (vph)	0	61	0	1577	1556	834
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.5	3.6	3.6	3.6	3.6
Lane Util. Factor	1.00	1.00	1.00	*0.80	*0.80	0.91
Frt	0.865			0.942		
Flt Protected						
Satd. Flow (prot)	0	1367	0	3836	3745	0
Flt Permitted						
Satd. Flow (perm)	0	1367	0	3836	3745	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	145.7			270.2	51.4	
Travel Time (s)	10.5			19.5	3.7	
Confl. Peds. (#/hr)						11
Peak Hour Factor	0.25	0.54	0.25	0.92	0.97	0.82
Heavy Vehicles (%)	0%	7%	0%	7%	4%	2%
Adj. Flow (vph)	0	113	0	1714	1604	1017
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	113	0	1714	2621	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0	3.3	3.3	3.3		
Link Offset(m)	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.14	1.16	1.14	1.14	1.14	1.14
Turning Speed (k/h)	24	14	24			14
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	CBD					
Control Type:	Unsignalized					
Intersection Capacity Utilization	65.4%					
Analysis Period (min)	15					
	* User Entered Value					

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	61	0	1577	1556	834
Future Volume (Veh/h)	0	61	0	1577	1556	834
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.25	0.54	0.25	0.92	0.97	0.82
Hourly flow rate (vph)	0	113	0	1714	1604	1017
Pedestrians	11					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	1					
Right turn flare (veh)				None	None	
Median type						
Median storage (veh)						
Upstream signal (m)				270	52	
pX, platoon unblocked	0.62	0.62	0.62			
vC, conflicting volume	2695	1054	2632			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1582	0	1481			
iC, single (s)	6.8	7.0	4.1			
iC, 2 stage (s)						
p0 queue free %	100	83	100			
p0 capacity (veh/h)	62	655	282			
Direction_Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2 SB 3
Volume Total	113	571	571	571	642	1338
Volume Left	0	0	0	0	0	0
Volume Right	113	0	0	0	0	1017
cSH	665	1700	1700	1700	1700	1700
Volume to Capacity	0.17	0.34	0.34	0.34	0.38	0.79
Queue Length 95th (m)	5.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	11.6	0.0	0.0	0.0	0.0	0.0
Lane LOS	B					
Approach Delay (s)	11.6	0.0			0.0	
Approach LOS	B					
Intersection Summary						
Average Delay	0.3					
Intersection Capacity Utilization	65.4%					
ICU Level of Service	C					
Analysis Period (min)	15					

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group						
Lane Configurations		↕↕	↕↕		↕	↕
Traffic Volume (vph)	0	995	979	0	0	0
Future Volume (vph)	0	995	979	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Flt Protected						
Satd. Flow (prot)	0	3185	3185	0	1676	0
Flt Permitted						
Satd. Flow (perm)	0	3185	3185	0	1676	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		92.7	130.9		41.6	
Travel Time (s)		6.7	9.4		3.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1082	1064	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1082	1064	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Right
Median Width(m)		3.3	3.3		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25	Free	Free	15	25	15
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	CBD					
Control Type:	Unsignalized					
Intersection Capacity Utilization	33.9%					
Analysis Period (min)	15					
	ICU Level of Service A					

	EBL	EBT	WBT	WBR	SBL	SBR
Movement						
Lane Configurations		↕↕	↕↕		↕	↕
Traffic Volume (veh/h)	0	995	979	0	0	0
Future Volume (Veh/h)	0	995	979	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1082	1064	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)			None		None	
Median type			None		None	
Median storage (veh)			93		131	
Upstream signal (m)						
pX, platoon unblocked					0.83	
vC, conflicting volume	1064				1605	532
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1064				1309	532
iC, single (s)		4.1			6.8	6.9
iC, 2 stage (s)		2.2			3.5	3.3
p0 queue free %	100				100	100
qM capacity (veh/h)	651				124	492
Direction_Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	361	721	709	355	0	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
ESH	651	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.42	0.42	0.21	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	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	33.9%					
ICU Level of Service	A					
Analysis Period (min)	15					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	EB	EB	WB	WB	NB	NB
Traffic Volume (veh/h)	19	0	0	777	0	0
Future Volume (veh/h)	19	0	0	777	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	61.0			116.7	66.7	
Travel Time (s)	4.4			8.4	4.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	21	0	0	845	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	21	0	0	845	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Right
Median Width (m)	0.0			0.0	3.6	
Link Offset (m)	0.0			0.0	0.0	
Crosswalk Width (m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	15			25	25	15
Sign Control	Free			Free	Stop	
Intersection Summary	Other					
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	44.2%					
Analysis Period (min)	15					
ICU Level of Service A						

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	EB	EB	WB	WB	NB	NB
Traffic Volume (veh/h)	19	0	0	777	0	0
Future Volume (veh/h)	19	0	0	777	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	21	0	0	845	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	242					
pX platoon unblocked						
vC, conflicting volume		21			866	21
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		21			866	21
IC, single (s)		4.1			6.4	6.2
IC, 2 stage (s)						
p0 queue free %		2.2			3.5	3.3
ICM capacity (veh/h)		100			100	100
ICM capacity (veh/h)		1595			324	1056
Direction_Lane #	EB 1	WB 1	NB 1			
Volume Total	21	845	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
ESH	1700	1595	1700			
Volume to Capacity	0.01	0.00	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	Intersection Summary					
Average Delay	0.0					
Intersection Capacity Utilization	44.2%					
ICU Level of Service	A					
Analysis Period (min)	15					

Intersection: 101: Trafalgar Rd & Cross Ave/South Service Rd

Movement	EB		EB		WB		WB		NB		NB		B34		B34	
	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR
Directions Served	104.4	110.5	107.0	32.3	116.3	32.2	57.4	124.7	137.5	152.5	17.4	48.7				
Maximum Queue (m)	101.8	106.2	79.1	20.0	71.2	14.9	41.3	79.2	107.4	128.7	2.0	12.8				
Average Queue (m)	107.0	109.1	123.0	38.1	117.4	25.3	69.8	112.0	144.2	165.0	21.9	60.3				
95th Queue (m)	104.4	104.4		313.2	313.2		128.1	128.1	128.1	128.1	101.5	101.5				
Link Distance (m)	8	62	12				0	1	26							
Upstream Blk Time (%)	0	307	60				0	4	141							
Queuing Penalty (veh)	130.0			25.0			50.0									
Storage Bay Dist (m)	8	62		6	52		3	28								
Storage Blk Time (%)	25	183		14	36		9	46								
Queuing Penalty (veh)																

Intersection: 101: Trafalgar Rd & Cross Ave/South Service Rd

Movement	B34		SB		SB		SB		SB		B14	
	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR
Directions Served	78.7	32.4	221.6	208.7	197.4							
Maximum Queue (m)	19.0	31.7	137.2	105.8	113.6							
Average Queue (m)	73.6	35.4	229.1	202.0	200.2							
95th Queue (m)	101.5		238.9	238.9	238.9							
Link Distance (m)	1	0	0	0	0							
Upstream Blk Time (%)	5	250	2	1	2							
Queuing Penalty (veh)	130.0			70	11							
Storage Bay Dist (m)	8	62		6	52		3	28				
Storage Blk Time (%)	25	183		14	36		9	46				
Queuing Penalty (veh)												

Intersection: 102: GO Bus Terminal/Argus Rd & Cross Ave

Movement	EB		EB		WB		WB		NB		NB		SB		SB		B14	
	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR
Directions Served	27.3	211.1	213.1	27.4	69.0	62.5	66.1	82.6	22.5	192.2	64.6							
Maximum Queue (m)	13.3	162.6	160.7	22.6	36.6	30.1	22.1	48.8	21.1	169.0	37.4							
Average Queue (m)	33.3	254.3	261.9	32.9	65.9	54.9	50.9	86.9	27.3	224.7	71.1							
95th Queue (m)	196.3	196.3		72.4	72.4	66.0	66.0	66.0	66.0	158.9	40.8							
Link Distance (m)	45	39		0	0	0	1	14		74	38							
Upstream Blk Time (%)	0	0		0	0	0	0	0		15.0	298							
Queuing Penalty (veh)	20.0			23	11					57	48							
Storage Bay Dist (m)	8	62		6	52		3	28										
Storage Blk Time (%)	1	33		92	14		355	79										
Queuing Penalty (veh)																		

Intersection: 104: Trafalgar Rd & Cornwall Rd

Movement	EB		EB		WB		WB		NB		NB		SB		SB	
	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR
Directions Served	83.7	87.4	278.2	271.2	37.7	125.8	131.3	32.3	106.9	103.4	67.6	74.6				
Maximum Queue (m)	82.4	86.8	254.3	225.9	6.7	74.1	82.7	19.6	56.4	59.1	42.4	45.0				
Average Queue (m)	88.7	91.3	326.0	321.4	25.2	116.9	146.2	39.5	91.7	92.4	62.5	67.0				
95th Queue (m)	264.0	264.0		122.1	122.1		286.8	286.8								
Link Distance (m)	64	4		0	0		7									
Upstream Blk Time (%)	80.0	80.0		80.0			25.0									
Queuing Penalty (veh)	14	71		1			12									
Storage Bay Dist (m)	39	198		3			31									
Storage Blk Time (%)																
Queuing Penalty (veh)																

Intersection: 104: Trafalgar Rd & Cornwall Rd

Movement	SB		R	
	T	R		
Directions Served	73.0	29.4		
Maximum Queue (m)	36.3	10.6		
Average Queue (m)	61.9	22.8		
95th Queue (m)	101.5	101.5		
Link Distance (m)				
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 105: Trafalgar Rd & QEW EB-Off Ramp

Movement	EB		EB		NB		NB		SB		SB	
	L	R	L	R	L	R	L	R	L	R	L	R
Directions Served	175.6	187.8	189.3	37.7	39.2	38.0	314.6	319.8	315.8			
Maximum Queue (m)	80.0	175.8	182.1	28.5	30.1	29.7	289.3	307.6	306.2			
Average Queue (m)	156.2	217.3	185.5	32.2	36.2	34.5	358.5	316.4	312.4			
95th Queue (m)	176.9	176.9	176.9	27.8	27.8	27.8	300.4	300.4	300.4			
Link Distance (m)	0	33	76	38	43	41	20	38	53			
Upstream Blk Time (%)	0	0	0	199	224	217	156	296	416			
Queuing Penalty (veh)												
Storage Bay Dist (m)												
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

Movement	EB	EB	WB	WB	NB	NB	T	T	SB	SB	SB	SB	SB	SB
	L	R	L	LT	R	TR	T	T	T	T	T	T	T	R
Directions Served														
Maximum Queue (m)	24.4	125.6	180.0	184.3	180.1	84.3	88.3	86.8	268.6	271.9	263.0	262.7	262.7	262.7
Average Queue (m)	0.9	83.3	117.9	127.4	42.4	49.4	56.3	54.0	259.5	260.2	258.7	248.6	248.6	248.6
95th Queue (m)	11.8	136.7	197.8	203.3	167.1	78.3	85.7	84.9	271.2	268.3	268.0	325.1	325.1	325.1
Link Distance (m)	119.7	173.2	173.2	173.2	300.4	300.4	300.4	300.4	254.7	254.7	254.7	254.7	254.7	254.7
Upstream Blk Time (%)	17	10	24	13					81	95	96	78	78	78
Queuing Penalty (veh)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Storage Bay Dist (m)	50.0													
Storage Blk Time (%)	58													
Queuing Penalty (veh)	1													

Intersection: 203: Argus Rd & South Service Rd

Movement	EB	WB	SB	SB
	LT	TR	LR	LR
Directions Served				
Maximum Queue (m)	2.9	120.1	47.6	
Average Queue (m)	0.1	71.0	25.2	
95th Queue (m)	2.1	154.5	50.9	
Link Distance (m)	102.8	112.4	43.0	
Upstream Blk Time (%)	18	21		
Queuing Penalty (veh)	148	0		
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 204: Trafalgar Rd & Argus Rd

Movement	EB	NB	NB	SB	SB	SB	SB	SB	SB
	R	T	T	T	T	T	T	T	TR
Directions Served									
Maximum Queue (m)	21.3	60.3	64.1	70.1	12.5	32.6	43.8	43.8	43.8
Average Queue (m)	8.1	35.2	39.3	43.0	0.6	7.4	18.5	18.5	18.5
95th Queue (m)	16.8	54.5	58.3	62.6	6.4	27.1	42.7	42.7	42.7
Link Distance (m)	112.4	238.9	238.9	238.9	27.8	27.8	27.8	27.8	27.8
Upstream Blk Time (%)					0	0	13	13	13
Queuing Penalty (veh)					0	3	106	106	106
Storage Bay Dist (m)									
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 302: Cross Ave & East Driveway Access

Movement	EB	EB	WB	WB
	LT	T	TR	TR
Directions Served				
Maximum Queue (m)	83.4	98.3	1.8	1.8
Average Queue (m)	75.5	59.0	0.1	0.1
95th Queue (m)	80.9	115.1	1.3	1.3
Link Distance (m)	72.4	72.4	104.4	104.4
Upstream Blk Time (%)	49	23		
Queuing Penalty (veh)	214	102		
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 303: North Driveway & Argus Rd

Movement	WB
	LT
Directions Served	
Maximum Queue (m)	106.9
Average Queue (m)	77.4
95th Queue (m)	150.5
Link Distance (m)	102.8
Upstream Blk Time (%)	30
Queuing Penalty (veh)	235
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 5131

Lanes, Volumes, Timings
101: Trafalgar Rd & Cross Ave/South Service Rd

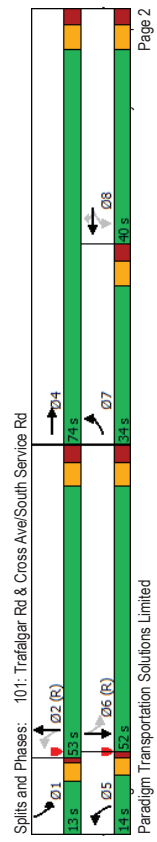
Background 2032
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT
Traffic Volume (vph)	1132	252	178	233	253	314	203	1530	122	166	1314	475
Future Volume (vph)	1132	252	178	233	253	314	203	1530	122	166	1314	475
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.6	3.3	3.6	3.5	3.3	3.6	3.6	3.3	3.6	3.6
Storage Length (m)	130.0	0.0	25.0	0.0	25.0	0.0	50.0	0.0	25.0	0.0	25.0	0.0
Storage Lanes	1	0	1	1	1	1	1	1	1	1	1	1
Taper Length (m)	7.5	1.0	1.0	7.5	1.0	1.0	7.5	1.0	7.5	1.0	7.5	1.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.80	0.91	1.00	0.80	0.91	0.99
Ped Bike Factor	1.00	0.99	1.00	1.00	0.99	1.00	0.98	1.00	0.99	0.98	1.00	0.99
Frt	0.931			0.850			0.988			0.960		
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2795	1450	0	1525	1583	1382	1428	3876	0	1525	3780	0
Flt Permitted	0.950			0.436			0.087			0.089		
Satd. Flow (perm)	2791	1450	0	697	1583	1362	131	3876	0	143	3780	0
Right Turn on Red	Yes			Yes			Yes			Yes		
Satd. Flow (RTOR)	44			122			10			70		
Link Speed (k/h)	50			50			50			50		
Link Distance (m)	122.6			330.4			150.2			270.2		
Travel Time (s)	8.8			23.8			10.8			19.5		
Confl. Peds. (#/hr)	1			4			10			52		
Peak Hour Factor	0.87	0.77	0.64	0.77	0.77	0.77	0.81	0.88	0.80	0.84	0.84	0.83
Heavy Vehicles (%)	9%	6%	12%	3%	8%	4%	10%	3%	0%	3%	3%	4%
Adj. Flow (vph)	1301	327	278	303	329	408	251	1739	153	188	1564	572
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1301	605	0	303	329	408	251	1892	0	188	2136	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width (m)	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
Link Offset (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width (m)	4.8			4.8			4.8			4.8		
Two way Left Turn Lane	1.19	1.14	1.14	1.14	1.14	1.16	1.19	1.14	1.14	1.19	1.14	1.14
Headway Factor	24	14	24	24	24	14	24	14	14	24	24	14
Turning Speed (k/h)	1	2	1	2	1	1	2	1	2	1	2	1
Number of Detectors	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Detector Template	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 1 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4	0.6	9.4	0.6	9.4	0.6	9.4	0.6	9.4	0.6	9.4	0.6
Detector 2 Size (m)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Detector 2 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex

Lanes, Volumes, Timings
101: Trafalgar Rd & Cross Ave/South Service Rd

Background 2032
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		0.0
Turn Type	Prot	NA	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA		NA
Protected Phases	7	4	8	8	8	2	5	2	1	6		6
Permitted Phases	7	4	8	8	8	2	5	2	1	6		6
Switch Phase	10.0	10.0	10.0	10.0	10.0	10.0	7.0	27.0	7.0	27.0		7.0
Minimum Initial (s)	17.0	25.0	25.0	25.0	25.0	25.0	11.5	34.0	11.5	34.0		11.5
Minimum Split (s)	34.0	74.0	40.0	40.0	40.0	40.0	14.0	53.0	13.0	52.0		52.0
Total Split (%)	24.3%	52.9%	28.6%	28.6%	28.6%	10.0%	37.9%		9.3%	37.1%		37.1%
Maximum Green (s)	27.0	67.0	33.0	33.0	33.0	10.0	46.0		9.0	45.0		45.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	4.0		3.0	4.0		4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	1.0	3.0	1.0	3.0		3.0
Lost Time Adjust (s)	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	0.0	-3.0	0.0	-3.0		-3.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0
Lead/Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lead	Lag	Lead	Lag		Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Vehicle Extension (s)	3.0	4.0	4.0	4.0	4.0	4.0	3.0	5.0	3.0	5.0		5.0
Recall Mode	Min	Min	Min	Min	Min	Min	C-Max	Min	C-Max	Min		C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0		7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0		0
Ad Effct Green (s)	30.0	70.0	33.0	36.0	36.0	36.0	59.0	49.0	57.0	48.0		48.0
Actuated v/c Ratio	0.21	0.50	0.24	0.26	0.26	0.42	0.35	0.41	0.34	0.34		0.34
v/c Ratio	2.18	0.81	1.85	0.81	0.93	1.71	1.39	1.35	1.59	1.59		1.59
Control Delay	561.0	37.4	434.5	65.2	63.6	347.0	212.5	218.8	302.3	302.3		302.3
Queue Delay	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Total Delay	561.0	39.6	434.5	65.2	63.6	347.0	212.5	218.8	302.3	302.3		302.3
LOS	F	D	F	E	E	F	F	F	F	F		F
Approach Delay	395.5			172.2			228.2			295.2		
Approach LOS	F			F			F			F		F
Intersection Summary	CBD											
Area Type:	CBD											
Cycle Length:	140											
Actuated Cycle Length:	140											
Offset: 128 (91%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green												
Natural Cycle:	150											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	2.18											
Intersection Signal Delay:	284.4											
Intersection Capacity Utilization:	116.8%											
Analysis Period (min):	15											
* User Entered Value												



	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group	1301	605	303	329	408	251	1892	198	2136
Lane Group Flow (vph)	2.18	0.81	1.85	0.81	0.93	1.71	1.39	1.35	1.59
v/c Ratio	561.0	37.4	434.5	65.2	63.6	347.0	212.5	218.8	302.3
Control Delay	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	561.0	39.6	434.5	65.2	63.6	347.0	212.5	218.8	302.3
Total Delay	~312.1	135.9	~133.6	90.4	86.6	~93.3	~304.7	~61.1	~362.7
Queue Length 50th (m)	#34.1.1	143.8	#159.0	105.2	#103.2	#64.8	#181.5	#84.3	#358.9
Queue Length 95th (m)	98.6	306.4	306.4	306.4	306.4	126.2	126.2	246.2	246.2
Internal Link Dist (m)	130.0	25.0	25.0	25.0	25.0	50.0	25.0	25.0	25.0
Turn Bay Length (m)	598	747	164	407	440	147	1363	147	1342
Base Capacity (vph)	0	59	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	2.18	0.88	1.85	0.81	0.93	1.71	1.39	1.35	1.59

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT
Traffic Volume (vph)	1132	252	178	233	253	314	203	1530	122	166	1314	475
Future Volume (vph)	1132	252	178	233	253	314	203	1530	122	166	1314	475
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.5	3.3	3.6	3.6	3.3	3.6	3.6
Total Lost time (s)	4.0	4.0	4.0	7.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.80	0.80	1.00	0.80	0.80
Frbp. ped/bikes	1.00	0.99	1.00	1.00	1.00	0.99	1.00	0.98	1.00	1.00	0.99	1.00
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.95	1.00	0.93	1.00	0.93	1.00	0.95	1.00	0.99	1.00	0.96	1.00
Flt Protected	0.95	1.00	0.93	1.00	0.93	1.00	0.95	1.00	0.99	1.00	0.96	1.00
Satd. Flow (prot)	2785	1450	1518	1583	1362	1428	3876	1525	3779	1525	3779	1525
Flt Permitted	0.95	1.00	0.93	1.00	0.93	1.00	0.95	1.00	0.99	1.00	0.96	1.00
Satd. Flow (perm)	2795	1450	1518	1583	1362	1428	3876	1525	3779	1525	3779	1525
Peak-hour factor, PHF	0.87	0.77	0.64	0.77	0.77	0.77	0.81	0.88	0.80	0.84	0.84	0.83
Adj. Flow (vph)	1301	327	278	303	329	408	251	1739	152	198	1664	572
RTOR Reduction (vph)	0	22	0	0	0	0	91	0	7	0	46	0
Lane Group Flow (vph)	1301	583	0	303	329	317	251	1886	0	188	2090	0
Conf. Peds. (#/hr)	1	4	4	4	4	4	1	10	52	52	10	10
Heavy Vehicles (%)	9%	6%	12%	3%	8%	4%	10%	3%	0%	3%	3%	4%
Turn Type	Prot	NA	Perm	NA	Perm	NA	pm-pt	NA	pm-pt	NA	pm-pt	NA
Protected Phases	7	4	8	8	8	5	2	1	6	6	6	6
Permitted Phases	8	8	8	8	8	8	2	2	2	2	2	2
Actuated Green, G (s)	27.0	67.0	33.0	33.0	33.0	33.0	56.0	46.0	54.0	54.0	45.0	45.0
Effective Green, g (s)	30.0	70.0	33.0	36.0	36.0	36.0	56.0	49.0	54.0	54.0	48.0	48.0
Actuated G/C Ratio	0.21	0.50	0.24	0.26	0.26	0.40	0.35	0.39	0.39	0.39	0.34	0.34
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	4.0	7.0	4.0	7.0	4.0	7.0
Vehicle Extension (s)	3.0	4.0	4.0	4.0	4.0	4.0	3.0	5.0	3.0	5.0	3.0	5.0
Lane Grp Cap (vph)	598	725	164	407	350	145	1356	144	1295	144	1295	1295
v/s Ratio Prot	c0.47	0.40	0.21	0.21	0.23	c0.57	0.49	0.09	0.55	0.44	0.55	0.55
v/s Ratio Perm	c0.44	0.40	0.21	0.21	0.23	c0.57	0.49	0.09	0.55	0.44	0.55	0.55
v/c Ratio	2.18	0.80	1.85	0.81	0.91	1.73	1.39	1.38	1.61	1.38	1.61	1.61
Uniform Delay, d1	55.0	29.3	53.5	48.8	50.4	38.1	45.5	36.1	46.0	36.1	46.0	46.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.06	1.08	1.31	1.13	1.31	1.13	1.13
Incremental Delay, d2	534.5	6.8	404.0	11.8	26.4	331.6	176.1	197.7	278.9	197.7	278.9	278.9
Delay (s)	589.5	36.1	457.5	60.6	76.8	372.1	225.3	244.9	330.8	244.9	330.8	330.8
Level of Service	F	D	F	E	E	F	F	F	F	F	F	F
Approach Delay (s)	F	F	F	F	F	F	F	F	F	F	F	F
Approach LOS	F	F	F	F	F	F	F	F	F	F	F	F

Intersection Summary	Value	Unit
HCM 2000 Control Delay	303.6	s
HCM 2000 Volume to Capacity ratio	1.80	
Actuated Cycle Length (s)	140.0	s
Intersection Capacity Utilization	116.8%	%
Analysis Period (min)	15	min
Critical Lane Group		

Lanes, Volumes, Timings
102: GO Bus Terminal/Argus Rd & Cross Ave

Lanes, Volumes, Timings
102: GO Bus Terminal/Argus Rd & Cross Ave

Background 2032
PM Peak Hour

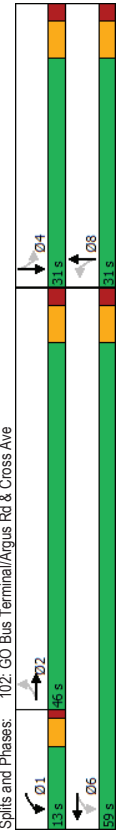
Background 2032
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	30	1065	45	119	488	78	92	2	108	247	23	197
Traffic Volume (vph)	30	1065	45	119	488	78	92	2	108	247	23	197
Future Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	3.3	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.6
Lane Width (m)	20.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	15.0	0.0	0.0	0.0
Storage Length (m)	1	0	1	0	1	0	1	0	1	0	1	0
Taper Length (m)	7.5	0.95	1.00	7.5	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.97	0.98	0.99	0.99	0.99
Ped Bike Factor	1.00	1.00	0.991	1.00	0.977	1.00	0.957					
Frt	0.950	0.950	0.950	0.950	0.950	0.950	0.950					
Flt Protected	1570	3028	0	818	3114	0	805	760	0	1570	1298	0
Satd. Flow (prot)	0.403	0.091		0.454			0.600			0.600		
Flt Permitted	666	3028	0	78	3114	0	384	760	0	974	1298	0
Satd. Flow (perm)	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992
Right Turn on Red	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Satd. Flow (RTOR)	8	50	42	154	50	50	221					
Link Speed (k/h)	207.1	100.7	100.7	81.9	180.7							
Link Distance (m)	14.9	7.3	7.3	5.9	13.0							
Travel Time (s)	1	3	3	1	3	20	20	20	20	20	20	3
Confl. Peds. (#/hr)	0.52	0.87	0.65	0.84	0.88	0.79	0.53	0.25	0.70	0.78	0.62	0.89
Peak Hour Factor	0%	1%	100%	92%	1%	5%	95%	0%	91%	0%	93%	0%
Heavy Vehicles (%)	58	1224	69	142	555	99	174	8	154	317	37	221
Adj. Flow (vph)	58	1224	69	142	555	99	174	8	154	317	37	221
Shared Lane Traffic (%)	58	1224	69	142	555	99	174	8	154	317	37	221
Lane Group Flow (vph)	58	1293	0	142	654	0	174	162	0	317	258	0
Enter Blocked Intersection	Left	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width(m)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
Link Offset(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width(m)	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Two way Left Turn Lane	1.19	1.14	1.14	1.19	1.14	1.14	1.19	1.14	1.14	1.19	1.14	1.14
Headway Factor	24	14	14	24	14	14	24	14	14	24	14	14
Turning Speed (k/h)	1	2	1	2	1	2	1	2	1	2	1	2
Number of Detectors	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru
Detector Template	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Size(m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 1 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4	0.6	9.4	0.6	9.4	0.6	9.4	0.6	9.4	0.6	9.4	0.6
Detector 2 Size(m)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Detector 2 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 2 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	2	1	6	1	6	8	8	8	8	4	4	4
Permitted Phases	2	2	2	1	6	8	8	8	8	4	4	4
Detector Phase	2	2	2	1	6	8	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	22.0	22.0	8.0	22.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	45.0	45.0	12.5	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0
Total Split (s)	46.0	46.0	13.0	59.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0
Total Split (%)	51.1%	51.1%	14.4%	65.6%	34.4%	34.4%	34.4%	34.4%	34.4%	34.4%	34.4%	34.4%
Maximum Green (s)	40.0	40.0	9.0	53.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	5.0	5.0	2.5	5.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Recall Mode	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Act Effct Green (s)	42.0	42.0	55.0	55.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0
Actuated g/C Ratio	0.47	0.47	0.61	0.61	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
v/c Ratio	0.19	0.91	1.17	0.34	1.51	0.48	1.09	0.47	1.09	0.47	0.47	0.47
Control Delay	16.1	33.6	161.2	8.6	286.3	10.3	110.3	8.7	110.3	8.7	8.7	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.1	33.6	161.2	8.6	286.3	10.3	110.3	8.7	110.3	8.7	8.7	8.7
LOS	B	C	F	A	F	B	F	A	F	B	F	A
Approach Delay	32.8	35.8	159.4	35.8	159.4	35.8	159.4	35.8	159.4	35.8	159.4	35.8
Approach LOS	C	D	F	D	F	D	F	D	F	D	F	D
Intersection Summary												
Area Type:	CBD											
Cycle Length:	90											
Actuated Cycle Length:	90											
Natural Cycle:	90											
Control Type:	Semi Act-Uncoordinated											
Maximum v/c Ratio:	1.51											
Intersection Signal Delay:	53.5											
Intersection LOS:	D											
Intersection Capacity Utilization:	84.3%											
Analysis Period (min):	15											

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Queues Background 2032
102: GO Bus Terminal/Argus Rd & Cross Ave PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	58	1293	142	654	174	162	317	258
v/c Ratio	0.19	0.91	1.17	0.34	1.51	0.48	1.09	0.47
Control Delay	16.1	33.6	161.2	8.6	298.3	10.3	110.3	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.1	33.6	161.2	8.6	298.3	10.3	110.3	8.7
Queue Length 50th (m)	5.9	110.1	~23.2	25.9	~44.5	1.0	~65.4	4.8
Queue Length 95th (m)	7.4	#148.9	#54.9	34.7	#41.1	0.0	#94.0	5.6
Internal Link Dist (m)	183.1		76.7		57.9		156.7	
Turn Bay Length (m)	20.0		20.0		15.0		15.0	
Base Capacity (vph)	310	1417	121	1919	115	335	292	544
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.91	1.17	0.34	1.51	0.48	1.09	0.47

Intersection Summary
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis Background 2032
102: GO Bus Terminal/Argus Rd & Cross Ave PM Peak Hour

Movement	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Traffic Volume (vph)	30	1065	45	119	488	78	92	2	108
Future Volume (vph)	30	1065	45	119	488	78	92	2	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.3	3.6	3.3	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.95
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98
Frt	0.95	1.00	0.95	1.00	0.98	1.00	0.86	1.00	0.87
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Satd. Flow (prot)	1569	3028	818	3115	804	760	1542	1298	
Flt Permitted	0.40	1.00	0.09	1.00	0.45	1.00	0.60	1.00	
Satd. Flow (perm)	666	3028	78	3115	384	760	975	1298	
Peak-hour factor, PHF	0.52	0.87	0.65	0.84	0.88	0.79	0.53	0.25	0.70
Adj. Flow (vph)	58	1224	69	142	555	99	174	8	154
RTOR Reduction (vph)	0	4	0	0	16	0	0	108	0
Lane Group Flow (vph)	58	1289	0	142	638	0	174	54	0
Conf. Peds. (#/hr)	1	3	3	3	1	3	20	20	3
Heavy Vehicles (%)	0%	1%	100%	92%	1%	5%	95%	0%	91%
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA	Perm
Protected Phases	2	6	6	6	8	8	8	8	4
Permitted Phases	2	6	6	6	8	8	8	8	4
Actuated Green, G (s)	40.0	40.0	53.0	53.0	25.0	25.0	25.0	25.0	25.0
Effective Green, g (s)	42.0	42.0	53.0	55.0	27.0	27.0	27.0	27.0	27.0
Actuated g/C Ratio	0.47	0.47	0.59	0.61	0.30	0.30	0.30	0.30	0.30
Clearance Time (s)	6.0	6.0	4.0	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	5.0	5.0	2.5	5.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	310	1413	119	1903	115	228	292	389	0.08
v/s Ratio Prot	0.43	c0.12	0.20	c0.12	0.07	c0.45	0.33	0.33	0.08
v/s Ratio Perm	0.09	c0.58							
v/c Ratio	0.19	0.91	1.19	0.34	1.51	0.24	1.09	0.27	0.27
Uniform Delay, d1	14.0	22.3	24.7	8.6	31.5	23.7	31.5	24.0	24.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	9.7	143.6	0.2	270.3	0.7	77.4	0.5	0.5
Delay (s)	14.6	31.9	168.3	8.8	301.8	24.5	108.9	24.5	24.5
Level of Service	B	C	F	A	F	C	F	C	C
Approach Delay (s)	31.2		37.2		168.1		71.0		71.0
Approach LOS	C		D		F		E		E

Intersection Summary	Value	Unit
HCM 2000 Control Delay	55.3	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	1.31	
Actuated Cycle Length (s)	90.0	Sum of lost time (s)
Intersection Capacity Utilization	84.3%	ICU Level of Service
Analysis Period (min)	15	
c Critical Lane Group		

Lanes, Volumes, Timings
104: Trafalgar Rd & Cornwall Rd

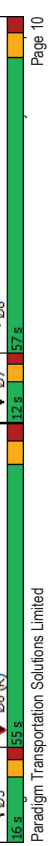
Background 2032
PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT
Traffic Volume (vph)	532	681	221	62	928	684	158	468	47	570	662	539
Future Volume (vph)	532	681	221	62	928	684	158	468	47	570	662	539
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.5
Storage Length (m)	80.0	0.0	80.0	0.0	25.0	0.0	80.0	0.0	80.0	0.0	0.0	1
Storage Lanes	2	0	1	0	1	0	1	0	1	0	1	1
Taper Length (m)	7.5	0.95	0.95	7.5	0.95	0.95	7.5	0.95	0.95	7.5	0.95	1.00
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	1.00	0.80	0.95	0.97	0.80	0.95	1.00
Ped Bike Factor	1.00	0.99	1.00	0.98	1.00	1.00	0.98	1.00	0.98	1.00	0.98	0.98
Frt	0.951			0.938			0.984					0.850
Flt Protected	0.950			0.950			0.950					0.950
Satd. Flow (prot)	2987	2964	0	1481	2902	0	1540	2658	0	2929	1341	1356
FltP Permitted	0.950			0.950			0.950					0.950
Satd. Flow (perm)	2978	2964	0	1476	2902	0	1533	2658	0	2879	1341	1324
Right Turn on Red	Yes			Yes			Yes			Yes		Yes
Satd. Flow (RTOR)	70			137			8					149
Link Speed (k/h)	50			50			50			50		50
Link Distance (m)	285.8			142.3			311.4			130.3		130.3
Travel Time (s)	20.6			10.2			22.4			9.4		9.4
Confl. Peds. (#/hr)	25			7			25			18		18
Peak Hour Factor	0.93	0.91	0.60	0.75	0.86	0.90	0.60	0.86	0.75	0.84	0.86	0.80
Heavy Vehicles (%)	2%	4%	1%	6%	3%	3%	2%	1%	0%	4%	2%	6%
Adj. Flow (vph)	572	748	368	83	1079	760	263	533	63	679	770	674
Shared Lane Traffic (%)												
Lane Group Flow (vph)	572	1116	0	83	1839	0	263	596	0	679	770	674
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Left	Right
Median Width (m)	6.6			6.6			6.6			6.6		6.6
Link Offset (m)	0.0			0.0			0.0			0.0		0.0
Crosswalk Width (m)	4.8			4.8			4.8			4.8		4.8
Two way Left Turn Lane												
Headway Factor	1.19	1.14	1.14	1.19	1.14	1.14	1.14	1.14	1.14	1.19	1.14	1.16
Turning Speed (k/h)	24	14	14	24	14	14	24	14	14	24	14	14
Number of Detectors	1	2	1	1	2	1	2	1	2	1	2	1
Detector Template	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Right	Right
Leading Detector (m)	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Type	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4			9.4			9.4			9.4		9.4
Detector 2 Size (m)	0.6			0.6			0.6			0.6		0.6
Detector 2 Type	C+Ex			C+Ex			C+Ex			C+Ex		C+Ex

Lanes, Volumes, Timings
104: Trafalgar Rd & Cornwall Rd

Background 2032
PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		0.0
Turn Type	Prot	NA	NA	Prot	NA	NA	Prot	NA	NA	Prot	NA	Perm
Protected Phases	3	8	7	4			5	2		1		6
Permitted Phases	3	8	7	4			5	2		1		6
Detector Phase	3	8	7	4			5	2		1		6
Switch Phase												
Minimum Initial (s)	7.0	10.0	7.0	10.0			7.0	20.0		7.0	20.0	20.0
Minimum Split (s)	12.0	37.0	12.0	37.0			12.0	39.0		12.0	39.0	39.0
Total Split (s)	18.0	57.0	12.0	51.0			16.0	52.0		19.0	55.0	55.0
Total Split (%)	12.9%	40.7%	8.6%	36.4%			11.4%	37.1%		13.5%	39.3%	39.3%
Maximum Green (s)	13.0	50.0	7.0	44.0			11.0	45.0		14.0	48.0	48.0
Yellow Time (s)	3.0	4.0	3.0	4.0			3.0	4.0		3.0	4.0	4.0
All-Red Time (s)	2.0	3.0	2.0	3.0			2.0	3.0		2.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-3.0	-1.0	-3.0			-1.0	-3.0		-1.0	-3.0	-3.0
Total Lost Time (s)	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag			Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	0.2	0.2	0.2	0.2			0.2	0.2		0.2	0.2	0.2
Recall Mode	Max	Max	Max	Max			None	C-Max		Max	C-Max	C-Max
Walk Time (s)	7.0			7.0			7.0			7.0		7.0
Flash Dont Walk (s)	23.0			23.0			25.0			25.0		25.0
Pedestrian Calls (#/hr)	0			0			0			0		0
Ad Effct Green (s)	14.0	53.0	8.0	47.0			12.0	48.0		15.0	51.0	51.0
Actuated g/C Ratio	0.10	0.38	0.06	0.34			0.09	0.34		0.11	0.36	0.36
v/c Ratio	1.92	0.96	0.99	1.73			1.99	0.65		2.17	1.58	1.17
Control Delay	458.1	57.8	159.4	359.2			503.6	42.4		558.4	286.1	97.5
Queue Delay	0.0	0.0	0.0	0.0			0.0	0.0		0.0	0.0	0.0
Total Delay	458.1	57.8	159.4	359.2			503.6	42.4		558.4	286.1	97.5
LOS	F	E	F	F			F	D		F	F	F
Approach Delay	193.4			350.6			183.6			313.3		F
Approach LOS	F			F			F			F		F
Intersection Summary	CBD											
Area Type	CBD											
Cycle Length	140											
Actuated Cycle Length	140											
Offset: 0 (0%)	Referenced to phase 2:NBT and 6:SBT, Start of Green, Master Intersection											
Control Type	Actuated-Coordinated											
Natural Cycle	150											
Maximum v/c Ratio	2.17											
Intersection Signal Delay	276.6											
Intersection Capacity Utilization	132.5%											
Analysis Period (min)	15											
* User Entered Value												



	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	572	1116	83	1839	263	596	679	770	674
v/c Ratio	1.92	0.96	0.99	1.73	1.99	0.65	2.17	1.58	1.17
Control Delay	458.1	57.8	159.4	359.2	503.6	42.4	558.4	286.1	97.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	458.1	57.8	159.4	359.2	503.6	42.4	558.4	286.1	97.5
Queue Length 50th (m)	~131.7	158.2	24.7	~404.4	~119.1	90.5	~167.5	~392.1	~201.9
Queue Length 95th (m)	#170.0	#207.5	#46.4	#420.5	#104.6	109.5	m#97.7	m#206.3	m31.3
Internal Link Dist (m)	261.8		118.3		287.4			106.3	
Turn Bay Length (m)	80.0		80.0		25.0		80.0		
Base Capacity (vph)	298	1165	84	1065	132	916	313	488	577
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.92	0.96	0.99	1.73	1.99	0.65	2.17	1.58	1.17
Intersection Summary									
~ Volume exceeds capacity, queue is theoretically infinite.									
Queue shown is maximum after two cycles.									
# 95th percentile volume exceeds capacity, queue may be longer.									
Queue shown is maximum after two cycles.									
m Volume for 95th percentile queue is metered by upstream signal.									

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Movement	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	TT	TT	TT	TT	TT	TT	TT	TT	TT
Traffic Volume (vph)	532	681	221	62	928	684	158	468	47
Future Volume (vph)	532	681	221	62	928	684	158	468	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.3	3.6	3.3	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.95	1.00	0.80	0.97	0.80	1.00
Frbp. ped/bikes	1.00	0.99	1.00	0.98	1.00	1.00	1.00	1.00	0.98
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.95	1.00	0.94	1.00	0.98	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	2987	2962	1481	2902	1540	2659	2929	1341	1324
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	2987	2962	1481	2902	1540	2659	2929	1341	1324
Peak-hour factor, PHF	0.93	0.91	0.60	0.75	0.86	0.90	0.60	0.86	0.75
Adj. Flow (vph)	572	748	368	83	1079	760	263	533	63
RTOR Reduction (vph)	0	44	0	0	91	0	0	5	0
Lane Group Flow (vph)	572	1073	0	83	1748	0	263	591	0
Conf. Peds. (#/hr)	25	7	7	25	9	9	18	18	9
Heavy Vehicles (%)	2%	4%	1%	6%	3%	2%	1%	0%	4%
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Prot
Protected Phases	3	8	7	4	5	2	1	6	6
Permitted Phases	13.0	50.0	7.0	44.0	11.0	45.0	14.0	48.0	48.0
Actuated Green, G (s)	14.0	53.0	8.0	47.0	12.0	48.0	15.0	51.0	51.0
Effective Green, g (s)	0.10	0.38	0.06	0.34	0.09	0.34	0.11	0.36	0.36
Actuated g/C Ratio	5.0	7.0	5.0	7.0	5.0	7.0	5.0	7.0	7.0
Clearance Time (s)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Vehicle Extension (s)	298	1121	84	974	132	911	313	488	462
Lane Grp Cap (vph)	c0.19	0.36	0.06	c0.60	0.17	0.22	c0.23	c0.57	0.44
v/s Ratio Prot	1.92	0.96	0.99	1.79	1.99	0.65	2.17	1.58	1.20
v/c Ratio	63.0	42.4	66.0	46.5	64.0	38.9	62.5	44.5	44.5
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	1.23	0.63	0.50
Progression Factor	4.26	18.3	95.0	361.7	472.5	3.6	527.2	260.9	92.8
Incremental Delay, d2	489.0	60.7	160.9	408.2	536.5	42.4	603.9	288.9	114.9
Delay (s)	F	E	F	F	F	D	F	F	F
Level of Service	F	E	F	F	F	D	F	F	F
Approach Delay (s)	205.8		397.5		193.7		334.4		F
Approach LOS	F		F		F		F		F
Intersection Summary									
HCM 2000 Control Delay	301.6 HCM 2000 Level of Service F								
HCM 2000 Volume to Capacity ratio	1.78								
Actuated Cycle Length (s)	140.0 Sum of lost time (s) 16.0								
Intersection Capacity Utilization	132.5% ICU Level of Service H								
Analysis Period (min)	15								
c Critical Lane Group									

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	987	481	0	1876	1729	0
Future Volume (vph)	987	481	0	1876	1729	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.5	3.6	3.6	3.6	3.6
Lane Util. Factor	0.97	1.00	1.00	*0.80	*0.80	1.00
Flt Protected	0.950					
Satd. Flow (prot)	2958	1423	0	3872	3946	0
Flt Permitted	0.950					
Satd. Flow (perm)	2958	1423	0	3872	3946	0
Right Turn on Red	Yes					Yes
Satd. Flow (RTOR)	9					
Link Speed (k/h)	50			50	50	
Link Distance (m)	199.2			51.4	324.8	
Travel Time (s)	14.3			3.7	23.4	
Peak Hour Factor	0.98	0.92	0.25	0.91	0.90	0.25
Heavy Vehicles (%)	3%	1%	0%	6%	4%	0%
Adj. Flow (vph)	1007	523	0	2062	1921	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1007	523	0	2062	1921	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	6.6			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.19	1.16	1.14	1.14	1.14	1.14
Turning Speed (k/h)	24	14	24		14	
Number of Detectors	1	Right	Thru	2	2	
Detector Template	2.0	2.0	10.0	10.0	10.0	
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	2.0	0.6	0.6	0.6	
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)			9.4	9.4		
Detector 2 Size(m)			0.6	0.6		
Detector 2 Type			Ch+Ex	Ch+Ex		
Detector 2 Channel						
Detector 2 Extend (s)			0.0	0.0		
Turn Type	Prot	Perm	NA	NA	NA	
Protected Phases	4		2	2	2	
Permitted Phases	4	4	2	2	2	
Detector Phase	4	4	2	2	2	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	10.0	10.0		29.0	29.0	
Minimum Split (s)	38.0	38.0		36.0	36.0	
Total Split (s)	58.0	58.0		82.0	82.0	
Total Split (%)	41.4%	41.4%		58.6%	58.6%	
Maximum Green (s)	51.0	51.0		75.0	75.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	24.0	24.0		22.0	22.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Ad Effct Green (s)	53.5	53.5		78.5	78.5	
Actuated g/C Ratio	0.38	0.38		0.56	0.56	
v/c Ratio	0.89	0.95		0.95	0.87	
Control Delay	51.5	69.8		26.2	19.8	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	51.5	69.8		26.2	19.8	
LOS	D	E		C	B	
Approach Delay	57.8			26.2	19.8	
Approach LOS	E			C	B	
Intersection Summary	CBD					
Area Type:	CBD					
Cycle Length:	140					
Actuated Cycle Length:	140					
Offset:	133.6 (95%), Referenced to phase 2,NBSB and 6., Start of Green					
Natural Cycle:	90					
Control Type:	Actuated-Coordinated					
Maximum v/c Ratio:	0.95					
Intersection Signal Delay:	32.7					
Intersection Capacity Utilization:	78.2%					
Analysis Period (min):	15					
* User Entered Value						

	EBL	EBR	NBT	SBT
Lane Group	1007	523	2062	1921
Lane Group Flow (vph)	0.89	0.95	0.95	0.87
v/c Ratio	51.5	69.8	26.2	19.8
Control Delay	0.0	0.0	0.0	0.0
Queue Delay	51.5	69.8	26.2	19.8
Total Delay	139.8	144.5	172.3	183.5
Queue Length 50th (m)	#172.3	#220.3	m66.8	m180.9
Queue Length 95th (m)	175.2	271.4	300.8	
Internal Link Dist (m)				
Turn Bay Length (m)	1140	554	2171	2212
Base Capacity (vph)	0	0	0	0
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.88	0.94	0.95	0.87

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

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	TT	T	TT	TT	TT	TT
Traffic Volume (vph)	987	481	0	1876	1729	0
Future Volume (vph)	987	481	0	1876	1729	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.5	3.6	3.6	3.6	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	*0.80	*0.80	*0.80	*0.80
Ft	1.00	0.85	1.00	1.00	1.00	1.00
Fit Protected	0.95	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	2958	1423	3872	3872	3946	3946
Fit Permitted	0.95	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	2958	1423	3872	3872	3946	3946
Peak-hour factor, PHF	0.98	0.92	0.25	0.91	0.90	0.25
Adj. Flow (vph)	1007	523	0	2062	1921	0
RTOR Reduction (vph)	0	6	0	0	0	0
Lane Group Flow (vph)	1007	517	0	2062	1921	0
Heavy Vehicles (%)	3%	1%	0%	6%	4%	0%
Turn Type	Prot	Perm	NA	NA	NA	NA
Protected Phases	4			2	2	
Permitted Phases		4				
Actuated Green, G (s)	50.5	50.5	75.5	75.5	75.5	
Effective Green, g (s)	53.5	53.5	78.5	78.5	78.5	
Actuated g/C Ratio	0.38	0.38	0.56	0.56	0.56	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	1130	543	2171	2212	2212	
v/s Ratio Prot	0.34			c0.53	0.49	
v/s Ratio Perm	0.89	0.95		0.95	0.87	
Uniform Delay, d1	40.5	42.0	28.9	26.3	26.3	
Progression Factor	1.00	1.00	0.84	0.64	0.64	
Incremental Delay, d2	9.1	27.1	1.3	2.6	2.6	
Delay (s)	49.6	69.1	25.6	19.4	19.4	
Level of Service	D	E	C	C	B	
Approach Delay (s)	56.3		25.6	19.4		
Approach LOS	E		C	C	B	
Intersection Summary						
HCM 2000 Control Delay			32.0		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.95			
Actuated Cycle Length (s)			140.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			78.2%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

Lanes, Volumes, Timings
106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

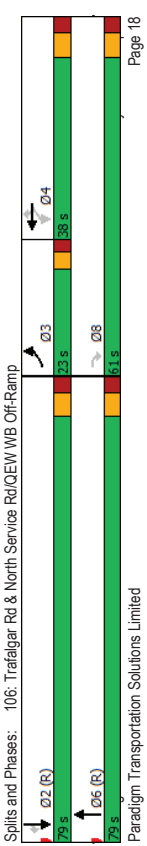
Background 2032
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3	0	225	520	105	213	0	2473	0	0	1655	12
Traffic Volume (vph)	23	0	225	520	105	213	0	2473	0	0	1655	12
Future Volume (vph)	23	0	225	520	105	213	0	2473	0	0	1655	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.5	3.3	3.6	3.5	3.6	3.6	3.6	3.6	3.6	3.5
Storage Length (m)	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Storage Lanes	1	1	1	1	1	1	0	0	0	0	0	1
Taper Length (m)	7.5	1.0	1.0	0.95	0.95	1.00	1.00	0.80	1.00	1.00	0.80	1.00
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.80	1.00	1.00	0.80	1.00
Ped Bike Factor												0.96
Frt	0.950		0.850		0.950	0.971	0.850					0.850
Satd. Flow (prot)	1570	0	1395	1421	1404	1356	0	3909	0	0	3984	1437
FIT Permitted	0.950		0.950	0.971								
Satd. Flow (perm)	1570	0	1395	1421	1404	1356	0	3909	0	0	3984	1380
Right Turn on Red	Yes		Yes		Yes		Yes		Yes		Yes	
Satd. Flow (RTOR)	31		31		92		92		92		70	
Link Speed (k/h)	50		50		50		50		50		50	
Link Distance (m)	142.1		192.6		324.8		268.2		268.2		19.3	
Travel Time (s)	10.2		13.9		23.4		19.3		19.3		8	
Confl. Peds. (#/hr)					8		5		5		8	
Peak Hour Factor	0.25	0.25	0.91	0.88	0.73	0.25	0.93	0.97	0.25	0.90	0.63	0.63
Heavy Vehicles (%)	0%	0%	3%	5%	23%	6%	0%	5%	0%	3%	0%	0%
Adj. Flow (vph)	92	0	247	591	154	292	0	2659	0	0	1839	19
Shared Lane Traffic (%)			38%									
Lane Group Flow (vph)	92	0	247	366	379	292	0	2659	0	0	1839	19
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width (m)	3.3		3.3		3.3		3.3		3.3		3.3	
Link Offset (m)	0.0		0.0		0.0		0.0		0.0		0.0	
Crosswalk Width (m)	4.8		4.8		4.8		4.8		4.8		4.8	
Two way Left Turn Lane												
Headway Factor	1.19	1.14	1.16	1.19	1.14	1.16	1.14	1.14	1.14	1.14	1.14	1.16
Turning Speed (k/h)	24	14	24	24	14	24	14	24	14	24	24	14
Number of Detectors	1	1	1	2	1	2	2	2	2	2	2	1
Detector Template	Left	Right	Left	Thru	Right	Thru	Thru	Thru	Right	Thru	Right	Right
Leading Detector (m)	2.0	2.0	2.0	10.0	2.0	10.0	10.0	10.0	2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	2.0	2.0	0.6	2.0	0.6	0.6	0.6	2.0	0.6	2.0	2.0
Detector 1 Type	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)				9.4		9.4		9.4		9.4		9.4
Detector 2 Size (m)				0.6		0.6		0.6		0.6		0.6
Detector 2 Type				C+Ex		C+Ex		C+Ex		C+Ex		C+Ex
Detector 2 Channel												

Lanes, Volumes, Timings
106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

Background 2032
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)												
Turn Type	Prot	Perm	NA	Perm	NA	Perm	NA	NA	NA	NA	NA	Perm
Protected Phases	3			4			6					2
Permitted Phases	3		8	4	4	4	6					2
Detector Phase	3		8	4	4	4	6					2
Switch Phase												
Minimum Initial (s)	7.0		10.0	10.0	10.0	10.0	5.0					28.0
Minimum Split (s)	23.0		38.0	38.0	38.0	38.0	35.0					35.0
Total Split (s)	23.0		61.0	38.0	38.0	38.0	79.0					79.0
Total Split (%)	16.4%		43.6%	27.1%	27.1%	27.1%	56.4%					56.4%
Maximum Green (s)	18.0		54.0	31.0	31.0	31.0	72.0					72.0
Yellow Time (s)	3.0		4.0	4.0	4.0	4.0	4.0					4.0
All-Red Time (s)	2.0		3.0	3.0	3.0	3.0	3.0					3.0
Lost Time Adjust (s)	-1.0		-3.0	-3.0	-3.0	-3.0	-3.0					-3.0
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0	4.0					4.0
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lag					Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes					Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	4.5					4.5
Recall Mode	Min		Min	Min	Min	Min	C-Min					C-Min
Walk Time (s)	7.0		7.0	7.0	7.0	7.0	7.0					7.0
Flash Dont Walk (s)	24.0		24.0	24.0	24.0	24.0	21.0					21.0
Pedestrian Calls (#/hr)			0	0	0	0	0					0
Ad Effect Green (s)	14.3		57.0	38.7	38.7	38.7	75.0					75.0
Actuated g/C Ratio	0.10		0.41	0.28	0.28	0.28	0.54					0.54
v/c Ratio	0.57		0.42	0.93	0.98	0.66	1.27					0.86
Control Delay	73.3		28.4	81.1	90.7	39.3	153.1					33.4
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0					0.0
Total Delay	73.3		28.4	81.1	90.7	39.3	153.1					33.4
LOS	E		C	F	F	D	F					C
Approach Delay	40.6		D	72.8	E	E	153.1					33.0
Approach LOS			D	E	E	E	F					C
Intersection Summary	CBD											
Area Type:	CBD											
Cycle Length:	140											
Actuated Cycle Length:	140											
Offset: 115.4 (82%), Referenced to phase 2:SBT and 6:NBT, Start of Green												
Natural Cycle:	150											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	1.27											
Intersection Signal Delay:	94.6											
Intersection Capacity Utilization:	85.5%											
Analysis Period (min):	15											
* User Entered Value												



	EBL	EBR	WBL	WBR	NBT	SBT	SBR
Lane Group	92	247	366	379	292	2659	1839
Lane Group Flow (vph)	0.57	0.42	0.83	0.98	0.66	1.27	0.86
v/c Ratio	73.3	28.4	81.1	90.7	39.3	153.1	33.4
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	73.3	28.4	81.1	90.7	39.3	153.1	33.4
Total Delay	26.0	44.4	110.2	116.0	52.6	~405.8	186.7
Queue Length 50th (m)	11.3	69.4	#184.8	#125.6	64.0	#437.4	214.4
Queue Length 95th (m)							
Internal Link Dist (m)	50.0		168.6		300.8	244.2	
Turn Bay Length (m)	213	566	392	388	441	2094	2134
Base Capacity (vph)	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.42	0.93	0.98	0.66	1.27	0.86
Intersection Summary							
~ Volume exceeds capacity, queue is theoretically infinite.							
Queue shown is maximum after two cycles.							
# 95th percentile volume exceeds capacity, queue may be longer.							
Queue shown is maximum after two cycles.							

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	23	0	225	520	105	213	0	2473	0	0	1655	12
Traffic Volume (vph)	23	0	225	520	105	213	0	2473	0	0	1655	12
Future Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	3.3	3.6	3.5	3.3	3.6	3.5	3.6	3.6	3.6	3.6	3.6	3.5
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	0.80	0.80	0.80	0.80	0.80	1.00
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.96
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95
Satd. Flow (prot)	1570	1395	1421	1405	1356	3909						3984
Flt Permitted	0.95	1.00	1.00	0.95	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95
Satd. Flow (perm)	1570	1395	1421	1405	1356	3909						3984
Peak-hour factor, PHF	0.25	0.25	0.91	0.88	0.68	0.73	0.25	0.93	0.97	0.25	0.90	0.63
Adj. Flow (vph)	92	0	247	591	154	292	0	2659	0	0	1839	19
RTOR Reduction (vph)	0	0	18	0	0	67	0	0	0	0	0	9
Lane Group Flow (vph)	92	0	229	366	379	225	0	2659	0	0	1839	10
Conf. Peds. (#/hr)							8		5			8
Heavy Vehicles (%)	0%	0%	3%	5%	23%	6%	0%	5%	5%	0%	3%	0%
Turn Type	Prot	Perm	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	3			4			6				2	
Permitted Phases	8	4		4			4				2	
Actuated Green, G (s)	13.3	54.0	35.7	35.7	35.7	35.7	72.0	72.0	72.0	72.0	72.0	72.0
Effective Green, g (s)	14.3	57.0	38.7	38.7	38.7	38.7	75.0	75.0	75.0	75.0	75.0	75.0
Actuated g/C Ratio	0.10	0.41	0.28	0.28	0.28	0.28	0.54	0.54	0.54	0.54	0.54	0.54
Clearance Time (s)	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.5	4.5	4.5	4.5	4.5	4.5
Lane Grp Cap (vph)	160	567	392	388	374	2094						739
v/s Ratio Prot	c0.06						c0.68					0.46
v/s Ratio Perm	0.57	0.40	0.93	0.98	0.60	1.27						0.86
Uniform Delay, d1	60.0	29.4	49.4	50.2	44.0	32.5						28.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00						1.00
Incremental Delay, d2	4.9	0.5	29.1	39.1	2.7	122.9						4.9
Delay (s)	64.9	29.9	78.5	89.4	46.7	155.4						32.9
Level of Service	E	C	E	F	D	F						C
Approach Delay (s)		39.4		73.5		155.4					32.7	
Approach LOS		D		E		F					C	
Intersection Summary												
HCM 2000 Control Delay	35.6											F
HCM 2000 Volume to Capacity ratio	1.10											F
Actuated Cycle Length (s)	140.0											12.0
Intersection Capacity Utilization	85.5%											E
Analysis Period (min)	15											
c Critical Lane Group												

EBL	EBT	WBT	WBR	SBL	SBR
↖	→	←	↗	↖	↗
EBL	EBT	WBT	WBR	SBL	SBR
12	51	390	174	43	82
12	51	390	174	43	82
1900	1900	1900	1900	1900	1900
1.00	1.00	1.00	1.00	1.00	1.00
0.986	0.986	0.986	0.986	0.983	0.983
0	1313	1598	0	1531	0
0	1313	1598	0	1531	0
50	50	50	50	50	50
122.3	145.7	145.7	51.8	51.8	51.8
1	8.8	10.5	3.7	3.7	3.7
1	5	5	1	5	1
0.25	0.42	0.86	0.72	0.25	0.25
100%	0%	3%	0%	0%	0%
48	121	453	242	172	328
0	169	695	0	500	0
No	No	No	No	No	No
Left	Left	Right	Right	Right	Right
0.0	0.0	0.0	3.6	3.6	3.6
4.8	4.8	4.8	4.8	4.8	4.8
1.14	1.14	1.14	1.14	1.14	1.14
24	Free	Free	Free	Stop	Stop
Intersection Summary					
Area Type: CBD					
Control Type: Unsignalized					
Intersection Capacity Utilization 49.8%					
Analysis Period (min) 15					

EBL	EBT	WBT	WBR	SBL	SBR
↖	→	←	↗	↖	↗
EBL	EBT	WBT	WBR	SBL	SBR
12	51	390	174	43	82
12	51	390	174	43	82
Free	Free	Free	Stop	Stop	Stop
0%	0%	0%	0%	0%	0%
0.25	0.42	0.86	0.72	0.25	0.25
48	121	453	242	172	328
1	5	5	1	5	1
3.6	3.6	3.6	3.6	3.6	3.6
1.2	1.2	1.2	1.2	1.2	1.2
0	0	0	0	0	0
None	None	None	None	None	None
358	358	358	358	358	358
696	696	696	696	696	696
696	696	696	696	696	696
5.1	5.1	5.1	5.1	5.1	5.1
3.1	3.1	3.1	3.1	3.1	3.1
92	92	92	92	92	92
575	575	575	575	575	575
EB 1	WB 1	SB 1	EB 1	WB 1	SB 1
169	695	500	169	695	500
48	0	172	48	0	172
0	242	328	0	242	328
575	1700	432	575	1700	432
0.08	0.41	1.16	0.08	0.41	1.16
2.2	0.0	148.7	2.2	0.0	148.7
4.1	0.0	123.5	4.1	0.0	123.5
A	A	F	A	A	F
4.1	0.0	123.5	4.1	0.0	123.5
F	F	F	F	F	F
Intersection Summary					
Average Delay 45.8					
Intersection Capacity Utilization 49.8%					
ICU Level of Service A					
Analysis Period (min) 15					

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	119	0	2770	2212	564
Future Volume (vph)	0	119	0	2770	2212	564
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.5	3.6	3.6	3.6	3.6
Lane Util. Factor	1.00	1.00	1.00	*0.80	*0.80	0.91
Ped. Bike Factor		0.865			0.965	
Flt Protected						
Satd. Flow (prot)	0	1367	0	3836	3825	0
Flt Permitted						
Satd. Flow (perm)	0	1367	0	3836	3825	0
Link Speed (k/h)	50		50	50	50	
Link Distance (m)	145.7		270.2	51.4		
Travel Time (s)	10.5		19.5	3.7		
Confl. Peds. (#/hr)						11
Peak Hour Factor	0.25	0.54	0.25	0.92	0.97	0.82
Heavy Vehicles (%)	0%	7%	0%	7%	4%	2%
Adj. Flow (vph)	0	220	0	3011	2280	688
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	220	0	3011	2968	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width (m)	0.0	3.3	0.0	3.3	3.3	0.0
Link Offset (m)	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width (m)	4.8		4.8	4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.14	1.16	1.14	1.14	1.14	1.14
Turning Speed (k/h)	24	14	24			14
Sign Control	Stop		Free	Free	Free	
Intersection Summary						
Area Type:	CBD					
Control Type:	Unsignalized					
Intersection Capacity Utilization	76.6%					
Analysis Period (min)	15					
ICU Level of Service	D					
User Entered Value						

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	119	0	2770	2212	564
Future Volume (Veh/h)	0	119	0	2770	2212	564
Sign Control	Stop		Free	Free	Free	
Grade	0%		0%	0%	0%	
Peak Hour Factor	0.25	0.54	0.25	0.92	0.97	0.82
Hourly flow rate (vph)	0	220	0	3011	2280	688
Pedestrians	11					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	1					
Right turn flare (veh)			None	None	None	
Median type						
Median storage (veh)						
Upstream signal (m)			270	52		
pX, platoon unblocked	0.74	0.59	0.59			
VC, conflicting volume	3639	1115	2979			
VC1, stage 1 conf vol						
VC2, stage 2 conf vol						
VCU, unblocked vol	588	0	1928			
IC, single (s)	6.8	7.0	4.1			
IC, 2 stage (s)						
p0 queue free %	100	65	100			
p0 capacity (veh/h)	322	626	182			
Direction_Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2 SB 3
Volume Total	220	1004	1004	1004	912	912 1144
Volume Left	0	0	0	0	0	0
Volume Right	220	0	0	0	0	688
CSH	626	1700	1700	1700	1700	1700
Volume to Capacity	0.35	0.59	0.59	0.59	0.54	0.54 0.67
Queue Length 95th (m)	12.6	0.0	0.0	0.0	0.0	0.0 0.0
Control Delay (s)	13.8	0.0	0.0	0.0	0.0	0.0 0.0
Lane LOS	B					
Approach Delay (s)	13.8	0.0			0.0	
Approach LOS	B					
Intersection Summary						
Average Delay	0.5					
Intersection Capacity Utilization	76.6%					
ICU Level of Service	D					
Analysis Period (min)	15					

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group						
Lane Configurations		4↑	4↑		W	
Traffic Volume (vph)	0	1563	931	0	0	0
Future Volume (vph)	0	1563	931	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Flt Protected						
Satd. Flow (prot)	0	3185	3185	0	1676	0
Flt Permitted						
Satd. Flow (perm)	0	3185	3185	0	1676	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		100.7	122.6		66.8	
Travel Time (s)		7.3	8.8		4.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1699	1012	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1699	1012	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Right	Left	Right
Median Width(m)		3.3	3.3		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25	Free	Free	Free	25	15
Sign Control		Free	Free	Free	Stop	Stop
Intersection Summary						
Area Type:	CBD					
Control Type:	Unsignalized					
Intersection Capacity Utilization	51.3%					
Analysis Period (min)	15					
	ICU Level of Service A					

	EBL	EBT	WBT	WBR	SBL	SBR
Movement						
Lane Configurations		4↑	4↑		W	
Traffic Volume (veh/h)	0	1563	931	0	0	0
Future Volume (Veh/h)	0	1563	931	0	0	0
Sign Control		Free	Free	Free	Stop	Stop
Grade		0%	0%	0%	0%	0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1699	1012	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)			None	None		
Median type						
Median storage (veh)						
Upstream signal (m)		101	123			
pX, platoon unblocked					0.61	
vC, conflicting volume	1012				1882	506
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1012				1146	506
IC, single (s)	4.1				6.8	6.9
IC, 2 stage (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
qM capacity (veh/h)	681				118	512
Direction_Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 1
Volume Total	566	1133	675	337	0	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
CSH	681	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.67	0.40	0.20	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS					A	A
Approach Delay (s)	0.0		0.0		0.0	
Approach LOS					A	
Intersection Summary						
Average Delay	0.0					
Intersection Capacity Utilization	51.3%					
ICU Level of Service	A					
Analysis Period (min)	15					

	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	W				W	
Traffic Volume (vph)	63	0	0	472	0	0
Future Volume (vph)	63	0	0	472	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	55.4			122.3	54.4	
Travel Time (s)	4.0			8.8	3.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	68	0	0	513	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	0	0	513	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	15			25	25	15
Sign Control	Free			Free	Stop	Stop
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	28.2%					
Analysis Period (min)	15					
	ICU Level of Service A					

	EBT	EBR	WBL	WBT	NBL	NBR
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	W				W	
Traffic Volume (veh/h)	63	0	0	472	0	0
Future Volume (Veh/h)	63	0	0	472	0	0
Sign Control	Free			Free	Stop	Stop
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	68	0	0	513	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	236					
pX platoon unblocked						
vC, conflicting volume		68			581	68
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		68			581	68
IC, single (s)		4.1			6.4	6.2
IC, 2 stage (s)						
p0 queue free %		2.2			3.5	3.3
ICM capacity (veh/h)		100			100	100
ICM capacity (veh/h)		1533			476	995
Direction_Lane #	EB 1	WB 1	NB 1			
Volume Total	68	513	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1533	1700			
Volume to Capacity	0.04	0.00	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	28.2%					
ICU Level of Service	A					
Analysis Period (min)	15					

Intersection: 101: Trafalgar Rd & Cross Ave/South Service Rd

Movement	EB		WB		NB		SB		B34		B34	
	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR
Directions Served	96.1	103.0	85.4	32.3	330.3	328.9	57.4	116.4	126.6	126.0	3.0	3.3
Maximum Queue (m)	92.9	98.6	30.2	31.2	314.1	287.7	41.3	71.5	81.8	84.4	0.1	0.1
Average Queue (m)	98.1	101.7	65.3	36.7	350.7	419.0	68.3	107.0	115.7	116.5	2.1	2.3
95th Queue (m)	96.2	96.2	31.32	31.32	313.2	313.2	126.0	128.0	128.0	101.5	101.5	101.5
Link Distance (m)	14	61	0	81	33	0	0	0	0	1	1	1
Upstream Blk Time (%)	0	479	2	0	0	0	0	0	0	1	3	3
Queuing Penalty (veh)	130.0	0	0	25.0	0	0	50.0	0	0	0	0	0
Storage Bay Dist (m)	14	61	69	38	10	22	0	0	0	0	0	0
Storage Blk Time (%)	82	347	88	176	88	51	45	0	0	0	0	0
Queuing Penalty (veh)	0	0	0	0	0	0	0	0	0	0	0	0

Intersection: 101: Trafalgar Rd & Cross Ave/South Service Rd

Movement	SB		SB		SB		SB		B34		B34	
	L	T	T	TR	L	TR	L	TR	L	TR	L	TR
Directions Served	32.3	255.6	254.5	251.4	0	0	0	0	0	0	0	0
Maximum Queue (m)	25.0	168.8	191.5	198.8	0	0	0	0	0	0	0	0
Average Queue (m)	41.7	315.1	334.3	325.1	0	0	0	0	0	0	0	0
95th Queue (m)	239.0	239.0	239.0	239.0	0	0	0	0	0	0	0	0
Link Distance (m)	6	19	32	0	0	0	0	0	0	0	0	0
Upstream Blk Time (%)	47	147	247	0	0	0	0	0	0	0	0	0
Queuing Penalty (veh)	25.0	0	0	0	0	0	0	0	0	0	0	0
Storage Bay Dist (m)	19	48	0	0	0	0	0	0	0	0	0	0
Storage Blk Time (%)	82	80	0	0	0	0	0	0	0	0	0	0
Queuing Penalty (veh)	0	0	0	0	0	0	0	0	0	0	0	0

Intersection: 102: GO Bus Terminal/Argus Rd & Cross Ave

Movement	EB		WB		NB		SB		B14		B14	
	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR
Directions Served	27.3	212.7	208.9	27.3	61.2	44.0	75.6	82.5	22.4	187.9	59.0	59.0
Maximum Queue (m)	5.1	202.0	201.9	20.1	21.9	15.7	37.7	45.5	21.6	162.5	32.9	32.9
Average Queue (m)	21.3	207.4	207.2	32.5	54.7	32.9	75.0	86.0	24.3	235.5	64.3	64.3
95th Queue (m)	196.3	196.3	196.3	79.5	79.5	65.7	65.7	65.7	65.7	159.0	35.2	35.2
Link Distance (m)	94	79	0	0	0	0	0	0	0	0	0	0
Upstream Blk Time (%)	0	0	0	0	0	0	0	0	0	35.4	266	266
Queuing Penalty (veh)	20.0	0	0	20.0	13	2	0	0	15.0	88	10	10
Storage Bay Dist (m)	0	89	0	13	2	0	0	0	88	10	0	0
Storage Blk Time (%)	0	27	0	32	3	0	0	0	195	24	0	0
Queuing Penalty (veh)	0	0	0	0	0	0	0	0	0	0	0	0

Intersection: 104: Trafalgar Rd & Cornwall Rd

Movement	EB		WB		NB		SB		B34		B34	
	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR
Directions Served	83.7	87.5	273.0	87.4	133.9	134.3	32.4	297.4	291.4	87.5	132.9	132.9
Maximum Queue (m)	83.0	87.2	270.1	242.8	32.7	122.0	127.9	32.1	280.3	248.9	81.4	112.2
Average Queue (m)	85.3	87.9	275.4	337.7	87.3	139.5	132.3	33.1	324.6	372.2	106.2	165.8
95th Queue (m)	264.0	264.0	264.0	264.0	122.1	122.1	122.1	286.8	286.8	286.8	101.5	101.5
Link Distance (m)	94	9	0	0	0	0	0	69	23	0	0	0
Upstream Blk Time (%)	80.0	80.0	0	0	80.0	0	0	25.0	0	0	0	0
Queuing Penalty (veh)	32	83	2	0	47	96	3	19	68	0	0	0
Storage Bay Dist (m)	108	281	10	0	29	220	5	54	193	0	0	0
Storage Blk Time (%)	0	0	0	0	0	0	0	0	0	0	0	0
Queuing Penalty (veh)	0	0	0	0	0	0	0	0	0	0	0	0

Intersection: 104: Trafalgar Rd & Cornwall Rd

Movement	SB		SB		B34		B34		B34		B34	
	T	R	T	TR	T	TR	T	TR	T	TR	T	TR
Directions Served	86.2	45.7	107.0	101.4	74.5	0	0	0	0	0	0	0
Maximum Queue (m)	37.7	14.1	66.9	33.6	5.9	0	0	0	0	0	0	0
Average Queue (m)	72.2	32.6	156.7	117.7	47.5	0	0	0	0	0	0	0
95th Queue (m)	101.5	101.5	128.0	128.0	128.0	0	0	0	0	0	0	0
Link Distance (m)	0	5	2	0	0	0	0	0	0	0	0	0
Upstream Blk Time (%)	1	30	10	1	0	0	0	0	0	0	0	0
Queuing Penalty (veh)	25.0	0	0	0	0	0	0	0	0	0	0	0
Storage Bay Dist (m)	19	48	0	0	0	0	0	0	0	0	0	0
Storage Blk Time (%)	82	80	0	0	0	0	0	0	0	0	0	0
Queuing Penalty (veh)	0	0	0	0	0	0	0	0	0	0	0	0

Intersection: 105: Trafalgar Rd & QEW EB-Off Ramp

Movement	EB		WB		NB		SB		B34		B34	
	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR
Directions Served	181.5	188.5	185.8	36.5	40.6	38.4	318.0	319.6	314.8	0	0	0
Maximum Queue (m)	81.9	166.0	180.4	27.7	30.6	29.3	297.1	306.0	305.5	0	0	0
Average Queue (m)	183.2	240.0	191.4	35.1	38.4	35.5	356.8	322.0	312.5	0	0	0
95th Queue (m)	176.9	176.9	176.9	27.8	27.8	27.8	300.4	300.4	300.4	0	0	0
Link Distance (m)	1	48	91	29	32	33	28	46	63	0	0	0
Upstream Blk Time (%)	0	0	0	0	269	302	225	366	508	0	0	0
Queuing Penalty (veh)	20.0	0	0	13	2	0	0	0	0	0	0	0
Storage Bay Dist (m)	0	89	0	13	2	0	0	0	0	0	0	0
Storage Blk Time (%)	0	27	0	32	3	0	0	0	0	0	0	0
Queuing Penalty (veh)	0	0	0	0	0	0	0	0	0	0	0	0

Intersection: 106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

Movement	EB	EB	WB	WB	NB	NB	T	T	SB	SB	SB	SB	SB	SB
	L	R	L	TR	L	TR	T	T	T	T	T	T	T	R
Directions Served														
Maximum Queue (m)	57.4	131.0	184.6	187.8	183.1	85.0	103.2	103.5	269.5	269.0	268.5	268.5	260.9	
Average Queue (m)	19.2	112.4	155.9	170.4	123.3	49.8	59.5	60.1	248.7	248.9	247.2	247.2	226.8	
95th Queue (m)	61.3	157.8	218.4	208.9	266.6	78.4	92.9	92.4	310.4	309.7	314.6	314.6	364.7	
Link Distance (m)	119.7	173.2	173.2	173.2	300.4	300.4	300.4	254.7	254.7	254.7	254.7	254.7	254.7	
Upstream Blk Time (%)	77	37	79	42	0	0	0	0	69	86	88	88	76	
Queuing Penalty (veh)	0	0	0	0	0	0	0	0	0	0	0	0	0	
Storage Bay Dist (m)	50.0													
Storage Blk Time (%)	0	86												
Queuing Penalty (veh)	0	20												

Intersection: 203: Argus Rd & South Service Rd

Movement	EB	WB	SB	SB
	LT	TR	LR	LR
Directions Served				
Maximum Queue (m)	25.2	119.8	47.6	
Average Queue (m)	2.8	63.4	29.9	
95th Queue (m)	15.2	153.4	57.1	
Link Distance (m)	108.5	112.4	43.0	
Upstream Blk Time (%)	28	43		
Queuing Penalty (veh)	160	0		
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 204: Trafalgar Rd & Argus Rd

Movement	EB	NB	NB	SB	SB	SB	SB	SB	SB
	R	T	T	T	T	TR	TR	TR	TR
Directions Served									
Maximum Queue (m)	76.5	64.9	71.6	67.8	44.1	41.1	44.8		
Average Queue (m)	33.9	26.1	31.3	34.6	15.0	24.9	33.7		
95th Queue (m)	79.7	53.8	59.3	59.8	39.9	43.5	41.7		
Link Distance (m)	112.4	239.0	239.0	239.0	27.8	27.8	27.8		
Upstream Blk Time (%)	0				3	12	54		
Queuing Penalty (veh)	0				26	91	398		
Storage Bay Dist (m)									
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 302: Cross Ave & East Driveway Access

Movement	EB	EB	T
	LT	T	T
Directions Served			
Maximum Queue (m)	91.6	104.7	
Average Queue (m)	83.3	66.0	
95th Queue (m)	88.2	125.4	
Link Distance (m)	79.5	79.5	
Upstream Blk Time (%)	56	22	
Queuing Penalty (veh)	399	153	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 303: North Driveway & Argus Rd

Movement	WB	LT
Directions Served		
Maximum Queue (m)	112.9	
Average Queue (m)	74.9	
95th Queue (m)	155.3	
Link Distance (m)	108.5	
Upstream Blk Time (%)	43	
Queuing Penalty (veh)	202	
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 7488

Lanes, Volumes, Timings
101: Trafalgar Rd & Cross Ave/South Service Rd

Background 2037
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT
Traffic Volume (vph)	865	400	179	89	374	186	186	689	1025	418	986	686
Future Volume (vph)	865	400	179	89	374	186	186	689	1025	418	986	686
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.6	3.3	3.6	3.5	3.3	3.6	3.6	3.3	3.6	3.6
Storage Length (m)	130.0	0.0	25.0	0.0	50.0	0.0	50.0	0.0	25.0	0.0	50.0	0.0
Storage Lanes	1	0	1	1	1	1	1	1	1	1	1	1
Taper Length (m)	7.5	1.0	1.0	7.5	1.0	1.0	7.5	1.0	1.0	7.5	1.0	1.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.80	0.91	1.00	0.80	0.91	0.91
Ped Bike Factor	1.00	0.99	0.99	0.99	0.99	0.99	0.86	0.86	0.99	0.86	0.99	0.99
Frt	0.947					0.850		0.907				0.938
Flt Protected	0.950			0.950		0.950		0.950		0.950		0.950
Satd. Flow (prot)	2795	1487	0	1525	1583	1382	1428	3182	0	1525	3669	0
Flt Permitted	0.950			0.154		0.067		0.080		0.080		0.080
Satd. Flow (perm)	2792	1487	0	247	1583	1362	131	3182	0	128	3669	0
Right Turn on Red	Yes			Yes		Yes		Yes		Yes		Yes
Satd. Flow (RTOR)	20			179		298		298		153		153
Link Speed (k/h)	50			50		50		50		50		50
Link Distance (m)	130.9			330.4		150.2		150.2		270.2		270.2
Travel Time (s)	9.4			23.8		10.8		10.8		19.5		19.5
Conf. Peds. (#/hr)	4			4		10		52		52		10
Peak Hour Factor	0.87	0.77	0.64	0.77	0.77	0.77	0.81	0.88	0.80	0.84	0.84	0.83
Heavy Vehicles (%)	9%	12%	8%	3%	8%	4%	10%	3%	0%	3%	3%	4%
Adj. Flow (vph)	994	519	280	116	486	242	230	783	1281	488	1174	827
Shared Lane Traffic (%)												
Lane Group Flow (vph)	994	799	0	116	486	242	230	2064	0	488	2001	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width (m)	6.6			6.6		3.3		3.3		3.3		3.3
Link Offset (m)	0.0			0.0		0.0		0.0		0.0		0.0
Crosswalk Width (m)	4.8			4.8		4.8		4.8		4.8		4.8
Two way Left Turn Lane												
Headway Factor	1.19	1.14	1.14	1.14	1.14	1.16	1.19	1.14	1.14	1.19	1.14	1.14
Turning Speed (k/h)	24	14	24	24	24	14	24	14	24	24	14	14
Number of Detectors	1	2	1	1	2	1	1	2	1	2	1	2
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Left	Thru	Right	Thru
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	10.0	2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4			9.4		9.4		9.4		9.4		9.4
Detector 2 Size (m)	0.6			0.6		0.6		0.6		0.6		0.6
Detector 2 Type	Ch+Ex			Ch+Ex		Ch+Ex		Ch+Ex		Ch+Ex		Ch+Ex
Detector 2 Channel												

Lanes, Volumes, Timings
101: Trafalgar Rd & Cross Ave/South Service Rd

Background 2037
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)	0.0			0.0		0.0		0.0		0.0		0.0
Turn Type	Prot	NA	NA	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8	8	5	2	1	6	1	6	6
Permitted Phases	7	4	3	8	8	5	2	1	6	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	12.0	10.0	10.0	10.0	7.0	27.0	7.0	7.0	27.0	7.0
Minimum Split (s)	17.0	25.0	17.0	25.0	25.0	11.5	34.0	11.5	34.0	11.5	34.0	11.5
Total Split (s)	31.0	47.0	17.0	33.0	33.0	15.0	53.0	23.0	61.0	23.0	61.0	23.0
Total Split (%)	22.1%	33.6%	12.1%	23.6%	23.6%	10.7%	37.9%	16.4%	43.6%	16.4%	43.6%	16.4%
Maximum Green (s)	24.0	40.0	13.0	26.0	26.0	11.0	46.0	19.0	54.0	19.0	54.0	19.0
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	3.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-3.0	-3.0	0.0	-3.0	-3.0	0.0	-3.0	0.0	-3.0	0.0	-3.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	4.0	4.0	3.5	4.0	4.0	3.0	5.0	3.0	5.0	3.0	5.0
Recall Mode	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0		0		0		0		0
Act Effct Green (s)	27.0	43.5	41.5	29.0	29.0	60.0	49.0	72.0	57.0	72.0	57.0	72.0
Actuated v/c Ratio	0.19	0.31	0.30	0.21	0.21	0.43	0.35	0.51	0.41	0.51	0.41	0.41
v/c Ratio	1.84	1.68	0.62	1.49	0.57	1.46	2.35dr	1.95	1.53dr	1.95	1.53dr	1.95
Control Delay	418.5	346.2	44.3	272.8	19.8	237.4	293.3	458.4	155.5	458.4	155.5	155.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	418.5	346.2	44.3	272.8	19.8	237.4	293.3	458.4	155.5	458.4	155.5	155.5
LOS	F	F	D	F	B	F	F	F	F	F	F	F
Approach Delay	386.3			168.9			287.7			215.5		
Approach LOS	F			F			F			F		F
Intersection Summary	CBD											
Area Type:	CBD											
Cycle Length:	140											
Actuated Cycle Length:	140											
Offset:	128 (91%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green											
Natural Cycle:	150											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	1.95											
Intersection Signal Delay:	273.7											
Intersection Capacity Utilization:	131.2%											
Analysis Period (min):	15											
User Entered Value												
Dr Defacto Right Lane:	Recode with 1 through lane as a right lane.											



	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group	994	799	116	486	242	230	2064	498	2001
Lane Group Flow (vph)	1.84	1.68	0.62	1.49	0.57	1.46	2.35dr	1.95	1.53dr
v/c Ratio	418.5	346.2	44.3	272.8	19.8	237.4	293.3	456.4	155.5
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	418.5	346.2	44.3	272.8	19.8	237.4	293.3	456.4	155.5
Total Delay	~225.8	~337.8	20.7	~194.7	15.4	~78.1	~350.5	~212.2	~290.6
Queue Length 50th (m)	#256.9	#338.2	29.9	#212.9	28.6	m#47.6	m#13.3	m#147.7	m#44.4
Queue Length 95th (m)	106.9	306.4	306.4			126.2		246.2	
Internal Link Dist (m)	130.0	25.0	25.0	50.0	50.0	25.0	25.0	25.0	25.0
Turn Bay Length (m)	539	475	192	327	424	158	1307	255	1584
Base Capacity (vph)	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.84	1.68	0.60	1.49	0.57	1.46	1.58	1.95	1.26

Intersection Summary
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 m Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.
 dr Defacto Right Lane. Recode with '1' though lane as a right lane.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
Traffic Volume (vph)	865	400	179	89	374	186	186	689	1025	418	986	686
Future Volume (vph)	865	400	179	89	374	186	186	689	1025	418	986	686
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.5	3.3	3.6	3.6	3.3	3.6	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.80	1.00	1.00	0.80	1.00
Frbp. ped/bikes	1.00	0.99	1.00	1.00	1.00	0.99	1.00	0.86	1.00	0.99	1.00	0.99
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.95	1.00	0.95	1.00	1.00	0.85	1.00	0.91	1.00	0.94	1.00	0.94
Flt Protected	0.95	1.00	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Satd. Flow (prot)	2785	1488	1525	1583	1362	1428	3182	1525	3669	1525	3669	1525
Flt Permitted	0.95	1.00	0.95	1.00	1.00	0.99	1.00	0.99	1.00	0.99	1.00	0.99
Satd. Flow (perm)	2785	1488	247	1583	1362	131	3182	128	3669	128	3669	128
Peak-hour factor, PHF	0.87	0.77	0.64	0.77	0.77	0.81	0.88	0.80	0.84	0.84	0.84	0.83
Adj. Flow (vph)	994	519	280	116	486	242	230	783	1281	498	1174	827
RTOR Reduction (vph)	0	14	0	0	0	142	0	194	0	0	91	0
Lane Group Flow (vph)	994	785	0	116	486	100	230	1870	0	488	1910	0
Conf. Peds. (#/hr)	1	4	4	4	4	1	10	52	52	52	10	10
Heavy Vehicles (%)	9%	6%	12%	3%	8%	4%	10%	3%	0%	3%	3%	4%
Turn Type	Prot	NA	pm-pt	NA	pm-pt	NA	pm-pt	NA	pm-pt	NA	pm-pt	NA
Protected Phases	7	4	3	8	8	5	2	1	6	1	6	6
Permitted Phases	8	8	8	8	8	8	2	6	6	6	6	6
Actuated Green, G (s)	24.0	40.5	38.5	26.0	26.0	57.0	46.0	69.0	69.0	54.0	54.0	54.0
Effective Green, g (s)	27.0	43.5	38.5	29.0	29.0	57.0	49.0	69.0	69.0	57.0	57.0	57.0
Actuated G/C Ratio	0.19	0.31	0.28	0.21	0.21	0.41	0.35	0.49	0.49	0.41	0.41	0.41
Clearance Time (s)	7.0	7.0	4.0	7.0	7.0	4.0	7.0	4.0	7.0	4.0	7.0	7.0
Vehicle Extension (s)	3.0	4.0	3.5	4.0	4.0	3.0	5.0	3.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	539	462	182	327	282	155	1113	252	1493	252	1493	1493
v/s Ratio Prot	c0.36	c0.53	0.06	0.31	0.12	0.12	0.59	c0.27	0.52	c0.27	0.52	0.52
v/s Ratio Perm	0.12	0.12	0.07	0.49	0.49	0.49	0.49	0.70	0.70	0.70	0.70	0.70
v/c Ratio	1.84	1.70	0.64	1.49	0.35	1.48	2.35dr	1.98	1.53dr	1.98	1.53dr	1.53dr
Uniform Delay, d1	56.5	48.2	41.7	55.5	47.5	39.4	45.5	45.5	41.5	45.5	41.5	41.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	0.96	1.30	1.06	1.13	1.06	1.13	1.13
Incremental Delay, d2	387.0	324.0	7.4	234.5	1.0	220.9	306.5	440.6	126.3	440.6	126.3	126.3
Delay (s)	443.5	372.3	49.1	290.0	48.5	258.7	365.9	488.7	173.4	488.7	173.4	173.4
Level of Service	F	F	D	F	D	F	F	F	F	F	F	F
Approach Delay (s)	411.8	355.2	187.7	355.2	355.2	355.2	355.2	355.2	355.2	355.2	355.2	355.2
Approach LOS	F	F	F	F	F	F	F	F	F	F	F	F

Intersection Summary
 HCM 2000 Control Delay 309.8 HCM 2000 Level of Service F
 HCM 2000 Volume to Capacity ratio 1.91
 Actuated Cycle Length (s) 140.0 Sum of lost time (s) 16.0
 Intersection Capacity Utilization 131.2% ICU Level of Service H
 Analysis Period (min) 15
 dr Defacto Right Lane. Recode with '1' though lane as a right lane.
 c Critical Lane Group

Lanes, Volumes, Timings
102: GO Bus Terminal/Argus Rd & Cross Ave

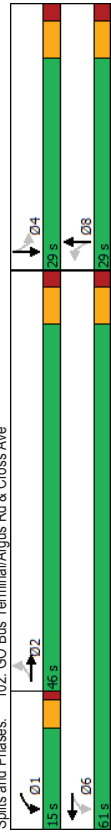
Lanes, Volumes, Timings
102: GO Bus Terminal/Argus Rd & Cross Ave

Background 2037
All Peak Hour

Background 2037
All Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	4	4	4	4	4	4	4	4	4	4	4	4
Traffic Volume (vph)	47	926	82	212	960	51	95	0	240	127	22	120
Future Volume (vph)	47	926	82	212	960	51	95	0	240	127	22	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.6
Storage Length (m)	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	15.0	0.0	0.0
Storage Lanes	1	0	0	1	0	0	1	0	1	0	1	0
Taper Length (m)	7.5	0.95	0.95	7.5	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.96	0.99	0.99	0.99	0.99
Ped Bike Factor	1.00	1.00	0.097	1.00	0.992	0.992	0.850					
Frt	0.984											
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1570	2860	0	818	3180	0	805	734	0	1570	1249	0
FltP Permitted	0.245			0.097			0.579			0.307		
Satd. Flow (perm)	405	2860	0	84	3180	0	490	734	0	502	1249	0
Right Turn on Red		Yes			Yes		Yes		Yes		Yes	
Satd. Flow (RTOR)	19			13			198			111		
Link Speed (k/h)	50			50			50			50		
Link Distance (m)	207.1			92.7			81.9			126.3		
Travel Time (s)	14.9			6.7			5.9			9.1		
Conf. Peds. (#/hr)	1	3	3	3	3	1	3	20	20	20	3	3
Peak Hour Factor	0.52	0.87	0.65	0.84	0.88	0.79	0.53	0.25	0.70	0.78	0.62	0.89
Heavy Vehicles (%)	0%	1%	100%	92%	1%	5%	95%	0%	91%	0%	93%	0%
Adj. Flow (vph)	90	1064	126	252	1091	65	179	0	343	163	35	135
Shared Lane Traffic (%)												
Lane Group Flow (vph)	90	1190	0	252	1156	0	179	343	0	163	170	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width (m)	3.3			3.3			3.3			3.3		
Link Offset (m)	0.0			0.0			0.0			0.0		
Crosswalk Width (m)	4.8			4.8			4.8			4.8		
Two way Left Turn Lane												
Headway Factor	1.19	1.14	1.14	1.19	1.14	1.14	1.14	1.14	1.14	1.19	1.14	1.14
Turning Speed (k/h)	24	14	14	24	14	14	24	14	14	24	14	14
Number of Detectors	1	2	1	1	2	1	2	1	2	1	2	1
Detector Template	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru
Leading Detector (m)	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4			9.4			9.4			9.4		
Detector 2 Size (m)	0.6			0.6			0.6			0.6		
Detector 2 Type	Ch+Ex			Ch+Ex			Ch+Ex			Ch+Ex		
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		0.0
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	2	1	6				8			4		4
Permitted Phases	2	2	2	6	1	6	8	8	8	4	4	4
Detector Phase	2	2	2	1	6	8	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	22.0	22.0	8.0	22.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	45.0	45.0	12.5	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0
Total Split (s)	46.0	46.0	15.0	61.0	61.0	61.0	61.0	61.0	61.0	61.0	61.0	61.0
Total Split (%)	51.1%	51.1%	16.7%	67.8%	32.2%	32.2%	32.2%	32.2%	32.2%	32.2%	32.2%	32.2%
Maximum Green (s)	40.0	40.0	11.0	55.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead									
Lead-Lag Optimize?	Yes	Yes	Yes									
Vehicle Extension (s)	5.0	5.0	2.5	5.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Recall Mode	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Act Effct Green (s)	41.4	41.4	56.4	56.4	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
Actuated g/C Ratio	0.46	0.46	0.63	0.63	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28
v/c Ratio	0.48	0.89	1.76	0.58	1.31	0.99	1.16	0.40	0.40	1.16	0.40	0.40
Control Delay	27.2	31.8	393.8	10.8	212.5	62.2	160.5	13.3	13.3	160.5	13.3	13.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.2	31.8	393.8	10.8	212.5	62.2	160.5	13.3	13.3	160.5	13.3	13.3
LOS	C	C	F	B	E	F	E	F	E	F	B	B
Approach Delay	31.5			79.4			113.8			85.4		
Approach LOS	C			E			F			F		
Intersection Summary												
Area Type:	CBD											
Cycle Length:	90											
Actuated Cycle Length:	89.4											
Natural Cycle:	100											
Control Type:	Semi Act-Uncoordinated											
Maximum v/c Ratio:	1.76											
Intersection Signal Delay:	67.7											
Intersection Capacity Utilization:	90.1%											
Analysis Period (min):	15											



Queues
102: GO Bus Terminal/Argus Rd & Cross Ave

Background 2037
AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group	90	1190	252	1156	179	343	163	170
Lane Group Flow (vph)	0.48	0.89	1.76	0.58	1.31	0.99	1.16	0.40
v/c Ratio	27.2	31.8	393.8	10.8	212.5	62.2	160.5	13.3
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	27.2	31.8	393.8	10.8	212.5	62.2	160.5	13.3
Total Delay	12.1	#124.0	#93.8	71.2	#38.6	0.0	#61.7	11.1
Queue Length 50th (m)	10.8	98.3	-61.4	56.6	-42.4	30.8	-35.7	8.1
Queue Length 95th (m)	12.1	#124.0	#93.8	71.2	#38.6	0.0	#61.7	11.1
Internal Link Dist (m)	183.1		68.7		57.9		102.3	
Turn Bay Length (m)	20.0		20.0		15.0		15.0	
Base Capacity (vph)	190	1354	143	2032	137	347	140	429
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	0.47	0.88	1.76	0.57	1.31	0.99	1.16	0.40
Intersection Summary								
~ Volume exceeds capacity, queue is theoretically infinite.								
Queue shown is maximum after two cycles.								
# 95th percentile volume exceeds capacity, queue may be longer.								
Queue shown is maximum after two cycles.								

HCM Signalized Intersection Capacity Analysis
102: GO Bus Terminal/Argus Rd & Cross Ave

Background 2037
AM Peak Hour

Movement	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR	
Lane Configurations	47	926	82	212	960	51	95	0	240	
Traffic Volume (vph)	47	926	82	212	960	51	95	0	240	
Future Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Ideal Flow (vphpl)	3.3	3.6	3.6	3.3	3.6	3.3	3.6	3.3	3.6	
Lane Width	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Total Lost time (s)	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.00	
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	
Frt	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.88	
Flt Protected	1570	2860	818	3179	803	734	1563	1249		
Satd. Flow (prot)	0.25	1.00	0.10	1.00	0.58	1.00	0.31	1.00		
Flt Permitted	405	2860	84	3179	490	734	502	1249		
Satd. Flow (perm)	0.52	0.87	0.65	0.84	0.88	0.79	0.53	0.25	0.70	
Peak-hour factor, PHF	90	1064	126	252	1091	65	179	0	343	
Adj. Flow (vph)	0	10	0	0	5	0	143	0	80	
RTOR Reduction (vph)	90	1180	0	252	1151	0	179	200	0	
Lane Group Flow (vph)	1	3	3	3	1	3	20	20	3	
Conf. Peds. (#/hr)	0%	1%	100%	92%	1%	5%	95%	0%	91%	
Heavy Vehicles (%)	Perm	NA	NA	pm+pt	NA	Perm	NA	Perm	NA	
Turn Type	2	6	1	6	8	8	4	4	4	
Protected Phases	39.4	39.4	54.4	54.4	23.0	23.0	23.0	23.0	23.0	
Permitted Phases	41.4	41.4	54.4	56.4	25.0	25.0	25.0	25.0	25.0	
Actuated Green, G (s)	0.46	0.46	0.61	0.63	0.28	0.28	0.28	0.28	0.28	
Effective Green, g (s)	6.0	6.0	4.0	6.0	6.0	6.0	6.0	6.0	6.0	
Actuated g/C Ratio	5.0	5.0	2.5	5.0	4.0	4.0	4.0	4.0	4.0	
Clearance Time (s)	187	1324	141	2005	137	205	140	349		
Vehicle Extension (s)	0.41	0.22	0.36	0.27	0.32	0.27	0.32	0.07		
Lane Grp Cap (vph)	0.48	0.89	1.79	0.57	1.31	0.98	1.16	0.26		
v/s Ratio Prot	16.6	21.9	25.0	9.5	32.2	31.9	32.2	25.0		
v/s Ratio Perm	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
v/c Ratio	4.0	8.4	381.2	0.6	180.7	56.0	127.0	0.5		
Uniform Delay, d1	20.6	30.4	406.2	10.2	212.9	87.9	159.2	25.5		
Progression Factor	C	C	F	B	F	F	F	C		
Incremental Delay, d2	C	C	F	B	F	F	F	C		
Delay (s)	29.7	29.7	81.1	130.7	130.7	130.7	91.0	91.0		
Level of Service	C	C	F	B	F	F	F	C		
Approach Delay (s)	C	C	F	F	F	F	F	F		
Approach LOS	C	C	F	F	F	F	F	F		
Intersection Summary										
HCM 2000 Control Delay	70.7								HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.64									
Actuated Cycle Length (s)	89.4								Sum of lost time (s)	12.0
Intersection Capacity Utilization	90.1%								ICU Level of Service	E
Analysis Period (min)	15									
c. Critical Lane Group										

Lanes, Volumes, Timings
104: Trafalgar Rd & Cornwall Rd

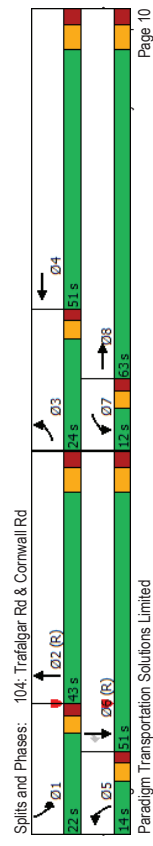
Background 2037
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT
Traffic Volume (vph)	635	706	113	22	604	702	83	623	66	475	461	407
Future Volume (vph)	635	706	113	22	604	702	83	623	66	475	461	407
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.3	3.6	3.3	3.5
Storage Length (m)	80.0	0.0	80.0	0.0	25.0	0.0	80.0	0.0	80.0	0.0	0.0	1
Storage Lanes	2	0	1	0	1	0	1	0	1	0	1	1
Taper Length (m)	7.5	0.95	0.95	7.5	0.95	0.95	7.5	0.95	7.5	0.95	7.5	0.80
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	1.00	0.80	0.95	0.97	0.80	0.95	1.00
Ped Bike Factor	1.00	0.99	1.00	0.98	1.00	0.99	1.00	0.99	1.00	0.99	0.98	0.98
Frt	0.971			0.921			0.984			0.850		0.850
Flt Protected	0.950			0.950			0.950			0.950		0.950
Satd. Flow (prot)	2987	3029	0	1481	2834	0	1540	2658	0	2929	1341	1356
Flt Permitted	0.950			0.950			0.950			0.950		0.950
Satd. Flow (perm)	2973	3029	0	1475	2834	0	1531	2658	0	2892	1341	1324
Right Turn on Red	Yes			Yes			Yes			Yes		Yes
Satd. Flow (RTOR)	26			216			7			274		274
Link Speed (k/h)	50			50			50			50		50
Link Distance (m)	285.8			142.3			311.4			130.3		130.3
Travel Time (s)	20.6			10.2			22.4			9.4		9.4
Confl. Peds. (#/hr)	25			7			25			18		18
Peak Hour Factor	0.93	0.91	0.60	0.75	0.86	0.90	0.60	0.86	0.75	0.84	0.86	0.80
Heavy Vehicles (%)	2%	4%	1%	6%	3%	3%	2%	1%	0%	4%	2%	6%
Adj. Flow (vph)	683	776	188	29	702	780	138	724	88	565	536	509
Shared Lane Traffic (%)												
Lane Group Flow (vph)	683	964	0	29	1482	0	138	812	0	585	536	509
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Left	Right
Median Width (m)	6.6			6.6			6.6			6.6		6.6
Link Offset (m)	0.0			0.0			0.0			0.0		0.0
Crosswalk Width (m)	4.8			4.8			4.8			4.8		4.8
Two way Left Turn Lane	1.19	1.14	1.14	1.19	1.14	1.14	1.19	1.14	1.14	1.19	1.14	1.16
Headway Factor	24	14	14	24	14	14	24	14	14	24	14	14
Turning Speed (k/h)	1	2	1	1	2	1	2	1	2	1	2	1
Number of Detectors	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Right	Right
Detector Template	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	2.0
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	2.0
Detector 1 Type	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex
Detector 1 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4			9.4			9.4			9.4		9.4
Detector 2 Size (m)	0.6			0.6			0.6			0.6		0.6
Detector 2 Type	C+Ex			C+Ex			C+Ex			C+Ex		C+Ex
Detector 2 Channel	0.0			0.0			0.0			0.0		0.0

Lanes, Volumes, Timings
104: Trafalgar Rd & Cornwall Rd

Background 2037
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		0.0
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	3	8	7	4	7	4	5	2	1	6	1	6
Permitted Phases	3	8	7	4	7	4	5	2	1	6	1	6
Switch Phase	7.0	10.0	7.0	10.0	7.0	10.0	7.0	10.0	7.0	10.0	7.0	10.0
Minimum Initial (s)	12.0	37.0	12.0	37.0	12.0	37.0	12.0	39.0	12.0	39.0	12.0	39.0
Minimum Split (s)	24.0	63.0	12.0	51.0	14.0	43.0	14.0	43.0	14.0	43.0	14.0	43.0
Total Split (%)	17.1%	45.0%	8.6%	36.4%	10.0%	30.7%	10.0%	30.7%	15.7%	36.4%	15.7%	36.4%
Maximum Green (s)	19.0	56.0	7.0	44.0	9.0	36.0	17.0	44.0	17.0	44.0	17.0	44.0
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0
Lost Time Adjust (s)	-1.0	-3.0	-1.0	-3.0	-1.0	-3.0	-1.0	-3.0	-1.0	-3.0	-1.0	-3.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Recall Mode	Max	Max	Max	Max	Max	Max	None	C-Max	Max	C-Max	Max	C-Max
Walk Time (s)	7.0			7.0			7.0			7.0		7.0
Flash Dont Walk (s)	23.0			23.0			25.0			25.0		25.0
Pedestrian Calls (#/hr)	0			0			0			0		0
Ad Effct Green (s)	20.0	59.0	8.0	47.0	10.0	39.0	10.0	39.0	18.0	47.0	18.0	47.0
Actuated g/C Ratio	0.14	0.42	0.06	0.34	0.07	0.28	0.13	0.34	0.13	0.34	0.13	0.34
v/c Ratio	1.60	0.75	0.35	1.35	0.25	1.09	0.25	1.09	1.50	1.19	1.50	1.19
Control Delay	319.7	37.6	75.1	197.6	219.7	106.6	219.7	106.6	275.9	124.9	275.9	124.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	319.7	37.6	75.1	197.6	219.7	106.6	219.7	106.6	275.9	124.9	275.9	124.9
LOS	F	D	E	F	F	F	F	F	F	F	F	B
Approach Delay	154.6			195.2			123.0			143.6		143.6
Approach LOS	F			F			F			F		F
Intersection Summary	CBD											
Area Type:	CBD											
Cycle Length:	140											
Actuated Cycle Length:	140											
Offset: 0 (0%):	Referenced to phase 2:NBT and 6:SBT, Start of Green, Master Intersection											
Natural Cycle:	150											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	1.60											
Intersection Signal Delay:	157.0											
Intersection Capacity Utilization:	120.1%											
Analysis Period (min):	15											
* User Entered Value												



	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	683	964	29	1482	138	812	565	536	509
v/c Ratio	1.60	0.75	0.35	1.35	1.25	1.09	1.50	1.19	0.81
Control Delay	319.7	37.6	75.1	197.6	219.7	106.6	275.9	124.9	16.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	319.7	37.6	75.1	197.6	219.7	106.6	275.9	124.9	16.4
Queue Length 50th (m)	~146.3	120.3	8.3	~275.7	~50.2	~165.3	~120.7	~231.8	31.3
Queue Length 95th (m)	#186.2	147.8	16.3	#298.0	#52.6	#200.3	m#82.7	m128.6	m16.6
Internal Link Dist (m)	261.8		118.3		287.4			106.3	
Turn Bay Length (m)	80.0		80.0		25.0		80.0		
Base Capacity (vph)	426	1291	84	1094	110	745	376	450	626
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.60	0.75	0.35	1.35	1.25	1.09	1.50	1.19	0.81

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

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Movement	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	TT	TT	T	T	T	T	TT	TT	T
Traffic Volume (vph)	635	706	113	22	604	702	83	623	66
Future Volume (vph)	635	706	113	22	604	702	83	623	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.3	3.6	3.3	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.95	1.00	0.80	0.97	0.80	1.00
Frb. ped/bikes	1.00	0.99	1.00	0.98	1.00	1.00	1.00	1.00	0.98
Frb. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97	1.00	0.92	1.00	0.98	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	2987	3028	1481	2835	1540	2658	2929	1341	1324
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	2987	3028	1481	2835	1540	2658	2929	1341	1324
Peak-hour factor, PHF	0.93	0.91	0.60	0.75	0.86	0.90	0.60	0.86	0.75
Adj. Flow (vph)	683	776	188	29	702	780	138	724	88
RTOR Reduction (vph)	0	15	0	0	143	0	0	5	0
Lane Group Flow (vph)	683	949	0	29	1339	0	138	807	0
Conf. Peds. (#/hr)	25	7	7	7	25	9	18	18	9
Heavy Vehicles (%)	2%	4%	1%	6%	3%	2%	1%	0%	4%
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Prot
Protected Phases	3	8	7	4	5	2	1	6	6
Permitted Phases	190	560	70	440	90	360	170	440	440
Actuated Green, G (s)	20.0	59.0	8.0	47.0	10.0	39.0	18.0	47.0	47.0
Effective Green, g (s)	0.14	0.42	0.06	0.34	0.07	0.28	0.13	0.34	0.34
Actuated g/C Ratio	5.0	7.0	5.0	7.0	5.0	7.0	5.0	7.0	7.0
Clearance Time (s)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Vehicle Extension (s)	426	1276	84	951	110	740	376	450	444
Lane Grp Cap (vph)	c0.23	0.31	0.02	c0.47	0.09	0.30	c0.19	c0.40	0.25
v/s Ratio Prot	1.60	0.74	0.35	1.41	1.25	1.09	1.50	1.19	0.74
v/c Ratio	60.0	34.1	63.5	46.5	65.0	50.5	61.0	46.5	41.0
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.87
Progression Factor	282.3	4.0	10.9	189.7	169.2	60.5	227.5	88.2	1.0
Incremental Delay, d2	342.3	38.1	74.4	236.2	234.2	111.0	306.7	128.7	32.8
Delay (s)	F	D	E	F	F	F	F	F	C
Level of Service	F	D	E	F	F	F	F	F	C
Approach Delay (s)	164.2		233.1		128.9		160.9		F
Approach LOS	F		F		F		F		F

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Intersection Summary									
HCM 2000 Control Delay	175.6								F
HCM 2000 Volume to Capacity ratio	1.41								
Actuated Cycle Length (s)	140.0								16.0
Intersection Capacity Utilization	120.1%								H
Analysis Period (min)	15								
c Critical Lane Group									

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	1101	969	0	1680	2019	0
Future Volume (vph)	1101	969	0	1680	2019	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.5	3.6	3.6	3.6	3.6
Lane Util. Factor	0.97	1.00	1.00	*0.80	*0.80	1.00
Flt Protected	0.950					
Satd. Flow (prot)	2958	1423	0	3872	3946	0
Flt Permitted	0.950					
Satd. Flow (perm)	2958	1423	0	3872	3946	0
Right Turn on Red	Yes					Yes
Satd. Flow (RTOR)	1					
Link Speed (km/h)	50			50	50	
Link Distance (m)	199.2			51.4	324.8	
Travel Time (s)	14.3			3.7	23.4	
Peak Hour Factor	0.98	0.92	0.25	0.91	0.90	0.25
Heavy Vehicles (%)	3%	1%	0%	6%	4%	0%
Adj. Flow (vph)	1123	1053	0	1846	2243	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1123	1053	0	1846	2243	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Right
Median Width(m)	6.6			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.19	1.16	1.14	1.14	1.14	1.14
Turning Speed (km/h)	24	14	24		14	
Number of Detectors	1	Right	Thru	2	2	
Detector Template	2.0	2.0	10.0	10.0	10.0	
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	2.0	2.0	0.6	0.6	0.6	
Detector 1 Size(m)	2.0	2.0	0.6	0.6	0.6	
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)			9.4	9.4		
Detector 2 Size(m)			0.6	0.6		
Detector 2 Type			Ch+Ex	Ch+Ex		
Detector 2 Channel						
Detector 2 Extend (s)			0.0	0.0		
Turn Type	Prot	Perm	NA	NA	NA	
Protected Phases	4		2	2	2	
Permitted Phases	4	4		2	2	
Detector Phase	4	4		2	2	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	10.0	10.0		29.0	29.0	
Minimum Split (s)	38.0	38.0		36.0	36.0	
Total Split (s)	76.0	76.0		64.0	64.0	
Total Split (%)	54.3%	54.3%		45.7%	45.7%	
Maximum Green (s)	69.0	69.0		57.0	57.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	24.0	24.0		22.0	22.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Ad Effct Green (s)	72.0	72.0		60.0	60.0	
Actuated g/C Ratio	0.51	0.51		0.43	0.43	
v/c Ratio	0.74	1.44		1.11	1.33	
Control Delay	30.3	234.2		99.1	178.4	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	30.3	234.2		99.1	178.4	
LOS	C	F		F	F	
Approach Delay	129.0			99.1	178.4	
Approach LOS	F			F	F	
Intersection Summary	CBD					
Area Type:	CBD					
Cycle Length:	140					
Actuated Cycle Length:	140					
Offset:	133.6 (95%), Referenced to phase 2:NBSB and 6:, Start of Green					
Natural Cycle:	75					
Control Type:	Actuated-Coordinated					
Maximum v/c Ratio:	1.44					
Intersection Signal Delay:	137.9					
Intersection Capacity Utilization:	116.7%					
Analysis Period (min):	15					
* User Entered Value						

	EBL	EBR	NBT	SBT
Lane Group	1123	1053	1846	2243
Lane Group Flow (vph)	0.74	1.44	1.11	1.33
v/c Ratio	30.3	234.2	99.1	178.4
Control Delay	0.0	0.0	0.0	0.0
Queue Delay	30.3	234.2	99.1	178.4
Total Delay	128.5	~418.0	~256.8	~351.8
Queue Length 50th (m)	156.5	#503.3	m126.1	m#343.8
Queue Length 95th (m)	175.2		27.4	300.8
Internal Link Dist (m)				
Turn Bay Length (m)	1521	732	1659	1691
Base Capacity (vph)	0	0	0	0
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.74	1.44	1.11	1.33

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

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	TT	TT	TT	TT	TT	TT
Traffic Volume (vph)	1101	969	0	1680	2019	0
Future Volume (vph)	1101	969	0	1680	2019	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.5	3.6	3.6	3.6	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00		*0.80	*0.80	
Ft	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	2958	1423		3872	3946	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	2958	1423		3872	3946	
Peak-hour factor, PHF	0.98	0.92	0.25	0.91	0.90	0.25
Adj. Flow (vph)	1123	1053	0	1846	2243	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1123	1053	0	1846	2243	0
Heavy Vehicles (%)	3%	1%	0%	6%	4%	0%
Turn Type	Prot	Perm	NA	NA	NA	
Protected Phases	4			2	2	
Permitted Phases		4				
Actuated Green, G (s)	69.0	69.0		57.0	57.0	
Effective Green, g (s)	72.0	72.0		60.0	60.0	
Actuated g/C Ratio	0.51	0.51		0.43	0.43	
Clearance Time (s)	7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	1521	731		1659	1691	
v/s Ratio Prot	0.38			0.48	c0.57	
v/s Ratio Perm	0.74	1.44		1.11	1.33	
Uniform Delay, d1	26.6	34.0		40.0	40.0	
Progression Factor	1.00	1.00		1.31	0.83	
Incremental Delay, d2	1.9	205.7		51.7	148.4	
Delay (s)	28.5	239.7		104.0	181.7	
Level of Service	C	F		F	F	
Approach Delay (s)	130.7			104.0	181.7	
Approach LOS	F			F	F	
Intersection Summary						
HCM 2000 Control Delay			141.1		HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			1.39			
Actuated Cycle Length (s)			140.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			116.7%		ICU Level of Service	H
Analysis Period (min)			15			

c Critical Lane Group

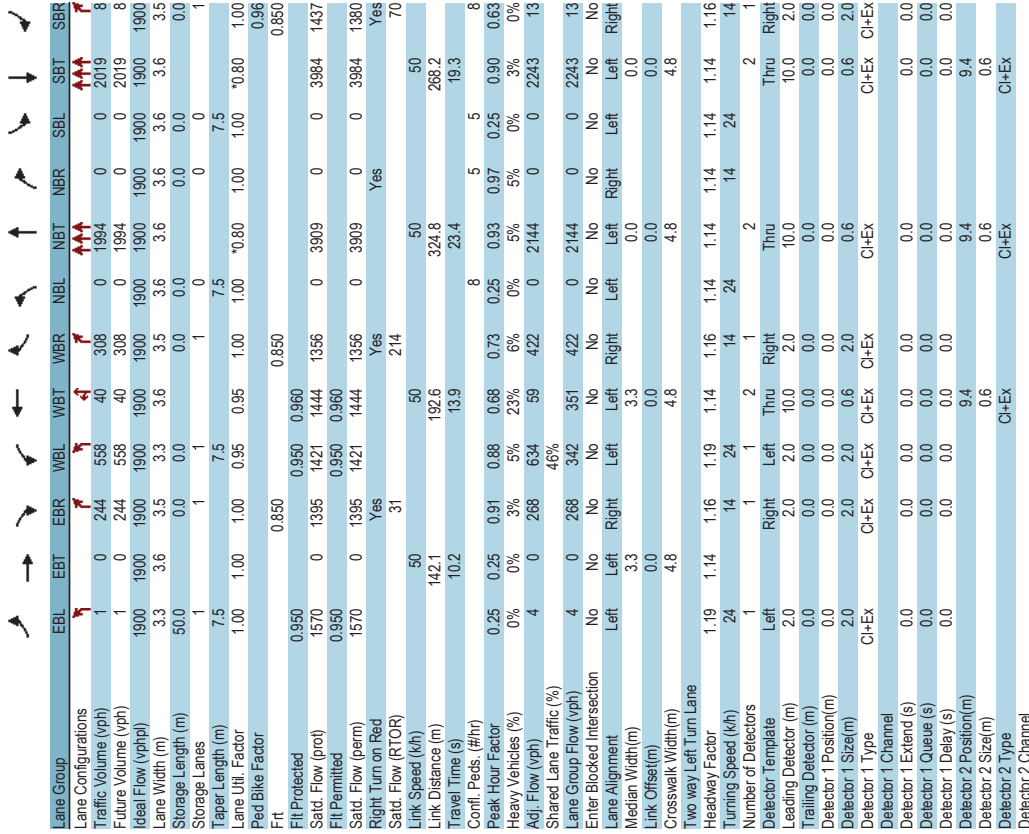
Lanes, Volumes, Timings
106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

Lanes, Volumes, Timings
106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	0	244	558	40	308	0	1994	0	0	2019	8
Traffic Volume (vph)	1	0	244	558	40	308	0	1994	0	0	2019	8
Future Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	3.3	3.6	3.5	3.3	3.6	3.5	3.6	3.6	3.6	3.6	3.6	3.5
Lane Width (m)	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
Storage Length (m)	7.5	1.0	1.0	7.5	0.95	1.00	1.00	0.80	1.00	1.00	0.80	1.00
Taper Length (m)	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.80	1.00	1.00	0.80	1.00
Lead Util. Factor	0.950	0.950	0.950	0.960	0.960	0.850	0.850	0.850	0.850	0.850	0.850	0.850
Fit Protected	1570	0	1395	1421	1444	1356	0	3909	0	0	3984	1437
Satd. Flow (prot)	0.950	0.950	0.950	0.960	0.960	0.850	0.850	0.850	0.850	0.850	0.850	0.850
Flt Permitted	1570	0	1395	1421	1444	1356	0	3909	0	0	3984	1380
Satd. Flow (perm)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Right Turn on Red	31											
Satd. Flow (RTOR)	50			50			50			50		50
Link Speed (km/h)	142.1			192.6			324.8			268.2		268.2
Link Distance (m)	10.2			13.9			23.4			19.3		19.3
Travel Time (s)	0.25	0.25	0.91	0.88	0.73	0.25	0.93	0.97	0.25	0.90	0.90	0.63
Peak Hour Factor	0%	0%	3%	5%	23%	6%	0%	5%	5%	0%	3%	0%
Heavy Vehicles (%)	4	0	268	634	59	422	0	2144	0	0	2243	13
Adj. Flow (vph)	46%											
Shared Lane Traffic (%)	4	0	268	342	351	422	0	2144	0	0	2243	13
Lane Group Flow (vph)	No	No	No	No	No	No	No	No	No	No	No	No
Enter Blocked Intersection	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Lane Alignment	3.3			3.3								
Median Width (m)	0.0			0.0			0.0			0.0		0.0
Link Offset (m)	0.0			0.0			0.0			0.0		0.0
Crosswalk Width (m)	4.8			4.8			4.8			4.8		4.8
Two way Left Turn Lane	1.19	1.14	1.16	1.19	1.14	1.16	1.14	1.14	1.14	1.14	1.14	1.16
Headway Factor	24	14	24	24	14	24	14	24	14	24	24	14
Turning Speed (km/h)	1	1	1	1	2	1	2	2	2	2	2	1
Number of Detectors	Left	Right	Thru	Left	Right	Thru	Left	Right	Left	Right	Thru	Right
Detector Template	2.0	2.0	10.0	2.0	10.0	2.0	10.0	10.0	2.0	10.0	2.0	2.0
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	2.0	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 1 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4			9.4			9.4			9.4		9.4
Detector 2 Size (m)	0.6			0.6			0.6			0.6		0.6
Detector 2 Type	Ch+Ex			Ch+Ex			Ch+Ex			Ch+Ex		Ch+Ex
Detector 2 Channel												

Lanes, Volumes, Timings
106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		0.0
Turn Type	Prot	Perm	Perm	NA	Perm	NA	NA	NA	NA	NA	NA	Perm
Protected Phases	3			4			4			6		2
Permitted Phases	3			8			4			4		2
Detector Phase	3			8			4			4		2
Switch Phase												
Minimum Initial (s)	7.0			10.0			10.0			5.0		28.0
Minimum Split (s)	23.0			38.0			38.0			35.0		35.0
Total Split (s)	23.0			61.0			38.0			79.0		79.0
Total Split (%)	16.4%			43.6%			27.1%			56.4%		56.4%
Maximum Green (s)	18.0			54.0			31.0			72.0		72.0
Yellow Time (s)	3.0			4.0			4.0			4.0		4.0
All-Red Time (s)	2.0			3.0			3.0			3.0		3.0
Lost Time Adjust (s)	-1.0			-3.0			-3.0			-3.0		-3.0
Total Lost Time (s)	4.0			4.0			4.0			4.0		4.0
Lead/Lag	Lead			Lag			Lag			Lag		Lag
Lead-Lag Optimizer?	Yes			Yes			Yes			Yes		Yes
Vehicle Extension (s)	3.0			3.0			3.0			3.0		4.5
Recall Mode	Min			Min			Min			Min		C-Min
Walk Time (s)	7.0			7.0			7.0			7.0		7.0
Flash Dont Walk (s)	24.0			24.0			24.0			24.0		21.0
Pedestrian Calls (#/hr)	0			0			0			0		0
Ad Effct Green (s)	8.0			56.6			44.6			75.4		75.4
Actuated g/C Ratio	0.06			0.40			0.32			0.54		0.54
v/c Ratio	0.04			0.46			0.76			1.02		1.05
Control Delay	64.0			29.7			55.2			48.6		64.5
Queue Delay	0.0			0.0			0.0			0.0		0.0
Total Delay	64.0			29.7			55.2			48.6		64.5
LOS	E			C			D			E		A
Approach Delay	30.2			C			45.0			D		64.1
Approach LOS	C			D			D			D		E
Intersection Summary	CBD											
Area Type:	CBD											
Cycle Length:	140											
Actuated Cycle Length:	140											
Offset:	115.4 (82%), Referenced to phase 2:SBT and 6:NBT, Start of Green											
Natural Cycle:	150											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	1.05											
Intersection Signal Delay:	53.1											
Intersection Capacity Utilization:	88.5%											
Analysis Period (min):	15											
* User Entered Value												



	EBL	EBR	WBL	WBR	NBT	SBT	SBR
Lane Group	4	268	342	351	422	2144	2243
Lane Group Flow (vph)	0.04	0.46	0.76	0.76	0.73	1.02	1.05
v/c Ratio	0.04	0.46	0.76	0.76	0.73	1.02	1.05
Control Delay	64.0	29.7	54.9	55.2	28.5	48.6	64.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.0	29.7	54.9	55.2	28.5	48.6	64.5
Queue Length 50th (m)	1.1	49.7	93.7	96.6	55.6	~273.2	~296.2
Queue Length 95th (m)	1.4	76.9	131.0	94.4	59.5	m182.7	#329.2
Internal Link Dist (m)			168.6		300.8	244.2	
Turn Bay Length (m)	50.0						
Base Capacity (vph)	213	586	452	460	577	2105	2146
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.46	0.76	0.76	0.73	1.02	1.05
Intersection Summary							
~ Volume exceeds capacity, queue is theoretically infinite.							
Queue shown is maximum after two cycles.							
# 95th percentile volume exceeds capacity, queue may be longer.							
Queue shown is maximum after two cycles.							
m Volume for 95th percentile queue is metered by upstream signal.							

	EBL	EBS	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	1	0	244	558	40	308	0	1994	0	0	0	2019
Traffic Volume (vph)	1	0	244	558	40	308	0	1994	0	0	0	2019
Future Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	3.3	3.6	3.5	3.3	3.6	3.5	3.6	3.6	3.6	3.6	3.6	3.6
Lane Width	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00	1.00	0.80	1.00	1.00	1.00	0.80
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt	0.95	1.00	0.85	1.00	1.00	0.85	1.00	1.00	1.00	1.00	1.00	0.85
Flt Protected	1570	1395	1421	1444	1356	3909						3984
Satd. Flow (prot)	0.95	1.00	0.95	0.96	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt Permitted	1570	1395	1421	1444	1356	3909						3984
Satd. Flow (perm)	0.25	0.25	0.91	0.88	0.68	0.73	0.25	0.93	0.97	0.25	0.25	0.90
Peak-hour factor, PHF	4	0	268	634	59	422	0	2144	0	0	0	2243
Adj. Flow (vph)	0	0	18	0	0	146	0	0	0	0	0	0
RTOR Reduction (vph)	4	0	250	342	351	276	0	2144	0	0	0	2243
Lane Group Flow (vph)	4	0	250	342	351	276	0	2144	0	0	0	2243
Conf. Peds. (#/hr)	0%	0%	3%	5%	23%	6%	0%	5%	5%	0%	0%	3%
Heavy Vehicles (%)	Prot	Per	Per	Per	NA	Per	NA	Per	NA	Per	NA	Per
Turn Type	3	8	4	4	4	4	6	2	2	2	2	2
Protected Phases	8	4	4	4	4	4	4	2	2	2	2	2
Permitted Phases	7.0	53.6	41.6	41.6	41.6	41.6	72.4	72.4	72.4	72.4	72.4	72.4
Actuated Green, G (s)	8.0	56.6	44.6	44.6	44.6	44.6	75.4	75.4	75.4	75.4	75.4	75.4
Effective Green, g (s)	0.06	0.40	0.32	0.32	0.32	0.32	0.54	0.54	0.54	0.54	0.54	0.54
Actuated G/C Ratio	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Clearance Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	89	563	452	460	431	2105	431	2105	431	2105	431	2105
Lane Grp Cap (vph)	0.00	0.18	0.24	0.24	0.20	0.20	0.55	0.55	0.55	0.55	0.55	0.55
v/s Ratio Prot	0.04	0.44	0.76	0.76	0.64	0.64	1.02	1.02	1.02	1.02	1.02	1.02
v/s Ratio Perm	62.4	30.3	42.8	42.9	40.8	40.8	32.3	32.3	32.3	32.3	32.3	32.3
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.04	1.04	1.04	1.04	1.04
Progression Factor	0.2	0.6	7.1	7.4	3.2	15.5	32.7	32.7	32.7	32.7	32.7	32.7
Incremental Delay, d2	62.6	30.8	49.9	50.3	44.1	49.0	65.0	65.0	65.0	65.0	65.0	65.0
Delay (s)	E	C	D	D	D	D	E	E	E	E	E	E
Level of Service	31.3	47.8	49.0	49.0	49.0	49.0	64.7	64.7	64.7	64.7	64.7	64.7
Approach Delay (s)	C	C	D	D	D	D	E	E	E	E	E	E
Approach LOS												
Intersection Summary												
HCM 2000 Control Delay	54.0						HCM 2000 Level of Service	D				
HCM 2000 Volume to Capacity ratio	0.91											
Actuated Cycle Length (s)	140.0						Sum of lost time (s)	12.0				
Intersection Capacity Utilization	88.5%						ICU Level of Service	E				
Analysis Period (min)	15											
c Critical Lane Group												

Lanes, Volumes, Timings
203: Argus Rd & South Service Rd

Background 2037
AM Peak Hour

EBL	EBT	WBT	WBR	SBL	SBR
↖	→	←	↗	↖	↗
1	31	786	268	92	4
1	31	786	268	92	4
1900	1900	1900	1900	1900	1900
1.00	1.00	1.00	1.00	1.00	1.00
0.997	0.997	0.997	0.954	0.954	0.954
0	1622	1609	0	1622	0
0	1622	1609	0	1622	0
50	50	50	50	50	50
116.7	145.7	145.7	51.8	51.8	51.8
8.4	10.5	10.5	3.7	3.7	3.7
1	1	1	5	5	1
0.25	0.42	0.86	0.72	0.25	0.25
100%	0%	3%	0%	0%	0%
4	74	914	372	368	16
0	78	1286	0	384	0
No	No	No	No	No	No
Left	Left	Right	Left	Right	Right
0.0	0.0	0.0	3.6	3.6	3.6
4.8	4.8	4.8	4.8	4.8	4.8
1.14	1.14	1.14	1.14	1.14	1.14
24	Free	Free	14	24	14
Free	Free	Free	Stop	Stop	Stop

Area Type:	CBD
Control Type:	Unsignalized
Intersection Capacity Utilization	77.0%
ICU Level of Service	D

HCM Unsignalized Intersection Capacity Analysis
203: Argus Rd & South Service Rd

Background 2037
AM Peak Hour

EBL	EBT	WBT	WBR	SBL	SBR
↖	→	←	↗	↖	↗
1	31	786	268	92	4
1	31	786	268	92	4
Free	Free	Free	Stop	Stop	Stop
0%	0%	0%	0%	0%	0%
0.25	0.42	0.86	0.72	0.25	0.25
4	74	914	372	368	16
1	5	5	3.6	3.6	3.6
1.2	1.2	1.2	1.2	1.2	1.2
0	0	0	0	0	0
None	None	None	None	None	None
358	358	358	1188	1102	1102
1287	1287	1287	1188	1102	1102
5.1	5.1	5.1	6.4	6.2	6.2
3.1	3.1	3.1	3.5	3.3	3.3
99	99	99	0	94	94
310	310	310	206	259	259
EB 1	WB 1	SB 1			
78	1286	384			
4	0	368			
0	372	16			
310	1700	208			
0.01	0.76	1.85			
0.3	0.0	218.3			
1.1	0.0	438.1			
A	F	F			
1.1	0.0	438.1			
F	F	F			
Intersection Summary					
Average Delay		96.3			
Intersection Capacity Utilization		77.0%	ICU Level of Service		D
Analysis Period (min)		15			

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	134	0	2023	2182	954
Future Volume (vph)	0	134	0	2023	2182	954
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.5	3.6	3.6	3.6	3.6
Lane Util. Factor	1.00	1.00	1.00	*0.80	*0.80	0.91
Frt	0.865			0.949		
Flt Protected						
Satd. Flow (prot)	0	1367	0	3636	3770	0
Flt Permitted						
Satd. Flow (perm)	0	1367	0	3636	3770	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	145.7			270.2	51.4	
Travel Time (s)	10.5			19.5	3.7	
Confl. Peds. (#/hr)						11
Peak Hour Factor	0.25	0.54	0.25	0.92	0.97	0.82
Heavy Vehicles (%)	0%	7%	0%	7%	4%	2%
Adj. Flow (vph)	0	248	0	2199	2249	1163
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	248	0	2199	3412	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width (m)	0.0	3.3	3.3	3.3	3.3	
Link Offset (m)	0.0	0.0	0.0	0.0	0.0	
Crosswalk Width (m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.14	1.16	1.14	1.14	1.14	1.14
Turning Speed (k/h)	24	14	24			14
Sign Control	Stop			Free	Free	Free
Intersection Summary						
Area Type:	CBD					
Control Type:	Unsignalized					
Intersection Capacity Utilization	86.8%					
Analysis Period (min)	15					
ICU Level of Service	E					
User Entered Value						

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	134	0	2023	2182	954
Future Volume (Veh/h)	0	134	0	2023	2182	954
Sign Control	Stop			Free	Free	Free
Grade	0%			0%	0%	0%
Peak Hour Factor	0.25	0.54	0.25	0.92	0.97	0.82
Hourly flow rate (vph)	0	248	0	2199	2249	1163
Pedestrians	11					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	1					
Right turn flare (veh)				None	None	
Median type						
Median storage (veh)						
Upstream signal (m)				270	52	
pk. platoon unblocked	0.58	0.58	0.58			
VC, conflicting volume	3574	1342	3423			
VC1, stage 1 conf vol						
VC2, stage 2 conf vol						
VCu, unblocked vol	2912	0	2653			
IC, single (s)	6.8	7.0	4.1			
IC, 2 stage (s)						
pl queue free %	3.5	3.4	2.2			
IC (s)	100	60	100			
pl capacity (veh/h)	7	617	93			
Direction_Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2 SB 3
Volume Total	248	733	733	733	900	900 1613
Volume Left	0	0	0	0	0	0 0
Volume Right	248	0	0	0	0	1163
CSH	617	1700	1700	1700	1700	1700
Volume to Capacity	0.40	0.43	0.43	0.43	0.53	0.53 0.95
Queue Length 95th (m)	15.5	0.0	0.0	0.0	0.0	0.0 0.0
Control Delay (s)	14.7	0.0	0.0	0.0	0.0	0.0 0.0
Lane LOS	B					
Approach Delay (s)	14.7	0.0			0.0	
Approach LOS	B					
Intersection Summary						
Average Delay	0.6					
Intersection Capacity Utilization	86.8%					
ICU Level of Service	E					
Analysis Period (min)	15					

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	W					
Lane Configurations						
Traffic Volume (vph)	0	0	0	98	237	553
Future Volume (vph)	0	0	0	98	237	553
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected				0.906		
Satd. Flow (prot)	1863	0	0	1863	1688	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1688	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	103.3			126.3	54.4	
Travel Time (s)	7.4			9.1	3.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	107	258	601
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	107	859	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Right
Median Width(m)	3.6			3.3	3.3	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	Free
Intersection Summary	Other					
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	49.8%					
Analysis Period (min)	15					
ICU Level of Service	A					

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	W					
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	98	237	553
Future Volume (Veh/h)	0	0	0	98	237	553
Sign Control	Stop			Free	Free	Free
Grade	0%			0%	0%	0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	107	258	601
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)				None	None	None
Median type						
Upstream signal (m)				126		
Median storage (veh)						
Upstream unblocked						
VC, conflicting volume	666	558	859			
VC1, stage 1 conf vol						
VC2, stage 2 conf vol						
VCu, unblocked vol	666	558	859			
IC, single (s)	6.4	6.2	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
CM capacity (veh/h)	425	529	782			
Direction_Lane #	EB 1	NB 1	SB 1			
Volume Total	0	107	859			
Volume Left	0	0	0			
Volume Right	0	0	601			
CSH	1700	782	1700			
Volume to Capacity	0.00	0.00	0.51			
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	Intersection Summary					
Average Delay	0.0					
Intersection Capacity Utilization	49.8%					
ICU Level of Service	A					
Analysis Period (min)	15					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		W	
Traffic Volume (vph)	0	1445	1246	0	0	0
Future Volume (vph)	0	1445	1246	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Flt Protected						
Satd. Flow (prot)	0	3185	3185	0	1676	0
Flt Permitted						
Satd. Flow (perm)	0	3185	3185	0	1676	0
Link Speed (k/h)	50	50	50	50	50	50
Link Distance (m)	92.7	130.9	130.9	41.6	41.6	41.6
Travel Time (s)	6.7	9.4	9.4	3.0	3.0	3.0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1571	1354	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1571	1354	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Right	Left	Right
Median Width(m)	3.3	3.3	3.3	3.6	3.6	3.6
Link Offset(m)	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width(m)	4.8	4.8	4.8	4.8	4.8	4.8
Two way Left Turn Lane						
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25	Free	Free	Free	Stop	Stop
Sign Control						
Intersection Summary						
Area Type:	CBD					
Control Type:	Unsignalized					
Intersection Capacity Utilization	47.7%					
Analysis Period (min)	15					
ICU Level of Service A						

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		W	
Traffic Volume (veh/h)	0	1445	1246	0	0	0
Future Volume (Veh/h)	0	1445	1246	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Grade	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1571	1354	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None	None	None	None	None	None
Median storage (veh)						
Upstream signal (m)	93	131				
pX, platoon unblocked					0.64	
vC, conflicting volume	1354				2140	677
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1354				1663	677
IC, single (s)	4.1				6.8	6.9
IC, 2 stage (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
CM capacity (veh/h)	504				57	395
Direction_Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 1
Volume Total	524	1047	903	451	0	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
CSH	504	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.62	0.53	0.27	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS					A	A
Approach Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Approach LOS					A	A
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			47.7%		ICU Level of Service	A
Analysis Period (min)			15			

	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	32	0	0	790	0	0
Traffic Volume (vph)	32	0	0	790	0	0
Future Volume (vph)	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	1.00	1.00	1.00	1.00	1.00	1.00
Fr						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	61.0			116.7	66.7	
Travel Time (s)	4.4			8.4	4.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	35	0	0	859	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	35	0	0	859	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	15			25	25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	44.9%					
Analysis Period (min)	15					
	ICU Level of Service A					

	EBT	EBR	WBL	WBT	NBL	NBR
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	32	0	0	790	0	0
Traffic Volume (veh/h)	32	0	0	790	0	0
Future Volume (Veh/h)	32	0	0	790	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	35	0	0	859	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	242					
pX platoon unblocked						
vC, conflicting volume		35			894	35
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		35			894	35
IC, single (s)		4.1			6.4	6.2
IC, 2 stage (s)						
p0 queue free %		2.2			3.5	3.3
IC capacity (veh/h)		100			100	100
ICM capacity (veh/h)		1576			312	1038
Direction_Lane #	EB 1	WB 1	NB 1			
Volume Total	35	859	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
CSH	1700	1576	1700			
Volume to Capacity	0.02	0.00	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	44.9%					
ICU Level of Service	A					
Analysis Period (min)	15					

Intersection: 101: Trafalgar Rd & Cross Ave/South Service Rd

Movement	EB		EB		WB		WB		NB		NB		B34		B34	
	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR
Directions Served	0	427	49	0	0	0	0	0	0	0	0	0	86	0	559	39
Maximum Queue (m)	104.4	111.8	109.8	32.3	329.7	325.0	48.0	65.2	84.8	148.8	64.4	112.3				
Average Queue (m)	101.5	106.5	70.7	18.8	319.3	300.5	20.8	33.3	42.0	148.8	8.7	101.8				
95th Queue (m)	107.4	109.6	115.0	37.6	327.9	403.4	40.8	58.0	68.7	149.0	43.0	110.4				
Link Distance (m)	104.4	104.4		313.2	313.2		128.1	128.1	128.1	128.1	101.5	101.5				
Upstream Blk Time (%)	8	59	7	89	49	0	0	0	0	0	86	6				
Queuing Penalty (veh)	0	427	49	0	0	0	0	0	0	0	559	39				
Storage Bay Dist (m)	130.0			25.0			50.0				1	1				
Storage Blk Time (%)	8	59		79			1				1	1				
Queuing Penalty (veh)	32	255	18	71	2	1										

Intersection: 101: Trafalgar Rd & Cross Ave/South Service Rd

Movement	B34		SB		SB		SB	
	L	TR	L	TR	L	TR	L	TR
Directions Served	136.8	32.4	249.2	252.2	242.9			
Maximum Queue (m)	127.3	32.2	228.0	198.3	166.4			
Average Queue (m)	133.6	32.8	286.2	295.4	266.4			
95th Queue (m)	101.5		238.9	238.9	238.9			
Link Distance (m)	86		39	3	1			
Upstream Blk Time (%)	564		301	26	10			
Queuing Penalty (veh)	25.0		80	11				
Storage Bay Dist (m)	80		11					
Storage Blk Time (%)	263		47					

Intersection: 102: GO Bus Terminal/Argus Rd & Cross Ave

Movement	EB		EB		WB		WB		NB		NB		SB		SB	
	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR
Directions Served	27.3	213.5	212.2	27.4	73.1	65.4	81.6	85.2	22.4	102.2						
Maximum Queue (m)	11.2	203.1	203.4	24.5	41.6	31.6	45.5	76.8	17.2	44.1						
Average Queue (m)	30.8	209.2	209.5	32.3	75.5	58.4	90.1	94.8	26.6	99.8						
95th Queue (m)	196.3	196.3		72.4	72.4	66.0	66.0	66.0	106.2							
Link Distance (m)	90	82		1	0	11	75	6								
Upstream Blk Time (%)	0	0	0	20.0	3	0	0	0	15.0	15						
Queuing Penalty (veh)	0	88	35	6					52	15						
Storage Bay Dist (m)	0	41	169	14					73	20						
Storage Blk Time (%)																
Queuing Penalty (veh)																

Intersection: 104: Trafalgar Rd & Cornwall Rd

Movement	EB		EB		WB		WB		NB		NB		SB		SB	
	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR
Directions Served	83.7	87.4	279.7	269.7	45.6	131.5	138.7	32.4	294.3	297.4	72.0	79.2				
Maximum Queue (m)	78.8	87.3	270.1	229.6	5.1	114.3	129.2	14.2	286.8	289.7	38.7	42.0				
Average Queue (m)	107.0	87.8	275.7	354.4	22.7	155.8	135.2	33.8	319.6	309.2	63.1	69.3				
95th Queue (m)			264.0	284.0		122.1	122.1		286.8	286.8		101.5				
Link Distance (m)			96	11	16	94	0	0	56	90	0	0				
Upstream Blk Time (%)	80.0	80.0	0	0	0	0	0	0	25.0	0	0	0				
Queuing Penalty (veh)	4	85	2		5		6	26	0	0	1	0				
Storage Bay Dist (m)	14	300	13		1		19	21	0	0	3	0				
Storage Blk Time (%)																
Queuing Penalty (veh)																

Intersection: 104: Trafalgar Rd & Cornwall Rd

Movement	SB		R	
	T	R	T	R
Directions Served	60.2	24.0		
Maximum Queue (m)	26.3	7.9		
Average Queue (m)	52.3	19.1		
95th Queue (m)	101.5	101.5		
Link Distance (m)				
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 105: Trafalgar Rd & QEW EB-Off Ramp

Movement	EB		EB		NB		NB		SB		SB	
	L	R	L	R	L	R	L	R	L	R	L	R
Directions Served	162.3	183.8	189.7	34.0	42.3	38.2	318.7	319.4	313.4			
Maximum Queue (m)	64.9	172.0	182.0	28.6	30.5	29.4	237.8	309.0	306.6			
Average Queue (m)	135.5	229.8	186.2	31.3	37.1	34.1	343.2	317.2	311.5			
95th Queue (m)	176.9	176.9	176.9	27.8	27.8	27.8	300.4	300.4	300.4			
Link Distance (m)	0	36	85	38	40	38	15	31	43			
Upstream Blk Time (%)	0	0	0	258	268	259	142	294	403			
Queuing Penalty (veh)												
Storage Bay Dist (m)												
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB	SB	SB	SB
	L	R	L	TR	T	T	T	T	T	T	T	R
Directions Served												
Maximum Queue (m)	2.9	128.6	180.8	188.3	181.6	62.1	70.8	74.2	270.3	268.8	270.0	269.7
Average Queue (m)	0.1	84.5	145.5	149.8	81.4	30.0	36.8	35.4	260.9	260.8	259.9	253.2
95th Queue (m)	1.6	142.8	211.8	216.9	227.0	56.9	67.0	65.4	266.3	266.0	264.0	313.4
Link Distance (m)	119.7	173.2	173.2	173.2	173.2	300.4	300.4	300.4	254.7	254.7	254.7	254.7
Upstream Blk Time (%)	18	21	39	18	0	0	0	0	80	97	99	73
Queuing Penalty (veh)	0	0	0	0	0	0	0	0	0	0	0	0
Storage Bay Dist (m)	50.0											
Storage Blk Time (%)	61											
Queuing Penalty (veh)	1											

Intersection: 203: Argus Rd & South Service Rd

Movement	EB	WB	SB	SB
	LT	TR	LR	
Directions Served				
Maximum Queue (m)	20.0	27.4	44.4	
Average Queue (m)	3.2	4.3	20.5	
95th Queue (m)	18.2	36.9	44.0	
Link Distance (m)	102.8	112.4	43.0	
Upstream Blk Time (%)	0	16		
Queuing Penalty (veh)	3	0		
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 204: Trafalgar Rd & Argus Rd

Movement	EB	NB	NB	SB	SB	SB	SB	SB
	R	T	T	T	T	TR		
Directions Served								
Maximum Queue (m)	100.8	92.1	74.9	60.9	37.4	47.1	45.1	
Average Queue (m)	65.6	52.0	43.9	39.9	22.3	20.3	20.3	
95th Queue (m)	133.8	78.1	64.7	55.5	43.4	46.2	46.0	
Link Distance (m)	112.4	238.9	238.9	27.8	27.8	27.8	27.8	
Upstream Blk Time (%)	21			25	4	3		
Queuing Penalty (veh)	26			251	41	29		
Storage Bay Dist (m)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 207: Argus Rd & East-West Local Rd

Movement	SB	B14	T
	TR		
Directions Served			
Maximum Queue (m)	21.0	12.7	
Average Queue (m)	5.3	4.4	
95th Queue (m)	31.9	30.4	
Link Distance (m)	35.6	42.1	
Upstream Blk Time (%)	5	4	
Queuing Penalty (veh)	42	33	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 302: Cross Ave & East Driveway Access

Movement	EB	EB	WB	T
	LT			
Directions Served				
Maximum Queue (m)	83.6	99.5	5.2	
Average Queue (m)	75.4	67.9	0.2	
95th Queue (m)	80.4	113.6	2.7	
Link Distance (m)	72.4	72.4	104.4	
Upstream Blk Time (%)	48	27		
Queuing Penalty (veh)	313	174		
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 303: North Driveway & Argus Rd

Movement	WB	WB	WB
	LT		
Directions Served			
Maximum Queue (m)	21.2		
Average Queue (m)	5.5		
95th Queue (m)	40.8		
Link Distance (m)	102.8		
Upstream Blk Time (%)	1		
Queuing Penalty (veh)	12		
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 5919

Lanes, Volumes, Timings
101: Trafalgar Rd & Cross Ave/South Service Rd

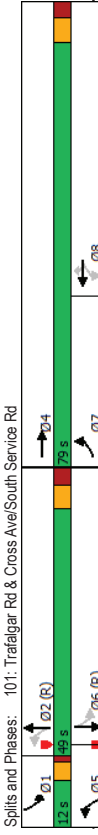
Lanes, Volumes, Timings
101: Trafalgar Rd & Cross Ave/South Service Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT
Traffic Volume (vph)	1305	410	212	302	350	378	284	1400	199	187	1407	601
Future Volume (vph)	1305	410	212	302	350	378	284	1400	199	187	1407	601
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.6	3.3	3.6	3.5	3.3	3.6	3.6	3.3	3.6	3.6
Storage Length (m)	130.0	0.0	25.0	0.0	25.0	0.0	50.0	0.0	25.0	0.0	25.0	0.0
Storage Lanes	1	0	1	1	1	1	1	1	1	1	1	1
Taper Length (m)	7.5	1.00	1.00	7.5	1.00	1.00	7.5	1.00	7.5	1.00	7.5	1.00
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.80	0.91	1.00	0.80	0.91	0.99
Ped Bike Factor	1.00	0.99	0.99	0.99	0.99	0.99	0.97	0.97	0.99	0.97	0.99	0.99
Frt	0.942			0.850			0.980		0.980		0.955	
Flt Protected	0.950			0.950			0.950		0.950		0.950	
Satd. Flow (prot)	2795	1475	0	1525	1583	1382	1428	3804	0	1525	3754	0
Flt Permitted	0.950			0.129			0.095		0.100		0.100	
Satd. Flow (perm)	2791	1475	0	207	1583	1362	143	3804	0	160	3754	0
Right Turn on Red	Yes			Yes			Yes		Yes		Yes	
Satd. Flow (RTOR)	34			125			18		80		80	
Link Speed (km/h)	50			50			50		50		50	
Link Distance (m)	122.6			330.4			150.2		270.2		270.2	
Travel Time (s)	8.8			23.8			10.8		19.5		19.5	
Conf. Peds. (#/hr)	1			4			10		52		52	
Peak Hour Factor	0.87	0.77	0.64	0.77	0.77	0.77	0.81	0.88	0.80	0.84	0.84	0.83
Heavy Vehicles (%)	9%	12%	8%	3%	8%	4%	10%	3%	0%	3%	3%	4%
Adj. Flow (vph)	1500	532	331	392	455	491	351	1591	249	223	1675	724
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1500	863	0	392	455	491	351	1840	0	223	2399	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width (m)	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
Link Offset (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width (m)	4.8			4.8			4.8		4.8		4.8	
Two way Left Turn Lane	1.19	1.14	1.14	1.19	1.14	1.16	1.19	1.14	1.14	1.19	1.14	1.14
Headway Factor	24	14	14	24	24	14	24	14	14	24	24	14
Turning Speed (km/h)	1	2	2	1	2	1	1	2	1	2	1	2
Number of Detectors	Left	Thru	Right	Left	Thru	Right	Left	Thru	Left	Thru	Right	Left
Detector Template	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	10.0	2.0	10.0
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 1 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4			9.4			9.4		9.4		9.4	
Detector 2 Size (m)	0.6			0.6			0.6		0.6		0.6	
Detector 2 Type	Ch+Ex			Ch+Ex			Ch+Ex		Ch+Ex		Ch+Ex	
Detector 2 Channel	0.6			0.6			0.6		0.6		0.6	

Lanes, Volumes, Timings
101: Trafalgar Rd & Cross Ave/South Service Rd

Lanes, Volumes, Timings
101: Trafalgar Rd & Cross Ave/South Service Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)	0.0			0.0			0.0		0.0		0.0	
Turn Type	Prot	NA	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4		8		8	5	2	1	6		
Permitted Phases	7	4		8		8	5	2	1	6		
Detector Phase	7	4		8		8	5	2	1	6		
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	7.0	27.0	7.0	27.0	7.0	27.0
Minimum Split (s)	17.0	25.0	25.0	25.0	25.0	25.0	11.5	34.0	11.5	34.0	11.5	34.0
Total Split (s)	29.0	79.0	50.0	50.0	50.0	50.0	14.0	49.0	12.0	47.0	12.0	47.0
Total Split (%)	20.7%	56.4%	35.7%	35.7%	35.7%	35.7%	10.0%	35.0%	8.6%	33.6%	8.6%	33.6%
Maximum Green (s)	22.0	72.0	43.0	43.0	43.0	43.0	10.0	42.0	8.0	40.0	8.0	40.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	1.0	3.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	0.0	-3.0	0.0	-3.0	0.0	-3.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	4.0	4.0	4.0	4.0	4.0	3.0	5.0	3.0	5.0	3.0	5.0
Recall Mode	Min	Min	Min	Min	Min	Min	Min	C-Max	Min	C-Max	Min	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Ad Effct Green (s)	25.0	75.0	43.0	46.0	46.0	46.0	55.0	45.0	51.0	43.0	51.0	43.0
Actuated g/C Ratio	0.18	0.54	0.31	0.33	0.33	0.33	0.39	0.32	0.36	0.31	0.36	0.31
v/c Ratio	3.01	1.07	6.22	0.88	0.92	0.92	2.39	1.49	1.64	1.99	1.64	1.99
Control Delay	927.8	83.6	2392.9	63.2	58.2	647.4	258.8	337.2	474.0	337.2	474.0	337.2
Queue Delay	0.0	11.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	927.8	95.2	2392.9	63.2	58.2	647.4	258.8	337.2	474.0	337.2	474.0	337.2
LOS	F	F	F	F	F	F	F	F	F	F	F	F
Approach Delay	623.7			743.9			321.0		462.3			
Approach LOS	F			F			F		F			
Intersection Summary	CBD											
Area Type:	CBD											
Cycle Length:	140											
Actuated Cycle Length:	140											
Offset: 128 (91%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green												
Natural Cycle:	100											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	6.22											
Intersection Signal Delay:	515.0											
Intersection Capacity Utilization:	138.1%											
Analysis Period (min):	15											
* User Entered Value												



Queues Background 2037
101: Tatalgar Rd & Cross Ave/South Service Rd

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1500	863	392	455	491	351	1840	223	2399
v/c Ratio	3.01	1.07	6.22	0.88	0.92	2.39	1.49	1.64	1.99
Control Delay	927.8	83.6	2392.9	63.2	58.2	647.4	258.8	337.2	474.0
Queue Delay	0.0	11.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	927.8	95.2	2392.9	63.2	58.2	647.4	258.8	337.2	474.0
Queue Length 50th (m)	~389.7	-273.8	-202.7	124.9	109.4	-155.1	-307.6	-79.5	-447.0
Queue Length 95th (m)	#416.5	#267.6	#225.4	137.5	122.7	m#89.6	m#44.6	m#87.8	m#47.8
Internal Link Dist (m)	98.6		306.4			126.2		246.2	
Turn Bay Length (m)	130.0		25.0			50.0		25.0	
Base Capacity (vph)	499	805	63	520	531	147	1234	136	1208
Starvation Cap Reductn	0	64	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	3.01	1.16	6.22	0.88	0.92	2.39	1.49	1.64	1.99

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

HCM Signalized Intersection Capacity Analysis Background 2037
101: Tatalgar Rd & Cross Ave/South Service Rd

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Movement	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	TT	TT	T	T	T	TT	TT	TT	TT
Traffic Volume (vph)	1305	410	212	302	350	378	284	1400	199
Future Volume (vph)	1305	410	212	302	350	378	284	1400	199
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.3	3.6	3.3	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.80	1.00	0.80
Frbp. ped/bikes	1.00	0.99	1.00	1.00	0.99	1.00	0.97	1.00	0.99
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.95	1.00	0.94	1.00	0.94	1.00	0.98	1.00	0.95
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Satd. Flow (prot)	2785	1476	1525	1583	1362	1428	3803	1525	3753
Flt Permitted	0.95	1.00	0.13	1.00	1.00	0.10	1.00	0.10	1.00
Satd. Flow (perm)	2795	1476	206	1583	1362	143	3803	160	3753
Peak-hour factor, PHF	0.87	0.77	0.64	0.77	0.77	0.81	0.88	0.80	0.84
Adj. Flow (vph)	1500	532	331	392	455	491	351	1591	249
RTOR Reduction (vph)	0	16	0	0	0	84	0	12	0
Lane Group Flow (vph)	1500	847	0	392	455	407	351	1828	0
Conf. Peds. (#/hr)	1	4	4	4	4	1	10	52	52
Heavy Vehicles (%)	9%	6%	12%	3%	8%	4%	10%	3%	0%
Turn Type	Prot	NA	Perm	NA	Perm	pm-pt	NA	pm-pt	NA
Protected Phases	7	4	8	8	8	5	2	1	6
Permitted Phases			8	8	8	2		6	
Actuated Green, G (s)	22.0	72.0	43.0	43.0	43.0	52.0	42.0	48.0	40.0
Effective Green, g (s)	25.0	75.0	43.0	46.0	46.0	52.0	45.0	46.0	43.0
Actuated g/C Ratio	0.18	0.54	0.31	0.33	0.33	0.37	0.32	0.34	0.31
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	4.0	7.0	4.0	7.0
Vehicle Extension (s)	3.0	4.0	4.0	4.0	4.0	3.0	5.0	3.0	5.0
Lane Grp Cap (vph)	499	790	63	520	447	144	1222	132	1152
v/s Ratio Prot	c0.54	0.57		0.29		c0.17	0.48	0.10	0.62
v/s Ratio Perm			c1.90		0.30	c0.73		0.48	
v/c Ratio	3.01	1.07	6.22	0.88	0.91	2.44	1.50	1.69	2.03
Uniform Delay, d1	57.5	32.5	48.5	44.3	45.0	36.6	47.5	40.3	48.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.20	1.15	1.30	1.16
Incremental Delay, d2	908.1	53.2	2383.6	15.5	22.9	648.8	223.5	331.3	467.5
Delay (s)	965.6	85.7	2432.1	59.8	67.9	692.9	277.9	383.8	523.6
Level of Service	F	F	F	E	E	F	F	F	F
Approach Delay (s)	644.3		757.8			344.4		511.7	
Approach LOS	F		F			F		F	

Intersection Summary	
HCM 2000 Control Delay	544.1
HCM 2000 Volume to Capacity ratio	3.77
Actuated Cycle Length (s)	140.0
Intersection Capacity Utilization	138.1%
Analysis Period (min)	15
c Critical Lane Group	

Lanes, Volumes, Timings
102: GO Bus Terminal/Argus Rd & Cross Ave

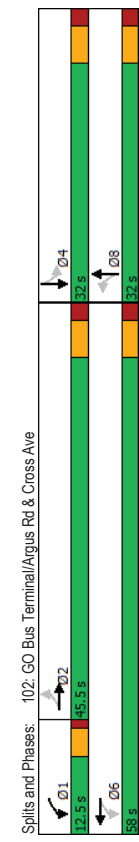
Background 2037
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	4	4	4	4	4	4	4	4	4	4	4	4
Traffic Volume (vph)	45	1333	72	198	618	111	167	3	166	209	26	106
Future Volume (vph)	45	1333	72	198	618	111	167	3	166	209	26	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.6
Storage Length (m)	20.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	15.0	0.0	0.0
Storage Lanes	1	0	1	0	1	0	1	0	1	0	1	0
Taper Length (m)	7.5	0.95	7.5	0.95	7.5	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.97	0.99	0.99	0.99	0.99
Ped Bike Factor	1.00	1.00	0.992	1.00	0.975	1.00	0.97	0.857	0.857	0.857	0.857	0.857
Flt Protected	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (prot)	1570	2982	0	818	3104	0	805	759	0	1570	1209	0
Flt Permitted	0.335	0.335	0.092	0.092	0.606	0.606	0.476	0.476	0.476	0.476	0.476	0.476
Satd. Flow (perm)	533	2982	0	79	3104	0	512	759	0	775	1209	0
Right Turn on Red	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Satd. Flow (RTOR)	11	11	47	47	144	144	119	119	119	119	119	119
Link Speed (k/h)	50	50	50	50	50	50	50	50	50	50	50	50
Link Distance (m)	207.1	207.1	100.7	100.7	81.9	81.9	123.5	123.5	123.5	123.5	123.5	123.5
Travel Time (s)	14.9	14.9	7.3	7.3	5.9	5.9	8.9	8.9	8.9	8.9	8.9	8.9
Confl. Peds. (#/hr)	1	3	3	3	1	3	20	20	20	20	20	3
Peak Hour Factor	0.52	0.87	0.65	0.88	0.79	0.53	0.25	0.70	0.78	0.62	0.89	0.89
Heavy Vehicles (%)	0%	1%	100%	92%	1%	5%	95%	0%	91%	0%	93%	0%
Adj. Flow (vph)	87	1532	111	236	702	141	315	12	237	288	42	119
Shared Lane Traffic (%)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	87	1643	0	236	843	0	315	249	0	288	161	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width(m)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
Link Offset(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width(m)	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Two way Left Turn Lane	1.19	1.14	1.14	1.19	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Headway Factor	24	14	14	24	14	14	24	14	14	24	14	14
Turning Speed (k/h)	1	2	1	2	1	2	1	2	1	2	1	2
Number of Detectors	1	2	1	2	1	2	1	2	1	2	1	2
Detector Template	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru
Leading Detector (m)	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Type	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex
Detector 1 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4	0.6	9.4	0.6	9.4	0.6	9.4	0.6	9.4	0.6	9.4	0.6
Detector 2 Size(m)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Detector 2 Type	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex
Detector 2 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Lanes, Volumes, Timings
102: GO Bus Terminal/Argus Rd & Cross Ave

Background 2037
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	2	1	6	6	8	8	4	4	4	4	4	4
Permitted Phases	2	2	2	1	6	8	8	8	8	4	4	4
Detector Phase	2	2	2	1	6	8	8	8	8	4	4	4
Switch Phase	22.0	22.0	8.0	22.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Initial (s)	45.0	45.0	12.5	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0
Minimum Split (s)	45.5	45.5	12.5	58.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0
Total Split (%)	50.6%	50.6%	13.9%	64.4%	35.6%	35.6%	35.6%	35.6%	35.6%	35.6%	35.6%	35.6%
Maximum Green (s)	39.5	39.5	8.5	52.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	5.0	5.0	2.5	5.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Recall Mode	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Act Effct Green (s)	41.5	41.5	54.0	54.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0
Actuated g/C Ratio	0.46	0.46	0.60	0.60	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31
v/c Ratio	0.34	1.19	2.02	0.45	1.98	0.74	1.11	0.35	1.11	0.35	1.11	0.35
Control Delay	20.4	118.4	506.2	10.1	486.2	27.4	123.7	10.1	123.7	10.1	123.7	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.4	118.4	506.2	10.1	486.2	27.4	123.7	10.1	123.7	10.1	123.7	10.1
LOS	C	F	F	B	F	C	F	C	F	B	F	B
Approach Delay	113.5	113.5	118.6	118.6	283.7	283.7	81.1	81.1	81.1	81.1	81.1	81.1
Approach LOS	F	F	F	F	F	F	F	F	F	F	F	F
Intersection Summary												
Area Type:	CBD											
Cycle Length:	90											
Actuated Cycle Length:	90											
Natural Cycle:	90											
Control Type:	Semi Act-Uncoordinated											
Maximum v/c Ratio:	2.02											
Intersection Signal Delay:	136.5											
Intersection LOS:	F											
Intersection Capacity Utilization:	98.1%											
Analysis Period (min):	15											



Queues Background 2037
102: GO Bus Terminal/Argus Rd & Cross Ave

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	87	1643	236	843	315	249	268	161
v/c Ratio	0.34	1.19	2.02	0.45	1.98	0.74	1.11	0.35
Control Delay	20.4	118.4	506.2	10.1	466.2	27.4	123.7	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.4	118.4	506.2	10.1	466.2	27.4	123.7	10.1
Queue Length 50th (m)	9.8	~192.3	~60.9	37.8	~90.0	16.6	~56.4	5.4
Queue Length 95th (m)	11.0	#224.0	#98.9	49.4	#70.9	0.0	#84.7	8.3
Internal Link Dist (m)	183.1		76.7		57.9		15.0	99.5
Turn Bay Length (m)	20.0		20.0		159		335	241
Base Capacity (vph)	254	1380	117	1881	159	335	241	458
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	0.34	1.19	2.02	0.45	1.98	0.74	1.11	0.35

Intersection Summary
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis Background 2037
102: GO Bus Terminal/Argus Rd & Cross Ave

Movement	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Traffic Volume (vph)	45	1333	72	198	618	111	167	3	166
Future Volume (vph)	45	1333	72	198	618	111	167	3	166
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.3	3.6	3.3	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.00	0.99
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.95	1.00	0.95	1.00	0.97	1.00	0.86	1.00	0.89
Flt Protected	1569	2981	818	3104	803	759	1548	1210	
Flt Permitted	0.33	1.00	0.09	1.00	0.61	1.00	0.48	1.00	
Satd. Flow (perm)	553	2981	79	3104	512	759	775	1210	
Peak-hour factor, PHF	0.52	0.87	0.65	0.84	0.88	0.79	0.53	0.25	0.70
Adj. Flow (vph)	87	1532	111	236	702	141	315	12	237
RTOR Reduction (vph)	0	6	0	0	19	0	0	99	0
Lane Group Flow (vph)	87	1637	0	236	824	0	315	150	0
Conf. Peds. (#/hr)	1	3	3	3	1	3	20	20	3
Heavy Vehicles (%)	0%	1%	100%	92%	1%	5%	95%	0%	91%
Turn Type	Perm	NA	pm-pt	NA	Perm	NA	Perm	0%	93%
Protected Phases	2	6	6	6	8	8	4	4	4
Permitted Phases	2	6	6	6	8	8	4	4	4
Actuated Green, G (s)	39.5	39.5	52.0	52.0	26.0	26.0	26.0	26.0	26.0
Effective Green, g (s)	41.5	41.5	52.0	54.0	28.0	28.0	28.0	28.0	28.0
Actuated G/C Ratio	0.46	0.46	0.58	0.60	0.31	0.31	0.31	0.31	0.31
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	5.0	5.0	2.5	5.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	254	1374	115	1862	159	236	241	376	0.07
v/s Ratio Prot	0.16	0.55	c0.19	0.27	c0.61	0.20	0.35	0.07	0.07
v/s Ratio Perm	0.34	1.19	2.05	0.44	1.98	0.63	1.11	0.21	0.21
Uniform Delay, d1	15.5	24.2	26.0	9.8	31.0	26.6	31.0	22.8	22.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.7	93.7	502.3	0.4	463.3	6.2	91.3	0.4	0.4
Delay (s)	17.2	117.9	528.3	10.2	494.3	32.8	122.3	23.2	23.2
Level of Service	B	F	F	B	F	C	F	C	C
Approach Delay (s)	112.8	F	123.5	F	290.5	F	85.1	F	F
Approach LOS	F	F	F	F	F	F	F	F	F

Intersection Summary
 HCM 2000 Control Delay 139.1 HCM 2000 Level of Service F
 HCM 2000 Volume to Capacity ratio 2.04
 Actuated Cycle Length (s) 90.0 Sum of lost time (s) 12.0
 Intersection Capacity Utilization 98.1% ICU Level of Service F
 Analysis Period (min) 15
 Critical Lane Group

Lanes, Volumes, Timings
104: Trafalgar Rd & Cornwall Rd

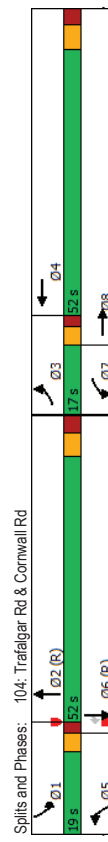
Background 2037
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT
Traffic Volume (vph)	596	808	248	55	1084	775	177	507	47	624	586
Future Volume (vph)	596	808	248	55	1084	775	177	507	47	624	586
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.3	3.6	3.5
Storage Length (m)	80.0	0.0	80.0	0.0	25.0	0.0	80.0	0.0	80.0	0.0	1
Storage Lanes	2	0	1	0	1	0	1	0	1	0	1
Taper Length (m)	7.5	0.95	0.95	1.00	0.95	1.00	0.80	0.95	0.97	0.80	1.00
Lane Util. Factor	1.00	0.99	1.00	0.98	1.00	0.98	1.00	0.98	0.98	0.98	0.98
Ped Bike Factor	0.952			0.939			0.986			0.850	
Flt Protected	0.950			0.950			0.950			0.950	
Satd. Flow (prot)	2987	2967	0	1481	2906	0	1540	2664	0	2929	1341
FltP Permitted	0.950			0.950			0.950			0.950	
Satd. Flow (perm)	2981	2967	0	1477	2906	0	1534	2664	0	2883	1341
Right Turn on Red	Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)	63			132			7			126	
Link Speed (k/h)	50			50			50			50	
Link Distance (m)	285.8			142.3			311.4			130.3	
Travel Time (s)	20.6			10.2			22.4			9.4	
Confl. Peds. (#/hr)	25			7			9			18	
Peak Hour Factor	0.93	0.91	0.60	0.75	0.86	0.90	0.60	0.86	0.75	0.84	0.86
Heavy Vehicles (%)	2%	4%	1%	6%	3%	3%	2%	1%	0%	4%	2%
Adj. Flow (vph)	641	888	413	73	1260	861	295	590	63	743	872
Shared Lane Traffic (%)											
Lane Group Flow (vph)	641	1301	0	73	2121	0	295	653	0	743	872
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right
Median Width (m)	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
Link Offset (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width (m)	4.8			4.8			4.8			4.8	
Two way Left Turn Lane	1.19	1.14	1.14	1.19	1.14	1.14	1.19	1.14	1.14	1.19	1.14
Headway Factor	24	14	14	24	14	14	24	14	14	24	14
Turning Speed (k/h)	1	2	1	1	2	1	2	1	2	1	2
Number of Detectors	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Right
Detector Template	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0
Detector 1 Type	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex
Detector 1 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4			9.4			9.4			9.4	
Detector 2 Size (m)	0.6			0.6			0.6			0.6	
Detector 2 Type	C+Ex			C+Ex			C+Ex			C+Ex	

Lanes, Volumes, Timings
104: Trafalgar Rd & Cornwall Rd

Background 2037
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Detector 2 Extend (s)	0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Prot
Protected Phases	3	8	7	4	7	4	5	2	1	6	6
Permitted Phases	3	8	7	4	7	4	5	2	1	6	6
Switch Phase	7.0	10.0	7.0	10.0	7.0	10.0	7.0	10.0	7.0	10.0	7.0
Minimum Initial (s)	12.0	37.0	12.0	37.0	12.0	37.0	12.0	37.0	12.0	37.0	12.0
Minimum Split (s)	17.0	57.0	12.0	52.0	17.0	52.0	17.0	52.0	17.0	54.0	19.0
Total Split (%)	12.1%	40.7%	8.6%	37.1%	12.1%	37.1%	12.1%	37.1%	13.5%	38.6%	38.6%
Maximum Green (s)	12.0	50.0	7.0	45.0	12.0	45.0	14.0	47.0	14.0	47.0	4.0
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	3.0
All-Red Time (s)	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0	2.0
Lost Time Adjust (s)	-1.0	-3.0	-1.0	-3.0	-1.0	-3.0	-1.0	-3.0	-1.0	-3.0	-3.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Recall Mode	Max	Max	Max	Max	Max	Max	None	C-Max	Max	C-Max	C-Max
Walk Time (s)	7.0			7.0			7.0			7.0	7.0
Flash Dont Walk (s)	23.0			23.0			25.0			25.0	25.0
Pedestrian Calls (#/hr)	0			0			0			0	0
Act Effct Green (s)	13.0	53.0	8.0	48.0	13.0	48.0	15.0	50.0	15.0	50.0	50.0
Actuated g/C Ratio	0.09	0.38	0.06	0.34	0.09	0.34	0.11	0.36	0.11	0.36	1.33
v/c Ratio	2.31	1.12	0.87	1.96	2.06	0.71	2.37	1.82	2.37	1.82	1.33
Control Delay	629.1	104.1	131.3	460.2	531.5	44.7	647.3	393.6	647.3	393.6	166.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	629.1	104.1	131.3	460.2	531.5	44.7	647.3	393.6	647.3	393.6	166.4
LOS	F	F	F	F	F	F	D	F	F	F	F
Approach Delay	277.4			449.2			196.2			402.9	
Approach LOS	F			F			F			F	
Intersection Summary	CBD										
Area Type:	CBD										
Cycle Length:	140										
Actuated Cycle Length:	140										
Offset: 0 (0%):	Referenced to phase 2:NBT and 6:SBT. Start of Green, Master Intersection										
Control Type:	Actuated-Coordinated										
Maximum v/c Ratio:	2.37										
Intersection Signal Delay:	357.4										
Intersection Capacity Utilization:	148.9%										
Analysis Period (min):	15										
* User Entered Value											



	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	641	1301	73	2121	295	653	743	872	733
v/c Ratio	2.31	1.12	0.87	1.96	2.06	0.71	2.37	1.82	1.33
Control Delay	629.1	104.1	131.3	460.2	531.5	44.7	647.3	393.6	166.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	629.1	104.1	131.3	460.2	531.5	44.7	647.3	393.6	166.4
Queue Length 50th (m)	~156.5	~223.3	21.5	~493.2	~135.2	102.1	~188.1	~472.0	~247.6
Queue Length 95th (m)	#195.8	#268.8	#93.7	#503.8	#115.8	122.3	m#70.6	m79.6	m20.8
Internal Link Dist (m)	261.8		118.3		287.4			106.3	
Turn Bay Length (m)	80.0		80.0		25.0		80.0		
Base Capacity (vph)	277	1162	84	1083	143	917	313	478	553
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	2.31	1.12	0.87	1.96	2.06	0.71	2.37	1.82	1.33

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

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Movement	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	TT	TT	TT	TT	TT	TT	TT	TT	TT
Traffic Volume (vph)	596	808	248	55	1084	775	177	507	47
Future Volume (vph)	596	808	248	55	1084	775	177	507	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.3	3.6	3.3	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.95	1.00	0.80	0.97	0.80	1.00
Frbp. ped/bikes	1.00	0.99	1.00	0.98	1.00	1.00	1.00	1.00	0.98
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.95	1.00	0.94	1.00	0.99	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	2987	2968	1481	2907	1540	2663	2929	1341	1324
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	2987	2968	1481	2907	1540	2663	2929	1341	1324
Peak-hour factor, PHF	0.93	0.91	0.60	0.75	0.86	0.90	0.86	0.75	0.84
Adj. Flow (vph)	641	888	413	73	1260	861	295	590	63
RTOR Reduction (vph)	0	39	0	0	87	0	0	0	0
Lane Group Flow (vph)	641	1262	0	73	2034	0	295	648	0
Conf. Peds. (#/hr)	25	7	7	7	25	9	18	18	9
Heavy Vehicles (%)	2%	4%	1%	6%	3%	2%	1%	0%	2%
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Prot
Protected Phases	3	8	7	4	5	2	1	6	6
Permitted Phases	12.0	50.0	7.0	45.0	12.0	45.0	14.0	47.0	47.0
Actuated Green, G (s)	13.0	53.0	8.0	48.0	13.0	48.0	15.0	50.0	50.0
Effective Green, g (s)	0.09	0.38	0.06	0.34	0.09	0.34	0.11	0.36	0.36
Actuated g/C Ratio	5.0	7.0	5.0	7.0	5.0	7.0	5.0	7.0	7.0
Clearance Time (s)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Vehicle Extension (s)	277	1123	84	996	143	913	313	478	472
Lane Grp Cap (vph)	c0.21	0.43	0.05	c0.70	0.19	0.24	c0.25	c0.65	0.49
v/s Ratio Prot	2.31	1.12	0.87	2.04	2.06	0.71	2.37	1.82	1.38
v/c Ratio	63.5	43.5	65.5	46.0	63.5	40.0	62.5	45.0	45.0
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	1.22	0.52	0.38
Progression Factor	602.6	67.6	66.7	472.6	501.6	4.7	619.1	371.7	172.8
Incremental Delay, d2	666.1	111.1	132.2	518.6	565.1	44.6	695.5	395.2	190.1
Delay (s)	F	F	F	F	F	D	F	F	F
Level of Service	F	F	F	F	F	D	F	F	F
Approach Delay (s)	294.3		595.7		206.6		426.2		F
Approach LOS	F		F		F		F		F

Intersection Summary	
HCM 2000 Control Delay	387.2
HCM 2000 Volume to Capacity ratio	2.04
Actuated Cycle Length (s)	140.0
Sum of lost time (s)	16.0
Intersection Capacity Utilization	148.9%
ICU Level of Service	H
Analysis Period (min)	15
Critical Lane Group	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	1100	572	0	2192	2097	0
Future Volume (vph)	1100	572	0	2192	2097	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.5	3.6	3.6	3.6	3.6
Lane Util. Factor	0.97	1.00	1.00	*0.80	*0.80	1.00
Flt Protected	0.950					
Satd. Flow (prot)	2958	1423	0	3872	3946	0
Flt Permitted	0.950					
Satd. Flow (perm)	2958	1423	0	3872	3946	0
Right Turn on Red	Yes					Yes
Satd. Flow (RTOR)		3				
Link Speed (k/h)	50			50	50	
Link Distance (m)	199.2			51.4	324.8	
Travel Time (s)	14.3			3.7	23.4	
Peak Hour Factor	0.98	0.92	0.25	0.91	0.90	0.25
Heavy Vehicles (%)	3%	1%	0%	6%	4%	0%
Adj. Flow (vph)	1122	622	0	2409	2330	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1122	622	0	2409	2330	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	6.6			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.19	1.16	1.14	1.14	1.14	1.14
Turning Speed (k/h)	24	14	24		14	
Number of Detectors	1	Right	Thru	2	2	
Detector Template	2.0	2.0	10.0	10.0	10.0	
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	2.0	0.6	0.6	0.6	
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)			9.4	9.4		
Detector 2 Size(m)			0.6	0.6		
Detector 2 Type			Ch+Ex	Ch+Ex		
Detector 2 Channel						
Detector 2 Extend (s)			0.0	0.0		
Turn Type	Prot	Perm	NA	NA	NA	
Protected Phases	4		2	2	2	
Permitted Phases	4	4		2	2	
Detector Phase	4	4		2	2	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	10.0	10.0		29.0	29.0	
Minimum Split (s)	38.0	38.0		36.0	36.0	
Total Split (s)	57.0	57.0		83.0	83.0	
Total Split (%)	40.7%	40.7%		59.3%	59.3%	
Maximum Green (s)	50.0	50.0		76.0	76.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	24.0	24.0		22.0	22.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Ad Effct Green (s)	53.0	53.0		79.0	79.0	
Actuated g/C Ratio	0.38	0.38		0.56	0.56	
v/c Ratio	1.00	1.15		1.10	1.05	
Control Delay	70.7	127.3		73.9	45.7	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	70.7	127.3		73.9	45.7	
LOS	E	F		E	D	
Approach Delay	90.9			73.9	45.7	
Approach LOS	F			E	D	
Intersection Summary	CBD					
Area Type:	CBD					
Cycle Length:	140					
Actuated Cycle Length:	140					
Offset:	133.6 (95%), Referenced to phase 2,NBSB and 6., Start of Green					
Natural Cycle:	130					
Control Type:	Actuated-Coordinated					
Maximum v/c Ratio:	1.15					
Intersection Signal Delay:	68.4					
Intersection Capacity Utilization:	91.0%					
Analysis Period (min):	15					
* User Entered Value						

	EBL	EBR	NBT	SBT
Lane Group	1122	622	2409	2330
Lane Group Flow (vph)	1.00	1.15	1.10	1.05
v/c Ratio	70.7	127.3	73.9	45.7
Control Delay	0.0	0.0	0.0	0.0
Queue Delay	70.7	127.3	73.9	45.7
Total Delay	~168.4	~212.8	~320.6	~309.5
Queue Length 50th (m)	#218.5	#289.5	m54.7	m#297.3
Queue Length 95th (m)	175.2	27.4	300.8	
Internal Link Dist (m)				
Turn Bay Length (m)	1119	540	2184	2226
Base Capacity (vph)	0	0	0	0
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.00	1.15	1.10	1.05

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

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	TT	T		TT	TT	TT
Traffic Volume (vph)	1100	572	0	2192	2097	0
Future Volume (vph)	1100	572	0	2192	2097	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.5	3.6	3.6	3.6	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00		*0.80	*0.80	
Flt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	2958	1423		3872	3946	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	2958	1423		3872	3946	
Peak-hour factor, PHF	0.98	0.92	0.25	0.91	0.90	0.25
Adj. Flow (vph)	1122	622	0	2409	2330	0
RTOR Reduction (vph)	0	2	0	0	0	0
Lane Group Flow (vph)	1122	620	0	2409	2330	0
Heavy Vehicles (%)	3%	1%	0%	6%	4%	0%
Turn Type	Prot	Perm	NA	NA	NA	
Protected Phases	4			2	2	
Permitted Phases		4				
Actuated Green, G (s)	50.0	50.0		76.0	76.0	
Effective Green, g (s)	53.0	53.0		79.0	79.0	
Actuated g/C Ratio	0.38	0.38		0.56	0.56	
Clearance Time (s)	7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	1119	538		2184	2226	
v/s Ratio Prot	0.38			c0.62	0.59	
v/s Ratio Perm		c0.44				
v/c Ratio	1.00	1.15		1.10	1.05	
Uniform Delay, d1	43.5	43.5		30.5	30.5	
Progression Factor	1.00	1.00		0.87	0.63	
Incremental Delay, d2	27.6	88.3		47.1	25.1	
Delay (s)	71.1	131.8		73.5	44.4	
Level of Service	E	F		E	D	
Approach Delay (s)	92.7			73.5	44.4	
Approach LOS	F			E	D	
Intersection Summary						
HCM 2000 Control Delay	68.2		HCM 2000 Level of Service		E	
HCM 2000 Volume to Capacity ratio	1.12					
Actuated Cycle Length (s)	140.0		Sum of lost time (s)		8.0	
Intersection Capacity Utilization	91.0%		ICU Level of Service		F	
Analysis Period (min)	15					

c Critical Lane Group

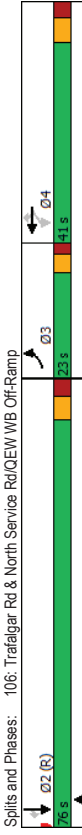
Lanes, Volumes, Timings
106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

Lanes, Volumes, Timings
106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	26	0	255	595	120	232	0	2741	0	0	1900	14
Future Volume (vph)	26	0	255	595	120	232	0	2741	0	0	1900	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.5	3.3	3.6	3.5	3.6	3.6	3.6	3.6	3.6	3.5
Storage Length (m)	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
Storage Lanes	1		1	1	1	1	0	0	0	0	0	1
Taper Length (m)	7.5		7.5	7.5	0.95	1.00	1.00	0.80	1.00	1.00	0.80	1.00
Ped Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.80	1.00	1.00	0.80	1.00
Link Distance (m)			0.850			0.850					0.850	
Flt Protected	0.950		0.950	0.971		0.950					0.950	
Satd. Flow (prot)	1570	0	1395	1421	1404	1356	0	3909	0	0	3984	1437
Flt Permitted	0.950		0.950	0.971		0.950					0.950	
Satd. Flow (perm)	1570	0	1395	1421	1404	1356	0	3909	0	0	3984	1380
Right Turn on Red	Yes		Yes	Yes		Yes		Yes			Yes	
Satd. Flow (RTOR)			31			84					70	
Link Speed (k/h)	50		50	50		50		50			50	
Link Distance (m)	142.1		192.6		324.8			268.2			268.2	
Travel Time (s)	10.2		13.9		23.4			19.3			19.3	
Conf. Peds. (#/hr)						8		5			5	
Peak Hour Factor	0.25	0.25	0.91	0.88	0.73	0.25	0.93	0.97	0.25	0.90	0.90	0.63
Heavy Vehicles (%)	0%	0%	3%	5%	23%	6%	0%	5%	0%	3%	0%	0%
Adj. Flow (vph)	104	0	280	676	176	318	0	2947	0	0	2111	22
Shared Lane Traffic (%)			38%									
Lane Group Flow (vph)	104	0	280	419	433	318	0	2947	0	0	2111	22
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width (m)	3.3		3.3		3.3		3.3		3.3		3.3	
Link Offset (m)	0.0		0.0		0.0		0.0		0.0		0.0	
Crosswalk Width (m)	4.8		4.8		4.8		4.8		4.8		4.8	
Two way Left Turn Lane	1.19	1.14	1.16	1.19	1.14	1.16	1.14	1.14	1.14	1.14	1.14	1.16
Headway Factor	24	14	14	24	14	14	24	14	14	24	14	14
Turning Speed (k/h)	1	1	1	1	1	1	1	1	1	1	1	1
Number of Detectors	Left	Right	Thru	Right	Thru	Right	Thru	Right	Thru	Right	Thru	Right
Detector Template	2.0	2.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	2.0
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	2.0	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Type	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex
Detector 1 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	0.0	0.0	0.0	9.4	0.0	9.4	0.0	9.4	0.0	9.4	0.0	9.4
Detector 2 Size (m)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Detector 2 Type	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex

Lanes, Volumes, Timings
106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)											0.0	0.0
Turn Type	Prot	Perm	Perm	NA	Perm	NA	NA	NA	NA	NA	NA	Perm
Protected Phases	3			4	4		6				2	
Permitted Phases	3		8	4	4	4	4		6		2	2
Switch Phase												
Minimum Initial (s)	7.0		10.0	10.0	10.0	10.0	10.0		5.0		28.0	28.0
Minimum Split (s)	23.0		38.0	38.0	38.0	38.0	38.0		35.0		35.0	35.0
Total Split (s)	23.0		64.0	41.0	41.0	41.0	41.0		76.0		76.0	76.0
Total Split (%)	16.4%		45.7%	29.3%	29.3%	29.3%	29.3%		54.3%		54.3%	54.3%
Maximum Green (s)	18.0		57.0	34.0	34.0	34.0	34.0		69.0		69.0	69.0
Yellow Time (s)	3.0		4.0	4.0	4.0	4.0	4.0		4.0		4.0	4.0
All-Red Time (s)	2.0		3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0
Lost Time Adjust (s)	-1.0		-3.0	-3.0	-3.0	-3.0	-3.0		-3.0		-3.0	-3.0
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0	4.0		4.0		4.0	4.0
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lag		Lag		Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes		Yes		Yes	Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0		4.5		4.5	4.5
Recall Mode	Min		Min	Min	Min	Min	Min		C-Min		C-Min	C-Min
Walk Time (s)	7.0		7.0	7.0	7.0	7.0	7.0		7.0		7.0	7.0
Flash Dont Walk (s)	24.0		24.0	24.0	24.0	24.0	24.0		21.0		21.0	21.0
Pedestrian Calls (#/hr)	0		0	0	0	0	0		0		0	0
Ad Effct Green (s)	15.1		60.0	40.9	40.9	40.9	40.9		72.0		72.0	72.0
Actuated v/c Ratio	0.11		0.43	0.29	0.29	0.29	0.29		0.51		0.51	0.51
v/c Ratio	0.62		0.46	1.01	1.06	0.70	1.47		1.03		1.03	0.83
Control Delay	74.8		27.9	95.7	107.0	42.0	239.8		61.9		61.9	0.1
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Delay	74.8		27.9	95.7	107.0	42.0	239.8		61.9		61.9	0.1
LOS	E		C	F	F	D	F		F		E	A
Approach Delay	40.6		D	85.3	F	F	F		239.8		61.2	E
Approach LOS	D		F	F	F	F	F		F		F	E
Intersection Summary	CBD											
Area Type:	CBD											
Cycle Length:	140											
Actuated Cycle Length:	140											
Offset:	115.4 (82%), Referenced to phase 2:SBT and 6:NBT, Start of Green											
Natural Cycle:	150											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	1.47											
Intersection Signal Delay:	143.6											
Intersection Capacity Utilization:	94.0%											
Analysis Period (min):	15											
* User Entered Value												



	EBL	EBR	WBL	WBT	WBR	NBT	SBT	SBR
Lane Group	104	280	419	433	318	2947	2111	22
Lane Group Flow (vph)	0.62	0.46	1.01	1.06	0.70	1.47	1.03	0.03
v/c Ratio	74.8	27.9	95.7	107.0	42.0	239.8	61.9	0.1
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	74.8	27.9	95.7	107.0	42.0	239.8	61.9	0.1
Total Delay	29.3	50.7	~135.8	~146.3	62.1	~490.7	~273.7	0.0
Queue Length 50th (m)	12.4	77.7	#210.8	#144.8	72.5m#442.8	#307.5	0.0	0.0
Queue Length 95th (m)								
Internal Link Dist (m)	50.0		168.6		300.8	244.2		
Turn Bay Length (m)	213	615	415	410	455	2010	2048	743
Base Capacity (vph)	0	0	0	0	0	0	0	0
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	0.49	0.46	1.01	1.06	0.70	1.47	1.03	0.03
Intersection Summary								
~ Volume exceeds capacity, queue is theoretically infinite.								
Queue shown is maximum after two cycles.								
# 95th percentile volume exceeds capacity, queue may be longer.								
Queue shown is maximum after two cycles.								
m Volume for 95th percentile queue is metered by upstream signal.								

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	0	255	595	120	232	0	2741	0	0	1900	14
Future Volume (vph)	26	0	255	595	120	232	0	2741	0	0	1900	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.6	3.6	3.6	3.6	3.6	3.5
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.80	1.00	1.00	0.80	1.00
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95
Satd. Flow (prot)	1570	1395	1421	1405	1356	3909						3984
Flt Permitted	0.95	1.00	0.95	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	1570	1395	1421	1405	1356	3909						3984
Peak-hour factor, PHF	0.25	0.25	0.91	0.88	0.68	0.73	0.25	0.93	0.97	0.25	0.90	0.63
Adj. Flow (vph)	104	0	280	676	176	318	0	2947	0	0	2111	22
RTOR Reduction (vph)	0	0	18	0	0	59	0	0	0	0	0	11
Lane Group Flow (vph)	104	0	262	419	433	259	0	2947	0	0	2111	11
Conf. Peds. (#/hr)							8		5			8
Heavy Vehicles (%)	0%	0%	3%	5%	23%	6%	0%	5%	5%	0%	3%	0%
Turn Type	Prot	Perm	Perm	NA	Perm	NA	Perm	NA	NA	Perm	NA	Perm
Protected Phases	3			4		4		6			2	
Permitted Phases	8		4			4					2	
Actuated Green, G (s)	14.1	57.0	37.9	37.9	37.9	37.9	69.0	69.0	69.0	69.0	69.0	69.0
Effective Green, g (s)	15.1	60.0	40.9	40.9	40.9	40.9	72.0	72.0	72.0	72.0	72.0	72.0
Actuated G/C Ratio	0.11	0.43	0.29	0.29	0.29	0.29	0.51	0.51	0.51	0.51	0.51	0.51
Clearance Time (s)	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.5	4.5	4.5	4.5	4.5	4.5
Lane Grp Cap (vph)	169	597	415	410	396	2010						2048
v/s Ratio Prot	c0.07						c0.75					0.53
v/s Ratio Perm	0.62	0.44	1.01	1.06	0.65	1.47						1.03
Uniform Delay, d1	59.7	28.2	49.5	49.5	43.3	34.0						34.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.06						1.00
Incremental Delay, d2	6.5	0.5	46.6	60.0	3.8	210.0						28.3
Delay (s)	66.2	28.7	96.2	109.6	47.2	246.2						62.3
Level of Service	E	C	F	F	D	F						E
Approach Delay (s)		38.8			87.8		246.2					61.8
Approach LOS		D			F		F					E
Intersection Summary												
HCM 2000 Control Delay	147.0 HCM 2000 Level of Service F											
HCM 2000 Volume to Capacity ratio	1.23											
Actuated Cycle Length (s)	140.0 Sum of lost time (s) 12.0											
Intersection Capacity Utilization	94.0% ICU Level of Service F											
Analysis Period (min)	15											
c Critical Lane Group												

	EBL	EBT	WBT	WBR	SBL	SBR
EBL	→	→	←	←	→	→
EBT	→	→	←	←	→	→
WBT	→	→	←	←	→	→
WBR	→	→	←	←	→	→
SBL	→	→	←	←	→	→
SBR	→	→	←	←	→	→
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	13	93	475	289	64	19
Future Volume (vph)	13	93	475	289	64	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Flt Protected		0.991	0.943	0.969		
Satd. Flow (prot)	0	1423	1585	0	1596	0
Flt Permitted		0.991		0.963		
Satd. Flow (perm)	0	1423	1585	0	1596	0
Link Speed (k/h)		50	50	50		
Link Distance (m)		122.3	145.7	51.8		
Travel Time (s)		8.8	10.5	3.7		
Conf. Peds. (#/hr)	1			1	5	1
Peak Hour Factor	0.25	0.42	0.86	0.72	0.25	0.25
Heavy Vehicles (%)	100%	0%	3%	0%	0%	0%
Adj. Flow (vph)	52	221	552	401	256	76
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	273	953	0	332	0
Enter Blocked Intersection	No	No	No	No	No	No
Line Alignment	Left	Left	Right	Right	Left	Right
Median Width(m)		0.0	0.0	3.6		
Link Offset(m)		0.0	0.0	0.0		
Crosswalk Width(m)		4.8	4.8	4.8		
Two way Left Turn Lane						
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	24			14	24	14
Sign Control		Free	Free	Free	Stop	Stop
Intersection Summary						
Area Type:	CBD					
Control Type:	Unsignalized					
Intersection Capacity Utilization	59.6%					
Analysis Period (min)	15					
ICU Level of Service B						

	EBL	EBT	WBT	WBR	SBL	SBR
EBL	→	→	←	←	→	→
EBT	→	→	←	←	→	→
WBT	→	→	←	←	→	→
WBR	→	→	←	←	→	→
SBL	→	→	←	←	→	→
SBR	→	→	←	←	→	→
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	13	93	475	289	64	19
Future Volume (Veh/h)	13	93	475	289	64	19
Sign Control	Free	Free	Free	Free	Stop	Stop
Grade	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.25	0.42	0.86	0.72	0.25	0.25
Hourly flow rate (vph)	52	221	552	401	256	76
Pedestrians		1	5		1	
Lane Width (m)		3.6	3.6	3.6		
Walking Speed (m/s)		1.2	1.2	1.2		
Percent Blockage		0	0	0		
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		358				
px platoon unblocked						
vC, conflicting volume	954				1084	754
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	954				1084	754
IC, single (s)	5.1				6.4	6.2
IC, 2 stage (s)						
p0 queue free %	88				3.5	3.3
qM capacity (veh/h)	440				213	411
Direction_Lane #	EB 1	WB 1	SB 1			
Volume Total	273	953	332			
Volume Left	52	0	256			
Volume Right	0	401	76			
cSH	440	1700	239			
Volume to Capacity	0.12	0.56	1.39			
Queue Length 95th (m)	3.2	0.0	147.0			
Control Delay (s)	4.3	0.0	237.9			
Lane LOS	A		F			
Approach Delay (s)	4.3	0.0	237.9			
Approach LOS			F			
Intersection Summary						
Average Delay			51.4			
Intersection Capacity Utilization			59.6%		ICU Level of Service	B
Analysis Period (min)			15			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				↑↑↑	↑↑↑	↑↑↑
Traffic Volume (vph)	0	186	0	3020	2888	764
Future Volume (vph)	0	186	0	3020	2888	764
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.5	3.6	3.6	3.6	3.6
Lane Util. Factor	1.00	1.00	1.00	*0.80	*0.80	0.91
Ped. Bike Factor		0.865			0.964	
Flt Protected						
Satd. Flow (prot)	0	1367	0	3636	3822	0
Flt Permitted						
Satd. Flow (perm)	0	1367	0	3636	3822	0
Link Speed (k/h)	50		50	50	50	
Link Distance (m)	145.7		270.2	51.4		
Travel Time (s)	10.5		19.5	3.7		
Confl. Peds. (#/hr)						11
Peak Hour Factor	0.25	0.54	0.25	0.92	0.97	0.82
Heavy Vehicles (%)	0%	7%	0%	7%	4%	2%
Adj. Flow (vph)	0	344	0	3283	2977	932
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	344	0	3283	3909	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width (m)	0.0	3.3	0.0	3.3	0.0	0.0
Link Offset (m)	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width (m)	4.8		4.8	4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.14	1.16	1.14	1.14	1.14	1.14
Turning Speed (k/h)	24	14	24			14
Sign Control	Stop		Free	Free	Free	
Intersection Summary						
Area Type:	CBD					
Control Type:	Unsignalized					
Intersection Capacity Utilization	100.6%					
Analysis Period (min)	15					
ICU Level of Service	G					
User Entered Value						

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				↑↑↑	↑↑↑	↑↑↑
Traffic Volume (veh/h)	0	186	0	3020	2888	764
Future Volume (Veh/h)	0	186	0	3020	2888	764
Sign Control	Stop		Free	Free	Free	
Grade	0%		0%	0%	0%	
Peak Hour Factor	0.25	0.54	0.25	0.92	0.97	0.82
Hourly flow rate (vph)	0	344	0	3283	2977	932
Pedestrians	11					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	1					
Right turn flare (veh)			None	None	None	
Median type						
Median storage (veh)				270	52	
Upstream signal (m)						
pX, platoon unblocked	0.58	0.45	0.45			
VC, conflicting volume	4548	1469	3920			
VC1, stage 1 conf vol						
VC2, stage 2 conf vol						
VCu, unblocked vol	1459	0	3203			
IC, single (s)	6.8	7.0	4.1			
IC, 2 stage (s)						
p0 queue free %	100	27	100			
IC capacity (veh/h)	71	474	43			
Direction_Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2 SB 3
Volume Total	344	1094	1094	1094	1191	1191 1527
Volume Left	0	0	0	0	0	0
Volume Right	344	0	0	0	0	932
CSH	474	1700	1700	1700	1700	1700
Volume to Capacity	0.73	0.64	0.64	0.64	0.70	0.70 0.90
Queue Length 95th (m)	46.8	0.0	0.0	0.0	0.0	0.0 0.0
Control Delay (s)	30.3	0.0	0.0	0.0	0.0	0.0 0.0
Lane LOS	D					
Approach Delay (s)	30.3	0.0			0.0	
Approach LOS	D					
Intersection Summary						
Average Delay	1.4					
Intersection Capacity Utilization	100.6%					
ICU Level of Service	G					
Analysis Period (min)	15					

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	W					
Lane Configurations						
Traffic Volume (vph)	0	0	0	159	346	148
Future Volume (vph)	0	0	0	159	346	148
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected					0.960	
Satd. Flow (prot)	1863	0	0	1863	1788	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1788	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	94.4			123.5	57.2	
Travel Time (s)	6.8			8.9	4.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	173	376	161
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	173	537	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.3	3.3	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	Free
Intersection Summary	Other					
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	30.6%					
Analysis Period (min)	15					
ICU Level of Service A						

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	W					
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	159	346	148
Future Volume (Veh/h)	0	0	0	159	346	148
Sign Control	Stop			Free	Free	Free
Grade	0%			0%	0%	0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	173	376	161
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)				None	None	None
Median type						
Median storage (veh)						
Upstream signal (m)				123		
pX, platoon unblocked						
VC, conflicting volume	630	456	537			
VC1, stage 1 conf vol						
VC2, stage 2 conf vol						
VCU, unblocked vol	630	456	537			
IC, single (s)	6.4	6.2	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
CM capacity (veh/h)	446	604	1031			
Direction_Lane #	EB 1	NB 1	SB 1			
Volume Total	0	173	537			
Volume Left	0	0	0			
Volume Right	0	0	161			
ESH	1700	1031	1700			
Volume to Capacity	0.00	0.00	0.32			
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	Intersection Summary					
Average Delay	0.0					
Intersection Capacity Utilization	30.6%					
ICU Level of Service	A					
Analysis Period (min)	15					

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group						
Lane Configurations		4↑	4↑		W	
Traffic Volume (vph)	0	1927	1235	0	0	0
Future Volume (vph)	0	1927	1235	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Fr						
Flt Protected						
Satd. Flow (prot)	0	3185	3185	0	1676	0
Flt Permitted						
Satd. Flow (perm)	0	3185	3185	0	1676	0
Link Speed (k/h)	50	50	50	50	50	50
Link Distance (m)	100.7	122.6	66.8	66.8	66.8	66.8
Travel Time (s)	7.3	8.8	4.8	4.8	4.8	4.8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2095	1342	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	2095	1342	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Right	Left	Right
Median Width(m)	3.3	3.3	3.6	3.6	3.6	3.6
Link Offset(m)	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width(m)	4.8	4.8	4.8	4.8	4.8	4.8
Two way Left Turn Lane						
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25	Free	Free	Free	25	15
Sign Control		Free	Free	Free	Stop	Stop
Intersection Summary						
Area Type:	CBD					
Control Type:	Unsignalized					
Intersection Capacity Utilization	62.5%					
Analysis Period (min)	15					
ICU Level of Service	B					

	EBL	EBT	WBT	WBR	SBL	SBR
Movement						
Lane Configurations		4↑	4↑		W	
Traffic Volume (veh/h)	0	1927	1235	0	0	0
Future Volume (Veh/h)	0	1927	1235	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Grade	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2095	1342	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None	None	None	None	None	None
Median storage (veh)						
Upstream signal (m)	101	123				
pX, platoon unblocked					0.56	
vC, conflicting volume	1342				2390	671
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1342				1905	671
IC, single (s)	4.1				6.8	6.9
IC, 2 stage (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
CM capacity (veh/h)	509				34	399
Direction_Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 1
Volume Total	688	1397	895	447	0	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
CSH	509	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.82	0.53	0.26	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS					A	A
Approach Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Approach LOS					A	A
Intersection Summary						
Average Delay	0.0					
Intersection Capacity Utilization	62.5%					
ICU Level of Service	B					
Analysis Period (min)	15					

	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	T	T	T	T	T	T
Traffic Volume (vph)	106	0	0	494	0	0
Future Volume (vph)	106	0	0	494	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	55.4			122.3	54.4	
Travel Time (s)	4.0			8.8	3.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	115	0	0	537	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	115	0	0	537	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	15			25	25	15
Sign Control	Free			Free	Stop	Stop
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	29.3%					
Analysis Period (min)	15					
	ICU Level of Service A					

	EBT	EBR	WBL	WBT	NBL	NBR
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	T	T	T	T	T	T
Traffic Volume (veh/h)	106	0	0	494	0	0
Future Volume (Veh/h)	106	0	0	494	0	0
Sign Control	Free			Free	Stop	Stop
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	115	0	0	537	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	236					
pX, platoon unblocked						
vC, conflicting volume		115		652	115	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		115		652	115	
IC, single (s)		4.1		6.4	6.2	
IC, 2 stage (s)						
p0 queue free %		2.2		3.5	3.3	
IF (s)		100		100	100	
GM capacity (veh/h)		1474		433	937	
Direction_Lane #	EB 1	WB 1	NB 1			
Volume Total	115	537	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
ESH	1700	1474	1700			
Volume to Capacity	0.07	0.00	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	29.3%					
ICU Level of Service	A					
Analysis Period (min)	15					

Intersection: 101: Trafalgar Rd & Cross Ave/South Service Rd

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	B34	SB	SB
	L	L	TR	L	TR	L	TR	L	TR	L	TR	L	T	L
Directions Served														
Maximum Queue (m)	96.1	101.9	81.6	32.3	328.1	328.2	57.4	113.9	114.8	118.4	1.9	32.3		
Average Queue (m)	93.0	98.5	24.9	30.7	319.9	308.3	46.9	68.1	72.4	76.8	0.1	22.4		
95th Queue (m)	99.4	101.3	60.1	37.7	325.6	379.9	70.0	112.1	106.8	108.9	1.3	39.0		
Link Distance (m)	96.2	96.2		313.2	313.2			126.0	128.0	128.0	101.5			
Upstream Blk Time (%)	13	64	0	87	35	0	0	0	0	0	1			
Queuing Penalty (veh)	0	618	3	0	0	0	0	3	1	3				
Storage Bay Dist (m)	130.0			25.0				50.0					25.0	
Storage Blk Time (%)	13	64		60	43			28	11				14	
Queuing Penalty (veh)	86	418		210	129			131	30				67	

Intersection: 101: Trafalgar Rd & Cross Ave/South Service Rd

Movement	SB	SB	SB	TR	TR
	T	T	TR	T	TR
Directions Served					
Maximum Queue (m)	248.4	259.9	251.8		
Average Queue (m)	194.8	241.1	243.1		
95th Queue (m)	294.2	273.5	248.9		
Link Distance (m)	239.0	239.0	239.0		
Upstream Blk Time (%)	4	28	53		
Queuing Penalty (veh)	43	288	546		
Storage Bay Dist (m)					
Storage Blk Time (%)	39				
Queuing Penalty (veh)	72				

Intersection: 102: GO Bus Terminal/Argus Rd & Cross Ave

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR
Directions Served														
Maximum Queue (m)	27.3	209.2	213.5	27.3	72.0	67.3	83.6	85.0	22.4	98.0				
Average Queue (m)	6.4	201.6	202.5	24.3	38.6	23.1	63.3	72.8	19.1	49.9				
95th Queue (m)	24.2	206.0	209.1	31.0	76.7	50.4	99.7	99.8	27.1	102.1				
Link Distance (m)	196.3	196.3		79.5	79.5	65.7	65.7			103.5				
Upstream Blk Time (%)	96	79	0	0	0	37	59			3				
Queuing Penalty (veh)	0	0		1	0	0	0			10				
Storage Bay Dist (m)	20.0			20.0						15.0				
Storage Blk Time (%)	0	91		27	5					71			14	
Queuing Penalty (veh)	0	41		83	9					94			30	

Intersection: 104: Trafalgar Rd & Cornwall Rd

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	TR	SB	SB
	L	L	TR	L	TR	L	TR	L	TR	L	TR	L	T	L
Directions Served														
Maximum Queue (m)	83.7	87.4	279.2	269.3	87.4	134.5	135.9	32.4	296.8	294.5	82.5	109.9		
Average Queue (m)	83.1	87.2	270.1	245.0	27.0	122.9	128.4	32.1	281.8	265.0	50.1	58.9		
95th Queue (m)	84.9	87.8	275.3	330.6	79.6	141.1	133.3	33.0	328.9	359.1	85.9	109.3		
Link Distance (m)			264.0	264.0		122.1	122.1		286.8	286.8	101.5			
Upstream Blk Time (%)			95	10	0	33	60	0	78	27	0			
Queuing Penalty (veh)			0	0	0	0	0	0	0	0				
Storage Bay Dist (m)	80.0	80.0		80.0				25.0					80.0	
Storage Blk Time (%)	33	83		3				95		4			3	
Queuing Penalty (veh)	133	336		18				241		7			9	

Intersection: 104: Trafalgar Rd & Cornwall Rd

Movement	SB	SB	B34	B34	T	T
	T	R	T	T	T	T
Directions Served						
Maximum Queue (m)	65.5	29.4	22.0	11.7		
Average Queue (m)	31.2	12.2	3.3	0.4		
95th Queue (m)	57.4	25.3	20.3	8.3		
Link Distance (m)	101.5	101.5	128.0	128.0		
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 105: Trafalgar Rd & QEW EB-Off Ramp

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB	SB	SB	TR	SB	SB
	L	L	R	T	T	T	T	T	T	T	T	T	T	T
Directions Served														
Maximum Queue (m)	177.0	190.4	166.9	36.7	39.5	35.6	317.3	318.1	313.0					
Average Queue (m)	73.5	172.9	181.4	25.1	27.9	28.5	303.0	307.7	305.9					
95th Queue (m)	162.1	227.4	184.4	36.1	34.1	33.1	315.1	311.1						
Link Distance (m)	176.9	176.9	176.9	27.8	27.8	27.8	300.4	300.4	300.4					
Upstream Blk Time (%)	0	54	92	20	28	31	28	50	65					
Queuing Penalty (veh)	0	0	0	197	278	315	252	462	600					
Storage Bay Dist (m)														
Storage Blk Time (%)														
Queuing Penalty (veh)														

Intersection: 106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

Movement	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	T	T	T	T	SB	SB	SB	SB	SB	SB
Directions Served	L	R	L	TR	LR	R	T	T	T	T	T	T	T	T	T	T	T	T	T	R
Maximum Queue (m)	57.4	133.3	184.2	188.2	184.1	92.4	101.8	97.0	269.0	271.8	267.9	263.4								
Average Queue (m)	18.5	122.1	160.6	177.4	149.0	53.2	62.4	60.2	260.6	260.4	259.5	253.1								
95th Queue (m)	61.3	141.9	213.3	184.9	251.2	81.3	91.2	89.1	266.4	266.6	264.8	312.9								
Link Distance (m)			119.7	173.2	173.2	300.4	300.4	300.4	254.7	254.7	254.7	254.7								
Upstream Blk Time (%)			92	47	95	56			83	97	99	81								
Queuing Penalty (veh)			0	0	0	0			0	0	0	0								
Storage Bay Dist (m)	50.0																			
Storage Blk Time (%)	97																			
Queuing Penalty (veh)	25																			

Intersection: 203: Argus Rd & South Service Rd

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (m)	42.2	18.4	37.7
Average Queue (m)	11.5	0.8	21.7
95th Queue (m)	35.4	6.9	47.4
Link Distance (m)	108.5	112.4	43.0
Upstream Blk Time (%)		23	
Queuing Penalty (veh)		0	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 204: Trafalgar Rd & Argus Rd

Movement	EB	NB	NB	SB	SB	SB	SB	SB	SB	SB	SB	SB	SB	SB	SB	SB	SB	SB	SB	SB
Directions Served	R	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	R
Maximum Queue (m)	116.2	46.4	53.5	56.9	40.7	42.1	48.6													
Average Queue (m)	102.9	14.1	19.0	21.9	16.7	27.6	34.8													
95th Queue (m)	132.0	37.0	45.3	47.8	39.5	40.5	44.1													
Link Distance (m)	112.4	239.0	239.0	239.0	27.8	27.8	27.8													
Upstream Blk Time (%)					4	14	52													
Queuing Penalty (veh)	60				33	125	460													
Storage Bay Dist (m)																				
Storage Blk Time (%)																				
Queuing Penalty (veh)																				

Intersection: 207: Argus Rd & East-West Local Rd

Movement	SB	B14
Directions Served	TR	T
Maximum Queue (m)	16.7	6.4
Average Queue (m)	2.1	0.7
95th Queue (m)	18.9	7.5
Link Distance (m)	36.5	36.6
Upstream Blk Time (%)	1	0
Queuing Penalty (veh)	7	0
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 302: Cross Ave & East Driveway Access

Movement	EB	EB
Directions Served	LT	T
Maximum Queue (m)	94.2	103.5
Average Queue (m)	84.1	63.7
95th Queue (m)	89.7	124.9
Link Distance (m)	79.5	79.5
Upstream Blk Time (%)	58	25
Queuing Penalty (veh)	486	213
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 303: North Driveway & Argus Rd

Movement	EB	EB
Directions Served	LT	T
Maximum Queue (m)	94.2	103.5
Average Queue (m)	84.1	63.7
95th Queue (m)	89.7	124.9
Link Distance (m)	79.5	79.5
Upstream Blk Time (%)	58	25
Queuing Penalty (veh)	486	213
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 7309

Lanes, Volumes, Timings
101: Trafalgar Rd & Cross Ave/South Service Rd

Total 2027
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT
Traffic Volume (vph)	588	94	130	49	100	139	145	805	62	310	855	479
Future Volume (vph)	588	94	130	49	100	139	145	805	62	310	855	479
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.6	3.3	3.6	3.5	3.3	3.6	3.6	3.3	3.6	3.6
Storage Length (m)	130.0	0.0	25.0	0.0	25.0	0.0	50.0	0.0	25.0	0.0	25.0	0.0
Storage Lanes	1	0	1	1	1	1	1	1	0	1	1	0
Taper Length (m)	7.5	1.0	7.5	7.5	1.0	7.5	7.5	1.0	7.5	1.0	7.5	1.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91	0.91
Ped Bike Factor	1.00	0.99	0.99	0.99	0.99	0.99	0.98	0.98	1.00	0.99	0.99	0.99
Frt	0.906					0.850	0.988			0.946		
Flt Protected	0.950			0.950		0.950	0.950			0.950		
Satd. Flow (prot)	2795	1393	0	1525	1583	1382	1428	4411	0	1525	4219	0
Flt Permitted	0.950			0.564		0.111				0.100		
Satd. Flow (perm)	2789	1393	0	900	1583	1362	167	4411	0	160	4219	0
Right Turn on Red	Yes			Yes		Yes		Yes		Yes		Yes
Satd. Flow (RTOR)	62			181		181		10		118		118
Link Speed (k/h)	50			50		50		50		50		50
Link Distance (m)	130.9			330.4		150.2		270.2		270.2		270.2
Travel Time (s)	9.4			23.8		10.8		19.5		19.5		19.5
Confl. Peds. (#/hr)	1			4		4		10		52		52
Peak Hour Factor	0.87	0.77	0.64	0.77	0.77	0.77	0.81	0.88	0.80	0.84	0.84	0.83
Heavy Vehicles (%)	9%	12%	3%	8%	4%	10%	3%	0%	3%	3%	4%	4%
Adj. Flow (vph)	676	122	203	64	130	181	179	915	78	369	1018	577
Shared Lane Traffic (%)												
Lane Group Flow (vph)	676	325	0	64	130	181	179	993	0	369	1995	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width (m)	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
Link Offset (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width (m)	4.8			4.8		4.8		4.8		4.8		4.8
Two way Left Turn Lane	1.19	1.14	1.14	1.19	1.14	1.16	1.19	1.14	1.14	1.19	1.14	1.14
Headway Factor	24	14	14	24	24	14	24	14	14	24	14	14
Turning Speed (k/h)	1	2	1	1	2	1	1	2	1	2	1	2
Number of Detectors	Left	Thru	Right	Left	Thru	Right	Left	Thru	Left	Thru	Right	Left
Detector Template	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 1 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4			9.4		9.4		9.4		9.4		9.4
Detector 2 Size (m)	0.6			0.6		0.6		0.6		0.6		0.6
Detector 2 Type	Ch+Ex			Ch+Ex		Ch+Ex		Ch+Ex		Ch+Ex		Ch+Ex
Detector 2 Channel	0.0			0.0		0.0		0.0		0.0		0.0

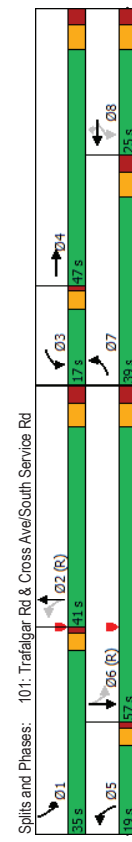
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Paradigm Transportation Solutions Limited
Synchro 10 Report
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Lanes, Volumes, Timings
101: Trafalgar Rd & Cross Ave/South Service Rd

Total 2027
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)	0.0			0.0		0.0		0.0		0.0		0.0
Turn Type	Prot	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8	8	5	2	1	6	1	6	6
Permitted Phases	7	4	3	8	8	5	2	1	6	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	12.0	10.0	10.0	10.0	7.0	27.0	7.0	27.0	7.0	27.0
Minimum Split (s)	17.0	25.0	17.0	25.0	25.0	11.5	34.0	11.5	34.0	11.5	34.0	34.0
Total Split (s)	39.0	47.0	17.0	25.0	25.0	19.0	41.0	35.0	57.0	35.0	57.0	57.0
Total Split (%)	27.9%	33.6%	12.1%	17.9%	17.9%	13.6%	29.3%	25.0%	40.7%	25.0%	40.7%	40.7%
Maximum Green (s)	32.0	40.0	13.0	18.0	18.0	15.0	34.0	31.0	50.0	31.0	50.0	50.0
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	4.0
All-Red Time (s)	3.0	3.0	1.0	3.0	3.0	1.0	3.0	1.0	3.0	1.0	3.0	3.0
Lost Time Adjust (s)	-3.0	-3.0	0.0	-3.0	-3.0	0.0	-3.0	0.0	-3.0	0.0	-3.0	-3.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	4.0	3.5	4.0	4.0	3.0	5.0	3.0	5.0	3.0	5.0	5.0
Recall Mode	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0		0		0		0		0
Ad Effct Green (s)	35.0	41.9	31.1	19.0	19.0	54.3	39.1	74.0	54.8	74.0	54.8	54.8
Actuated g/C Ratio	0.25	0.30	0.22	0.14	0.14	0.39	0.28	0.53	0.39	0.53	0.39	0.39
v/c Ratio	0.97	0.71	0.25	0.61	0.53	0.89	0.80	0.96	0.93	0.96	0.93	0.93
Control Delay	78.9	43.9	29.8	69.0	13.1	57.6	63.0	71.4	56.0	71.4	56.0	56.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.9	43.9	29.8	69.0	13.1	57.6	63.0	71.4	56.0	71.4	56.0	56.0
LOS	E	D	C	E	B	E	E	E	E	E	E	E
Approach Delay	67.6			35.4		62.2		58.9		58.9		58.9
Approach LOS	E			D		E		E		E		E
Intersection Summary												
Area Type:	CBD											
Cycle Length:	140											
Actuated Cycle Length:	140											
Offset: 128 (91%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green												
Natural Cycle:	120											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	0.97											
Intersection Signal Delay:	59.7											
Intersection Capacity Utilization:	82.1%											
Analysis Period (min):	15											
ICU Level of Service:	E											

571 Angus Road
Paradigm Transportation Solutions Limited
Synchro 10 Report
Page 2



Queues
101: Tatalgar Rd & Cross Ave/South Service Rd

Total 2027
AM Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group	676	325	64	130	181	179	993	369	1595
v/c Ratio	0.97	0.71	0.25	0.61	0.53	0.89	0.80	0.96	0.93
Control Delay	78.9	43.9	29.8	69.0	13.1	57.6	63.0	71.4	56.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.9	43.9	29.8	69.0	13.1	57.6	63.0	71.4	56.0
Queue Length 50th (m)	101.0	67.9	11.1	35.7	0.0	39.0	104.2	94.8	152.3
Queue Length 95th (m)	#133.2	81.8	17.8	48.8	11.7	m#48.3	m#12.6	m#12.5	m#155.6
Internal Link Dist (m)	106.9		306.4			126.2		246.2	
Turn Bay Length (m)	130.0		25.0			50.0		25.0	
Base Capacity (vph)	698	474	263	237	358	205	1239	393	1723
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.69	0.24	0.55	0.51	0.87	0.80	0.94	0.93

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

HCM Signalized Intersection Capacity Analysis
101: Tatalgar Rd & Cross Ave/South Service Rd

Total 2027
AM Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	FF	FF	F	F	F	FF	FF	F	FF	FF
Traffic Volume (vph)	588	94	130	49	100	139	145	805	62	310
Future Volume (vph)	588	94	130	49	100	139	145	805	62	310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.5	3.3	3.6	3.3	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.91
Frbp. ped/bikes	1.00	0.99	1.00	1.00	0.99	1.00	0.98	1.00	0.99	1.00
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.95	1.00	0.91	1.00	0.85	1.00	0.99	1.00	0.95	1.00
Flt Protected	0.95	1.00	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95
Satd. Flow (prot)	2785	1393	1520	1583	1362	1428	4412	1525	4218	4218
Flt Permitted	0.95	1.00	0.56	1.00	1.00	0.11	1.00	0.10	1.00	0.10
Satd. Flow (perm)	2795	1393	902	1583	1362	167	4412	161	4218	4218
Peak-hour factor, PHF	0.87	0.77	0.64	0.77	0.77	0.81	0.88	0.80	0.84	0.84
Adj. Flow (vph)	676	122	203	64	130	181	179	915	78	369
RTOR Reduction (vph)	0	43	0	0	0	156	0	7	0	72
Lane Group Flow (vph)	676	282	0	64	130	25	179	986	0	369
Conf. Peds. (#/hr)	1	4	4	4	1	10	10	52	52	10
Heavy Vehicles (%)	9%	6%	12%	3%	8%	4%	10%	3%	0%	3%
Turn Type	Prot	NA	pm-pt	NA	Perm	pm-pt	NA	pm-pt	NA	NA
Protected Phases	7	4	3	8	8	5	2	1	6	6
Permitted Phases			8		8	2		6		
Actuated Green, G (s)	32.0	38.9	28.1	16.0	16.0	51.3	36.1	71.0	51.8	51.8
Effective Green, g (s)	35.0	41.9	28.1	19.0	19.0	51.3	39.1	71.0	54.8	54.8
Actuated G/C Ratio	0.25	0.30	0.20	0.14	0.14	0.37	0.28	0.51	0.39	0.39
Clearance Time (s)	7.0	7.0	4.0	7.0	7.0	4.0	7.0	4.0	7.0	7.0
Vehicle Extension (s)	3.0	4.0	3.5	4.0	4.0	3.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	698	416	234	214	184	198	1232	382	1651	1651
v/s Ratio Prot	c0.24	c0.20	0.02	0.08	0.02	0.10	0.22	c0.21	c0.36	c0.36
v/s Ratio Perm			0.03		0.02	0.23		0.28		0.28
v/c Ratio	0.97	0.68	0.27	0.61	0.13	0.90	0.80	0.97	0.92	0.92
Uniform Delay, d1	52.0	43.1	46.7	57.0	53.3	36.8	48.8	42.6	40.6	40.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	0.88	1.28	1.09	1.30	1.30
Incremental Delay, d2	26.1	4.7	0.8	5.6	0.5	22.4	2.7	28.8	7.1	7.1
Delay (s)	78.1	47.8	47.4	62.5	53.7	54.9	62.6	75.4	59.8	59.8
Level of Service	E	D	D	E	D	D	D	E	E	E
Approach Delay (s)										
Approach LOS	E	E	E	E	E	E	E	E	E	E

Intersection Summary	
HCM 2000 Control Delay	63.0
HCM 2000 Volume to Capacity ratio	0.94
Actuated Cycle Length (s)	140.0
Sum of lost time (s)	16.0
Intersection Capacity Utilization	82.1%
ICU Level of Service	E
Analysis Period (min)	15
Critical Lane Group	

Lanes, Volumes, Timings
102: GO Bus Terminal/Argus Rd & Cross Ave

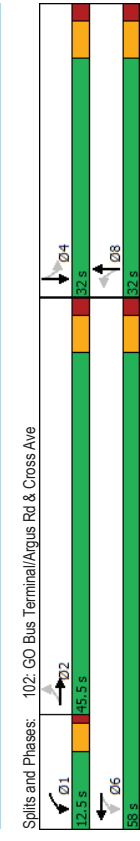
Total 2027
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	37	416	15	43	646	43	22	0	53	248	18	553
Traffic Volume (vph)	37	416	15	43	646	43	22	0	53	248	18	553
Future Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	3.3	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6
Lane Width (m)	20.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	15.0	0.0	0.0	0.0
Storage Lanes	1	0	1	0	1	0	1	0	1	0	1	0
Taper Length (m)	7.5	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.96	0.96	0.96	0.96	0.99	0.99	0.99
Ped Bike Factor	1.00	0.993	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990
Flt Protected	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (prot)	1570	3053	0	818	3171	0	805	734	0	1570	1386	0
Flt Permitted	0.354	0.325	0.143	0.143	0.143	0.143	0.143	0.143	0.143	0.143	0.143	0.143
Satd. Flow (perm)	585	3053	0	279	3171	0	121	734	0	1146	1386	0
Right Turn on Red	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Satd. Flow (RTOR)	7	15	15	15	15	15	15	15	15	15	15	15
Link Speed (k/h)	50	50	50	50	50	50	50	50	50	50	50	50
Link Distance (m)	207.1	207.1	207.1	207.1	207.1	207.1	207.1	207.1	207.1	207.1	207.1	207.1
Travel Time (s)	14.9	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7
Confl. Peds. (#/hr)	1	3	3	3	3	3	3	3	3	3	3	3
Peak Hour Factor	0.52	0.87	0.65	0.84	0.88	0.79	0.53	0.25	0.70	0.78	0.62	0.89
Heavy Vehicles (%)	0%	1%	100%	92%	1%	5%	95%	0%	91%	0%	93%	0%
Adj. Flow (vph)	71	478	23	51	734	54	42	0	76	318	29	621
Shared Lane Traffic (%)												
Lane Group Flow (vph)	71	501	0	51	788	0	42	76	0	318	650	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width(m)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
Link Offset(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width(m)	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Two way Left Turn Lane												
Headway Factor	1.19	1.14	1.14	1.19	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	24	14	24	24	14	24	24	14	24	24	14	24
Number of Detectors	1	2	1	1	2	1	2	1	2	1	2	1
Detector Template	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru
Leading Detector (m)	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Type	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
Detector 2 Size(m)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Detector 2 Type	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex
Detector 2 Channel												

Lanes, Volumes, Timings
102: GO Bus Terminal/Argus Rd & Cross Ave

Total 2027
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	2	1	6	6	8	8	4	4	4	4	4	4
Permitted Phases	2	2	2	1	6	8	8	8	8	4	4	4
Detector Phase	2	2	2	1	6	8	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	22.0	22.0	8.0	22.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	45.0	45.0	12.5	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0
Total Split (s)	45.5	45.5	12.5	58.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0
Total Split (%)	50.6%	50.6%	13.9%	64.4%	35.6%	35.6%	35.6%	35.6%	35.6%	35.6%	35.6%	35.6%
Maximum Green (s)	39.5	39.5	8.5	52.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	5.0	5.0	2.5	5.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Recall Mode	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Act Effct Green (s)	25.0	25.0	37.2	37.2	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0
Actuated g/C Ratio	0.34	0.34	0.51	0.51	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38
v/c Ratio	0.36	0.48	0.25	0.49	0.91	0.15	0.15	0.15	0.15	0.73	0.98	0.98
Control Delay	24.2	20.5	12.7	12.7	143.3	0.6	31.8	47.6	47.6	31.8	47.6	47.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.2	20.5	12.7	12.7	143.3	0.6	31.8	47.6	47.6	31.8	47.6	47.6
LOS	C	C	B	B	F	A	C	D	D	C	D	D
Approach Delay	20.9	12.7	12.7	12.7	51.4	0.6	42.4	42.4	42.4	31.8	47.6	47.6
Approach LOS	C	C	B	B	D	D	D	D	D	C	D	D
Intersection Summary												
Area Type:	CBD											
Cycle Length:	90											
Actuated Cycle Length:	73.2											
Natural Cycle:	100											
Control Type:	Semi Act-Uncoordinated											
Maximum v/c Ratio:	0.98											
Intersection Signal Delay:	27.9											
Intersection LOS:	C											
Intersection Capacity Utilization:	65.8%											
Analysis Period (min):	15											



Queues
102: GO Bus Terminal/Argus Rd & Cross Ave

Total 2027
AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group	71	501	51	788	42	76	318	650
Lane Group Flow (vph)	0.36	0.48	0.25	0.49	0.91	0.15	0.73	0.98
v/c Ratio	24.2	20.5	12.7	12.7	143.3	0.6	31.8	47.6
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	24.2	20.5	12.7	12.7	143.3	0.6	31.8	47.6
Total Delay	7.6	28.9	3.6	36.0	5.4	0.0	37.1	63.2
Queue Length 50th (m)	9.5	40.8	8.5	48.2	#12.8	0.0	60.4	55.1
Queue Length 95th (m)	183.1		68.7		57.9		156.7	
Internal Link Dist (m)	20.0		20.0		15.0		15.0	
Turn Bay Length (m)	332	1735	204	2345	46	502	438	665
Base Capacity (vph)	0	0	0	0	0	0	0	0
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	0.21	0.29	0.25	0.34	0.91	0.15	0.73	0.98

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

HCM Signalized Intersection Capacity Analysis
102: GO Bus Terminal/Argus Rd & Cross Ave

Total 2027
AM Peak Hour

Movement	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	37	416	15	43	646	43	22	0	53
Future Volume (vph)	37	416	15	43	646	43	22	0	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.3	3.6	3.3	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.86
Flt Protected	1570	3054	817	3170	805	738	1543	1387	
Flt Permitted	0.35	1.00	0.32	1.00	0.14	1.00	0.71	1.00	
Satd. Flow (perm)	584	3054	279	3170	121	738	1149	1387	
Peak-hour factor, PHF	0.52	0.87	0.65	0.84	0.88	0.79	0.53	0.25	0.70
Adj. Flow (vph)	71	478	23	51	734	54	42	0	76
RTOR Reduction (vph)	0	5	0	0	7	0	0	47	0
Lane Group Flow (vph)	71	496	0	51	781	0	42	29	0
Conf. Peds. (#/hr)	1	3	3	3	1	3	20	20	3
Heavy Vehicles (%)	0%	1%	100%	92%	1%	5%	95%	0%	91%
Turn Type	Perm	NA	pm-pt	NA	Perm	NA	Perm	NA	Perm
Protected Phases	2	6	1	6	8	8	4	4	4
Permitted Phases	2	6	6	6	8	8	4	4	4
Actuated Green, G (s)	23.0	23.0	35.2	35.2	26.0	26.0	26.0	26.0	26.0
Effective Green, g (s)	25.0	25.0	35.2	37.2	28.0	28.0	28.0	28.0	28.0
Actuated g/C Ratio	0.34	0.34	0.48	0.51	0.38	0.38	0.38	0.38	0.38
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	5.0	5.0	2.5	5.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	199	1043	194	1610	46	282	439	530	37
v/s Ratio Prot	0.12	0.16	0.03	c0.25	0.04	0.04	0.28	c0.37	0.28
v/s Ratio Perm	0.36	0.48	0.26	0.48	0.91	0.10	0.72	0.97	0.97
Uniform Delay, d1	18.1	18.9	11.1	11.7	21.4	14.5	19.3	22.2	22.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.3	0.7	0.5	0.5	100.6	0.2	6.2	31.8	31.8
Delay (s)	20.4	19.7	11.6	12.2	122.0	14.7	25.5	54.0	54.0
Level of Service	C	B	B	B	F	B	C	D	D
Approach Delay (s)	19.8	B	12.2	B	52.9	D	44.7	D	D
Approach LOS	B	B	B	B	D	D	D	D	D

Intersection Summary	
HCM 2000 Control Delay	28.4
HCM 2000 Volume to Capacity ratio	0.74
Actuated Cycle Length (s)	73.2
Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.8%
ICU Level of Service	E
Analysis Period (min)	15
Critical Lane Group	c

Lanes, Volumes, Timings
104: Trafalgar Rd & Cornwall Rd

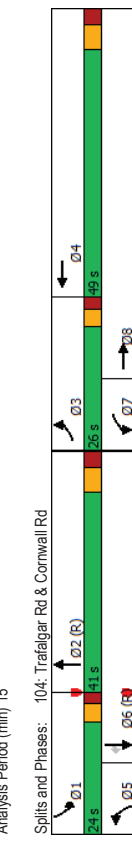
Total 2027
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT
Traffic Volume (vph)	401	488	87	22	410	529	49	403	55	324	432	289
Future Volume (vph)	401	488	87	22	410	529	49	403	55	324	432	289
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.5
Storage Length (m)	80.0	0.0	80.0	0.0	80.0	0.0	25.0	0.0	80.0	0.0	80.0	1.0
Storage Lanes	2	0	1	0	1	0	1	0	1	0	1	1
Taper Length (m)	7.5	0.95	0.95	7.5	0.95	0.95	7.5	0.95	0.95	7.5	0.95	1.00
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.98	0.98
Ped Bike Factor	0.99	0.99	0.99	0.99	0.97	0.99	0.99	1.00	0.98	0.98	0.98	0.850
Frt	0.968			0.917			0.980			0.980		0.850
Flt Protected	0.950			0.950			0.950			0.950		0.850
Satd. Flow (prot)	2987	3019	0	1481	2819	0	1540	3142	0	2929	1676	1356
Flt Permitted	0.950			0.950			0.950			0.950		0.850
Satd. Flow (perm)	2963	3019	0	1472	2819	0	1531	3142	0	2875	1676	1324
Right Turn on Red	Yes			Yes			Yes			Yes		Yes
Satd. Flow (RTOR)	30			235			12			12		313
Link Speed (k/h)	50			50			50			50		50
Link Distance (m)	285.8			142.3			311.4			311.4		130.3
Travel Time (s)	20.6			10.2			22.4			22.4		9.4
Confl. Peds. (#/hr)	25			7			25			9		18
Peak Hour Factor	0.93	0.91	0.60	0.75	0.86	0.90	0.60	0.86	0.75	0.84	0.86	0.80
Heavy Vehicles (%)	2%	4%	1%	6%	3%	3%	2%	1%	0%	4%	2%	6%
Adj. Flow (vph)	431	536	145	29	477	588	82	469	73	386	502	361
Shared Lane Traffic (%)												
Lane Group Flow (vph)	431	681	0	29	1065	0	82	542	0	386	502	361
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Left	Right
Median Width (m)	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
Link Offset (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width (m)	4.8			4.8			4.8			4.8		4.8
Two way Left Turn Lane	1.19	1.14	1.14	1.19	1.14	1.14	1.19	1.14	1.14	1.19	1.14	1.16
Headway Factor	24	14	14	24	14	14	24	14	14	24	14	14
Turning Speed (k/h)	1	2	1	1	2	1	1	2	1	2	1	1
Number of Detectors	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Right	Right
Detector Template	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	2.0
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	2.0
Detector 1 Type	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex
Detector 1 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4			9.4			9.4			9.4		9.4
Detector 2 Size (m)	0.6			0.6			0.6			0.6		0.6
Detector 2 Type	C+Ex			C+Ex			C+Ex			C+Ex		C+Ex

Lanes, Volumes, Timings
104: Trafalgar Rd & Cornwall Rd

Total 2027
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		0.0
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	3	8	7	4	7	4	5	2	5	2	1	6
Permitted Phases	3	8	7	4	7	4	5	2	5	2	1	6
Switch Phase	7.0	10.0	7.0	10.0	7.0	10.0	7.0	10.0	7.0	10.0	7.0	20.0
Minimum Initial (s)	12.0	37.0	12.0	37.0	12.0	37.0	12.0	37.0	12.0	37.0	12.0	39.0
Minimum Split (s)	26.0	63.0	18.6%	45.0%	18.6%	45.0%	8.6%	29.3%	8.6%	29.3%	17.1%	37.9%
Total Split (%)	21.0	56.0	7.0	42.0	7.0	34.0	7.0	34.0	7.0	34.0	19.0	46.0
Maximum Green (s)	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
Yellow Time (s)	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0
All-Red Time (s)	-1.0	-3.0	-1.0	-3.0	-1.0	-3.0	-1.0	-3.0	-1.0	-3.0	-1.0	-3.0
Lost Time Adjust (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost Time (s)	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead/Lag	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lead-Lag Optimize?	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Vehicle Extension (s)	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max
Recall Mode	7.0			7.0			7.0			7.0		7.0
Walk Time (s)	23.0			23.0			23.0			23.0		25.0
Flash Dont Walk (s)	0			0			0			0		0
Pedestrian Calls (#/hr)	22.0	59.0	0.16	0.42	0.06	0.32	0.06	0.32	0.06	0.32	0.14	0.35
Act Effct Green (s)	0.92	0.53	0.35	1.00	0.93	0.65	0.92	0.65	0.92	0.65	0.92	0.86
v/c Ratio	83.5	30.5	75.1	64.4	143.1	48.8	98.4	34.5	2.7	2.7	2.7	2.7
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	83.5	30.5	75.1	64.4	143.1	48.8	98.4	34.5	2.7	2.7	2.7	2.7
Total Delay	F	C	E	E	F	D	F	D	F	C	A	A
LOS	51.1			64.7			61.2			45.0		D
Approach Delay	D			E			E			D		D
Approach LOS												
Intersection Summary	CBD											
Area Type:	CBD											
Cycle Length:	140											
Actuated Cycle Length:	140											
Offset: 0 (0%):	Referenced to phase 2:NBT and 6:SBT. Start of Green, Master Intersection											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	1.00											
Intersection Signal Delay:	54.4											
Intersection Capacity Utilization:	95.8%											
Analysis Period (min):	15											



Queues
104: Tatalgar Rd & Cornwall Rd

Total 2027
AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBR
Lane Group Flow (vph)	431	681	29	1065	82	542	386	502
v/c Ratio	0.92	0.53	0.35	1.00	0.93	0.65	0.92	0.86
Control Delay	83.5	30.5	75.1	64.4	143.1	48.8	98.4	34.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.5	30.5	75.1	64.4	143.1	48.8	98.4	34.5
Queue Length 50th (m)	64.5	73.5	8.3	136.2	24.3	72.5	58.2	71.2
Queue Length 95th (m)	#96.3	93.0	16.3	#170.6	#30.8	88.1	m#66.6	m106.6
Internal Link Dist (m)	261.8		118.3		287.4			106.3
Turn Bay Length (m)	80.0		80.0		25.0		80.0	
Base Capacity (vph)	469	1289	84	1065	88	839	418	566
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	0.92	0.53	0.35	1.00	0.93	0.65	0.92	0.86

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

HCM Signalized Intersection Capacity Analysis
104: Tatalgar Rd & Cornwall Rd

Total 2027
AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBR
Movement	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBR
Lane Configurations	TT	TT	T	TT	TT	TT	TT	T
Traffic Volume (vph)	401	488	87	22	410	529	49	403
Future Volume (vph)	401	488	87	22	410	529	49	403
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.3	3.6	3.3
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.95	1.00	0.95	0.97	1.00
Frbp. ped/bikes	1.00	0.99	1.00	0.97	1.00	1.00	1.00	0.98
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97	1.00	0.92	1.00	0.98	1.00	1.00
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	2987	3020	1481	2819	1540	3141	2929	1676
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	2987	3020	1481	2819	1540	3141	2929	1676
Peak-hour factor, PHF	0.93	0.91	0.60	0.75	0.86	0.90	0.60	0.86
Adj. Flow (vph)	481	536	145	29	477	588	82	469
RTOR Reduction (vph)	0	17	0	0	159	0	0	9
Lane Group Flow (vph)	431	664	0	29	906	0	82	533
Conf. Peds. (#/hr)	25	7	7	7	25	9	18	18
Heavy Vehicles (%)	2%	4%	1%	6%	3%	2%	1%	0%
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	3	8	7	4	5	2	1	6
Permitted Phases	21.0	56.0	7.0	42.0	7.0	34.0	19.0	46.0
Actuated Green, G (s)	22.0	59.0	8.0	45.0	8.0	37.0	20.0	49.0
Effective Green, g (s)	0.16	0.42	0.06	0.32	0.06	0.26	0.14	0.35
Actuated g/C Ratio	5.0	7.0	5.0	7.0	5.0	7.0	5.0	7.0
Clearance Time (s)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Vehicle Extension (s)	469	1272	84	906	88	830	418	566
Lane Grp Cap (vph)	c0.14	0.22	0.02	c0.32	0.05	0.17	c0.13	c0.30
v/s Ratio Prot	0.92	0.52	0.35	1.00	0.93	0.64	0.92	0.86
v/c Ratio	58.1	30.0	63.5	47.5	65.7	45.6	59.2	42.2
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	1.40	0.60
Progression Factor	25.6	1.5	10.9	29.8	72.6	3.8	17.1	8.0
Incremental Delay, d2	83.7	31.6	74.4	77.3	138.3	49.4	100.2	33.5
Delay (s)	F	C	E	E	F	D	F	C
Level of Service	D	D	E	E	E	E	D	A
Approach Delay (s)	51.8		77.2		61.1		46.5	
Approach LOS	D		E		E		D	

Intersection Summary	
HCM 2000 Control Delay	58.4
HCM 2000 Volume to Capacity ratio	0.95
Actuated Cycle Length (s)	140.0
Sum of lost time (s)	16.0
Intersection Capacity Utilization	95.8%
ICU Level of Service	F
Analysis Period (min)	15
Critical Lane Group	c

Lanes, Volumes, Timings
105: Trafalgar Rd & QEW EB-Off Ramp

Total 2027
AM Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	903	746	0	1161	1427	0
Future Volume (vph)	903	746	0	1161	1427	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.5	3.6	3.6	3.6	3.6
Lane Util. Factor	0.97	1.00	1.00	0.91	0.91	1.00
Flt Protected	0.950					
Satd. Flow (prot)	2958	1423	0	4404	4489	0
Flt Permitted	0.950					
Satd. Flow (perm)	2958	1423	0	4404	4489	0
Right Turn on Red	Yes					Yes
Satd. Flow (RTOR)		3				
Link Speed (km/h)	50			50	50	
Link Distance (m)	199.2			51.4	324.8	
Travel Time (s)	14.3			3.7	23.4	
Peak Hour Factor	0.98	0.92	0.25	0.91	0.90	0.25
Heavy Vehicles (%)	3%	1%	0%	6%	4%	0%
Adj. Flow (vph)	921	811	0	1276	1586	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	921	811	0	1276	1586	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Right
Median Width(m)	6.6			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.19	1.16	1.14	1.14	1.14	1.14
Turning Speed (km/h)	24	14	24		14	
Number of Detectors	1	Right	Thru	2	2	
Detector Template	2.0	2.0	10.0	10.0	10.0	
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	2.0	2.0	0.6	0.6	0.6	
Detector 1 Size(m)	2.0	2.0	0.6	0.6	0.6	
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)			9.4	9.4		
Detector 2 Size(m)			0.6	0.6		
Detector 2 Type			Ch+Ex	Ch+Ex		
Detector 2 Channel						
Detector 2 Extend (s)			0.0	0.0		
Turn Type	Prot	Perm	NA	NA	NA	
Protected Phases	4		2	2	2	
Permitted Phases	4	4	2	2	2	

Lanes, Volumes, Timings
105: Trafalgar Rd & QEW EB-Off Ramp

Total 2027
AM Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	10.0	10.0		29.0	29.0	
Minimum Split (s)	38.0	38.0		36.0	36.0	
Total Split (s)	83.0	83.0		57.0	57.0	
Total Split (%)	59.3%	59.3%		40.7%	40.7%	
Maximum Green (s)	76.0	76.0		50.0	50.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	24.0	24.0		22.0	22.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	79.0	79.0		53.0	53.0	
Actuated g/C Ratio	0.56	0.56		0.38	0.38	
v/c Ratio	0.55	1.01		0.77	0.93	
Control Delay	20.9	64.5		36.3	50.4	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	20.9	64.5		36.3	50.4	
LOS	C	E		D	D	
Approach Delay	41.3			36.3	50.4	
Approach LOS	D			D	D	
Intersection Summary	CBD					
Area Type:	CBD					
Cycle Length:	140					
Actuated Cycle Length:	140					
Offset:	133.6 (95%), Referenced to phase 2,NBSB and 6:, Start of Green					
Natural Cycle:	80					
Control Type:	Actuated-Coordinated					
Maximum v/c Ratio:	1.01					
Intersection Signal Delay:	43.1					
Intersection Capacity Utilization:	88.6%					
Analysis Period (min):	15					

	EBL	EBR	NBT	SBT
Lane Group	921	811	1276	1586
Lane Group Flow (vph)	0.55	1.01	0.77	0.93
v/c Ratio	20.9	64.5	36.3	50.4
Control Delay	0.0	0.0	0.0	0.0
Queue Delay	20.9	64.5	36.3	50.4
Total Delay	84.2	~234.6	66.3	170.2
Queue Length 50th (m)	103.7	#328.5	m77.2	#196.3
Queue Length 95th (m)	175.2		271.4	300.8
Internal Link Dist (m)				
Turn Bay Length (m)	1669	804	1667	1699
Base Capacity (vph)	0	0	0	0
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.55	1.01	0.77	0.93

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

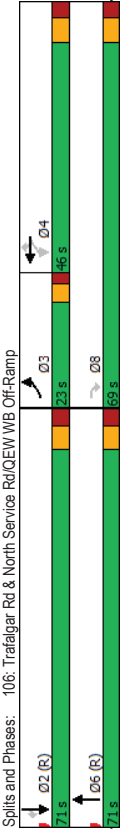
	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	TT	TT		TT	TT	TT
Traffic Volume (vph)	903	746	0	1161	1427	0
Future Volume (vph)	903	746	0	1161	1427	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.5	3.6	3.6	3.6	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	0.00	0.91	0.91	0.00
Frt	1.00	0.85	1.00	1.00	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	2958	1423	4404	4404	4489	0
Flt Permitted	0.95	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	2958	1423	4404	4404	4489	0
Peak-hour factor, PHF	0.98	0.92	0.25	0.91	0.90	0.25
Adj. Flow (vph)	921	811	0	1276	1586	0
RTOR Reduction (vph)	0	1	0	0	0	0
Lane Group Flow (vph)	921	810	0	1276	1586	0
Heavy Vehicles (%)	3%	1%	0%	6%	4%	0%
Turn Type	Prot	Perm	NA	NA	NA	NA
Protected Phases	4			2	2	
Permitted Phases		4				
Actuated Green, G (s)	76.0	76.0		50.0	50.0	
Effective Green, g (s)	79.0	79.0		53.0	53.0	
Actuated g/C Ratio	0.56	0.56		0.38	0.38	
Clearance Time (s)	7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	1669	802		1667	1699	
v/s Ratio Prot	0.31			0.29	0.35	
v/s Ratio Perm	0.55	0.57		0.77	0.93	
Uniform Delay, d1	19.3	30.5		38.1	41.8	
Progression Factor	1.00	1.00		0.90	0.97	
Incremental Delay, d2	0.4	34.2		1.8	9.6	
Delay (s)	19.7	64.7		36.0	50.2	
Level of Service	B	E		D	D	
Approach Delay (s)	40.8			36.0	50.2	
Approach LOS	D			D	D	
Intersection Summary						
HCM 2000 Control Delay	42.7		HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio	0.98					
Actuated Cycle Length (s)	140.0		Sum of lost time (s)		8.0	
Intersection Capacity Utilization	88.6%		ICU Level of Service		E	
Analysis Period (min)	15					
c Critical Lane Group						

Lanes, Volumes, Timings
 106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

													Total 2027			
													AM Peak Hour			
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR				
Lane Configurations	1	0	221	450	36	276	0	1579	0	0	1287	7				
Traffic Volume (vph)																
Future Volume (vph)	1	0	221	450	36	276	0	1579	0	0	1287	7				
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900				
Lane Width (m)	3.3	3.6	3.5	3.3	3.6	3.5	3.6	3.6	3.6	3.6	3.6	3.5				
Storage Length (m)	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Storage Lanes	1		1	1	1	1	0	0	0	0	0	1				
Taper Length (m)	7.5		7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5				
Ped Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00				
Ped Bike Factor			0.850			0.850					0.91					
Frt	0.950		0.850	0.950	0.961		0.850				0.91					
Satd. Flow (prot)	1570	0	1395	1421	1441	1356	0	4446	0	0	4532	1437				
Flt Protected																
Satd. Flow (perm)	0.950		0.950	0.961		0.961		0.950			0.91					
Right Turn on Red	1570	0	1395	1421	1441	1356	0	4446	0	0	4532	1380				
Satd. Flow (RTOR)			31			237					Yes				70	
Link Speed (k/h)			50			50		50			50				50	
Link Distance (m)			1421			192.6		324.8			288.2				288.2	
Travel Time (s)			10.2			13.9		23.4			19.3				19.3	
Confl. Peds. (#/hr)								8			5				5	
Peak Hour Factor	0.25	0.25	0.91	0.88	0.68	0.73	0.25	0.93	0.97	0.25	0.90	0.63			0.63	
Heavy Vehicles (%)	0%	0%	3%	5%	23%	6%	0%	5%	5%	0%	3%	0%			3%	
Adj. Flow (vph)	4	0	243	511	53	378	0	1698	0	0	1430	11			11	
Shared Lane Traffic (%)				45%												
Lane Group Flow (vph)	4	0	243	281	283	378	0	1698	0	0	1430	11			11	
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No			No	
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Left	Right	Left	Left	Right			Right	
Median Width (m)			3.3		3.3			0.0			0.0				0.0	
Link Offset (m)			0.0		0.0			0.0			0.0				0.0	
Crosswalk Width (m)			4.8		4.8			4.8			4.8				4.8	
Two way Left Turn Lane																
Headway Factor	1.19	1.14	1.16	1.19	1.14	1.16	1.14	1.14	1.14	1.14	1.14	1.16			1.16	
Turning Speed (k/h)	24	14	24	24	14	24	14	24	14	24	24	14			14	
Number of Detectors	1	1	1	1	2	1	2	2	1	2	2	1			1	
Detector Template	Left	Right	Right	Left	Thru	Right	Thru	Thru	Right	Thru	Right	Right			Right	
Leading Detector (m)	2.0	2.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	2.0			2.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Size (m)	2.0	2.0	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6			2.0	
Detector 1 Type	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex			C+Ex	
Detector 1 Channel																
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 2 Position (m)				9.4		9.4		9.4			9.4				9.4	
Detector 2 Size (m)				0.6		0.6		0.6			0.6				0.6	
Detector 2 Type				C+Ex		C+Ex		C+Ex			C+Ex				C+Ex	
Detector 2 Channel																

Lanes, Volumes, Timings
 106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

													Total 2027			
													AM Peak Hour			
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR				
Detector 2 Extend (s)																
Turn Type	Prot	Perm	NA	Perm	NA	Perm	NA	NA	NA	NA	NA	Perm			NA	
Protected Phases	3			4		4		6				2			2	
Permitted Phases	3		8	4		4		6				2			2	
Detector Phase	3		8	4		4		6				2			2	
Switch Phase																
Minimum Initial (s)	7.0		10.0	10.0		10.0		10.0				5.0			28.0	
Minimum Split (s)	23.0		38.0	38.0		38.0		38.0				35.0			35.0	
Total Split (s)	23.0		69.0	46.0		46.0		46.0				71.0			71.0	
Total Split (%)	16.4%		48.3%	32.9%		32.9%		32.9%				50.7%			50.7%	
Maximum Green (s)	18.0		62.0	39.0		39.0		64.0				64.0			64.0	
Yellow Time (s)	3.0		4.0	4.0		4.0		4.0				4.0			4.0	
All-Red Time (s)	2.0		3.0	3.0		3.0		3.0				3.0			3.0	
Lost Time Adjust (s)	-1.0		-3.0	-3.0		-3.0		-3.0				-3.0			-3.0	
Total Lost Time (s)	4.0		4.0	4.0		4.0		4.0				4.0			4.0	
Lead/Lag	Lead		Lag	Lag		Lag		Lag				Lag			Lag	
Lead-Lag Optimize?	Yes		Yes	Yes		Yes		Yes				Yes			Yes	
Vehicle Extension (s)	3.0		3.0	3.0		3.0		3.0				4.5			4.5	
Recall Mode	Min		Min	Min		Min		Min				C-Min			C-Min	
Walk Time (s)	7.0		7.0	7.0		7.0		7.0				7.0			7.0	
Flash Dont Walk (s)			24.0	24.0		24.0		24.0				21.0			21.0	
Pedestrian Calls (#/hr)			0	0		0		0				0			0	
Ad Effct Green (s)	8.0		48.8	36.8		36.8		83.2				83.2			83.2	
Actuated g/C Ratio	0.06		0.35	0.26		0.26		0.59				0.59			0.59	
v/c Ratio	0.04		0.48	0.75		0.75		0.64				0.64			0.53	
Control Delay	64.0		32.9	59.6		59.0		23.6				26.9			18.8	
Queue Delay	0.0		0.0	0.0		0.0		0.0				0.0			0.0	
Total Delay	64.0		32.9	59.6		59.0		23.6				26.9			18.8	
LOS	E		C	E		E		C				B			B	
Approach Delay			33.4			45.0		26.9				18.6			18.6	
Approach LOS			C			D		C				B			B	
Intersection Summary																
Area Type:	CBD															
Cycle Length:	140															
Actuated Cycle Length:	140															
Offset:	115.4 (82%), Referenced to phase 2:SBT and 6:NBT, Start of Green															
Natural Cycle:	100															
Control Type:	Actuated-Coordinated															
Maximum v/c Ratio:	0.75															
Intersection Signal Delay:	28.4															
Intersection Capacity Utilization:	67.7%															
Analysis Period (min):	15															
ICU Level of Service:	C															



Queues
106: Tatalgar Rd & North Service Rd/QEW WB Off-Ramp

Total 2027
AM Peak Hour

	EBL	EBR	WBL	WBR	NBT	SBT	SBR
Lane Group	4	243	281	283	378	1698	1430
Lane Group Flow (vph)	0.04	0.48	0.75	0.75	0.64	0.53	0.01
v/c Ratio	64.0	32.9	59.6	59.0	23.6	26.9	18.8
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	64.0	32.9	59.6	59.0	23.6	26.9	18.8
Total Delay	1.1	47.8	79.1	79.5	37.6	113.6	87.4
Queue Length 50th (m)	1.4	66.2	101.4	73.0	38.3	138.0	120.1
Queue Length 95th (m)							
Internal Link Dist (m)	50.0		168.6		300.8	244.2	
Turn Bay Length (m)	213	664	437	443	581	2642	2633
Base Capacity (vph)	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.37	0.64	0.64	0.65	0.64	0.53
Intersection Summary							

HCM Signalized Intersection Capacity Analysis
106: Tatalgar Rd & North Service Rd/QEW WB Off-Ramp

Total 2027
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBR
Lane Configurations	1	0	221	450	36	276	0	1579	0	1287
Traffic Volume (vph)	1	0	221	450	36	276	0	1579	0	1287
Future Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	3.3	3.6	3.5	3.3	3.6	3.5	3.6	3.6	3.6	3.6
Lane Width	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor	1.00	1.00	0.85	1.00	0.95	1.00	0.91	1.00	1.00	0.96
Frb. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frb. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt	0.95	1.00	0.85	1.00	0.96	1.00	0.85	1.00	1.00	0.85
Flt Protected	1570	1395	1421	1440	1356	4446				
Satd. Flow (prot)	0.95	1.00	0.95	0.96	1.00	1.00	1.00	1.00	1.00	1.00
Flt Permitted	1570	1395	1421	1440	1356	4446				
Satd. Flow (perm)	0.25	0.25	0.81	0.88	0.68	0.73	0.25	0.93	0.97	0.25
Peak-hour factor, PHF	4	0	243	511	53	378	0	1698	0	1430
Adj. Flow (vph)	0	0	20	0	0	175	0	0	0	0
RTOR Reduction (vph)	4	0	223	281	283	203	0	1698	0	1430
Lane Group Flow (vph)	0	0	223	281	283	203	0	1698	0	1430
Conf. Peds. (#/hr)	0	0	0	0	0	0	0	0	0	0
Heavy Vehicles (%)	0%	0%	3%	5%	23%	6%	0%	5%	0%	3%
Turn Type	Prot	Perm	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	3	4	4	4	4	4	6	6	2	2
Permitted Phases	8	4	4	4	4	4	4	4	2	2
Actuated Green, G (s)	7.0	45.8	33.8	33.8	33.8	33.8	80.2	80.2	80.2	80.2
Effective Green, g (s)	8.0	48.8	36.8	36.8	36.8	36.8	83.2	83.2	83.2	83.2
Actuated g/C Ratio	0.06	0.35	0.26	0.26	0.26	0.26	0.59	0.59	0.59	0.59
Clearance Time (s)	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.5	4.5	4.5	4.5
Lane Grp Cap (vph)	89	486	373	378	356	2642				
v/s Ratio Prot	0.00						0.38			
v/s Ratio Perm	0.04	0.16	0.20	0.20	0.15	0.15	0.32	0.32	0.32	0.32
v/c Ratio	0.46	0.46	0.75	0.75	0.57	0.57	0.64	0.64	0.53	0.01
Uniform Delay, d1	62.4	35.4	47.4	47.4	44.8	44.8	18.6	18.6	16.8	11.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.30	1.30	1.00	1.00
Incremental Delay, d2	0.2	0.7	8.4	7.9	2.2	0.9	0.9	0.9	0.8	0.0
Delay (s)	62.6	36.0	55.8	55.3	47.0	25.1	25.1	25.1	17.6	11.6
Level of Service	E	D	E	E	D	D	C	C	B	B
Approach Delay (s)	36.5			52.1			25.1		17.5	
Approach LOS	D			D			C		B	
Intersection Summary										
HCM 2000 Control Delay	29.1								C	
HCM 2000 Volume to Capacity ratio	0.67									
Actuated Cycle Length (s)	140.0								12.0	
Intersection Capacity Utilization	67.7%								C	
Analysis Period (min)	15									
c. Critical Lane Group										

Lanes, Volumes, Timings
203: Argus Rd & South Service Rd

Total 2027
AM Peak Hour

EBL	EBT	WBT	WBR	SBL	SBR
↖	→	←	↗	↖	↗
EBL	EBT	WBT	WBR	SBL	SBR
1	76	681	132	4	3
Lane Configurations					
Traffic Volume (vph)	1	76	681	132	4
Future Volume (vph)	1	76	681	132	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					
Flt Protected	0.999	0.975	0.942		
Satd. Flow (prot)	0	1672	1628	0	1566
Flt Permitted	0.999	0.972	0.972		
Satd. Flow (perm)	0	1672	1628	0	1566
Link Speed (k/h)	50	50	50		
Link Distance (m)	116.7	145.7	51.8		
Travel Time (s)	8.4	10.5	3.7		
Conf. Peds. (#/hr)	1		1	5	1
Peak Hour Factor	0.25	0.42	0.86	0.72	0.25
Heavy Vehicles (%)	100%	0%	3%	0%	0%
Adj. Flow (vph)	4	181	792	183	12
Shared Lane Traffic (%)					
Lane Group Flow (vph)	0	185	975	0	28
Enter Blocked Intersection	No	No	No	No	No
Line Alignment	Left	Left	Right	Left	Right
Median Width(m)	0.0	0.0	3.6		
Link Offset(m)	0.0	0.0	0.0		
Crosswalk Width(m)	4.8	4.8	4.8		
Two way Left Turn Lane					
Headway Factor	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	24		14	24	14
Sign Control	Free	Free	Free	Stop	Stop
Intersection Summary					
Area Type:	CBD				
Control Type:	Unsignalized				
Intersection Capacity Utilization	59.1%				
Analysis Period (min)	15				
ICU Level of Service B					

HCM Unsignalized Intersection Capacity Analysis
203: Argus Rd & South Service Rd

Total 2027
AM Peak Hour

EBL	EBT	WBT	WBR	SBL	SBR
↖	→	←	↗	↖	↗
EBL	EBT	WBT	WBR	SBL	SBR
1	76	681	132	4	3
Lane Configurations					
Traffic Volume (veh/h)	1	76	681	132	4
Future Volume (Veh/h)	1	76	681	132	4
Sign Control	Free	Free	Free	Stop	Stop
Grade	0%	0%	0%	0%	0%
Peak Hour Factor	0.25	0.42	0.86	0.72	0.25
Hourly flow rate (vph)	4	181	792	183	16
Pedestrians	1	5		1	
Lane Width (m)	3.6	3.6	3.6		
Walking Speed (m/s)	1.2	1.2	1.2		
Percent Blockage	0	0	0		
Right turn flare (veh)					
Median type	None	None			
Median storage (veh)					
Upstream signal (m)	358				
PX platoon unblocked					
VC, conflicting volume	976			1078	886
VC1, stage 1 conf vol					
VC2, stage 2 conf vol					
VCu, unblocked vol	976			1078	886
IC, single (s)	5.1			6.4	6.2
IC, 2 stage (s)	3.1			3.5	3.3
p0 queue free %	99			93	97
GM capacity (veh/h)	430			241	346
Direction, Lane #					
	EB 1	WB 1	SB 1		
Volume Total	185	975	28		
Volume Left	4	0	16		
Volume Right	0	183	12		
cSH	430	1700	277		
Volume to Capacity	0.01	0.57	0.10		
Queue Length 95th (m)	0.2	0.0	2.7		
Control Delay (s)	0.4	0.0	19.5		
Lane LOS	A		C		
Approach Delay (s)	0.4	0.0	19.5		
Approach LOS			C		
Intersection Summary					
Average Delay	0.5				
Intersection Capacity Utilization	59.1%				
Analysis Period (min)	15				
ICU Level of Service B					

Lanes, Volumes, Timings
204: Trafalgar Rd & Argus Rd

Total 2027
AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	89	0	1559	1456	736
Future Volume (vph)	0	89	0	1559	1456	736
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.5	3.6	3.6	3.6	3.6
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	0.91
Ped. Bike Factor		0.865		0.944		
Flt Protected						
Satd. Flow (prot)	0	1367	0	4363	4268	0
Flt Permitted						
Satd. Flow (perm)	0	1367	0	4363	4268	0
Link Speed (k/h)	50		50	50	50	
Link Distance (m)	145.7		270.2	51.4		
Travel Time (s)	10.5		19.5	3.7		
Confl. Peds. (#/hr)						11
Peak Hour Factor	0.25	0.54	0.25	0.92	0.97	0.82
Heavy Vehicles (%)	0%	7%	0%	7%	4%	2%
Adj. Flow (vph)	0	165	0	1695	1501	898
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	165	0	1695	2399	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width (m)	0.0	3.3	3.3	3.3	3.3	0.0
Link Offset (m)	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width (m)	4.8		4.8	4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.14	1.16	1.14	1.14	1.14	1.14
Turning Speed (k/h)	24	14	24			14
Sign Control	Stop		Free	Free	Free	
Intersection Summary						
Area Type:	CBD					
Control Type:	Unsignalized					
Intersection Capacity Utilization	62.7%					
Analysis Period (min)	15					
ICU Level of Service	B					

HCM Unsignalized Intersection Capacity Analysis
204: Trafalgar Rd & Argus Rd

Total 2027
AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	89	0	1559	1456	736
Future Volume (Veh/h)	0	89	0	1559	1456	736
Sign Control	Stop		Free	Free	Free	
Grade	0%		0%	0%	0%	
Peak Hour Factor	0.25	0.54	0.25	0.92	0.97	0.82
Hourly flow rate (vph)	0	165	0	1695	1501	898
Pedestrians	11					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	1					
Right turn flare (veh)			None	None	None	
Median type						
Median storage (veh)						
Upstream signal (m)			270	52		
pk. platoon unblocked	0.75	0.66	0.66			
VC, conflicting volume	2526	960	2410			
VC1, stage 1 conf vol						
VC2, stage 2 conf vol						
VCu, unblocked vol	369	0	1354			
IC, single (s)	6.8	7.0	4.1			
IC, 2 stage (s)	3.5	3.4	2.2			
pl queue free %	100	77	100			
pl capacity (veh/h)	451	703	339			
Direction_Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2 SB 3
Volume Total	165	565	565	600	600	1198
Volume Left	0	0	0	0	0	0
Volume Right	165	0	0	0	0	898
CSH	703	1700	1700	1700	1700	1700
Volume to Capacity	0.23	0.33	0.33	0.33	0.35	0.70
Queue Length 95th (m)	7.3	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	11.7	0.0	0.0	0.0	0.0	0.0
Lane LOS	B					
Approach Delay (s)	11.7	0.0			0.0	
Approach LOS	B					
Intersection Summary						
Average Delay	0.5					
Intersection Capacity Utilization	62.7%					
ICU Level of Service	B					
Analysis Period (min)	15					

Lanes, Volumes, Timings
302: Cross Ave & East Driveway Access

Total 2027
AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group						
Lane Configurations		4↑	4↑		W	
Traffic Volume (vph)	0	812	724	0	0	0
Future Volume (vph)	0	812	724	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Flt Protected						
Satd. Flow (prot)	0	3185	3185	0	1676	0
Flt Permitted						
Satd. Flow (perm)	0	3185	3185	0	1676	0
Link Speed (k/h)	50	50	50	50	50	50
Link Distance (m)	92.7	130.9	41.6			
Travel Time (s)	6.7	9.4	3.0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	883	787	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	883	787	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Right	Left	Right
Median Width(m)	3.3	3.3	3.6			
Link Offset(m)	0.0	0.0	0.0			
Crosswalk Width(m)	4.8	4.8	4.8			
Two way Left Turn Lane						
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25	Free	Free	15	25	15
Sign Control		Free	Free	Free	Stop	Stop
Intersection Summary						
Area Type:	CBD					
Control Type:	Unsignalized					
Intersection Capacity Utilization	28.3%					
Analysis Period (min)	15					
	ICU Level of Service A					

HCM Unsignalized Intersection Capacity Analysis
302: Cross Ave & East Driveway Access

Total 2027
AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement						
Lane Configurations		4↑	4↑		W	
Traffic Volume (veh/h)	0	812	724	0	0	0
Future Volume (Veh/h)	0	812	724	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Grade	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	883	787	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)			None	None		
Median type			None	None		
Median storage (veh)			93	131		
Upstream signal (m)						
pX, platoon unblocked					0.89	
VC, conflicting volume	787				1228	394
VC1, stage 1 conf vol						
VC2, stage 2 conf vol						
VCu, unblocked vol	787				1014	394
IC, single (s)	4.1				6.8	6.9
IC, 2 stage (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
CM capacity (veh/h)	828				209	606
Direction_Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 1
Volume Total	294	569	525	262	0	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
CSH	828	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.35	0.31	0.15	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS					A	A
Approach Delay (s)	0.0		0.0		0.0	
Approach LOS					A	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			28.3%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
303: North Driveway & Argus Rd

Total 2027
AM Peak Hour

	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	7	21	49	635	197	70
Traffic Volume (vph)	7	21	49	635	197	70
Future Volume (vph)	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	1.00	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor	0.900				0.965	
Flt Protected				0.996	0.964	
Satd. Flow (prot)	1676	0	0	1855	1733	0
Flt Permitted				0.996	0.964	
Satd. Flow (perm)	1676	0	0	1855	1733	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	61.0			116.7	66.7	
Travel Time (s)	4.4			8.4	4.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	8	23	53	690	214	76
Shared Lane Traffic (%)	31	0	0	743	290	0
Lane Group Flow (vph)	No	No	No	No	No	No
Enter Blocked Intersection	Left	Right	Left	Left	Right	Right
Lane Alignment	0.0	0.0	3.6			
Median Width (m)	0.0	0.0	0.0	0.0	0.0	0.0
Link Offset (m)	4.8			4.8	4.8	
Crosswalk Width (m)	1.00	1.00	1.00	1.00	1.00	1.00
Headway Factor	15	25	25	25	25	15
Turning Speed (k/h)	Free	Free	Free	Free	Stop	Stop
Sign Control	Intersection Summary					
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	64.7%					
Analysis Period (min)	15					
	ICU Level of Service C					

HCM Unsignalized Intersection Capacity Analysis
303: North Driveway & Argus Rd

Total 2027
AM Peak Hour

	EBT	EBR	WBL	WBT	NBL	NBR
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	7	21	49	635	197	70
Traffic Volume (veh/h)	7	21	49	635	197	70
Future Volume (Veh/h)	Free	Free	Free	Stop	Stop	Stop
Sign Control	0%	0%	0%	0%	0%	0%
Grade	0.92	0.92	0.92	0.92	0.92	0.92
Peak Hour Factor	8	23	53	690	214	76
Hourly flow rate (vph)						
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)	None	None	None	None	None	None
Median type						
Median storage (veh)						
Upstream signal (m)	242					
pX, platoon unblocked						
vC, conflicting volume		31		816	20	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		31		816	20	
iC, single (s)		4.1		6.4	6.2	
iC, 2 stage (s)		2.2		3.5	3.3	
p0 queue free %		97		36	93	
qM capacity (veh/h)		1582		335	1058	
Direction_Lane #	EB 1	WB 1	NB 1			
Volume Total	31	743	290			
Volume Left	0	53	214			
Volume Right	23	0	76			
ESH	1700	1582	408			
Volume to Capacity	0.02	0.03	0.71			
Queue Length 95th (m)	0.0	0.8	43.1			
Control Delay (s)	0.0	0.9	32.7			
Lane LOS	A	D	D			
Approach Delay (s)	0.0	0.9	32.7			
Approach LOS	D	D	D			
Intersection Summary	Intersection Summary					
Average Delay	9.5					
Intersection Capacity Utilization	64.7%					
ICU Level of Service	C					
Analysis Period (min)	15					

Queuing and Blocking Report

Total 2027
AM Peak Hour

Intersection: 101: Trafalgar Rd & Cross Ave/South Service Rd

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB	
	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	
Directions Served	99.1	101.5	84.7	32.2	65.8	33.3	57.4	89.5	109.5	120.5	32.3	194.2				
Maximum Queue (m)	65.7	70.1	41.4	13.7	27.5	15.3	37.7	55.4	65.9	75.2	31.1	95.2				
Average Queue (m)	88.8	95.1	75.0	31.3	53.3	27.6	62.9	79.9	93.7	105.6	36.3	164.6				
95th Queue (m)																
Link Distance (m)	104.4	104.4		313.2	313.2			128.1	128.1	128.1		238.9				
Upstream Blk Time (%)	0	0						0	0	0		0				
Queuing Penalty (veh)	0	0						0	0	0		0				
Storage Bay Dist (m)	130.0			25.0			50.0				0	1			25.0	
Storage Blk Time (%)	0	0		1	16		1	12			4	26			44	
Queuing Penalty (veh)	0	0		1	8		4	17			126	80				

Intersection: 101: Trafalgar Rd & Cross Ave/South Service Rd

Movement	SB	SB	TR
Directions Served	191.1	213.3	
Maximum Queue (m)	101.8	137.5	
Average Queue (m)	179.2	208.8	
95th Queue (m)	238.9	238.9	
Link Distance (m)	0	1	
Upstream Blk Time (%)	0	4	
Queuing Penalty (veh)	0	4	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 102: GO Bus Terminal/Argus Rd & Cross Ave

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB	B14
	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR
Directions Served	27.1	63.5	45.2	27.3	44.0	44.1	28.0	32.4	22.4	177.0	36.8					
Maximum Queue (m)	7.9	30.1	18.4	12.4	23.3	23.3	7.5	12.7	21.3	118.3	6.6					
Average Queue (m)	20.5	50.2	36.1	29.3	40.6	39.3	22.5	27.4	27.3	205.3	31.6					
95th Queue (m)																
Link Distance (m)	196.3	196.3		72.4	72.4	66.0	66.0	66.0	158.9	40.8		15			2	
Upstream Blk Time (%)												125			18	
Queuing Penalty (veh)												33			48	
Storage Bay Dist (m)	20.0			20.0							15.0					
Storage Blk Time (%)	0	20		3	9						48					
Queuing Penalty (veh)	1	7		10	4						189				118	

Queuing and Blocking Report

Total 2027
AM Peak Hour

Intersection: 104: Trafalgar Rd & Cornwall Rd

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB	
	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	
Directions Served	81.4	86.1	98.5	89.1	35.0	107.6	129.0	32.3	77.2	71.2	54.6	60.2				
Maximum Queue (m)	52.0	61.2	44.8	47.4	7.0	57.7	59.9	16.2	47.1	38.0	30.0	34.1				
Average Queue (m)	78.5	83.9	75.5	75.8	21.6	87.2	117.8	36.2	72.3	63.4	50.0	54.6				
95th Queue (m)																
Link Distance (m)	266.8	266.8		122.1	122.1			289.9	289.9	289.9		101.5				
Upstream Blk Time (%)	0	0						0	0	0		0				
Queuing Penalty (veh)	0	0						0	0	0		0				
Storage Bay Dist (m)	80.0	80.0		80.0							25.0				80.0	
Storage Blk Time (%)	0	1		0	1		1	4			34				17	
Queuing Penalty (veh)	0	2		1	0		0	8			17					

Intersection: 104: Trafalgar Rd & Cornwall Rd

Movement	SB	SB	R	B34
Directions Served	84.0	28.7	5.2	
Maximum Queue (m)	27.9	8.1	0.2	
Average Queue (m)	60.6	21.0	3.7	
95th Queue (m)	101.5	101.5	128.1	
Link Distance (m)	0	1		
Upstream Blk Time (%)	0	1		
Queuing Penalty (veh)	0	1		
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 105: Trafalgar Rd & QEW EB-Off Ramp

Movement	EB	EB	EB	NB	NB	NB	NB	SB	SB	SB	SB
	L	L	R	T	T	T	T	L	L	T	T
Directions Served	141.4	185.4	187.4	36.9	42.2	35.8	318.2	320.3	314.1		
Maximum Queue (m)	76.2	121.6	159.7	28.6	31.2	29.3	293.4	307.3	305.9		
Average Queue (m)	115.9	222.2	214.9	33.5	38.4	33.1	337.4	315.9	311.0		
95th Queue (m)											
Link Distance (m)	176.9	176.9	176.9	27.8	27.8	27.8	300.4	300.4	300.4		
Upstream Blk Time (%)	0	12	32	41	46	46	14	32	46		
Queuing Penalty (veh)	0	0	0	212	241	239	91	210	304		
Storage Bay Dist (m)											
Storage Blk Time (%)											
Queuing Penalty (veh)											

Queuing and Blocking Report

Total 2027
AM Peak Hour

Intersection: 106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

Movement	EB	EB	WB	WB	LT	R	WB	WB	NB	NB	T	T	SB	SB	T	T	SB	SB	T	T	SB	SB
Directions Served	L	R	L	R	LT	R	WB	WB	NB	NB	T	T	SB	SB	T	T	SB	SB	T	T	SB	SB
Maximum Queue (m)	11.5	127.1	136.1	147.1	71.5	107.6	116.4	107.2	268.8	269.6	269.3	262.8	269.3	262.8	269.3	262.8	269.3	262.8	269.3	262.8	269.3	262.8
Average Queue (m)	0.4	67.2	69.7	82.0	3.6	70.6	77.8	72.0	241.5	241.5	241.4	241.4	241.4	207.3	241.4	207.3	241.4	207.3	241.4	207.3	241.4	207.3
95th Queue (m)	8.1	126.6	130.2	143.1	44.8	105.8	110.1	101.8	323.1	323.1	323.8	319.6	319.6	374.8	319.6	374.8	319.6	374.8	319.6	374.8	319.6	374.8
Link Distance (m)	113.7	173.2	173.2	173.2	173.2	300.4	300.4	300.4	254.7	254.7	254.7	254.7	254.7	254.7	254.7	254.7	254.7	254.7	254.7	254.7	254.7	254.7
Upstream Blk Time (%)	5	1	2	0	0	0	0	0	66	78	80	63	63	63	63	63	63	63	63	63	63	63
Queuing Penalty (veh)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Storage Bay Dist (m)	50.0																					
Storage Blk Time (%)	40																					
Queuing Penalty (veh)	0																					

Intersection: 203: Argus Rd & South Service Rd

Movement	EB	WB	SB	SB	LT	TR	LR
Directions Served	LT	TR	LR	LR			
Maximum Queue (m)	8.9	8.5	8.8	8.8			
Average Queue (m)	0.4	0.6	1.8	1.8			
95th Queue (m)	5.6	4.9	7.6	7.6			
Link Distance (m)	102.8	112.4	43.0	43.0			
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 204: Trafalgar Rd & Argus Rd

Movement	EB	NB	NB	SB	SB	T	T	SB	SB	T	TR
Directions Served	R	T	T	T	T	T	TR				
Maximum Queue (m)	30.9	117.4	133.4	127.3	1.7	21.1	39.0				
Average Queue (m)	11.4	54.5	61.9	67.1	0.1	1.7	8.2				
95th Queue (m)	21.8	98.1	108.4	110.6	1.2	10.7	28.3				
Link Distance (m)	112.4	238.9	238.9	238.9	27.8	27.8	27.8				
Upstream Blk Time (%)					0	1	9				
Queuing Penalty (veh)					0	9	9				
Storage Bay Dist (m)											
Storage Blk Time (%)											
Queuing Penalty (veh)											

Queuing and Blocking Report

Total 2027
AM Peak Hour

Intersection: 302: Cross Ave & East Driveway Access

Movement	EB	LT
Directions Served	LT	
Maximum Queue (m)	6.9	
Average Queue (m)	0.2	
95th Queue (m)	3.0	
Link Distance (m)	72.4	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 303: North Driveway & Argus Rd

Movement	WB	NB	LT	LR
Directions Served	LT	LR		
Maximum Queue (m)	33.7	59.1		
Average Queue (m)	3.0	25.2		
95th Queue (m)	23.5	48.7		
Link Distance (m)	102.8	58.0		
Upstream Blk Time (%)	0	5		
Queuing Penalty (veh)	0	0		
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 2051

Lanes, Volumes, Timings
101: Trafalgar Rd & Cross Ave/South Service Rd

Total 2027
PM Peak Hour

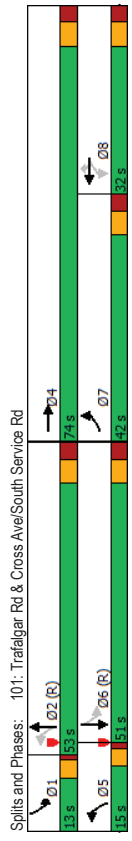
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT
Traffic Volume (vph)	1024	95	146	167	167	253	180	1526	45	150	1206	353
Future Volume (vph)	1024	95	146	167	167	253	180	1526	45	150	1206	353
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.3	3.6	3.3	3.6	3.3	3.6	3.3	3.6	3.3	3.6
Storage Length (m)	130.0	0.0	25.0	0.0	25.0	0.0	50.0	0.0	25.0	0.0	25.0	0.0
Storage Lanes	1	0	1	1	1	1	1	1	1	1	1	1
Taper Length (m)	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.91	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor	1.00	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Frt	0.903			0.850			0.995			0.966		
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2795	1386	0	1525	1583	1382	1428	4483	0	1525	4334	0
Flt Permitted	0.950			0.551			0.087			0.081		
Satd. Flow (perm)	2790	1386	0	879	1583	1362	131	4483	0	146	4334	0
Right Turn on Red	Yes			Yes			Yes			Yes		
Satd. Flow (RTOR)	95			117			4			57		
Link Speed (km/h)	50			50			50			50		
Link Distance (m)	122.6			330.4			150.2			270.2		
Travel Time (s)	8.8			23.8			10.8			19.5		
Conf. Peds. (#/hr)	1			4			10			52		
Peak Hour Factor	0.87	0.77	0.64	0.77	0.77	0.77	0.81	0.88	0.80	0.84	0.84	0.83
Heavy Vehicles (%)	9%	6%	12%	3%	8%	4%	10%	3%	0%	3%	3%	4%
Adj. Flow (vph)	1177	123	228	217	217	329	222	1734	56	179	1436	425
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1177	351	0	217	217	329	222	1790	0	179	1861	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width (m)	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
Link Offset (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width (m)	4.8			4.8			4.8			4.8		
Two way Left Turn Lane												
Headway Factor	1.19	1.14	1.14	1.19	1.14	1.16	1.19	1.14	1.14	1.19	1.14	1.14
Turning Speed (km/h)	24	14	24	24	14	24	24	14	24	24	14	24
Number of Detectors	1	2	1	1	2	1	1	2	1	2	1	2
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Left	Thru	Right	Left
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	10.0	2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4			9.4			9.4			9.4		
Detector 2 Size (m)	0.6			0.6			0.6			0.6		
Detector 2 Type	Ch+Ex			Ch+Ex			Ch+Ex			Ch+Ex		
Detector 2 Channel												

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Lanes, Volumes, Timings
101: Trafalgar Rd & Cross Ave/South Service Rd

Total 2027
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	Prot	NA	NA	Perm	NA	Perm	pm+pt	NA	NA	pm+pt	NA	NA
Protected Phases	7	4		8	8	2	5	2	1	6		
Permitted Phases	7	4		8	8	2	5	2	1	6		
Detector Phase	7	4		8	8	2	5	2	1	6		
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	7.0	27.0	7.0	27.0	7.0	27.0
Minimum Split (s)	17.0	25.0	25.0	25.0	25.0	25.0	11.5	34.0	11.5	34.0	11.5	34.0
Total Split (s)	42.0	74.0	74.0	32.0	32.0	32.0	15.0	53.0	13.0	51.0	13.0	51.0
Total Split (%)	30.0%	52.9%	52.9%	22.9%	22.9%	22.9%	10.7%	37.9%	9.3%	36.4%	9.3%	36.4%
Maximum Green (s)	35.0	67.0	67.0	25.0	25.0	25.0	11.0	46.0	9.0	44.0	9.0	44.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	1.0	3.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	0.0	-3.0	0.0	-3.0	0.0	-3.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	4.0	4.0	4.0	4.0	4.0	3.0	5.0	3.0	5.0	3.0	5.0
Recall Mode	Min	Min	Min	Min	Min	Min	Min	C-Max	Min	C-Max	Min	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Ad Effct Green (s)	38.0	70.0	70.0	25.0	28.0	28.0	60.0	49.0	56.0	47.0	47.0	47.0
Acted v/c Ratio	0.27	0.50	0.50	0.18	0.20	0.20	0.43	0.35	0.40	0.34	0.40	0.34
v/c Ratio	1.55	0.47	0.47	1.39	0.69	0.90	1.41	1.14	1.22	1.25	1.22	1.25
Control Delay	290.1	18.6	18.6	252.0	64.3	62.5	232.6	111.7	175.6	154.9	175.6	154.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	290.1	18.6	18.6	252.0	64.3	62.5	232.6	111.7	175.6	154.9	175.6	154.9
LOS	F	B	B	F	E	E	F	F	F	F	F	F
Approach Delay	227.8			116.9			125.1			156.7		
Approach LOS	F			F			F			F		
Intersection Summary	CBD											
Area Type:	CBD											
Cycle Length:	140											
Actuated Cycle Length:	140											
Offset:	128 (91%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green											
Natural Cycle:	150											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	1.55											
Intersection Signal Delay:	159.0											
Intersection Capacity Utilization:	101.7%											
Analysis Period (min):	15											
ICU Level of Service G												



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Queues
101: Tatalgar Rd & Cross Ave/South Service Rd

Total 2027
PM Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group	1177	351	217	217	329	222	1790	179	1861
Lane Group Flow (vph)	1.55	0.47	1.39	0.69	0.90	1.41	1.14	1.22	1.25
v/c Ratio	290.1	18.6	252.0	64.3	62.5	232.6	111.7	175.6	154.9
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	290.1	18.6	252.0	64.3	62.5	232.6	111.7	175.6	154.9
Queue Length 50th (m)	~248.6	47.1	~83.8	59.3	63.8	~72.7	~219.2	~49.4	~239.1
Queue Length 95th (m)	#278.5	56.7	#111.0	74.0	#81.5	m#72.2	m#179.4	m#88.0	#241.4
Internal Link Dist (m)	98.6		306.4			126.2			246.2
Turn Bay Length (m)	130.0		25.0		50.0				25.0
Base Capacity (vph)	758	740	156	316	366	158	1571	147	1492
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.55	0.47	1.39	0.69	0.90	1.41	1.14	1.22	1.25
Intersection Summary									
~ Volume exceeds capacity, queue is theoretically infinite.									
Queue shown is maximum after two cycles.									
# 95th percentile volume exceeds capacity, queue may be longer.									
Queue shown is maximum after two cycles.									
m Volume for 95th percentile queue is metered by upstream signal.									

HCM Signalized Intersection Capacity Analysis
101: Tatalgar Rd & Cross Ave/South Service Rd

Total 2027
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
Traffic Volume (vph)	1024	95	146	167	167	253	180	1526	45	150	1206	353
Future Volume (vph)	1024	95	146	167	167	253	180	1526	45	150	1206	353
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.5	3.3	3.6	3.6	3.3	3.6	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.91	1.00	0.91
Frbp. ped/bikes	1.00	0.99	1.00	1.00	1.00	0.99	1.00	0.99	1.00	0.99	1.00	0.99
Frbp. ped/bikes	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.95	1.00	0.90	1.00	1.00	0.85	1.00	1.00	1.00	1.00	0.97	1.00
Flt Protected	0.95	1.00	0.90	1.00	1.00	0.95	1.00	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	2785	1385		1516	1583	1362	1428	4484		1525	4333	
Flt Permitted	0.95	1.00		0.55	1.00	1.00	0.09	1.00		0.09	1.00	
Satd. Flow (perm)	2785	1385		879	1583	1362	131	4484		146	4333	
Peak-hour factor, PHF	0.87	0.77	0.64	0.77	0.77	0.77	0.81	0.88	0.80	0.84	0.84	0.83
Adj. Flow (vph)	1177	123	228	217	217	329	222	1734	56	179	1436	425
RTOR Reduction (vph)	0	48	0	0	0	94	0	3	0	0	38	0
Lane Group Flow (vph)	1177	304	0	217	217	235	222	1787	0	179	1823	0
Conf. Peds. (#/hr)	1	4	4	4	4	1	10	52	52	52	10	10
Heavy Vehicles (%)	9%	6%	12%	3%	8%	4%	10%	3%	0%	3%	3%	4%
Turn Type	Prot	NA	Perm	NA	Perm	NA	pm-pt	NA	pm-pt	pm-pt	NA	NA
Protected Phases	7	4		8	8	2	2	1	2	1	6	
Permitted Phases				8	8	2	2	6				
Actuated Green, G (s)	35.0	67.0		25.0	25.0	25.0	57.0	46.0	53.0	44.0	44.0	
Effective Green, g (s)	38.0	70.0		25.0	28.0	28.0	57.0	49.0	53.0	47.0	47.0	
Actuated g/C Ratio	0.27	0.50		0.18	0.20	0.20	0.41	0.35	0.38	0.34	0.34	
Clearance Time (s)	7.0	7.0		7.0	7.0	7.0	4.0	7.0	4.0	7.0	7.0	
Vehicle Extension (s)	3.0	4.0		4.0	4.0	4.0	3.0	5.0	3.0	4.0	5.0	
Lane Grp Cap (vph)	758	692		156	316	272	155	1569	143	1454	1454	
v/s Ratio Prot	c0.42	0.22		c0.14	0.14	0.17	c0.11	0.40	0.08	0.42	0.39	
v/s Ratio Perm				c0.25	0.17	0.17	c0.47					
v/c Ratio	1.55	0.44		1.39	0.69	0.87	1.43	1.14	1.25	1.25	1.25	
Uniform Delay, d1	51.0	22.4		57.5	51.9	54.2	39.4	45.5	36.1	46.5	46.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.25	1.10	1.37	1.01	1.01	
Incremental Delay, d2	255.2	0.6		210.3	6.6	24.4	211.8	66.9	152.6	119.2	119.2	
Delay (s)	306.2	23.0		267.8	58.5	78.6	261.0	116.9	202.2	166.3	166.3	
Level of Service	F	C		F	E	E	F	F	F	F	F	
Approach Delay (s)												
Approach LOS												
Intersection Summary												
HCM 2000 Control Delay	170.0											
HCM 2000 Volume to Capacity ratio	1.41											
Actuated Cycle Length (s)	140.0											
Intersection Capacity Utilization	101.7%											
Analysis Period (min)	15											
c Critical Lane Group	F											

Queues
102: GO Bus Terminal/Argus Rd & Cross Ave

Total 2027
PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group	62	1088	48	563	32	81	301	207
Lane Group Flow (vph)	0.19	0.77	0.37	0.30	0.23	0.28	0.85	0.40
v/c Ratio	16.2	24.3	15.8	7.9	27.9	9.8	52.5	8.6
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	16.2	24.3	15.8	7.9	27.9	9.8	52.5	8.6
Total Delay	6.4	81.7	3.4	20.3	4.2	1.0	50.4	4.3
Queue Length 50th (m)	7.9	102.9	7.7	28.4	6.7	0.0	#76.0	6.2
Queue Length 95th (m)	183.1		76.7		57.9		156.7	
Internal Link Dist (m)	20.0		20.0		15.0		15.0	
Turn Bay Length (m)	357	1535	134	1989	151	310	378	541
Base Capacity (vph)	0	0	0	0	0	0	0	0
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	0.17	0.71	0.36	0.28	0.21	0.26	0.80	0.38

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

HCM Signalized Intersection Capacity Analysis
102: GO Bus Terminal/Argus Rd & Cross Ave

Total 2027
PM Peak Hour

Movement	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	32	922	18	40	383	101	17	2	51
Future Volume (vph)	32	922	18	40	383	101	17	2	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.3	3.6	3.3	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.95	1.00	0.97	1.00	0.99	1.00
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98	1.00
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98	1.00
Frt	0.95	1.00	0.95	1.00	0.97	1.00	0.86	1.00	0.87
Flt Protected	1569	3124	818	3064	803	788	1539	1281	
Satd. Flow (prot)	0.44	1.00	0.12	1.00	0.54	1.00	0.70	1.00	
Flt Permitted	728	3124	104	3064	458	788	1141	1281	
Satd. Flow (perm)	0.52	0.87	0.65	0.84	0.88	0.79	0.53	0.25	0.70
Peak-hour factor, PHF	62	1060	28	48	435	128	32	8	73
Adj. Flow (vph)	0	2	0	0	31	0	0	50	0
RTOR Reduction (vph)	62	1086	0	48	532	0	32	31	0
Lane Group Flow (vph)	1	3	3	3	1	3	20	20	3
Conf. Peds. (#/hr)	0%	1%	100%	92%	1%	5%	95%	0%	91%
Heavy Vehicles (%)	Perm	NA	NA	pm+pt	NA	Perm	NA	Perm	NA
Turn Type	2	6	1	6	8	8	4	4	4
Protected Phases	2	6	1	6	8	8	4	4	4
Permitted Phases	36.4	36.4	48.7	48.7	24.4	24.4	24.4	24.4	24.4
Actuated Green, G (s)	38.4	38.4	48.7	50.7	26.4	26.4	26.4	26.4	26.4
Effective Green, g (s)	0.45	0.45	0.57	0.60	0.31	0.31	0.31	0.31	0.31
Actuated g/C Ratio	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Clearance Time (s)	5.0	5.0	2.5	5.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	328	1409	129	1825	142	244	353	397	0.07
Lane Grp Cap (vph)	c0.35	c0.04	0.17	0.17	0.07	0.07	c0.26	0.85	0.22
v/s Ratio Prot	0.19	0.77	0.37	0.29	0.23	0.13	0.23	0.13	0.22
v/s Ratio Perm	14.0	19.6	11.8	8.4	21.8	21.1	21.1	21.7	21.7
v/c Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay, d1	0.6	3.1	1.3	0.2	1.1	0.3	1.83	0.4	0.4
Progression Factor	14.6	22.8	13.1	8.6	22.9	21.4	45.8	22.1	22.1
Incremental Delay, d2	B	C	B	A	C	C	D	C	C
Delay (s)	22.3	22.3	9.0	9.0	21.8	21.8	36.2	36.2	36.2
Level of Service	C	C	A	A	C	C	D	D	D
Approach Delay (s)	C	C	A	A	C	C	D	D	D
Approach LOS	C	C	A	A	C	C	D	D	D

Intersection Summary
HCM 2000 Control Delay 21.8 HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio 0.75
Actuated Cycle Length (s) 85.1 Sum of lost time (s) 12.0
Intersection Capacity Utilization 64.7% ICU Level of Service C
Analysis Period (min) 15
c Critical Lane Group

Lanes, Volumes, Timings
104: Trafalgar Rd & Cornwall Rd

Total 2027
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT
Traffic Volume (vph)	423	560	198	70	781	513	139	435	47	444	512
Future Volume (vph)	423	560	198	70	781	513	139	435	47	444	512
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.6	3.3	3.6	3.3	3.6	3.6	3.3	3.6	3.5
Storage Length (m)	80.0	0.0	80.0	0.0	25.0	0.0	80.0	0.0	80.0	0.0	1
Storage Lanes	2	0	1	0	1	0	1	0	1	0	1
Taper Length (m)	7.5	0.95	0.95	7.5	0.95	1.00	0.95	0.95	0.95	0.95	7.5
Lane Util. Factor	0.97	0.95	0.95	1.00	0.98	0.99	1.00	0.98	0.98	0.98	1.00
Ped Bike Factor	1.00	0.99	1.00	0.98	0.99	1.00	0.98	1.00	0.98	0.98	1.00
Frt	0.948			0.942			0.983			0.850	
Flt Protected	0.950			0.950			0.950			0.950	
Satd. Flow (prot)	2987	2954	0	1481	2918	0	1540	3153	0	2929	1676
Flt Permitted	0.950			0.950			0.950			0.950	
Satd. Flow (perm)	2973	2954	0	1475	2918	0	1532	3153	0	2877	1676
Right Turn on Red			Yes		Yes		Yes		Yes		Yes
Satd. Flow (RTOR)	82			108			9				199
Link Speed (k/h)	50			50			50				50
Link Distance (m)	285.8			142.3			311.4				130.3
Travel Time (s)	20.6			10.2			22.4				9.4
Confl. Peds. (#/hr)	25			7			25			18	18
Peak Hour Factor	0.93	0.91	0.60	0.75	0.86	0.90	0.60	0.86	0.75	0.84	0.86
Heavy Vehicles (%)	2%	4%	1%	6%	3%	3%	2%	1%	0%	4%	2%
Adj. Flow (vph)	455	615	330	93	908	570	232	506	63	529	595
Shared Lane Traffic (%)											
Lane Group Flow (vph)	455	945	0	93	1478	0	232	569	0	529	595
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right
Median Width (m)	6.6			6.6			6.6			6.6	
Link Offset (m)	0.0			0.0			0.0			0.0	
Crosswalk Width (m)	4.8			4.8			4.8			4.8	
Two way Left Turn Lane											
Headway Factor	1.19	1.14	1.14	1.19	1.14	1.14	1.19	1.14	1.14	1.19	1.14
Turning Speed (k/h)	24	14	14	24	14	14	24	14	14	24	14
Number of Detectors	1	2		1	2		1	2		1	2
Detector Template	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Type	0.0	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Detector 1 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4			9.4			9.4			9.4	
Detector 2 Size (m)	0.6			0.6			0.6			0.6	
Detector 2 Type	0.6			0.6			0.6			0.6	
Detector 2 Channel	0.6			0.6			0.6			0.6	

Lanes, Volumes, Timings
104: Trafalgar Rd & Cornwall Rd

Total 2027
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Detector 2 Extend (s)	0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	NA	Prot	NA	NA	Prot	NA	Prot	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6
Permitted Phases	3	8		7	4		5	2		1	6
Switch Phase	7.0	10.0		7.0	10.0		7.0	20.0		7.0	20.0
Minimum Initial (s)	12.0	37.0		12.0	37.0		12.0	39.0		12.0	39.0
Minimum Split (s)	20.0	57.0		16.0	53.0		20.0	41.0		26.0	47.0
Total Split (%)	14.3%	40.7%		11.4%	37.9%		14.3%	29.3%		18.5%	33.6%
Maximum Green (s)	15.0	50.0		11.0	46.0		15.0	34.0		21.0	40.0
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0		3.0	4.0
All-Red Time (s)	2.0	3.0		2.0	3.0		2.0	3.0		2.0	3.0
Lost Time Adjust (s)	-1.0	-3.0		-1.0	-3.0		-1.0	-3.0		-1.0	-3.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes
Vehicle Extension (s)	0.2	0.2		0.2	0.2		0.2	0.2		0.2	0.2
Recall Mode	Max	Max		Max	Max		None	C-Max		Max	C-Max
Walk Time (s)	7.0			7.0			7.0			7.0	
Flash Dont Walk (s)	23.0			23.0			25.0			25.0	
Pedestrian Calls (#/hr)	0			0			0			0	
Act Effct Green (s)	16.0	53.0		12.0	49.0		16.0	37.0		22.0	43.0
Actuated v/c Ratio	0.11	0.38		0.09	0.35		0.11	0.26		0.16	0.31
v/c Ratio	1.33	0.81		0.74	1.35		1.32	0.68		1.15	1.16
Control Delay	215.2	41.9		94.4	199.6		223.8	50.2		134.8	111.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	215.2	41.9		94.4	199.6		223.8	50.2		134.8	111.9
LOS	F	D		F	F		F	D		F	F
Approach Delay	98.2			193.4			100.5			103.9	
Approach LOS	F			F			F			F	
Intersection Summary	CBD										
Area Type	CBD										
Cycle Length	140										
Actuated Cycle Length	140										
Offset: 0 (0%)	Referenced to phase 2/NBT and 6/SBT. Start of Green, Master Intersection										
Control Type	Actuated-Coordinated										
Maximum v/c Ratio	1.35										
Intersection Signal Delay	127.6										
Intersection Capacity Utilization	110.7%										
Analysis Period (min)	15										
ICU Level of Service H	F										

Queues
104: Tatalgar Rd & Cornwall Rd

Total 2027
PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBR
Lane Group	455	945	93	1478	232	569	529	595
Lane Group Flow (vph)	1.33	0.81	0.74	1.35	1.32	0.68	1.15	1.16
v/c Ratio	215.2	41.9	94.4	199.6	233.8	50.2	134.8	111.9
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	215.2	41.9	94.4	199.6	233.8	50.2	134.8	111.9
Total Delay	-88.6	119.3	26.9	-287.0	-87.1	77.4	-95.7	-198.7
Queue Length 50th (m)	#124.4	148.3	#40.2	#309.2	#76.8	93.2	m70.6	m99.8
Queue Length 95th (m)	261.8		118.3		287.4			106.3
Internal Link Dist (m)	80.0		80.0		25.0		80.0	
Turn Bay Length (m)	341	1169	126	1091	176	839	460	514
Base Capacity (vph)	0	0	0	0	0	0	0	0
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	1.33	0.81	0.74	1.35	1.32	0.68	1.15	1.16

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

HCM Signalized Intersection Capacity Analysis
104: Tatalgar Rd & Cornwall Rd

Total 2027
PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBR
Movement	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBR
Lane Configurations	TT	TT	TT	TT	TT	TT	TT	TT
Traffic Volume (vph)	423	560	198	781	513	139	435	473
Future Volume (vph)	423	560	198	781	513	139	435	473
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.95	1.00	0.95	0.97	1.00
Frbp. ped/bikes	1.00	0.99	1.00	0.98	1.00	1.00	1.00	0.98
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Flt Protected	2987	2953	1481	2919	1540	3155	2929	1676
Satd. Flow (prot)	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Flt Permitted	2987	2953	1481	2919	1540	3155	2929	1676
Satd. Flow (perm)	0.93	0.91	0.60	0.75	0.86	0.90	0.86	0.86
Peak-hour factor, PHF	465	615	330	93	908	570	232	506
Adj. Flow (vph)	0	51	0	0	70	0	7	0
RTOR Reduction (vph)	455	884	0	93	1408	0	232	562
Lane Group Flow (vph)	25	7	7	25	9	18	18	9
Conf. Peds. (#/hr)	2%	4%	1%	6%	3%	2%	1%	0%
Heavy Vehicles (%)	Prot	NA	NA	Prot	NA	Prot	NA	Prot
Turn Type	3	8	7	4	5	2	1	6
Protected Phases	15.0	50.0	11.0	46.0	15.0	34.0	21.0	40.0
Permitted Phases	16.0	53.0	12.0	49.0	16.0	37.0	22.0	43.0
Actuated Green, G (s)	0.11	0.38	0.09	0.35	0.11	0.26	0.16	0.31
Effective Green, g (s)	5.0	7.0	5.0	7.0	5.0	7.0	5.0	7.0
Actuated g/C Ratio	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Clearance Time (s)	341	1117	126	1021	176	833	460	514
Vehicle Extension (s)	c0.15	c0.30	0.06	c0.48	c0.15	0.18	c0.18	c0.35
Lane Grp Cap (vph)	1.33	0.80	0.74	1.38	1.32	0.68	1.15	1.16
v/s Ratio Prot	62.0	38.8	62.5	45.5	62.0	46.1	59.0	48.5
v/s Ratio Perm	1.00	1.00	1.00	1.00	1.00	1.00	1.31	0.87
Uniform Delay, d1	169.2	6.1	31.7	176.7	177.4	4.4	70.1	73.2
Progression Factor	231.2	44.8	94.2	222.2	239.4	50.5	147.7	115.5
Incremental Delay, d2	F	D	F	F	F	D	F	F
Delay (s)	F	D	F	F	F	D	F	F
Level of Service	105.4	F	214.6	F	105.2	F	118.4	F
Approach Delay (s)	F	F	F	F	F	F	F	F
Approach LOS	F	F	F	F	F	F	F	F

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBR
Intersection Summary	140.7	140.7	140.7	140.7	140.7	140.7	140.7	140.7
HCM 2000 Control Delay	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28
HCM 2000 Volume to Capacity ratio	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
Actuated Cycle Length (s)	110.7%	110.7%	110.7%	110.7%	110.7%	110.7%	110.7%	110.7%
Intersection Capacity Utilization	15	15	15	15	15	15	15	15
Analysis Period (min)								
Critical Lane Group								

Lanes, Volumes, Timings
105: Trafalgar Rd & QEII EB-Off Ramp

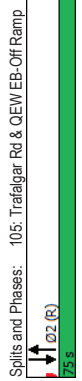
Total 2027
PM Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	886	452	0	1728	1546	0
Future Volume (vph)	886	452	0	1728	1546	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.5	3.6	3.6	3.6	3.6
Lane Util. Factor	0.97	1.00	1.00	0.91	0.81	1.00
Flt Protected	0.950					
Satd. Flow (prot)	2958	1423	0	4404	4489	0
Flt Permitted	0.950					
Satd. Flow (perm)	2958	1423	0	4404	4489	0
Right Turn on Red	Yes					Yes
Satd. Flow (RTOR)	10					
Link Speed (k/h)	50			50	50	
Link Distance (m)	199.2			51.4	324.8	
Travel Time (s)	14.3			3.7	23.4	
Peak Hour Factor	0.98	0.92	0.25	0.91	0.90	0.25
Heavy Vehicles (%)	3%	1%	0%	6%	4%	0%
Adj. Flow (vph)	904	491	0	1699	1718	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	904	491	0	1699	1718	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Right
Median Width(m)	6.6	0.0	0.0	0.0	0.0	0.0
Link Offset(m)	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.19	1.16	1.14	1.14	1.14	1.14
Turning Speed (k/h)	24	14	24		14	
Number of Detectors	1	Right	Thru	2	2	
Detector Template	2.0	2.0	10.0	10.0	10.0	
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	2.0	2.0	0.6	0.6	0.6	
Detector 1 Size(m)	2.0	2.0	0.6	0.6	0.6	
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)			9.4	9.4		
Detector 2 Size(m)			0.6	0.6		
Detector 2 Type			Ch+Ex	Ch+Ex		
Detector 2 Channel						
Detector 2 Extend (s)			0.0	0.0		
Turn Type	Prot	Perm	NA	NA	NA	
Protected Phases	4		2	2	2	
Permitted Phases	4	4	2	2	2	
Detector Phase	4	4	2	2	2	

Lanes, Volumes, Timings
105: Trafalgar Rd & QEII EB-Off Ramp

Total 2027
PM Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	10.0	10.0		29.0	29.0	
Minimum Split (s)	38.0	38.0		36.0	36.0	
Total Split (s)	65.0	65.0		75.0	75.0	
Total Split (%)	46.4%	46.4%		53.6%	53.6%	
Maximum Green (s)	58.0	58.0		68.0	68.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	24.0	24.0		22.0	22.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Ad Effct Green (s)	55.4	55.4		76.6	76.6	
Actuated g/C Ratio	0.40	0.40		0.55	0.55	
v/c Ratio	0.77	0.86		0.79	0.70	
Control Delay	41.4	53.6		24.8	16.3	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	41.4	53.6		24.8	16.3	
LOS	D	D		C	B	
Approach Delay	45.7			24.8	16.3	
Approach LOS	D			C	B	
Intersection Summary	CBD					
Area Type:	CBD					
Cycle Length:	140					
Actuated Cycle Length:	140					
Offset:	133.6 (95%), Referenced to phase 2,NBSB and 6:, Start of Green					
Natural Cycle:	75					
Control Type:	Actuated-Coordinated					
Maximum v/c Ratio:	0.86					
Intersection Signal Delay:	27.7					
Intersection Capacity Utilization:	71.8%					
Analysis Period (min):	15					



	EBL	EBR	NBT	SBT
Lane Group	904	491	1899	1718
Lane Group Flow (vph)	0.77	0.86	0.79	0.70
v/c Ratio	41.4	53.6	24.8	16.3
Control Delay	0.0	0.0	0.0	0.0
Queue Delay	41.4	53.6	24.8	16.3
Total Delay	112.9	123.4	104.7	109.5
Queue Length 50th (m)	134.2	169.2	75.7	137.8
Queue Length 95th (m)	175.2	271.4	300.8	
Internal Link Dist (m)				
Turn Bay Length (m)	1288	625	2409	2455
Base Capacity (vph)	0	0	0	0
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.70	0.79	0.79	0.70

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

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	FF	FF	FF	FF	FF	FF
Traffic Volume (vph)	886	452	0	1728	1546	0
Future Volume (vph)	886	452	0	1728	1546	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.5	3.6	3.6	3.6	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	1.00	0.91	0.91	0.91
Flt	1.00	0.85	1.00	1.00	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	2958	1423	4404	4404	4489	4489
Flt Permitted	0.95	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	2958	1423	4404	4404	4489	4489
Peak-hour factor, PHF	0.98	0.92	0.25	0.91	0.90	0.25
Adj. Flow (vph)	904	491	0	1899	1718	0
RTOR Reduction (vph)	0	6	0	0	0	0
Lane Group Flow (vph)	904	485	0	1899	1718	0
Heavy Vehicles (%)	3%	1%	0%	6%	4%	0%
Turn Type	Prot	Perm	NA	NA	NA	NA
Protected Phases	4			2	2	
Permitted Phases		4				
Actuated Green, G (s)	52.4	52.4	73.6	73.6	73.6	
Effective Green, g (s)	55.4	55.4	76.6	76.6	76.6	
Actuated g/C Ratio	0.40	0.40	0.55	0.55	0.55	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	1170	563	2409	2456		
v/s Ratio Prot	0.31		c0.43	0.38		
v/s Ratio Perm		c0.34				
v/c Ratio	0.77	0.86	0.79	0.70	0.70	
Uniform Delay, d1	36.8	38.8	25.2	23.3		
Progression Factor	1.00	1.00	0.92	0.62		
Incremental Delay, d2	3.2	12.8	0.2	1.2		
Delay (s)	40.1	51.6	23.5	15.6		
Level of Service	D	D	C	B		
Approach Delay (s)	44.1		23.5	15.6		
Approach LOS	D		C	B		
Intersection Summary						
HCM 2000 Control Delay		26.5		HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio		0.82				
Actuated Cycle Length (s)		140.0		Sum of lost time (s)		8.0
Intersection Capacity Utilization		71.8%		ICU Level of Service		C
Analysis Period (min)		15				

c Critical Lane Group

Lanes, Volumes, Timings
106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

Lanes, Volumes, Timings
106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

													Total 2027	
													PM Peak Hour	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations													→	↔
Traffic Volume (vph)	21	0	198	469	92	197	0	2265	0	0	1538	12	↑↑↑	↑
Future Volume (vph)	21	0	198	469	92	197	0	2265	0	0	1538	12	↑↑↑	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width (m)	3.3	3.6	3.5	3.3	3.6	3.5	3.6	3.6	3.6	3.6	3.6	3.5		
Storage Length (m)	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Storage Lanes	1		1	1	1	1	0	0	0	0	0	1		
Taper Length (m)	7.5		7.5	7.5	7.5	7.5	0	0	0	7.5	0	0		
Ped Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00		
Ped Bike Factor														
Frt	0.950		0.850		0.971		0.850					0.850		
Satd. Flow (prot)	1570	0	1395	1421	1406	1356	0	4446	0	0	4532	1437		
Flt Protected														
Satd. Flow (perm)	0.950		0.950	0.971		0.950		0.950		0.950		0.950		
Right Turn on Red	1570	0	1395	1421	1406	1356	0	4446	0	0	4532	1380		
Satd. Flow (RTOR)			31			100				Yes		70		
Link Speed (k/h)			50		50		50		50		50			
Link Distance (m)			142.1		192.6		324.8				288.2			
Travel Time (s)			10.2		13.9		23.4				19.3			
Conf. Peds. (#/hr)							8		5		5			
Peak Hour Factor	0.25	0.25	0.91	0.88	0.68	0.73	0.25	0.93	0.97	0.25	0.90	0.63		
Heavy Vehicles (%)	0%	0%	3%	5%	23%	6%	0%	5%	5%	0%	3%	0%		
Adj. Flow (vph)	84	0	218	533	135	270	0	2435	0	0	1709	19		
Shared Lane Traffic (%)							38%							
Lane Group Flow (vph)	84	0	218	330	338	270	0	2435	0	0	1709	19		
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No		
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Right	Left	Right		
Median Width(m)	3.3		3.3		3.3		3.3		3.3		3.3			
Link Offset(m)	0.0		0.0		0.0		0.0		0.0		0.0			
Crosswalk Width(m)			4.8		4.8		4.8				4.8			
Two way Left Turn Lane														
Headway Factor	1.19	1.14	1.16	1.19	1.14	1.16	1.14	1.14	1.14	1.14	1.14	1.16		
Turning Speed (k/h)	24	14	24	24	14	24	14	24	14	24	24	14		
Number of Detectors	1	1	1	1	2	1	2	1	2	2	2	1		
Detector Template	Left	Right	Left	Thru	Right	Thru	Thru	Right	Thru	Thru	Right	Right		
Leading Detector (m)	2.0	2.0	2.0	2.0	2.0	2.0	10.0	10.0	10.0	10.0	2.0	2.0		
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Detector 1 Size(m)	2.0	2.0	2.0	2.0	2.0	2.0	0.6	0.6	0.6	0.6	0.6	2.0		
Detector 1 Type	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex		
Detector 1 Channel														
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Detector 2 Position(m)							9.4		9.4		9.4			
Detector 2 Size(m)							0.6		0.6		0.6			
Detector 2 Type							C+Ex		C+Ex		C+Ex			

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Lanes, Volumes, Timings
106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

													Total 2027	
													PM Peak Hour	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Detector 2 Extend (s)													→	↔
Turn Type	Prot	Perm	Perm	NA	Perm	NA	Perm	NA	NA	NA	NA	Perm		
Protected Phases	3			4	4		4		6			2		
Permitted Phases	3		8	4	4	4	4		6			2		
Switch Phase	3		8	4	4	4	4		6			2		
Minimum Initial (s)	7.0		10.0	10.0	10.0	10.0	10.0		5.0			28.0		
Minimum Split (s)	23.0		38.0	38.0	38.0	38.0	38.0		35.0			35.0		
Total Split (s)	23.0		61.0	38.0	38.0	38.0	38.0		79.0			79.0		
Total Split (%)	16.4%		43.6%	27.1%	27.1%	27.1%	27.1%		56.4%			56.4%		
Maximum Green (s)	18.0		54.0	31.0	31.0	31.0	31.0		72.0			72.0		
Yellow Time (s)	3.0		4.0	4.0	4.0	4.0	4.0		4.0			4.0		
All-Red Time (s)	2.0		3.0	3.0	3.0	3.0	3.0		3.0			3.0		
Lost Time Adjust (s)	-1.0		-3.0	-3.0	-3.0	-3.0	-3.0		-3.0			-3.0		
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0	4.0		4.0			4.0		
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lag		Lag		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes		Yes		Yes	Yes		
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0		4.5			4.5		
Recall Mode	Min		Min	Min	Min	Min	Min		C-Min			C-Min		
Walk Time (s)	7.0		7.0	7.0	7.0	7.0	7.0		7.0			7.0		
Flash Dont Walk (s)	24.0		24.0	24.0	24.0	24.0	24.0		21.0			21.0		
Pedestrian Calls (#/hr)			0	0	0	0	0		0			0		
Ad Effct Green (s)	13.8		56.1	38.4	38.4	38.4	38.4		75.9			75.9		
Actuated g/C Ratio	0.10		0.40	0.27	0.27	0.27	0.27		0.54			0.54		
v/c Ratio	0.65		0.38	0.85	0.88	0.61	0.61		1.01			1.01		
Control Delay	72.4		27.1	68.9	72.8	34.5	48.0		48.0			25.7		
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0		0.0			0.0		
Total Delay	72.4		27.1	68.9	72.8	34.5	48.0		48.0			25.7		
LOS	E		C	E	E	C	D		D			C		
Approach Delay			39.7		60.4		48.0		25.4			25.4		
Approach LOS			D		E		D		C			C		
Intersection Summary														
Area Type:	CBD													
Cycle Length:	140													
Actuated Cycle Length:	140													
Offset:	115.4 (82%), Referenced to phase 2:SBT and 6:NBT, Start of Green													
Natural Cycle:	140													
Control Type:	Actuated-Coordinated													
Maximum v/c Ratio:	1.01													
Intersection Signal Delay:	42.5													
Intersection Capacity Utilization:	79.1%													
Analysis Period (min):	15													

Splits and Phases: 106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

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	EBL	EBR	WBL	WBR	NBT	SBT	SBR
Lane Group	84	218	330	338	270	2435	1709
Lane Group Flow (vph)	0.55	0.38	0.85	0.88	0.61	1.01	0.70
v/c Ratio	72.4	27.1	66.9	72.8	34.5	48.0	25.7
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	72.4	27.1	66.9	72.8	34.5	48.0	25.7
Total Delay	23.7	37.4	95.2	98.7	43.0	~226.8	131.7
Queue Length 50th (m)	10.5	60.0	#160.1	102.5	54.4	#301.5	150.0
Queue Length 95th (m)				168.6		300.8	244.2
Internal Link Dist (m)	50.0						
Turn Bay Length (m)	213	566	389	385	444	2408	2455
Base Capacity (vph)	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.37	0.85	0.88	0.61	1.01	0.70

Intersection Summary
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	21	0	198	469	92	197	0	2265	0	0	1538	12
Traffic Volume (vph)	21	0	198	469	92	197	0	2265	0	0	1538	12
Future Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	3.3	3.6	3.5	3.3	3.6	3.5	3.6	3.6	3.6	3.6	3.6	3.5
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.96
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	1.00	1.00	1.00	0.95
Satd. Flow (prot)	1570	1395	1421	1406	1356	1446	1570	1395	1421	1406	1356	1446
Flt Permitted	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	1.00	1.00	1.00	0.95
Satd. Flow (perm)	1570	1395	1421	1406	1356	1446	1570	1395	1421	1406	1356	1446
Peak-hour factor, PHF	0.25	0.25	0.81	0.88	0.68	0.73	0.25	0.93	0.97	0.25	0.90	0.63
Adj. Flow (vph)	64	0	218	533	135	270	0	2435	0	0	1709	19
RTOR Reduction (vph)	0	0	19	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	84	0	199	330	338	197	0	2435	0	0	1709	10
Conf. Peds. (#/hr)							8		5		5	8
Heavy Vehicles (%)	0%	0%	3%	5%	23%	6%	0%	5%	5%	0%	3%	0%
Turn Type	Prot	Perm	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	Perm
Protected Phases	3		4		4		6		6		2	2
Permitted Phases	8		4		4		4		4		2	2
Actuated Green, G (s)	12.8		53.2	35.4	35.4	35.4	72.8		72.8		72.8	72.8
Effective Green, g (s)	13.8		56.2	38.4	38.4	38.4	75.8		75.8		75.8	75.8
Actuated g/C Ratio	0.10		0.40	0.27	0.27	0.27	0.54		0.54		0.54	0.54
Clearance Time (s)	5.0		7.0	7.0	7.0	7.0	7.0		7.0		7.0	7.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	4.5		4.5		4.5	4.5
Lane Grp Cap (vph)	154		559	389	385	371	2407		2453		2453	747
v/s Ratio Prot	c0.05						c0.55					0.38
v/s Ratio Perm	0.55		0.36	0.85	0.88	0.53	1.01		0.70		0.70	0.01
Uniform Delay, d1	60.1		29.3	48.0	48.6	43.2	32.1		23.6		23.6	14.8
Progression Factor	1.00		1.00	1.00	1.00	1.00	0.96		1.00		1.00	1.00
Incremental Delay, d2	3.9		0.4	15.7	19.6	1.5	17.5		1.7		1.7	0.0
Delay (s)	64.0		29.7	63.7	68.2	44.6	48.1		25.3		25.3	14.9
Level of Service	E		C	E	E	D	D		C		C	B
Approach Delay (s)		39.2					59.8				25.2	
Approach LOS		D					D				C	

Intersection Summary
 HCM 2000 Control Delay 42.3 HCM 2000 Level of Service D
 HCM 2000 Volume to Capacity ratio 0.92
 Actuated Cycle Length (s) 140.0 Sum of lost time (s) 12.0
 Intersection Capacity Utilization 79.1% ICU Level of Service D
 Analysis Period (min) 15
 c Critical Lane Group

Lanes, Volumes, Timings
203: Argus Rd & South Service Rd

Total 2027
PM Peak Hour

EBL	EBT	WBT	WBR	SBL	SBR
↖	→	←	↗	↖	↗
EBL	EBT	WBT	WBR	SBL	SBR
11	35	434	91	14	15
11	35	434	91	14	15
1900	1900	1900	1900	1900	1900
1.00	1.00	1.00	1.00	1.00	1.00
0.983	0.973	0.930			
0	1248	1625	0	1552	0
0.983	0.976	0.976			
0	1248	1625	0	1552	0
50	50	50			
122.3	145.7	51.8			
8.8	10.5	3.7			
1	1	5			
0.25	0.42	0.86	0.72	0.25	0.25
100%	0%	3%	0%	0%	0%
44	83	505	126	56	60
0	127	631	0	116	0
No	No	No	No	No	No
Left	Left	Right	Right	Right	Right
0.0	0.0	0.0	3.6	3.6	
0.0	0.0	0.0	4.8	4.8	
1.14	1.14	1.14	1.14	1.14	1.14
24	Free	Free	Free	Stop	Stop

EB1	WB1	SB1
127	631	116
44	0	56
0	126	60
615	1700	426
0.07	0.37	0.27
1.8	0.0	8.7
4.5	0.0	16.6
A	C	C
4.5	0.0	16.6
C		C

EB1	WB1	SB1
127	631	116
44	0	56
0	126	60
615	1700	426
0.07	0.37	0.27
1.8	0.0	8.7
4.5	0.0	16.6
A	C	C
4.5	0.0	16.6
C		C

EB1	WB1	SB1
127	631	116
44	0	56
0	126	60
615	1700	426
0.07	0.37	0.27
1.8	0.0	8.7
4.5	0.0	16.6
A	C	C
4.5	0.0	16.6
C		C

EB1	WB1	SB1
127	631	116
44	0	56
0	126	60
615	1700	426
0.07	0.37	0.27
1.8	0.0	8.7
4.5	0.0	16.6
A	C	C
4.5	0.0	16.6
C		C

EB1	WB1	SB1
127	631	116
44	0	56
0	126	60
615	1700	426
0.07	0.37	0.27
1.8	0.0	8.7
4.5	0.0	16.6
A	C	C
4.5	0.0	16.6
C		C

HCM Unsignalized Intersection Capacity Analysis
203: Argus Rd & South Service Rd

Total 2027
PM Peak Hour

EBL	EBT	WBT	WBR	SBL	SBR
↖	→	←	↗	↖	↗
EBL	EBT	WBT	WBR	SBL	SBR
11	35	434	91	14	15
11	35	434	91	14	15
Free	Free	Free	Stop	Stop	Stop
0%	0%	0%	0%	0%	0%
0.25	0.42	0.86	0.72	0.25	0.25
44	83	505	126	56	60
1	5	5			
3.6	3.6	3.6			
1.2	1.2	1.2			
0	0	0			
None	None	None			
None	None	None			
358					
632			745	570	
632			745	570	
5.1			6.4	6.2	
3.1			3.5	3.3	
83			84	89	
615			355	524	

EB1	WB1	SB1
127	631	116
44	0	56
0	126	60
615	1700	426
0.07	0.37	0.27
1.8	0.0	8.7
4.5	0.0	16.6
A	C	C
4.5	0.0	16.6
C		C

EB1	WB1	SB1
127	631	116
44	0	56
0	126	60
615	1700	426
0.07	0.37	0.27
1.8	0.0	8.7
4.5	0.0	16.6
A	C	C
4.5	0.0	16.6
C		C

EB1	WB1	SB1
127	631	116
44	0	56
0	126	60
615	1700	426
0.07	0.37	0.27
1.8	0.0	8.7
4.5	0.0	16.6
A	C	C
4.5	0.0	16.6
C		C

EB1	WB1	SB1
127	631	116
44	0	56
0	126	60
615	1700	426
0.07	0.37	0.27
1.8	0.0	8.7
4.5	0.0	16.6
A	C	C
4.5	0.0	16.6
C		C

EB1	WB1	SB1
127	631	116
44	0	56
0	126	60
615	1700	426
0.07	0.37	0.27
1.8	0.0	8.7
4.5	0.0	16.6
A	C	C
4.5	0.0	16.6
C		C

Lanes, Volumes, Timings
204: Trafalgar Rd & Argus Rd

Total 2027
PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	72	0	2644	1507	540
Future Volume (vph)	0	72	0	2644	1507	540
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.5	3.6	3.6	3.6	3.6
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	0.91
Ped. Bike Factor		0.865			0.955	
Flt Protected						
Satd. Flow (prot)	0	1367	0	4363	4311	0
Flt Permitted						
Satd. Flow (perm)	0	1367	0	4363	4311	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	145.7			270.2	51.4	
Travel Time (s)	10.5			19.5	3.7	
Confli. Peds. (#/hr)						11
Peak Hour Factor	0.25	0.54	0.25	0.92	0.97	0.82
Heavy Vehicles (%)	0%	7%	0%	7%	4%	2%
Adj. Flow (vph)	0	133	0	2874	1554	659
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	133	0	2874	2213	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width (m)	0.0	3.3	3.3	3.3	3.3	
Link Offset (m)	0.0	0.0	0.0	0.0	0.0	
Crosswalk Width (m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.14	1.16	1.14	1.14	1.14	1.14
Turning Speed (k/h)	24	14	24			14
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	CBD					
Control Type:	Unsignalized					
Intersection Capacity Utilization	60.1%					
Analysis Period (min)	15					
ICU Level of Service	B					

HCM Unsignalized Intersection Capacity Analysis
204: Trafalgar Rd & Argus Rd

Total 2027
PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	72	0	2644	1507	540
Future Volume (Veh/h)	0	72	0	2644	1507	540
Sign Control	Stop		Free	Free	Free	
Grade	0%		0%	0%	0%	
Peak Hour Factor	0.25	0.54	0.25	0.92	0.97	0.82
Hourly flow rate (vph)	0	133	0	2874	1554	659
Pedestrians	11					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	1					
Right turn flare (veh)			None	None	None	
Median type						
Median storage (veh)						
Upstream signal (m)			270	52		
pX, platoon unblocked	0.82	0.72	0.72			
VC, conflicting volume	2862	858	2224			
VC1, stage 1 conf vol						
VC2, stage 2 conf vol						
VCu, unblocked vol	202	0	1350			
IC, single (s)	6.8	7.0	4.1			
IC, 2 stage (s)						
p0 queue free %	100	83	100			
p0 capacity (veh/h)	628	765	370			
Direction_Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2 SB 3
Volume Total	133	958	958	958	622	622 970
Volume Left	0	0	0	0	0	0
Volume Right	133	0	0	0	0	659
CSH	765	1700	1700	1700	1700	1700
Volume to Capacity	0.17	0.56	0.56	0.56	0.37	0.37 0.57
Queue Length 95th (m)	5.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	10.7	0.0	0.0	0.0	0.0	0.0
Lane LOS	B					
Approach Delay (s)	10.7	0.0			0.0	
Approach LOS	B					
Intersection Summary						
Average Delay	0.3					
Intersection Capacity Utilization	60.1%					
ICU Level of Service	B					
Analysis Period (min)	15					

Lanes, Volumes, Timings
302: Cross Ave & East Driveway Access

Total 2027
PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group						
Lane Configurations		4↑	4↑		W	
Traffic Volume (vph)	0	1265	700	0	0	0
Future Volume (vph)	0	1265	700	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Flt Protected						
Satd. Flow (prot)	0	3185	3185	0	1676	0
Flt Permitted						
Satd. Flow (perm)	0	3185	3185	0	1676	0
Link Speed (k/h)	50	50	50	50	50	50
Link Distance (m)	100.7	122.6	66.8			
Travel Time (s)	7.3	8.8	4.8			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1375	761	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1375	761	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Right	Left	Right
Median Width(m)	3.3	3.3	3.6			
Link Offset(m)	0.0	0.0	0.0			
Crosswalk Width(m)	4.8	4.8	4.8			
Two way Left Turn Lane						
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25	Free	Free	15	25	15
Sign Control		Free	Free	Free	Stop	Stop
Intersection Summary						
Area Type:	CBD					
Control Type:	Unsignalized					
Intersection Capacity Utilization	42.2%					
Analysis Period (min)	15					
	ICU Level of Service A					

HCM Unsignalized Intersection Capacity Analysis
302: Cross Ave & East Driveway Access

Total 2027
PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement						
Lane Configurations		4↑	4↑		W	
Traffic Volume (veh/h)	0	1265	700	0	0	0
Future Volume (Veh/h)	0	1265	700	0	0	0
Sign Control		Free	Free	Free	Stop	Stop
Grade		0%	0%	0%	0%	0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1375	761	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)			None	None		
Median type			None	None		
Median storage (veh)			101	123		
Upstream signal (m)						
pX, platoon unblocked					0.72	
vC, conflicting volume	761				1448	380
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	761				846	380
IC, single (s)	4.1				6.8	6.9
IC, 2 stage (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
CM capacity (veh/h)	847				217	617
Direction_Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	458	917	507	254	0	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
CSH	847	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.54	0.30	0.15	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS					A	A
Approach Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Approach LOS					A	A
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			42.2%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
303: North Driveway & Argus Rd

Total 2027
PM Peak Hour

	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	20	73	126	323	91	26
Traffic Volume (vph)	20	73	126	323	91	26
Future Volume (vph)	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	1.00	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor	0.894					
Flt Protected			0.986	0.962		
Satd. Flow (prot)	1665	0	0	1837	1738	0
Flt Permitted			0.986	0.962		
Satd. Flow (perm)	1665	0	0	1837	1738	0
Link Speed (k/h)	50		50	50	50	
Link Distance (m)	55.4		122.3	54.4		
Travel Time (s)	4.0		8.8	3.9		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	79	137	351	99	28
Shared Lane Traffic (%)						
Lane Group Flow (vph)	101	0	0	488	127	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Right
Median Width(m)	0.0		0.0	3.6		
Link Offset(m)	0.0		0.0	0.0		
Crosswalk Width(m)	4.8		4.8	4.8		
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25	25	25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	43.9%					
Analysis Period (min)	15					
	ICU Level of Service A					

HCM Unsignalized Intersection Capacity Analysis
303: North Driveway & Argus Rd

Total 2027
PM Peak Hour

	EBT	EBR	WBL	WBT	NBL	NBR
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	20	73	126	323	91	26
Traffic Volume (veh/h)	20	73	126	323	91	26
Future Volume (Veh/h)	20	73	126	323	91	26
Sign Control	Free		Free	Stop		
Grade	0%		0%	0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	79	137	351	99	28
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)	None		None			
Median type						
Median storage (veh)						
Upstream signal (m)	236					
PX platoon unblocked						
VC conflicting volume		101		686	62	
VC1 stage 1 conf vol						
VC2 stage 2 conf vol						
VCu unblocked vol		101		686	62	
IC single (s)		4.1		6.4	6.2	
IC 2 stage (s)						
P0 queue free %		2.2		3.5	3.3	
P1 queue free %		91		74	97	
CM capacity (veh/h)		1491		375	1004	
Direction_Lane #	EB 1	WB 1	NB 1			
Volume Total	101	488	127			
Volume Left	0	137	99			
Volume Right	79	0	28			
CSH	1700	1491	435			
Volume to Capacity	0.06	0.09	0.29			
Queue Length 95th (m)	0.0	2.4	9.6			
Control Delay (s)	0.0	2.8	16.6			
Lane LOS	A	A	C			
Approach Delay (s)	0.0	2.8	16.6			
Approach LOS		C				
Intersection Summary						
Average Delay	4.9					
Intersection Capacity Utilization	43.9%					
ICU Level of Service	A					
Analysis Period (min)	15					

Queuing and Blocking Report

Total 2027
PM Peak Hour

Intersection: 106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

Movement	EB	EB	WB	WB	LT	R	WB	WB	NB	NB	T	T	SB	SB	T	T	SB	SB	R
Directions Served	L	R	L	R	LT	R	WB	WB	NB	NB	T	T	SB	SB	T	T	SB	SB	T
Maximum Queue (m)	57.4	120.6	185.2	187.8	181.4	134.6	141.9	138.1	267.6	272.6	270.0	264.6	270.0	264.6	270.0	264.6	270.0	264.6	270.0
Average Queue (m)	10.8	60.5	136.1	149.8	79.7	90.0	102.2	98.2	232.8	233.2	231.4	201.7	231.4	201.7	231.4	201.7	231.4	201.7	231.4
95th Queue (m)	40.4	121.0	217.2	219.3	224.2	123.5	134.7	129.6	333.3	336.6	336.8	377.9	336.8	377.9	336.8	377.9	336.8	377.9	377.9
Link Distance (m)	119.7	173.2	173.2	173.2	173.2	300.4	300.4	300.4	254.7	254.7	254.7	254.7	254.7	254.7	254.7	254.7	254.7	254.7	254.7
Upstream Blk Time (%)	11	25	46	24	0	0	0	0	60	74	77	64	74	77	77	64	74	77	64
Queuing Penalty (veh)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Storage Bay Dist (m)	50.0																		
Storage Blk Time (%)	35																		
Queuing Penalty (veh)	7																		

Intersection: 203: Argus Rd & South Service Rd

Movement	EB	WB	SB	SB	LT	TR	LR	WB	WB	NB	NB	T <th>T <th>SB</th> <th>SB</th> <th>T <th>T <th>SB</th> <th>SB</th> </th></th></th>	T <th>SB</th> <th>SB</th> <th>T <th>T <th>SB</th> <th>SB</th> </th></th>	SB	SB	T <th>T <th>SB</th> <th>SB</th> </th>	T <th>SB</th> <th>SB</th>	SB	SB
Directions Served	LT	TR	LR																
Maximum Queue (m)	22.6	62.6	19.6																
Average Queue (m)	2.5	12.6	7.2																
95th Queue (m)	12.8	68.6	18.0																
Link Distance (m)	108.5	112.4	43.0																
Upstream Blk Time (%)	2																		
Queuing Penalty (veh)	13																		
Storage Bay Dist (m)																			
Storage Blk Time (%)																			
Queuing Penalty (veh)																			

Intersection: 204: Trafalgar Rd & Argus Rd

Movement	EB	NB	NB	SB	SB	T	T	T	SB	SB	T	TR	SB	SB	T	TR	SB	SB	T
Directions Served	R	T	T	T	T	T	T	T	T	T	T	TR	T	T	T	TR	T	T	T
Maximum Queue (m)	36.6	110.2	117.2	107.4	36.5	33.7	49.1	36.5	33.7	49.1	36.5	49.1	36.5	33.7	49.1	36.5	33.7	49.1	36.5
Average Queue (m)	13.6	53.6	61.9	63.3	12.1	20.9	29.7	12.1	20.9	29.7	12.1	29.7	12.1	20.9	29.7	12.1	20.9	29.7	12.1
95th Queue (m)	29.6	87.3	97.1	91.6	34.0	39.7	42.2	34.0	39.7	42.2	34.0	42.2	34.0	39.7	42.2	34.0	39.7	42.2	34.0
Link Distance (m)	112.4	239.0	239.0	239.0	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8
Upstream Blk Time (%)					2	5	26	2	5	26	2	26	2	5	26	2	5	26	2
Queuing Penalty (veh)					16	36	172	16	36	172	16	172	16	36	172	16	36	172	16
Storage Bay Dist (m)																			
Storage Blk Time (%)																			
Queuing Penalty (veh)																			

Queuing and Blocking Report

Total 2027
PM Peak Hour

Intersection: 302: Cross Ave & East Driveway Access

Movement	EB	EB	LT	T	LT	T
Directions Served	LT	T				
Maximum Queue (m)	91.7	99.2				
Average Queue (m)	83.5	43.1				
95th Queue (m)	88.0	109.6				
Link Distance (m)	79.5	79.5				
Upstream Blk Time (%)	41	10				
Queuing Penalty (veh)	245	61				
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 303: North Driveway & Argus Rd

Movement	EB	WB	NB	TR	LT	LR
Directions Served	TR	LT	LR			
Maximum Queue (m)	6.8	71.8	39.3			
Average Queue (m)	0.4	22.5	18.2			
95th Queue (m)	3.8	86.9	38.6			
Link Distance (m)	35.2	108.5	45.8			
Upstream Blk Time (%)	7	12				
Queuing Penalty (veh)	33	0				
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Network Summary

Network wide Queuing Penalty: 4772

Lanes, Volumes, Timings
101: Trafalgar Rd & Cross Ave/South Service Rd

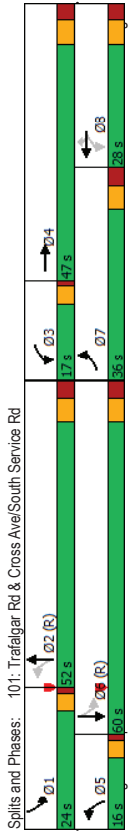
Total 2032
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT
Traffic Volume (vph)	874	253	183	69	241	162	186	865	543	365	904	612
Future Volume (vph)	874	253	183	69	241	162	186	865	543	365	904	612
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.6	3.3	3.6	3.3	3.6	3.6	3.6	3.3	3.6	3.6
Storage Length (m)	130.0	0.0	25.0	0.0	50.0	0.0	50.0	0.0	25.0	0.0	50.0	0.0
Storage Lanes	1	0	1	1	1	1	1	1	1	1	1	1
Taper Length (m)	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.80	0.91	1.00	0.80	0.91	0.99
Ped Bike Factor	1.00	0.99	0.99	0.99	0.99	0.99	0.91	0.91	0.99	0.91	0.99	0.99
Frt	0.930			0.850			0.939			0.939		
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2795	1447	0	1525	1583	1382	1428	3449	0	1525	3674	0
Flt Permitted	0.950			0.190			0.069			0.082		
Satd. Flow (perm)	2791	1447	0	305	1583	1362	134	3449	0	132	3674	0
Right Turn on Red	Yes			Yes			Yes			Yes		
Satd. Flow (RTOR)	32			210			136			147		
Link Speed (km/h)	50			50			50			50		
Link Distance (m)	130.9			330.4			150.2			270.2		
Travel Time (s)	9.4			23.8			10.8			19.5		
Conf. Peds. (#/hr)	1			4			10			52		
Peak Hour Factor	0.87	0.77	0.64	0.77	0.77	0.77	0.81	0.88	0.80	0.84	0.84	0.83
Heavy Vehicles (%)	9%	12%	3%	8%	4%	10%	3%	0%	3%	3%	4%	4%
Adj. Flow (vph)	1005	329	286	90	313	210	230	983	679	435	1076	737
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1005	615	0	90	313	210	230	1662	0	435	1813	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right
Median Width (m)	6.6			6.6			3.3			3.3		
Link Offset (m)	0.0			0.0			0.0			0.0		
Crosswalk Width (m)	4.8			4.8			4.8			4.8		
Two way Left Turn Lane												
Headway Factor	1.19	1.14	1.14	1.14	1.14	1.16	1.19	1.14	1.14	1.19	1.14	1.14
Turning Speed (km/h)	24	14	24	24	14	24	24	14	24	24	14	24
Number of Detectors	1	2	1	2	1	1	2	1	2	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Left	Thru	Right	Left
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	10.0	2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4			9.4			9.4			9.4		
Detector 2 Size (m)	0.6			0.6			0.6			0.6		
Detector 2 Type	Ch+Ex			Ch+Ex			Ch+Ex			Ch+Ex		
Detector 2 Channel												

Lanes, Volumes, Timings
101: Trafalgar Rd & Cross Ave/South Service Rd

Total 2032
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	Prot	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1		6
Permitted Phases	7	4		3	8		5	2		1		6
Detector Phase	7	4		3	8		5	2		1		6
Switch Phase												
Minimum Initial (s)	10.0	10.0		12.0	10.0		10.0	7.0		7.0		27.0
Minimum Split (s)	17.0	25.0		17.0	25.0		11.5	34.0		11.5		34.0
Total Split (s)	36.0	47.0		17.0	28.0		16.0	52.0		24.0		60.0
Total Split (%)	25.7%	33.6%		12.1%	20.0%		11.4%	37.1%		17.1%		42.9%
Maximum Green (s)	29.0	40.0		13.0	21.0		12.0	45.0		20.0		53.0
Yellow Time (s)	4.0	4.0		3.0	4.0		3.0	4.0		3.0		4.0
All-Red Time (s)	3.0	3.0		1.0	3.0		1.0	3.0		1.0		3.0
Lost Time Adjust (s)	-3.0	-3.0		0.0	-3.0		0.0	-3.0		0.0		-3.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0		4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead		Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes		Yes
Vehicle Extension (s)	3.0	4.0		3.5	4.0		4.0	3.0		3.0		5.0
Recall Mode	Min	Min		Min	Min		Min	C-Max		Min		C-Max
Walk Time (s)	7.0			7.0			7.0			7.0		
Flash Dont Walk (s)	11.0			11.0			11.0			11.0		
Pedestrian Calls (#/hr)	0			0			0			0		
Ad Effct Green (s)	32.0	43.7		36.3	24.0		60.0	48.0		72.0		56.0
Actuated g/C Ratio	0.23	0.31		0.26	0.17		0.43	0.34		0.51		0.40
v/c Ratio	1.68	1.30		0.48	1.15		0.52	1.37		1.64		1.39dr
Control Delay	302.0	187.1		36.6	153.3		11.1	200.7		179.9		325.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Total Delay	302.0	187.1		36.6	153.3		11.1	200.7		179.9		325.3
LOS	F	F		D	F		B	F		F		F
Approach Delay	258.4			87.5			182.4			156.6		
Approach LOS	F			F			F			F		F
Intersection Summary												
Area Type:	CBD											
Cycle Length:	140											
Actuated Cycle Length:	140											
Offset: 128 (91%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green												
Natural Cycle:	150											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	1.64											
Intersection Signal Delay:	183.5											
Intersection Capacity Utilization:	111.3%											
Analysis Period (min):	15											
* User Entered Value												
dr Defacto Right Lane. Record with 1 through lane as a right lane.												



Queues
101: Tatalgar Rd & Cross Ave/South Service Rd

Total 2032
AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1005	615	90	313	210	230	1662	435 1813
v/c Ratio	1.58	1.30	0.48	1.15	0.52	1.37	1.50dr	1.64 1.39dr
Control Delay	302.0	187.1	36.6	153.3	11.1	200.7	179.9	325.3 116.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	302.0	187.1	36.6	153.3	11.1	200.7	179.9	325.3 116.2
Queue Length 50th (m)	~213.7	~222.2	15.7	~107.2	0.0	~74.6	~246.6	~169.2 ~247.2
Queue Length 95th (m)	#244.5	#236.2	23.4	#132.6	11.4	m#59.7 m#157.4 m#203.9		
Internal Link Dist (m)	106.9		306.4		126.2			246.2
Turn Bay Length (m)	130.0		25.0		50.0		25.0	
Base Capacity (vph)	638	473	193	271	407	168	1271	266 1557
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	1.58	1.30	0.47	1.15	0.52	1.37	1.31	1.64 1.16
Intersection Summary								
~ Volume exceeds capacity, queue is theoretically infinite.								
Queue shown is maximum after two cycles.								
# 95th percentile volume exceeds capacity, queue may be longer.								
m Queue shown is maximum after two cycles.								
n Volume for 95th percentile queue is metered by upstream signal.								
dr Defacto Right Lane. Recode with '1' though lane as a right lane.								

HCM Signalized Intersection Capacity Analysis
101: Tatalgar Rd & Cross Ave/South Service Rd

Total 2032
AM Peak Hour

Movement	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	HT	HT	F	F	HT	HT	HT	HT	HT
Traffic Volume (vph)	874	253	183	69	241	162	186	865	543
Future Volume (vph)	874	253	183	69	241	162	186	865	543
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.3	3.6	3.3	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.80	1.00	0.80
Frbp. ped/bikes	1.00	0.99	1.00	1.00	0.99	1.00	0.91	1.00	0.99
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.95	1.00	0.93	1.00	0.93	1.00	0.94	1.00	0.94
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Satd. Flow (prot)	2795	1448	1525	1583	1362	1428	3448	1525	3674
Flt Permitted	0.95	1.00	0.19	1.00	1.00	0.09	1.00	0.08	1.00
Satd. Flow (perm)	2795	1448	306	1583	1362	134	3448	131	3674
Peak-hour factor, PHF	0.87	0.77	0.64	0.77	0.77	0.81	0.88	0.80	0.84
Adj. Flow (vph)	1005	329	286	90	313	210	230	983	679
RTOR Reduction (vph)	0	22	0	0	174	0	89	0	88
Lane Group Flow (vph)	1005	593	0	90	313	36	230	1573	0
Conf. Peds. (#/hr)	1	4	4	4	1	10	52	52	10
Heavy Vehicles (%)	9%	6%	12%	3%	8%	4%	10%	3%	4%
Turn Type	Prot	NA	pm-pt	NA	Perm	pm-pt	NA	pm-pt	NA
Protected Phases	7	4	3	8	5	2	1	6	
Permitted Phases			8		8	2		6	
Actuated Green, G (s)	29.0	40.7	33.3	21.0	21.0	57.0	45.0	69.0	53.0
Effective Green, g (s)	32.0	43.7	33.3	24.0	24.0	57.0	48.0	69.0	56.0
Actuated G/C Ratio	0.23	0.31	0.24	0.17	0.17	0.41	0.34	0.49	0.40
Clearance Time (s)	7.0	7.0	4.0	7.0	4.0	7.0	4.0	7.0	7.0
Vehicle Extension (s)	3.0	4.0	3.5	4.0	4.0	3.0	5.0	3.0	5.0
Lane Grp Cap (vph)	638	451	179	271	233	165	1182	263	1469
v/s Ratio Prot	c0.36	c0.41	0.04	0.20	0.12	0.46	c0.24	0.47	
v/s Ratio Perm			0.08		0.03	0.45		c0.58	
v/c Ratio	1.58	1.31	0.50	1.15	0.15	1.39	1.50dr	1.65	1.39dr
Uniform Delay, d1	54.0	48.1	44.3	58.0	49.4	40.3	45.0	45.5	42.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	0.98	1.26	1.06	1.10
Incremental Delay, d2	266.4	156.7	2.6	103.2	0.4	180.7	149.3	303.1	82.5
Delay (s)	320.4	204.9	46.9	161.2	49.8	220.4	207.0	351.6	128.7
Level of Service	F	F	D	F	D	F	F	F	F
Approach Delay (s)									
Approach LOS									
Intersection Summary									
HCM 2000 Control Delay	203.1								F
HCM 2000 Volume to Capacity ratio	1.59								F
Actuated Cycle Length (s)	140.0								16.0
Intersection Capacity Utilization	111.3%								H
Analysis Period (min)	15								
dr Defacto Right Lane. Recode with '1' though lane as a right lane.									
c Critical Lane Group									

Lanes, Volumes, Timings
102: GO Bus Terminal/Argus Rd & Cross Ave

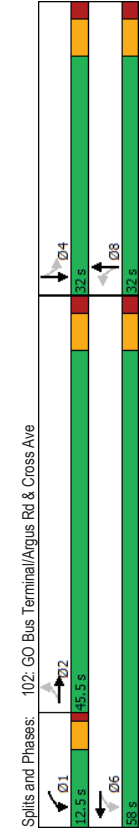
Total 2032
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	←	←	←	←	←	←	←	←	←	←	←	←
Traffic Volume (vph)	43	567	48	128	811	56	58	0	147	348	20	616
Future Volume (vph)	43	567	48	128	811	56	58	0	147	348	20	616
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.6
Storage Length (m)	20.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	15.0	0.0	0.0	0.0
Storage Lanes	1	0	1	0	1	0	1	0	1	0	1	0
Taper Length (m)	7.5	0.95	0.95	7.5	0.95	1.00	1.00	1.00	1.00	7.5	1.00	1.00
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.96	0.96	0.96	0.98	0.98	0.99	0.99
Ped Bike Factor	1.00	1.00	1.00	1.00	1.00	0.985	0.985	0.985	0.985	0.985	0.985	0.985
Flt Protected	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (prot)	1570	2873	0	818	3167	0	805	734	0	1570	1387	0
FltP Permitted	0.289	0.226	0.226	0.142	0.142	0.564	0.564	0.564	0.564	0.564	0.564	0.564
Satd. Flow (perm)	477	2873	0	194	3167	0	120	734	0	917	1387	0
Right Turn on Red	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Satd. Flow (RTOR)	18	50	16	267	267	143	267	267	143	267	267	143
Link Speed (k/h)	50	50	50	50	50	50	50	50	50	50	50	50
Link Distance (m)	207.1	207.1	92.7	81.9	180.7	180.7	81.9	180.7	81.9	180.7	180.7	81.9
Travel Time (s)	14.9	14.9	6.7	6.7	5.9	13.0	5.9	13.0	6.7	13.0	13.0	6.7
Confl. Peds. (#/hr)	1	3	3	3	3	20	20	20	20	20	20	3
Peak Hour Factor	0.52	0.87	0.65	0.84	0.88	0.79	0.53	0.25	0.70	0.78	0.62	0.89
Heavy Vehicles (%)	0%	1%	100%	92%	1%	5%	95%	0%	91%	0%	93%	0%
Adj. Flow (vph)	83	652	74	152	922	71	109	0	210	446	32	692
Shared Lane Traffic (%)												
Lane Group Flow (vph)	83	726	0	152	993	0	109	210	0	446	724	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left
Median Width (m)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
Link Offset (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width (m)	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Two way Left Turn Lane	1.19	1.14	1.14	1.19	1.14	1.14	1.14	1.14	1.14	1.19	1.14	1.14
Headway Factor	24	14	14	24	14	24	14	24	14	24	14	24
Turning Speed (k/h)	1	2	1	1	2	1	2	1	2	1	2	1
Number of Detectors	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru
Detector Template	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Type	C+Ex	Ch+Ex	C+Ex	Ch+Ex	C+Ex	Ch+Ex	C+Ex	Ch+Ex	C+Ex	Ch+Ex	C+Ex	Ch+Ex
Detector 1 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4	0.6	9.4	0.6	9.4	0.6	9.4	0.6	9.4	0.6	9.4	0.6
Detector 2 Size (m)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Detector 2 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 2 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Lanes, Volumes, Timings
102: GO Bus Terminal/Argus Rd & Cross Ave

Total 2032
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	2	1	6	6	8	8	8	8	8	4	4	4
Permitted Phases	2	2	2	1	6	8	8	8	8	4	4	4
Detector Phase	2	2	2	1	6	8	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	22.0	22.0	8.0	22.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	45.0	45.0	12.5	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0
Total Split (s)	45.5	45.5	12.5	98.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0
Total Split (%)	50.6%	50.6%	13.9%	64.4%	35.6%	35.6%	35.6%	35.6%	35.6%	35.6%	35.6%	35.6%
Maximum Green (s)	39.5	39.5	8.5	52.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead									
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	5.0	5.0	2.5	5.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Recall Mode	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Act Effct Green (s)	31.0	31.0	43.6	43.6	28.2	28.2	28.2	28.2	28.2	28.2	28.2	28.2
Actuated g/C Ratio	0.39	0.39	0.55	0.55	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
v/c Ratio	0.45	0.64	0.88	0.57	2.60	0.49	1.38	1.24	1.38	1.24	1.38	1.24
Control Delay	26.4	22.0	60.1	13.0	800.5	5.3	215.1	146.6	215.1	146.6	215.1	146.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.4	22.0	60.1	13.0	800.5	5.3	215.1	146.6	215.1	146.6	215.1	146.6
LOS	C	C	E	B	F	A	F	A	F	A	F	F
Approach Delay	22.4	19.3	277.0	19.3	277.0	19.3	277.0	19.3	277.0	19.3	277.0	19.3
Approach LOS	C	C	B	B	F	F	F	F	F	F	F	F
Intersection Summary												
Area Type:	CBD											
Cycle Length:	90											
Actuated Cycle Length:	79.8											
Natural Cycle:	130											
Control Type:	Semi Act-Uncoordinated											
Maximum v/c Ratio:	2.60											
Intersection Signal Delay:	96.0											
Intersection LOS:	F											
Intersection Capacity Utilization:	110.7%											
ICU Level of Service:	H											
Analysis Period (min):	15											



Queues
102: GO Bus Terminal/Argus Rd & Cross Ave

Total 2032
AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group	83	726	152	993	109	210	446	724
Lane Group Flow (vph)	0.45	0.64	0.88	0.57	2.60	0.49	1.38	1.24
v/c Ratio	26.4	22.0	60.1	13.0	800.5	5.3	215.1	146.6
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	26.4	22.0	60.1	13.0	800.5	5.3	215.1	146.6
Total Delay	9.5	46.8	12.5	49.7	~29.0	0.0	~83.4	~127.6
Queue Length 50th (m)	10.9	61.1	#36.0	63.4	#37.2	0.0	#143.9	#117.6
Queue Length 95th (m)	183.1			68.7		57.9		156.7
Internal Link Dist (m)	20.0		20.0				15.0	
Turn Bay Length (m)	249	1511	172	2161	42	431	323	582
Base Capacity (vph)	0	0	0	0	0	0	0	0
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	0.33	0.48	0.88	0.46	2.60	0.49	1.38	1.24

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
- Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
- Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
102: GO Bus Terminal/Argus Rd & Cross Ave

Total 2032
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	4	4	4	4	4	4	4	4	4	4	4	4
Traffic Volume (vph)	43	567	48	128	811	56	58	58	0	147	348	20
Future Volume (vph)	43	567	48	128	811	56	58	58	0	147	348	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frb. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frb. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.95	1.00	0.98	1.00	0.99	1.00	0.95	1.00	0.95	1.00	0.86	1.00
Flt Protected	1570	2873	818	3168	805	736	805	736	1547	1387	1547	1387
Flt Permitted	0.29	1.00	0.23	1.00	0.23	1.00	0.14	1.00	0.14	1.00	0.56	1.00
Satd. Flow (perm)	477	2873	195	3168	120	736	120	736	919	1387	919	1387
Peak-hour factor, PHF	0.52	0.87	0.65	0.84	0.88	0.79	0.53	0.25	0.70	0.78	0.62	0.89
Adj. Flow (vph)	83	652	74	152	922	71	109	0	210	446	32	692
RTOR Reduction (vph)	0	11	0	0	7	0	0	136	0	0	92	0
Lane Group Flow (vph)	83	715	0	152	986	0	109	74	0	446	632	0
Conf. Peds. (#/hr)	1	3	3	3	3	1	3	3	20	20	3	3
Heavy Vehicles (%)	0%	1%	100%	92%	1%	5%	95%	0%	91%	0%	93%	0%
Turn Type	Perm	NA	NA	pm-pt	NA	NA	Perm	NA	NA	Perm	NA	NA
Protected Phases	2	2	6	6	6	6	8	8	8	8	4	4
Permitted Phases	2	29.0	41.6	41.6	41.6	26.2	26.2	26.2	26.2	26.2	26.2	26.2
Actuated Green, G (s)	31.0	31.0	41.6	43.6	28.2	28.2	28.2	28.2	28.2	28.2	28.2	28.2
Effective Green, g (s)	0.39	0.39	0.52	0.55	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
Actuated g/C Ratio	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Clearance Time (s)	5.0	5.0	2.5	5.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	185	1116	168	1730	42	260	42	260	324	490	324	490
Lane Grp Cap (vph)	0.17	0.25	c0.10	0.31	c0.37	c0.91	c0.91	c0.91	0.49	0.49	0.49	0.46
v/s Ratio Perm	0.45	0.64	0.90	0.57	2.60	0.29	2.60	0.29	1.38	1.38	1.29	1.29
Uniform Delay, d1	18.1	19.9	13.4	11.9	25.8	18.6	25.8	18.6	25.8	25.8	25.8	25.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.6	1.7	42.8	0.7	781.9	0.8	187.8	144.7	187.8	144.7	187.8	144.7
Delay (s)	21.7	21.6	56.2	12.6	807.7	19.4	213.6	170.5	213.6	170.5	213.6	170.5
Level of Service	C	C	E	B	F	B	F	B	F	F	F	F
Approach Delay (s)	21.6	21.6	18.4	18.4	288.7	18.4	288.7	18.4	288.7	18.4	288.7	18.4
Approach LOS	C	C	B	B	F	B	F	B	F	F	F	F

Intersection Summary

HCM 2000 Control Delay	101.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.61		
Actuated Cycle Length (s)	79.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	110.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
104: Trafalgar Rd & Cornwall Rd

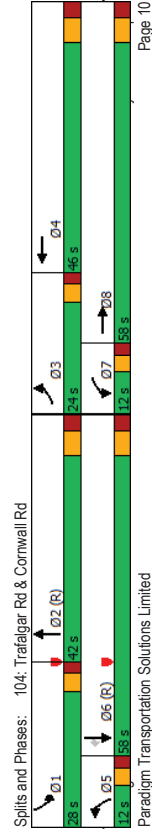
Total 2032
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT
Traffic Volume (vph)	505	557	99	22	480	615	61	529	61	451	510
Future Volume (vph)	505	557	99	22	480	615	61	529	61	451	510
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.3	3.6	3.5
Storage Length (m)	80.0	0.0	80.0	0.0	25.0	0.0	80.0	0.0	80.0	0.0	1
Storage Lanes	2		0	1	0	1	0	1	0	1	1
Taper Length (m)	7.5		7.5		7.5		7.5		7.5		7.5
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	1.00	0.80	0.95	0.97	0.80	1.00
Ped Bike Factor	0.99	0.99	0.99	0.99	0.97	1.00	0.99	1.00	0.99	0.99	0.98
Frt	0.968		0.917		0.917		0.983		0.983		0.850
Flt Protected	0.950		0.950		0.950		0.950		0.950		0.950
Satd. Flow (prot)	2987	3019	0	1481	2819	0	1540	2655	0	2929	1341
Flt Permitted	0.950		0.950		0.950		0.950		0.950		0.950
Satd. Flow (perm)	2968	3019	0	1473	2819	0	1532	2655	0	2885	1341
Right Turn on Red	Yes		Yes		Yes		Yes		Yes		Yes
Satd. Flow (RTOR)	28		226		226		8		8		313
Link Speed (k/h)	50		50		50		50		50		50
Link Distance (m)	285.8		142.3		142.3		311.4		311.4		130.3
Travel Time (s)	20.6		10.2		10.2		22.4		22.4		9.4
Confl. Peds. (#/hr)	25		7		7		25		25		18
Peak Hour Factor	0.93	0.91	0.60	0.75	0.86	0.90	0.60	0.86	0.75	0.84	0.86
Heavy Vehicles (%)	2%	4%	1%	6%	3%	3%	2%	1%	0%	4%	2%
Adj. Flow (vph)	543	612	165	29	558	683	102	615	81	537	593
Shared Lane Traffic (%)											
Lane Group Flow (vph)	543	777	0	29	1241	0	102	696	0	537	593
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left
Median Width(m)	6.6		6.6		6.6		6.6		6.6		6.6
Link Offset(m)	0.0		0.0		0.0		0.0		0.0		0.0
Crosswalk Width(m)	4.8		4.8		4.8		4.8		4.8		4.8
Two way Left Turn Lane	1.19	1.14	1.14	1.19	1.14	1.14	1.19	1.14	1.14	1.19	1.14
Headway Factor	24		14		24		14		14		24
Turning Speed (k/h)	1	2	14	1	24	14	24	14	14	24	14
Number of Detectors	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Right
Detector Template	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0
Detector 1 Type	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex
Detector 1 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4		9.4		9.4		9.4		9.4		9.4
Detector 2 Size(m)	0.6		0.6		0.6		0.6		0.6		0.6
Detector 2 Type	C+Ex		C+Ex		C+Ex		C+Ex		C+Ex		C+Ex
Detector 2 Channel											

Lanes, Volumes, Timings
104: Trafalgar Rd & Cornwall Rd

Total 2032
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Detector 2 Extend (s)	0.0		0.0		0.0		0.0		0.0		0.0
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Prot
Protected Phases	3	8	8	7	4	4	5	2	1	6	6
Permitted Phases	3	8	8	7	4	4	5	2	1	6	6
Switch Phase	7.0	10.0	7.0	10.0	7.0	10.0	7.0	10.0	7.0	10.0	7.0
Minimum Initial (s)	12.0	37.0	12.0	37.0	12.0	37.0	12.0	37.0	12.0	37.0	12.0
Minimum Split (s)	24.0	58.0	24.0	46.0	12.0	46.0	12.0	42.0	28.0	58.0	58.0
Total Split (%)	17.1%	41.4%	17.1%	8.6%	32.9%	8.6%	30.0%	20.0%	20.0%	41.4%	41.4%
Maximum Green (s)	19.0	51.0	19.0	39.0	7.0	39.0	7.0	35.0	23.0	51.0	51.0
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	4.0
All-Red Time (s)	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-3.0	-1.0	-3.0	-1.0	-3.0	-1.0	-3.0	-1.0	-3.0	-3.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Recall Mode	Max	Max	Max	Max	None	C-Max	Max	C-Max	Max	C-Max	C-Max
Walk Time (s)	7.0		7.0		7.0		7.0		7.0		7.0
Flash Dont Walk (s)	23.0		23.0		23.0		25.0		25.0		25.0
Pedestrian Calls (#/hr)	0		0		0		0		0		0
Ad Effct Green (s)	20.0	54.0	20.0	8.0	42.0	8.0	38.0	8.0	38.0	24.0	54.0
Actuated v/c Ratio	0.14	0.39	0.06	0.30	0.06	0.30	0.16	0.27	0.17	0.39	0.39
v/c Ratio	1.27	0.66	0.35	1.24	0.35	1.24	1.16	0.96	1.07	1.15	0.62
Control Delay	187.8	37.2	75.1	149.5	200.5	74.2	200.5	74.2	104.1	103.6	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	187.8	37.2	75.1	149.5	200.5	74.2	200.5	74.2	104.1	103.6	8.6
LOS	F	D	E	F	F	F	E	F	F	F	A
Approach Delay	99.2		147.8		90.4		F		F		E
Approach LOS	F		F		F		F		F		E
Intersection Summary	CBD										
Area Type:	CBD										
Cycle Length:	140										
Actuated Cycle Length:	140										
Offset: 0 (0%):	Referenced to phase 2:NBT and 6:SBT. Start of Green, Master Intersection										
Control Type:	Actuated-Coordinated										
Maximum v/c Ratio:	1.27										
Intersection Signal Delay:	103.4										
Intersection Capacity Utilization:	108.3%										
Analysis Period (min):	15										
* User Entered Value											



Queues
104: Tatalgar Rd & Cornwall Rd

Total 2032
AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	543	777	29	1241	102	696	537	593	433
v/c Ratio	1.27	0.66	0.35	1.24	1.16	0.96	1.07	1.15	0.62
Control Delay	187.8	37.2	75.1	149.5	200.5	74.2	104.1	103.6	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	187.8	37.2	75.1	149.5	200.5	74.2	104.1	103.6	8.6
Queue Length 50th (m)	~102.7	94.1	8.3	~210.3	~35.1	124.3	~91.7	~249.7	17.1
Queue Length 95th (m)	#140.1	117.6	16.3	#235.8	#41.1	#159.7	m75.1m#170.6	m12.2	
Internal Link Dist (m)	261.8		118.3		287.4			106.3	
Turn Bay Length (m)	80.0		80.0		25.0		80.0		
Base Capacity (vph)	426	1181	84	1003	88	726	502	517	702
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.27	0.66	0.35	1.24	1.16	0.96	1.07	1.15	0.62
Intersection Summary									
~ Volume exceeds capacity, queue is theoretically infinite.									
Queue shown is maximum after two cycles.									
# 95th percentile volume exceeds capacity, queue may be longer.									
Queue shown is maximum after two cycles.									
m Volume for 95th percentile queue is metered by upstream signal.									

HCM Signalized Intersection Capacity Analysis
104: Tatalgar Rd & Cornwall Rd

Total 2032
AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Movement	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	FF	FF	FF	FF	FF	FF	FF	FF	FF
Traffic Volume (vph)	505	557	99	22	480	615	61	451	510
Future Volume (vph)	505	557	99	22	480	615	61	451	510
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.5
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.95	1.00	0.80	0.97	0.80	1.00
Frbp. ped/bikes	1.00	0.99	1.00	0.97	1.00	1.00	1.00	1.00	0.98
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97	1.00	0.92	1.00	0.98	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	2987	3020	1481	2820	1540	2654	2929	1341	1324
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	2987	3020	1481	2820	1540	2654	2929	1341	1324
Peak-hour factor, PHF	0.93	0.91	0.60	0.75	0.86	0.90	0.86	0.75	0.84
Adj. Flow (vph)	543	612	165	29	558	683	102	615	81
RTOR Reduction (vph)	0	17	0	0	158	0	0	0	0
Lane Group Flow (vph)	543	760	0	29	1083	0	102	690	0
Conf. Peds. (#/hr)	25	7	7	7	25	9	18	18	9
Heavy Vehicles (%)	2%	4%	1%	6%	3%	2%	1%	0%	4%
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Perm
Protected Phases	3	8	7	4	5	2	1	6	6
Permitted Phases	190	510	70	390	70	350	230	510	510
Actuated Green, G (s)	20.0	54.0	8.0	42.0	8.0	38.0	24.0	54.0	54.0
Effective Green, g (s)	0.14	0.39	0.06	0.30	0.06	0.27	0.17	0.39	0.39
Actuated g/C Ratio	5.0	7.0	5.0	7.0	5.0	7.0	5.0	7.0	7.0
Clearance Time (s)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Vehicle Extension (s)	426	1164	84	846	88	720	502	517	510
Lane Grp Cap (vph)	c0.18	0.25	0.02	c0.38	0.07	0.26	c0.18	c0.44	0.18
v/s Ratio Prot	1.27	0.65	0.35	1.28	1.16	0.96	1.07	1.15	0.47
v/c Ratio	60.0	35.3	63.5	49.0	66.0	50.2	58.0	43.0	32.3
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.89
Progression Factor	140.8	2.9	10.9	135.0	145.1	24.8	35.7	68.5	0.3
Incremental Delay, d2	200.8	38.2	74.4	184.0	211.1	75.0	111.4	105.8	29.0
Delay (s)	F	D	E	F	F	E	F	F	C
Level of Service	F	D	E	F	F	E	F	F	C
Approach Delay (s)	105.1		181.5		92.4		86.4		F
Approach LOS	F		F		F		F		F
Intersection Summary									
HCM 2000 Control Delay	116.8 HCM 2000 Level of Service F								
HCM 2000 Volume to Capacity ratio	1.22								
Actuated Cycle Length (s)	140.0 Sum of lost time (s) 16.0								
Intersection Capacity Utilization	108.3% ICU Level of Service G								
Analysis Period (min)	15								
c Critical Lane Group									

Lanes, Volumes, Timings
105: Trafalgar Rd & QEW EB-Off Ramp

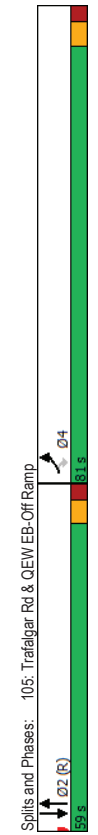
Total 2032
AM Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	996	877	0	1394	1561	0
Future Volume (vph)	996	877	0	1394	1561	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.5	3.6	3.6	3.6	3.6
Lane Util. Factor	0.97	1.00	1.00	*0.80	*0.80	1.00
Flt Protected	0.950					
Satd. Flow (prot)	2958	1423	0	3872	3946	0
Flt Permitted	0.950					
Satd. Flow (perm)	2958	1423	0	3872	3946	0
Right Turn on Red	Yes					Yes
Satd. Flow (RTOR)	2					
Link Speed (k/h)	50			50	50	
Link Distance (m)	199.2			51.4	324.8	
Travel Time (s)	14.3			3.7	23.4	
Peak Hour Factor	0.98	0.92	0.25	0.91	0.90	0.25
Heavy Vehicles (%)	3%	1%	0%	6%	4%	0%
Adj. Flow (vph)	1016	953	0	1532	1734	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1016	953	0	1532	1734	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Right
Median Width(m)	6.6			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.19	1.16	1.14	1.14	1.14	1.14
Turning Speed (k/h)	24	14	24		14	
Number of Detectors	1	Right	Thru	2	2	
Detector Template	2.0	2.0	10.0	10.0	10.0	
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	2.0	0.6	0.6	0.6	
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)			9.4	9.4		
Detector 2 Size(m)			0.6	0.6		
Detector 2 Type			Ch+Ex	Ch+Ex		
Detector 2 Channel						
Detector 2 Extend (s)			0.0	0.0		
Turn Type	Prot	Perm	NA	NA	NA	
Protected Phases	4		2	2	2	
Permitted Phases	4	4	2	2	2	
Detector Phase	4	4	2	2	2	

Lanes, Volumes, Timings
105: Trafalgar Rd & QEW EB-Off Ramp

Total 2032
AM Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	10.0	10.0		29.0	29.0	
Minimum Split (s)	38.0	38.0		36.0	36.0	
Total Split (s)	81.0	81.0		59.0	59.0	
Total Split (%)	57.9%	57.9%		42.1%	42.1%	
Maximum Green (s)	74.0	74.0		52.0	52.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	24.0	24.0		22.0	22.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Ad Effct Green (s)	77.0	77.0		55.0	55.0	
Actuated g/C Ratio	0.62	1.22		1.01	1.12	
v/c Ratio	23.7	139.2		58.4	93.6	
Control Delay	0.0	0.0		0.0	0.0	
Queue Delay	23.7	139.2		58.4	93.6	
Total Delay	23.7	139.2		58.4	93.6	
LOS	C	F		E	F	
Approach Delay	79.6			58.4	93.6	
Approach LOS	E			E	F	
Intersection Summary	CBD					
Area Type:	CBD					
Cycle Length:	140					
Actuated Cycle Length:	140					
Offset:	133.6 (95%), Referenced to phase 2,NBSB and 6:, Start of Green					
Natural Cycle:	75					
Control Type:	Actuated-Coordinated					
Maximum v/c Ratio:	1.22					
Intersection Signal Delay:	78.0					
Intersection Capacity Utilization:	100.5%					
Analysis Period (min):	15					
* User Entered Value						



	EBL	EBR	NBT	SBT
Lane Group	1016	953	1532	1734
Lane Group Flow (vph)	0.62	1.22	1.01	1.12
v/c Ratio	23.7	139.2	58.4	93.6
Control Delay	0.0	0.0	0.0	0.0
Queue Delay	23.7	139.2	58.4	93.6
Total Delay	101.0	~340.6	~180.5	~239.5
Queue Length 50th (m)	123.6	#424.6	m103.4	#275.6
Queue Length 95th (m)	175.2		27.4	300.8
Internal Link Dist (m)				
Turn Bay Length (m)				
Base Capacity (vph)	1626	783	1521	1550
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.62	1.22	1.01	1.12

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

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	FF	FF		FF	FF	FF
Traffic Volume (vph)	996	877	0	1394	1561	0
Future Volume (vph)	996	877	0	1394	1561	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.5	3.6	3.6	3.6	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00		*0.80	*0.80	
Flt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	2958	1423		3872	3946	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	2958	1423		3872	3946	
Peak-hour factor, PHF	0.98	0.92	0.25	0.91	0.90	0.25
Adj. Flow (vph)	1016	953	0	1532	1734	0
RTOR Reduction (vph)	0	1	0	0	0	0
Lane Group Flow (vph)	1016	952	0	1532	1734	0
Heavy Vehicles (%)	3%	1%	0%	6%	4%	0%
Turn Type	Prot	Perm	NA	NA	NA	
Protected Phases	4			2	2	
Permitted Phases		4				
Actuated Green, G (s)	74.0	74.0		52.0	52.0	
Effective Green, g (s)	77.0	77.0		55.0	55.0	
Actuated g/C Ratio	0.65	0.55		0.39	0.39	
Clearance Time (s)	7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	1626	782		1521	1550	
v/s Ratio Prot	0.34			0.40	c0.44	
v/s Ratio Perm	c0.67					
v/c Ratio	0.62	1.22		1.01	1.12	
Uniform Delay, d1	21.6	31.5		42.5	42.5	
Progression Factor	1.00	1.00		1.19	0.84	
Incremental Delay, d2	0.8	109.4		8.8	59.4	
Delay (s)	22.4	140.9		59.4	95.0	
Level of Service	C	F		E	F	
Approach Delay (s)	79.7			59.4	95.0	
Approach LOS	E			E	F	
Intersection Summary						
HCM 2000 Control Delay			78.9		HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio			1.18			
Actuated Cycle Length (s)			140.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			100.5%		ICU Level of Service	G
Analysis Period (min)			15			

c Critical Lane Group

Lanes, Volumes, Timings
106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

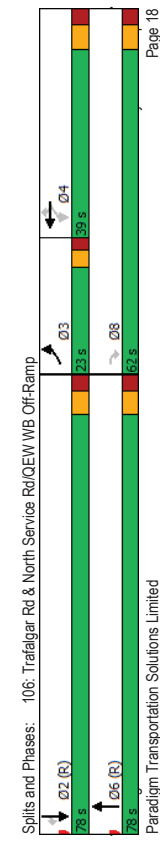
Total 2032
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	0	231	510	38	291	0	1808	0	0	1675	7
Traffic Volume (vph)	1	0	231	510	38	291	0	1808	0	0	1675	7
Future Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	3.3	3.6	3.5	3.3	3.6	3.5	3.6	3.6	3.6	3.6	3.6	3.5
Lane Width (m)	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
Storage Length (m)	7.5	1.0	1.0	7.5	1.0	1.0	7.5	1.0	1.0	7.5	1.0	1
Taper Length (m)	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.80	1.00	1.00	0.80	1.00
Ped Util. Factor												0.96
Fr	0.950			0.950	0.960		0.850					0.850
Flt Protected	1570	0	1395	1421	1442	1356	0	3909	0	0	3984	1437
Satd. Flow (prot)	0.950			0.950	0.960							
Flt Permitted	1570	0	1395	1421	1442	1356	0	3909	0	0	3984	1380
Satd. Flow (perm)												
Right Turn on Red	Yes			Yes			Yes					Yes
Satd. Flow (RTOR)	50		31			218						70
Link Speed (k/h)	142.1			50		50		50				50
Link Distance (m)	10.2			192.6		324.8		268.2				268.2
Travel Time (s)	0.25	0.25	0.91	0.88	0.73	0.25	0.93	0.97	0.25	0.90	0.63	0.8
Peak Hour Factor	0%	0%	3%	5%	23%	6%	0%	5%	5%	0%	3%	0%
Heavy Vehicles (%)	4	0	254	580	56	399	0	1944	0	0	1861	11
Adj. Flow (vph)				45%								
Shared Lane Traffic (%)	4	0	254	319	317	399	0	1944	0	0	1861	11
Lane Group Flow (vph)	No	No	No	No	No	No	No	No	No	No	No	No
Enter Blocked Intersection	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Lane Alignment	3.3			3.3								
Median Width (m)	0.0			0.0			0.0					0.0
Link Offset (m)	1.19	1.14	1.16	1.19	1.14	1.16	1.14	1.14	1.14	1.14	1.14	1.16
Crosswalk Width (m)	24	14	24	14	24	14	24	14	14	24	24	14
Two way Left Turn Lane	1	1	1	1	2	1	2	2	2	2	2	1
Headway Factor	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Right
Number of Detectors	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Detector Template	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Detector 1 Size (m)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Detector 1 Type	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex
Detector 1 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4			9.4			9.4					9.4
Detector 2 Size (m)	0.6			0.6			0.6					0.6
Detector 2 Type	C+Ex			C+Ex			C+Ex					C+Ex
Detector 2 Channel												

Lanes, Volumes, Timings
106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

Total 2032
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)												
Turn Type	Prot	Perm	NA	Perm	NA	Perm	NA	NA	NA	NA	NA	Perm
Protected Phases	3			4			6					2
Permitted Phases	3		8	4	4	4	6					2
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0	10.0	5.0					28.0
Minimum Split (s)	23.0	38.0	38.0	38.0	38.0	38.0	35.0					35.0
Total Split (s)	23.0	62.0	39.0	39.0	39.0	39.0	78.0					78.0
Total Split (%)	16.4%	44.3%	27.9%	27.9%	27.9%	27.9%	55.7%					55.7%
Maximum Green (s)	18.0	55.0	32.0	32.0	32.0	32.0	71.0					71.0
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	4.0					4.0
All-Red Time (s)	2.0	3.0	3.0	3.0	3.0	3.0	3.0					3.0
Lost Time Adjust (s)	-1.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0					-3.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0					4.0
Lead/Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes					
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.5					4.5
Recall Mode	Min	Min	Min	Min	Min	Min	C-Min					C-Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0					7.0
Flash Dont Walk (s)	24.0	24.0	24.0	24.0	24.0	24.0	21.0					21.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0					0
Ad Effct Green (s)	8.0	53.1	41.1	41.1	41.1	41.1	78.9					78.9
Actuated g/C Ratio	0.06	0.38	0.29	0.29	0.29	0.29	0.56					0.56
v/c Ratio	0.04	0.46	0.77	0.75	0.72	0.88	0.83					0.83
Control Delay	64.0	30.7	57.5	56.1	26.9	32.3	30.0					30.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0					0.0
Total Delay	64.0	30.7	57.5	56.1	26.9	32.3	30.0					30.0
LOS	E	C	C	E	E	C	C					C
Approach Delay	31.2			45.3			32.3					29.9
Approach LOS	C			D			C					C
Intersection Summary												
Area Type:	CBD											
Cycle Length:	140											
Actuated Cycle Length:	140											
Offset:	115.4 (82%), Referenced to phase 2:SBT and 6:NBT, Start of Green											
Natural Cycle:	120											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	0.88											
Intersection Signal Delay:	34.0											
Intersection Capacity Utilization:	78.7%											
Analysis Period (min):	15											
* User Entered Value												



Queues
106: Tatalgar Rd & North Service Rd/QEW WB Off-Ramp

Total 2032
AM Peak Hour

	EBL	EBR	WBL	WBR	NBT	SBT	SBR
Lane Group	4	254	319	317	399	1944	1861
Lane Group Flow (vph)	0.04	0.46	0.77	0.75	0.72	0.88	0.83
v/c Ratio	0.04	0.46	0.77	0.75	0.72	0.88	0.83
Control Delay	64.0	30.7	57.5	56.1	26.9	32.3	30.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.0	30.7	57.5	56.1	26.9	32.3	30.0
Queue Length 50th (m)	1.1	47.3	87.4	86.4	47.7	161.4	184.7
Queue Length 95th (m)	1.4	70.8	119.4	83.5	50.7	166.7	222.9
Internal Link Dist (m)			168.6		300.8	244.2	
Turn Bay Length (m)	50.0						
Base Capacity (vph)	213	596	422	428	556	2204	2246
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.43	0.76	0.74	0.72	0.88	0.83
Intersection Summary							
m Volume for 95th percentile queue is metered by upstream signal.							

HCM Signalized Intersection Capacity Analysis
106: Tatalgar Rd & North Service Rd/QEW WB Off-Ramp

Total 2032
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	0	231	510	38	291	0	1808	0	0	1675	7
Traffic Volume (vph)	1	0	231	510	38	291	0	1808	0	0	1675	7
Future Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	3.3	3.6	3.5	3.3	3.6	3.5	3.6	3.6	3.6	3.6	3.6	3.5
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.80	1.00	0.80	1.00	0.80	1.00	0.86
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frb. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	0.85	1.00	0.85	1.00	0.85	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	0.95	0.96	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95
Satd. Flow (prot)	1570	1395	1421	1442	1356	3909	3909	3909	3909	3984	1380	1380
Flt Permitted	0.95	1.00	0.95	0.96	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95
Satd. Flow (perm)	1570	1395	1421	1442	1356	3909	3909	3909	3909	3984	1380	1380
Peak-hour factor, PHF	0.25	0.25	0.91	0.88	0.68	0.73	0.25	0.93	0.97	0.25	0.90	0.63
Adj. Flow (vph)	4	0	254	580	56	399	0	1944	0	0	1861	11
RTOR Reduction (vph)	0	0	19	0	0	154	0	0	0	0	0	5
Lane Group Flow (vph)	4	0	235	319	317	245	0	1944	0	0	1861	6
Conf. Peds. (#/hr)	0	0	0	0	0	0	8	0	5	5	0	8
Heavy Vehicles (%)	0%	0%	3%	5%	23%	6%	0%	5%	5%	0%	3%	0%
Turn Type	Prot	Perm	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm	Perm
Protected Phases	3			4			6				2	
Permitted Phases	8	4			4						2	
Actuated Green, G (s)	7.0	50.1	38.1	38.1	38.1	38.1	75.9	75.9	75.9	75.9	75.9	75.9
Effective Green, g (s)	8.0	53.1	41.1	41.1	41.1	41.1	78.9	78.9	78.9	78.9	78.9	78.9
Actuated G/C Ratio	0.06	0.38	0.29	0.29	0.29	0.29	0.56	0.56	0.56	0.56	0.56	0.56
Clearance Time (s)	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.5	4.5	4.5	4.5	4.5	4.5
Lane Grp Cap (vph)	89	529	417	423	398	2203	2203	2203	2203	2245	777	777
v/s Ratio Prot	0.00						0.50			0.47		
v/s Ratio Perm	0.04	0.44	0.76	0.75	0.62	0.88	0.88	0.88	0.88	0.83	0.01	0.00
Uniform Delay, d1	62.4	32.4	45.1	44.8	42.6	26.5	26.5	26.5	26.5	25.0	13.4	13.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.06	1.06	1.06	1.06	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.6	8.1	7.1	2.8	2.9	2.9	2.9	2.9	3.7	0.0	0.0
Delay (s)	62.6	33.0	53.2	51.9	45.5	31.1	31.1	31.1	31.1	28.7	13.4	13.4
Level of Service	E	C	C	D	D	D	C	C	C	C	B	B
Approach Delay (s)	33.5			49.8			31.1			28.6		
Approach LOS	C			D			C			C		
Intersection Summary												
HCM 2000 Control Delay	34.1											C
HCM 2000 Volume to Capacity ratio	0.82											C
Actuated Cycle Length (s)	140.0											12.0
Intersection Capacity Utilization	78.7%											D
Analysis Period (min)	15											
c Critical Lane Group												

Lanes, Volumes, Timings
203: Argus Rd & South Service Rd

Total 2032
AM Peak Hour

EBL	EBT	WBT	WBR	SBL	SBR
1	88	754	229	33	72
1	88	754	229	33	72
1900	1900	1900	1900	1900	1900
1.00	1.00	1.00	1.00	1.00	1.00
0.999	0.964	0.964	0.907		
0	1677	1613	0	1528	0
0	1677	1613	0	1528	0
50	50	50	50		
116.7	145.7	51.8			
8.4	10.5	3.7			
1	1	5	1		
0.25	0.42	0.86	0.72	0.25	0.25
100%	0%	3%	0%	0%	0%
4	210	877	318	132	288
0	214	1195	0	420	0
No	No	No	No	No	No
Left	Left	Right	Left	Right	
0.0	0.0	0.0	3.6		
0.0	0.0	0.0	4.8		
1.14	1.14	1.14	1.14	1.14	1.14
24	Free	Free	Free	Stop	Stop

Intersection Summary

Area Type: CBD

Control Type: Unsignalized

Intersection Capacity Utilization 73.5%

ICU Level of Service D

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
203: Argus Rd & South Service Rd

Total 2032
AM Peak Hour

EBL	EBT	WBT	WBR	SBL	SBR
1	88	754	229	33	72
1	88	754	229	33	72
Free	Free	Free	Stop		
0%	0%	0%	0%		
0.25	0.42	0.86	0.72	0.25	0.25
4	210	877	318	132	288
1	5				
3.6	3.6			3.6	
1.2	1.2			1.2	
0	0			0	
None	None				
358					
1196				1260	1038
1196				1260	1038
5.1				6.4	6.2
3.1				3.5	3.3
99				29	0
341				187	283
EB 1	WB 1	SB 1			
214	1195	420			
4	0	132			
0	318	288			
341	1700	243			
0.01	0.70	1.73			
0.3	0.0	222.1			
0.5	0.0	378.6			
A		F			
0.5	0.0	378.6			
F		F			

Intersection Summary

Average Delay 87.0

Intersection Capacity Utilization 73.5%

ICU Level of Service D

Analysis Period (min) 15

Lanes, Volumes, Timings
204: Trafalgar Rd & Argus Rd

Total 2032
AM Peak Hour

EBL	EBR	NBL	NBT	SBT	SBR
Lane Group					
Lane Configurations					
Traffic Volume (vph)	0	131	0	1824	1588
Future Volume (vph)	0	131	0	1824	1588
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.5	3.6	3.6	3.6
Lane Util. Factor	1.00	1.00	1.00	*0.80	*0.80
Ped Bike Factor	0.940				
Flt Protected	0				
Satd. Flow (prot)	3636				
Flt Permitted	3738				
Satd. Flow (perm)	50				
Link Speed (k/h)	145.7				
Link Distance (m)	270.2				
Travel Time (s)	19.5				
Conf. Peds. (#/hr)	11				
Peak Hour Factor	0.25	0.54	0.25	0.92	0.82
Heavy Vehicles (%)	0%	7%	0%	7%	4%
Adj. Flow (vph)	0	243	0	1983	1637
Shared Lane Traffic (%)	0				
Lane Group Flow (vph)	No	No	No	No	No
Enter Blocked Intersection	Left	Right	Left	Left	Right
Lane Alignment	0.0				
Median Width (m)	3.3				
Link Offset (m)	0.0				
Crosswalk Width (m)	4.8				
Two way Left Turn Lane	1.14	1.16	1.14	1.14	1.14
Headway Factor	24	14	24	Free	14
Turning Speed (k/h)	Free				
Sign Control	Free				
Intersection Summary					
Area Type:	CBD				
Control Type:	Unsignalized				
Intersection Capacity Utilization	72.1%				
Analysis Period (min)	15				
* User Entered Value					

HCM Unsignalized Intersection Capacity Analysis
204: Trafalgar Rd & Argus Rd

Total 2032
AM Peak Hour

EBL	EBR	NBL	NBT	SBT	SBR
Movement					
Lane Configurations					
Traffic Volume (veh/h)	0	131	0	1824	1588
Future Volume (Veh/h)	0	131	0	1824	1588
Sign Control	Stop				
Grade	0%				
Peak Hour Factor	0.25	0.54	0.25	0.92	0.82
Hourly flow rate (vph)	0	243	0	1983	1637
Pedestrians	11				
Lane Width (m)	3.5				
Walking Speed (m/s)	1.2				
Percent Blockage	1				
Right turn flare (veh)	None				
Median type	None				
Median storage (veh)	None				
Upstream signal (m)	270				
pX, platoon unblocked	0.62	0.62	0.62	0.62	0.62
vC, conflicting volume	2848	1095	2725		
vC1, stage 1 conf vol					
vC2, stage 2 conf vol					
vCu, unblocked vol	1829	0	1631		
iC, single (s)	6.8	7.0	4.1		
iC, 2 stage (s)	3.5	3.4	2.2		
p0 queue free %	100	63	100		
d0 capacity (veh/h)	43	655	247		
Direction_Lane #					
Volume Total	243	661	661	655	1404
Volume Left	0	0	0	0	0
Volume Right	243	0	0	0	1077
cSH	665	1700	1700	1700	1700
Volume to Capacity	0.37	0.39	0.39	0.39	0.39
Queue Length 95th (m)	13.7	0.0	0.0	0.0	0.0
Control Delay (s)	13.7	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	13.7				
Approach LOS	B				
Intersection Summary					
Average Delay	0.7				
Intersection Capacity Utilization	72.1%				
Analysis Period (min)	15				
ICU Level of Service C					

Lanes, Volumes, Timings
302: Cross Ave & East Driveway Access

Total 2032
AM Peak Hour

EBL	EBT	WBT	WBR	SBL	SBR
Lane Group					
Lane Configurations					
2	1181	997	43	128	5
Traffic Volume (veh/h)					
2	1181	997	43	128	5
Future Volume (veh/h)					
1900	1900	1900	1900	1900	1900
Ideal Flow (veh/h)					
0.95	0.95	0.95	0.95	1.00	1.00
Lane Util. Factor					
Frt					
Flt Protected					
Satd. Flow (prot)					
0	3185	3166	0	1591	0
Flt Permitted					
Satd. Flow (perm)					
0	3185	3166	0	1591	0
Link Speed (k/h)					
Link Distance (m)					
Travel Time (s)					
Peak Hour Factor					
0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)					
2	1284	1084	47	139	5
Shared Lane Traffic (%)					
Lane Group Flow (vph)					
0	1286	1131	0	144	0
Enter Blocked Intersection					
No	No	No	No	No	No
Lane Alignment					
Left	Left	Right	Left	Right	Right
Median Width (m)					
Link Offset (m)					
Crosswalk Width (m)					
Two way Left Turn Lane					
1.14	1.14	1.14	1.14	1.14	1.14
Headway Factor					
25					
Turning Speed (k/h)					
Free	Free	Free	Free	Stop	Stop
Sign Control					
Intersection Summary					
Area Type: CBD					
Control Type: Unsignalized					
Intersection Capacity Utilization 52.7%					
Analysis Period (min) 15					
ICU Level of Service A					

HCM Unsignalized Intersection Capacity Analysis
302: Cross Ave & East Driveway Access

Total 2032
AM Peak Hour

EBL	EBT	WBT	WBR	SBL	SBR
Movement					
Lane Configurations					
2	1181	997	43	128	5
Traffic Volume (veh/h)					
2	1181	997	43	128	5
Future Volume (veh/h)					
Sign Control					
Grade					
Peak Hour Factor					
0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)					
2	1284	1084	47	139	5
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					
1131					
vC1, stage 1 conf vol					
vC2, stage 2 conf vol					
vCu, unblocked vol					
1131					
IC, single (s)					
4.1					
IC, 2 stage (s)					
2.2					
p0 queue free %					
100					
dM capacity (veh/h)					
613					
Direction_Lane #					
EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
430	856	723	408	144	144
Volume Total					
Volume Left					
2	0	0	0	139	5
Volume Right					
0	0	0	47	5	5
vSH					
613	1700	1700	1700	97	97
Volume to Capacity					
0.00	0.50	0.43	0.24	1.49	1.49
Queue Length 95th (m)					
0.1	0.0	0.0	0.0	87.0	87.0
Control Delay (s)					
0.1	0.0	0.0	0.0	344.7	344.7
Lane LOS					
A					
Approach Delay (s)					
0.0					
Approach LOS					
F					
Intersection Summary					
Average Delay					
Intersection Capacity Utilization					
Analysis Period (min)					
ICU Level of Service A					

Lanes, Volumes, Timings
303: North Driveway & Argus Rd

Total 2032
AM Peak Hour

	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	19	21	49	777	197	70
Traffic Volume (vph)	19	21	49	777	197	70
Future Volume (vph)	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	1.00	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor	0.929				0.965	
Flt Protected				0.997	0.964	
Satd. Flow (prot)	1730	0	0	1857	1733	0
Flt Permitted				0.997	0.964	
Satd. Flow (perm)	1730	0	0	1857	1733	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	61.0			116.7	66.7	
Travel Time (s)	4.4			8.4	4.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	21	23	53	845	214	76
Shared Lane Traffic (%)						
Lane Group Flow (vph)	44	0	0	898	290	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25	25	25	15
Sign Control	Free			Free	Stop	Stop
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	72.1%					
Analysis Period (min)	15					
	ICU Level of Service C					

HCM Unsignalized Intersection Capacity Analysis
303: North Driveway & Argus Rd

Total 2032
AM Peak Hour

	EBT	EBR	WBL	WBT	NBL	NBR
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	19	21	49	777	197	70
Traffic Volume (veh/h)	19	21	49	777	197	70
Future Volume (Veh/h)	1900	1900	1900	1900	1900	1900
Sign Control	Free			Free	Stop	Stop
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	21	23	53	845	214	76
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	242					
Pk platoon unblocked						
Vc, conflicting volume		44			984	32
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		44			984	32
IC, single (s)		4.1			6.4	6.2
IC, 2 stage (s)						
p0 queue free %		2.2			3.5	3.3
ICM capacity (veh/h)		1564			266	1041
Direction_Lane #	EB 1	WB 1	NB 1			
Volume Total	44	898	290			
Volume Left	0	53	214			
Volume Right	23	0	76			
CSH	1700	1564	331			
Volume to Capacity	0.03	0.03	0.88			
Queue Length 95th (m)	0.0	0.8	65.5			
Control Delay (s)	0.0	0.9	59.2			
Lane LOS	A	F	F			
Approach Delay (s)	0.0	0.9	59.2			
Approach LOS		F	F			
Intersection Summary						
Average Delay	14.6					
Intersection Capacity Utilization	72.1%					
ICU Level of Service	C					
Analysis Period (min)	15					

Queuing and Blocking Report

Total 2032
AM Peak Hour

Intersection: 101: Trafalgar Rd & Cross Ave/South Service Rd

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	TR	TR	TR	B34	B34	B34	T	T	T
Directions Served	L	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	T	TR	T			
Maximum Queue (m)	104.3	110.3	108.1	32.3	243.2	202.1	57.4	116.8	130.9	148.8	52.0	148.8	52.0	59.0						
Average Queue (m)	101.4	106.1	66.8	20.5	181.4	87.1	44.2	78.5	101.0	120.3	2.7	71.1	2.7	7.1						
95th Queue (m)	107.9	108.8	113.7	39.3	356.7	292.6	68.1	112.3	138.0	157.1	27.5	45.8	27.5	45.8						
Link Distance (m)	104.4	104.4		313.2	313.2		128.1	128.1	128.1	128.1	101.5	101.5	101.5	101.5						
Upstream Blk Time (%)	4	54	6	19	8	0	0	0	0	15	0	0	0	0						
Queuing Penalty (veh)	0	353	39	0	0	0	1	2	80	0	0	0	0	0						
Storage Bay Dist (m)	130.0			25.0			50.0													
Storage Blk Time (%)	4	54		4	74		4	27												
Queuing Penalty (veh)	19	236		10	51		11	51												

Intersection: 101: Trafalgar Rd & Cross Ave/South Service Rd

Movement	B34	SB	SB	SB	SB	SB	SB	TR	TR	TR	TR	TR	TR	TR	B14	B14	B14	T	T	T
Directions Served	T	L	T	T	T	TR														
Maximum Queue (m)	84.5	32.3	241.8	239.1	213.7															
Average Queue (m)	10.8	29.6	108.8	84.4	83.6															
95th Queue (m)	57.4	39.3	241.1	208.3	177.6															
Link Distance (m)	101.5		238.9	238.9	238.9															
Upstream Blk Time (%)	1		5	0	0															
Queuing Penalty (veh)	7		27	2	1															
Storage Bay Dist (m)		25.0																		
Storage Blk Time (%)		55			9															
Queuing Penalty (veh)		167			31															

Intersection: 102: GO Bus Terminal/Argus Rd & Cross Ave

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	TR	TR	TR	SB	SB	SB	B14	B14	B14	T	T	T
Directions Served	L	T	TR	L	T	TR	L	T	TR	L	T	TR	L	TR	L	TR	L	TR	L	TR			
Maximum Queue (m)	27.3	209.4	213.4	27.4	69.7	60.0	66.4	83.9	22.4	193.6	63.4	193.6	63.4	63.4									
Average Queue (m)	10.4	162.6	157.5	21.9	35.0	26.2	23.1	48.4	22.0	182.1	46.9	182.1	46.9	46.9									
95th Queue (m)	29.4	245.7	246.3	33.8	66.8	50.8	53.6	89.7	24.0	198.0	68.0	198.0	68.0	68.0									
Link Distance (m)	196.3	196.3		72.4	72.4	66.0	66.0	66.0	66.0	158.9	40.8	158.9	40.8	40.8									
Upstream Blk Time (%)	34	25		0	0	0	1	18		82	61	82	61	61									
Queuing Penalty (veh)	0	0	0	1	0	0	0	0	15.0	892	590	892	590	590									
Storage Bay Dist (m)	20.0			20.0						77	29	77	29	29									
Storage Blk Time (%)	1	82		22	8					492	100	492	100	100									
Queuing Penalty (veh)	1	35		89	10																		

Queuing and Blocking Report

Total 2032
AM Peak Hour

Intersection: 104: Trafalgar Rd & Cornwall Rd

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	TR	TR	TR	SB	SB	SB	T	T	T
Directions Served	L	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	T	TR	T			
Maximum Queue (m)	83.7	87.5	280.5	274.6	56.4	123.9	131.0	32.4	98.8	103.0	68.0	72.2	68.0	72.2						
Average Queue (m)	82.8	87.2	267.6	246.8	7.0	77.1	89.7	18.0	56.7	57.0	34.4	34.4	34.4	34.4						
95th Queue (m)	87.8	87.8	294.3	307.3	27.6	116.0	145.3	38.3	88.3	89.9	57.8	57.8	57.8	57.8						
Link Distance (m)	264.0	264.0		122.1	122.1	286.8	286.8	286.8	286.8	286.8	101.5	101.5	101.5	101.5						
Upstream Blk Time (%)	79	6	0	0	1	8														
Queuing Penalty (veh)	0	0	0	0	0	0														
Storage Bay Dist (m)	80.0	80.0		80.0			25.0													
Storage Blk Time (%)	18	75		2	0	6														
Queuing Penalty (veh)	49	209		9	0	1	20	22												

Intersection: 104: Trafalgar Rd & Cornwall Rd

Movement	SB	SB	SB	R	R	R	R	TR	TR	TR	TR	TR	TR	TR	SB	SB	SB	T	T	T
Directions Served	T	R																		
Maximum Queue (m)	68.4	29.0																		
Average Queue (m)	34.3	8.3																		
95th Queue (m)	59.9	20.0																		
Link Distance (m)	101.5	101.5																		
Upstream Blk Time (%)																				
Queuing Penalty (veh)																				
Storage Bay Dist (m)																				
Storage Blk Time (%)																				
Queuing Penalty (veh)																				

Intersection: 105: Trafalgar Rd & QEW EB-Off Ramp

Movement	EB	EB	EB	NB	NB	NB	NB	TR	TR	TR	TR	TR	TR	TR	SB	SB	SB	T	T	T
Directions Served	L	L	R	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
Maximum Queue (m)	169.2	185.3	189.7	31.4	43.2	38.0	315.8	317.7	312.5	312.5	312.5	312.5	312.5	312.5						
Average Queue (m)	51.7	154.2	181.3	28.1	30.6	29.6	282.1	304.5	305.0	305.0	305.0	305.0	305.0	305.0						
95th Queue (m)	141.7	253.9	186.3	32.2	38.8	36.0	399.1	321.4	310.2	310.2	310.2	310.2	310.2	310.2						
Link Distance (m)	176.9	176.9	176.9	27.8	27.8	27.8	300.4	300.4	300.4	300.4	300.4	300.4	300.4	300.4						
Upstream Blk Time (%)	0	38	90	40	45	42	22	44	66	66	66	66	66	66						
Queuing Penalty (veh)	0	0	0	242	271	256	173	357	532	532	532	532	532	532						
Storage Bay Dist (m)																				
Storage Blk Time (%)																				
Queuing Penalty (veh)																				

Queuing and Blocking Report

Total 2032
AM Peak Hour

Intersection: 106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

Movement	EB	EB	WB	WB	LT	R	WB	WB	NB	NB	T	T	SB	SB	T	T	SB	SB	R
Directions Served	L	R	L	R	LT	R	WB	WB	NB	NB	T	T	SB	SB	T	T	SB	SB	R
Maximum Queue (m)	14.4	135.8	182.5	186.8	182.9	83.4	92.0	86.4	268.8	268.5	261.9	263.3							
Average Queue (m)	1.0	109.8	153.5	162.1	102.7	38.6	43.9	43.1	257.9	257.8	256.8	243.4							
95th Queue (m)	11.9	156.1	213.8	216.0	245.0	74.8	79.9	74.3	273.0	272.1	272.4	333.5							
Link Distance (m)	119.7	173.2	173.2	173.2	300.4	300.4	254.7	254.7	254.7	254.7	254.7	254.7							
Upstream Blk Time (%)	70	36	66	33					80	95	96	78							
Queuing Penalty (veh)	0	0	0	0	0	0	0	0	0	0	0	0							
Storage Bay Dist (m)	50.0																		
Storage Blk Time (%)	84																		
Queuing Penalty (veh)	1																		

Intersection: 203: Argus Rd & South Service Rd

Movement	WB	SB
Directions Served	TR	LR
Maximum Queue (m)	120.9	47.6
Average Queue (m)	106.7	38.5
95th Queue (m)	155.4	59.4
Link Distance (m)	112.4	43.0
Upstream Blk Time (%)	50	66
Queuing Penalty (veh)	445	0
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 204: Trafalgar Rd & Argus Rd

Movement	EB	NB	NB	SB	SB	SB	SB	TR
Directions Served	R	T	T	T	T	T	TR	
Maximum Queue (m)	42.2	80.7	77.0	92.6	23.4	33.3	44.0	
Average Queue (m)	11.6	48.8	52.7	56.7	2.7	8.5	28.3	
95th Queue (m)	34.8	72.6	73.5	79.7	16.3	30.0	41.3	
Link Distance (m)	112.4	238.9	238.9	238.9	27.8	27.8	27.8	
Upstream Blk Time (%)					3	1	42	
Queuing Penalty (veh)					25	8	342	
Storage Bay Dist (m)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Queuing and Blocking Report

Total 2032
AM Peak Hour

Intersection: 302: Cross Ave & East Driveway Access

Movement	EB	EB	WB	WB	T <th>SB</th> <th>SB</th> <th>LR</th>	SB	SB	LR
Directions Served	LT	T	T	T	LR			
Maximum Queue (m)	83.4	94.0	3.0	37.2				
Average Queue (m)	75.1	59.4	0.1	26.9				
95th Queue (m)	83.5	114.2	2.1	34.3				
Link Distance (m)	72.4	72.4	104.4	27.4				
Upstream Blk Time (%)	46	21	100					
Queuing Penalty (veh)	243	110						
Storage Bay Dist (m)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 303: North Driveway & Argus Rd

Movement	EB	WB	NB	LR
Directions Served	TR	LT	LR	
Maximum Queue (m)	3.0	107.1	68.3	
Average Queue (m)	0.3	99.0	56.7	
95th Queue (m)	3.3	137.9	74.9	
Link Distance (m)	40.8	102.8	58.0	
Upstream Blk Time (%)	58	93		
Queuing Penalty (veh)	477	0		
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 7093

Lanes, Volumes, Timings
101: Trafalgar Rd & Cross Ave/South Service Rd

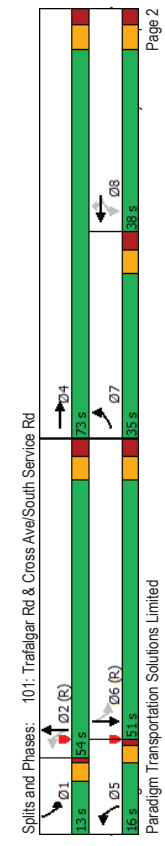
Total 2032
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT
Traffic Volume (vph)	1234	254	189	233	265	314	261	1530	122	171	1335	536
Future Volume (vph)	1234	254	189	233	265	314	261	1530	122	171	1335	536
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.6	3.3	3.6	3.3	3.6	3.6	3.6	3.3	3.6	3.6
Storage Length (m)	130.0	0.0	25.0	0.0	50.0	0.0	50.0	0.0	25.0	0.0	50.0	0.0
Storage Lanes	1	0	1	1	1	1	1	1	1	1	1	1
Taper Length (m)	7.5	1.00	1.00	7.5	1.00	1.00	7.5	1.00	7.5	1.00	7.5	1.00
Lane Util. Factor	0.97	1.00	1.00	0.99	1.00	1.00	0.98	1.00	0.98	1.00	0.99	1.00
Ped Bike Factor	1.00	0.99	1.00	1.00	0.99	1.00	0.98	1.00	0.98	1.00	0.99	1.00
Frt	0.929			0.850			0.988			0.957		
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2795	1445	0	1525	1583	1382	1428	3876	0	1525	3764	0
Flt Permitted	0.950			0.428			0.085			0.091		
Satd. Flow (perm)	2791	1445	0	684	1583	1362	128	3876	0	146	3764	0
Right Turn on Red	Yes			Yes			Yes			Yes		
Satd. Flow (RTOR)	45			122			10			79		
Link Speed (k/h)	50			50			50			50		
Link Distance (m)	122.6			330.4			150.2			270.2		
Travel Time (s)	8.8			23.8			10.8			19.5		
Conf. Peds. (#/hr)	1			4			10			52		
Peak Hour Factor	0.87	0.77	0.64	0.77	0.77	0.77	0.81	0.88	0.80	0.84	0.84	0.83
Heavy Vehicles (%)	9%	6%	12%	3%	8%	4%	10%	3%	0%	3%	3%	4%
Adj. Flow (vph)	1418	330	285	303	344	408	322	1739	153	204	1589	646
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1418	625	0	303	344	408	322	1892	0	204	235	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width (m)	6.6			6.6			3.3			3.3		
Link Offset (m)	0.0			0.0			0.0			0.0		
Crosswalk Width (m)	4.8			4.8			4.8			4.8		
Two way Left Turn Lane												
Headway Factor	1.19	1.14	1.14	1.19	1.14	1.16	1.19	1.14	1.14	1.19	1.14	1.14
Turning Speed (k/h)	24	14	24	24	14	24	14	24	14	24	14	24
Number of Detectors	1	2	1	1	2	1	1	2	1	2	1	2
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Left	Thru	Right	Thru
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	10.0	2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Type	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4			9.4			9.4			9.4		
Detector 2 Size (m)	0.6			0.6			0.6			0.6		
Detector 2 Type	C+Ex			C+Ex			C+Ex			C+Ex		
Detector 2 Channel												

Lanes, Volumes, Timings
101: Trafalgar Rd & Cross Ave/South Service Rd

Total 2032
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		0.0
Turn Type	Prot	NA	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4		8	8	8	5	2	1	6		6
Permitted Phases	7	4		8	8	8	5	2	1	6		6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	7.0	27.0	7.0	27.0	7.0	27.0
Minimum Split (s)	17.0	25.0	25.0	25.0	25.0	25.0	11.5	34.0	11.5	34.0	11.5	34.0
Total Split (s)	35.0	73.0	38.0	38.0	38.0	38.0	16.0	54.0	13.0	51.0	13.0	51.0
Total Split (%)	25.0%	52.1%	27.1%	27.1%	27.1%	27.1%	11.4%	38.6%	9.3%	36.4%	9.3%	36.4%
Maximum Green (s)	28.0	66.0	31.0	31.0	31.0	31.0	12.0	47.0	9.0	44.0	9.0	44.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	1.0	3.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	-3.0	-3.0	0.0	-3.0	-3.0	-3.0	0.0	-3.0	0.0	-3.0	0.0	-3.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	4.0	4.0	4.0	4.0	4.0	3.0	5.0	3.0	5.0	3.0	5.0
Recall Mode	Min	Min	Min	Min	Min	Min	Min	C-Max	Min	C-Max	Min	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0			0			0		
Ad Effct Green (s)	31.0	69.0	31.0	34.0	34.0	34.0	62.0	50.0	56.0	47.0	56.0	47.0
Actuated g/C Ratio	0.22	0.49	0.22	0.24	0.24	0.24	0.42	0.36	0.40	0.34	0.40	0.34
v/c Ratio	2.29	0.85	2.01	0.90	0.96	1.92	1.36	1.39	1.39	1.70	1.39	1.70
Control Delay	612.7	41.4	504.1	77.5	72.3	439.0	201.6	231.4	348.4	231.4	348.4	348.4
Queue Delay	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	612.7	44.4	504.1	77.5	72.3	439.0	201.6	231.4	348.4	231.4	348.4	348.4
LOS	F	D	F	E	E	E	F	F	F	F	F	F
Approach Delay	438.9			198.0			236.1			338.6		
Approach LOS	F			F			F			F		F
Intersection Summary												
Area Type:	CBD											
Cycle Length:	140											
Actuated Cycle Length:	140											
Offset:	128 (91%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green											
Natural Cycle:	150											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	2.29											
Intersection Signal Delay:	316.6											
Intersection Capacity Utilization:	126.3%											
Analysis Period (min):	15											
* User Entered Value												



Queues
101: Tatalgar Rd & Cross Ave/South Service Rd

Total 2032
PM Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group	1418	625	303	344	408	322	1892	204	2235
Lane Group Flow (vph)	2.29	0.85	2.01	0.90	0.96	1.92	1.36	1.39	1.70
v/c Ratio	612.7	41.4	504.1	77.5	72.3	439.0	201.6	231.4	348.4
Control Delay	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	612.7	44.4	504.1	77.5	72.3	439.0	201.6	231.4	348.4
Queue Length 50th (m)	~345.5	146.7	~137.4	97.7	88.5	~131.0	~301.0	~65.0	~391.0
Queue Length 95th (m)	#373.2	154.2	#162.8	112.7	#112.0	mm#91.4m#171.9	mm#78.1m#381.4		
Internal Link Dist (m)	98.6		306.4			126.2		246.2	
Turn Bay Length (m)	130.0		25.0			50.0		25.0	
Base Capacity (vph)	618	735	151	384	423	168	1390	147	1316
Starvation Cap Reductn	0	50	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	2.29	0.91	2.01	0.90	0.96	1.92	1.36	1.39	1.70

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

HCM Signalized Intersection Capacity Analysis
101: Tatalgar Rd & Cross Ave/South Service Rd

Total 2032
PM Peak Hour

Movement	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
Traffic Volume (vph)	1234	254	189	233	265	314	261	1530	122	171
Future Volume (vph)	1234	254	189	233	265	314	261	1530	122	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.3	3.6	3.3	3.6	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.80	1.00	0.80
Frbp. ped/bikes	1.00	0.99	1.00	1.00	0.99	1.00	0.98	1.00	0.99	1.00
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.95	1.00	0.93	1.00	0.95	1.00	0.99	1.00	0.96	1.00
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.99	1.00	0.95	1.00
Satd. Flow (prot)	2785	1445	1519	1583	1362	1428	3876	1525	3763	
Flt Permitted	0.95	1.00	0.43	1.00	1.00	0.09	1.00	0.09	1.00	
Satd. Flow (perm)	2795	1445	684	1583	1362	128	3876	146	3763	
Peak-hour factor, PHF	0.87	0.77	0.64	0.77	0.77	0.81	0.88	0.80	0.84	0.83
Adj. Flow (vph)	1418	330	295	303	344	408	322	1739	152	204
RTOR Reduction (vph)	0	23	0	0	0	92	0	6	0	52
Lane Group Flow (vph)	1418	602	303	344	316	322	1886	0	204	2183
Conf. Peds. (#/hr)	1	4	4	4	1	10	10	52	52	10
Heavy Vehicles (%)	9%	6%	12%	3%	8%	4%	10%	3%	0%	3%
Turn Type	Prot	NA	Perm	NA	Perm	pm-pt	NA	pm-pt	NA	NA
Protected Phases	7	4		8	8	5	2	1	6	
Permitted Phases			8		8		2		6	
Actuated Green, G (s)	28.0	66.0	31.0	31.0	31.0	59.0	47.0	53.0	44.0	
Effective Green, g (s)	31.0	69.0	31.0	34.0	34.0	59.0	50.0	53.0	47.0	
Actuated G/C Ratio	0.22	0.49	0.22	0.24	0.24	0.42	0.36	0.38	0.34	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	4.0	7.0	4.0	7.0	
Vehicle Extension (s)	3.0	4.0	4.0	4.0	4.0	3.0	5.0	3.0	5.0	
Lane Grp Cap (vph)	618	712	151	384	330	165	1384	143	1263	
v/s Ratio Prot	c0.51	0.42		0.22	0.22	c0.17	0.49	0.09	0.58	
v/s Ratio Perm			c0.44		0.23	c0.65		0.45		
v/c Ratio	2.29	0.85	2.01	0.90	0.96	1.95	1.36	1.43	1.73	
Uniform Delay, d1	54.5	30.9	54.5	51.3	52.3	40.8	45.0	36.1	46.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.01	1.12	1.22	1.15	
Incremental Delay, d2	587.6	9.5	475.6	22.9	37.9	430.2	163.5	217.0	329.9	
Delay (s)	642.1	40.3	530.1	74.2	90.2	471.3	213.8	261.1	363.3	
Level of Service	F	D	F	E	F	F	F	F	F	
Approach Delay (s)		488.0		211.3		251.2		373.0		
Approach LOS		F		F		F		F		

Intersection Summary	Value	Unit
HCM 2000 Control Delay	338.6	s
HCM 2000 Volume to Capacity ratio	1.99	
Actuated Cycle Length (s)	140.0	s
Intersection Capacity Utilization	126.3%	%
Analysis Period (min)	15	min
c Critical Lane Group		

Lanes, Volumes, Timings
102: GO Bus Terminal/Argus Rd & Cross Ave

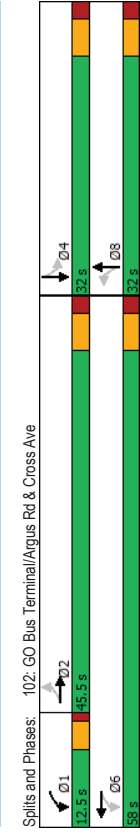
Total 2032
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	4	4	4	4	4	4	4	4	4	4	4
Traffic Volume (vph)	47	1059	45	119	481	134	92	2	108	325	23
Future Volume (vph)	47	1059	45	119	481	134	92	2	108	325	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.6	3.3	3.6
Storage Length (m)	20.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	15.0	0.0	0.0
Storage Lanes	1	0	1	0	1	0	1	0	1	0	1
Taper Length (m)	7.5	0.95	1.00	7.5	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor	1.00	0.95	0.95	1.00	0.99	1.00	0.97	0.98	0.99	0.98	0.99
Ped Bike Factor	1.00	1.00	0.99	1.00	0.99	1.00	0.97	0.98	0.99	0.98	0.99
Frt	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964	0.964
Flt Protected	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (prot)	1570	3027	0	818	3056	0	805	760	0	1570	1304
Flt Permitted	0.379	0.092	0.442	0.442	0.442	0.442	0.442	0.442	0.442	0.442	0.442
Satd. Flow (perm)	626	3027	0	79	3056	0	374	760	0	982	1304
Right Turn on Red	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Satd. Flow (RTOR)	8	82	154	82	154	82	154	82	154	82	154
Link Speed (k/h)	50	50	50	50	50	50	50	50	50	50	50
Link Distance (m)	207.1	100.7	81.9	100.7	81.9	100.7	81.9	100.7	81.9	100.7	81.9
Travel Time (s)	14.9	7.3	5.9	7.3	5.9	7.3	5.9	7.3	5.9	7.3	5.9
Confl. Peds. (#/hr)	1	3	3	3	3	3	3	3	3	3	3
Peak Hour Factor	0.52	0.87	0.88	0.88	0.79	0.53	0.25	0.70	0.78	0.62	0.89
Heavy Vehicles (%)	0%	1%	100%	92%	1%	5%	95%	0%	91%	0%	93%
Adj. Flow (vph)	90	1217	69	142	547	170	174	8	154	417	37
Shared Lane Traffic (%)											
Lane Group Flow (vph)	90	1286	0	142	717	0	174	162	0	417	273
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width (m)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
Link Offset (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width (m)	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Two way Left Turn Lane	1.19	1.14	1.14	1.19	1.14	1.14	1.19	1.14	1.14	1.19	1.14
Headway Factor	24	14	14	24	14	14	24	14	14	24	14
Turning Speed (k/h)	1	2	1	2	1	2	1	2	1	2	1
Number of Detectors	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left
Detector Template	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 1 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4	0.6	9.4	0.6	9.4	0.6	9.4	0.6	9.4	0.6	9.4
Detector 2 Size (m)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Detector 2 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 2 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Lanes, Volumes, Timings
102: GO Bus Terminal/Argus Rd & Cross Ave

Total 2032
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA	NA
Protected Phases	2	1	6	1	6	8	8	8	8	4	4
Permitted Phases	2	2	2	1	6	8	8	8	8	4	4
Detector Phase	2	2	2	1	6	8	8	8	8	4	4
Switch Phase	22.0	22.0	8.0	22.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Initial (s)	45.0	45.0	12.5	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0
Minimum Split (s)	45.5	45.5	12.5	58.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0
Total Split (%)	50.6%	50.6%	13.9%	64.4%	35.6%	35.6%	35.6%	35.6%	35.6%	35.6%	35.6%
Maximum Green (s)	39.5	39.5	8.5	52.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes								
Vehicle Extension (s)	5.0	5.0	2.5	5.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Recall Mode	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0
Ad Effct Green (s)	41.5	41.5	54.0	54.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0
Actuated g/C Ratio	0.46	0.46	0.60	0.60	0.31	0.31	0.31	0.31	0.31	0.31	0.31
v/c Ratio	0.31	0.92	1.21	0.38	1.50	0.47	1.50	0.47	1.37	0.48	0.48
Control Delay	19.1	34.6	176.4	8.8	292.5	9.9	292.5	9.9	213.6	8.3	8.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.1	34.6	176.4	8.8	292.5	9.9	292.5	9.9	213.6	8.3	8.3
LOS	B	C	F	A	F	A	F	A	F	A	A
Approach Delay	33.6	36.5	36.5	D	D	D	F	F	132.3	F	F
Approach LOS	C	C	C	D	D	D	F	F	F	F	F
Intersection Summary											
Area Type:	CBD										
Cycle Length:	90										
Actuated Cycle Length:	90										
Natural Cycle:	100										
Control Type:	Semi Act-Uncoordinated										
Maximum v/c Ratio:	1.50										
Intersection Signal Delay:	67.9										
Intersection LOS:	E										
Intersection Capacity Utilization:	89.0%										
Analysis Period (min):	15										



Queues
102: GO Bus Terminal/Argus Rd & Cross Ave

Total 2032
PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group	90	1296	142	717	174	162	417	273
Lane Group Flow (vph)	0.31	0.92	1.21	0.38	1.50	0.47	1.37	0.48
v/c Ratio	19.1	34.6	176.4	8.8	292.5	9.9	213.6	8.3
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	19.1	34.6	176.4	8.8	292.5	9.9	213.6	8.3
Total Delay	110	#149.3	#55.8	38.3	#40.9	0.0	#129.4	5.2
Queue Length 50th (m)	9.9	110.4	~24.1	28.3	~44.3	1.0	~101.1	4.7
Queue Length 95th (m)	110	#149.3	#55.8	38.3	#40.9	0.0	#129.4	5.2
Internal Link Dist (m)	183.1		20.0	76.7		57.9	156.7	
Turn Bay Length (m)	20.0		20.0			15.0		
Base Capacity (vph)	288	1400	117	1866	116	342	305	568
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.92	1.21	0.38	1.50	0.47	1.37	0.48

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
102: GO Bus Terminal/Argus Rd & Cross Ave

Total 2032
PM Peak Hour

Movement	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	47	1059	45	119	134	92	2	108
Traffic Volume (vph)	47	1059	45	119	134	92	2	108
Future Volume (vph)	47	1059	45	119	134	92	2	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.3	3.6	3.3
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00
Frbp. ped/bikes	1.00	1.00	1.00	0.99	1.00	0.97	1.00	0.99
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98
Frt	0.95	1.00	0.95	1.00	0.96	1.00	0.86	1.00
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1569	3027	818	3058	804	760	1542	1304
Flt Permitted	0.38	1.00	0.09	1.00	0.44	1.00	0.60	1.00
Satd. Flow (perm)	626	3027	79	3058	374	760	982	1304
Peak-hour factor, PHF	0.52	0.87	0.65	0.84	0.88	0.79	0.53	0.25
Adj. Flow (vph)	90	1217	69	142	547	170	174	8
RTOR Reduction (vph)	0	4	0	0	33	0	106	0
Lane Group Flow (vph)	90	1282	0	142	684	0	174	56
Conf. Peds. (#/hr)	1	3	3	3	1	3	20	20
Heavy Vehicles (%)	0%	1%	100%	92%	1%	5%	95%	0%
Turn Type	Perm	NA	NA	pm-pt	NA	Perm	NA	Perm
Protected Phases	2	1	6	8	8	8	8	4
Permitted Phases	2	6	6	8	8	8	8	4
Actuated Green, G (s)	39.5	41.5	52.0	52.0	26.0	26.0	26.0	26.0
Effective Green, g (s)	41.5	41.5	52.0	54.0	28.0	28.0	28.0	28.0
Actuated g/C Ratio	0.46	0.46	0.58	0.60	0.31	0.31	0.31	0.31
Clearance Time (s)	6.0	6.0	4.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	5.0	5.0	2.5	5.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	288	1395	115	1834	116	236	305	405
v/s Ratio Prot	0.42	0.12	0.22	c0.12	0.07	0.07	0.42	0.08
v/s Ratio Perm	0.14	c0.59						
v/c Ratio	0.31	0.92	1.23	0.37	1.50	0.24	1.37	0.27
Uniform Delay, d1	15.3	22.7	24.3	9.3	31.0	23.1	31.0	23.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.3	10.4	160.0	0.3	264.6	0.7	184.9	0.5
Delay (s)	16.6	33.0	184.3	9.5	285.6	23.8	215.9	23.8
Level of Service	B	C	F	A	F	C	F	C
Approach Delay (s)	31.9	38.4	164.5	38.4	164.5	139.9	139.9	139.9
Approach LOS	C	C	D	D	F	F	F	F

Intersection Summary

HCM 2000 Control Delay: 70.2
 HCM 2000 Level of Service: E
 HCM 2000 Volume to Capacity ratio: 1.34
 Actuated Cycle Length (s): 90.0
 Sum of lost time (s): 12.0
 Intersection Capacity Utilization: 89.0%
 ICU Level of Service: E
 Analysis Period (min): 15
 Critical Lane Group: c

Lanes, Volumes, Timings
104: Trafalgar Rd & Cornwall Rd

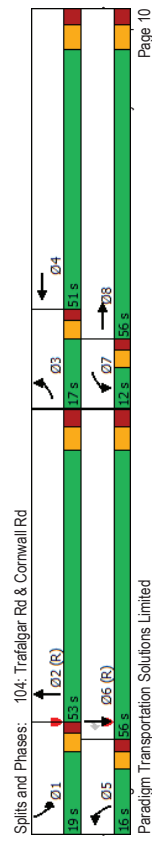
Total 2032
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT
Traffic Volume (vph)	532	681	221	62	928	684	158	516	47	570	694
Future Volume (vph)	532	681	221	62	928	684	158	516	47	570	694
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.3	3.6	3.5
Storage Length (m)	80.0	0.0	80.0	0.0	25.0	0.0	80.0	0.0	80.0	0.0	1
Storage Lanes	2	0	1	0	1	0	1	0	1	0	1
Taper Length (m)	7.5	0.95	0.95	7.5	0.95	0.95	7.5	0.95	7.5	0.95	1.00
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	1.00	0.80	0.95	0.97	0.80	1.00
Ped Bike Factor	1.00	0.99	1.00	0.98	1.00	1.00	0.98	1.00	0.98	1.00	0.98
Frt	0.951			0.938			0.986			0.850	
Flt Protected	0.950			0.950			0.950			0.950	
Satd. Flow (prot)	2987	2964	0	1481	2902	0	1540	2665	0	2929	1341
FltP Permitted	0.950			0.950			0.950			0.950	
Satd. Flow (perm)	2979	2964	0	1476	2902	0	1534	2665	0	2883	1341
Right Turn on Red			Yes			Yes			Yes		Yes
Satd. Flow (RTOR)	69		137			7			7		134
Link Speed (k/h)	50		50			50			50		50
Link Distance (m)	285.8		142.3			311.4			311.4		130.3
Travel Time (s)	20.6		10.2			22.4			22.4		9.4
Confl. Peds. (#/hr)	25		7			25			9		18
Peak Hour Factor	0.93	0.91	0.60	0.75	0.86	0.90	0.60	0.86	0.75	0.84	0.86
Heavy Vehicles (%)	2%	4%	1%	6%	3%	3%	2%	1%	0%	4%	2%
Adj. Flow (vph)	572	748	388	83	1079	760	263	600	63	679	807
Shared Lane Traffic (%)											
Lane Group Flow (vph)	572	1116	0	83	1839	0	263	663	0	679	807
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width (m)	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
Link Offset (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width (m)	4.8		4.8			4.8			4.8		4.8
Two way Left Turn Lane	1.19	1.14	1.14	1.19	1.14	1.14	1.19	1.14	1.14	1.19	1.14
Headway Factor	24	14	14	24	14	14	24	14	14	24	14
Turning Speed (k/h)	1	2	1	1	2	1	1	2	1	2	1
Number of Detectors	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Right
Detector Template	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0
Detector 1 Type	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex
Detector 1 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4		9.4			9.4			9.4		9.4
Detector 2 Size (m)	0.6		0.6			0.6			0.6		0.6
Detector 2 Type	C+Ex		C+Ex			C+Ex			C+Ex		C+Ex

Lanes, Volumes, Timings
104: Trafalgar Rd & Cornwall Rd

Total 2032
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Detector 2 Extend (s)	0.0		0.0			0.0			0.0		0.0
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Prot
Protected Phases	3	8	7	4	7	4	5	2	1	6	6
Permitted Phases	3	8	7	4	7	4	5	2	1	6	6
Switch Phase	7.0	10.0	7.0	10.0	7.0	10.0	7.0	10.0	7.0	10.0	20.0
Minimum Initial (s)	12.0	37.0	12.0	37.0	12.0	37.0	12.0	39.0	12.0	39.0	39.0
Minimum Split (s)	17.0	96.0	12.0	51.0	16.0	53.0	11.4%	37.9%	13.5%	40.0%	40.0%
Total Split (%)	12.1%	40.0%	8.6%	36.4%	11.4%	37.9%					
Maximum Green (s)	12.0	49.0	7.0	44.0	11.0	46.0	14.0	49.0	14.0	49.0	49.0
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	4.0
All-Red Time (s)	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-3.0	-1.0	-3.0	-1.0	-3.0	-1.0	-3.0	-1.0	-3.0	-3.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Recall Mode	Max	Max	Max	Max	None	C-Max	Max	C-Max	Max	C-Max	C-Max
Walk Time (s)	7.0		7.0			7.0			7.0		7.0
Flash Dont Walk (s)	23.0		23.0			25.0			25.0		25.0
Pedestrian Calls (#/hr)	0		0			0			0		0
Act Effct Green (s)	13.0	52.0	8.0	47.0	12.0	49.0	15.0	52.0	15.0	52.0	52.0
Actuated g/C Ratio	0.09	0.37	0.06	0.34	0.09	0.35	0.11	0.37	0.11	0.37	0.37
v/c Ratio	2.06	0.98	0.99	1.73	0.99	0.71	2.17	1.62	2.17	1.62	1.17
Control Delay	521.4	62.0	159.4	359.2	503.6	43.9	558.4	304.0	558.4	304.0	97.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	521.4	62.0	159.4	359.2	503.6	43.9	558.4	304.0	558.4	304.0	97.7
LOS	F	E	F	F	F	D	F	F	F	F	F
Approach Delay	217.6		350.6		174.4		319.6		319.6		319.6
Approach LOS	F		F		F		F		F		F
Intersection Summary	CBD										
Area Type:	CBD										
Cycle Length:	140										
Actuated Cycle Length:	140										
Offset: 0 (0%):	Referenced to phase 2:NBT and 6:SBT. Start of Green, Master Intersection										
Natural Cycle:	150										
Control Type:	Actuated-Coordinated										
Maximum v/c Ratio:	2.17										
Intersection Signal Delay:	282.7										
Intersection Capacity Utilization:	134.2%										
Analysis Period (min):	15										
* User Entered Value											



Queues
104: Tatalgar Rd & Cornwall Rd

Total 2032
PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	572	1116	83	1839	263	663	679	807	674
v/c Ratio	2.06	0.98	0.99	1.73	1.99	0.71	2.17	1.62	1.17
Control Delay	521.4	62.0	159.4	359.2	503.6	43.9	558.4	304.0	97.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	521.4	62.0	159.4	359.2	503.6	43.9	558.4	304.0	97.7
Queue Length 50th (m)	~135.0	160.3	24.7	~404.4	~119.1	103.0	~167.6	~416.2	~205.8
Queue Length 95th (m)	#173.4	#211.0	#46.4	#420.5	#104.6	123.2	m#90.4	m#200.5	m28.9
Internal Link Dist (m)	261.8		118.3		287.4			106.3	
Turn Bay Length (m)	80.0		80.0		25.0		80.0		
Base Capacity (vph)	277	1144	84	1065	132	937	313	498	576
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	2.06	0.98	0.99	1.73	1.99	0.71	2.17	1.62	1.17
Intersection Summary									
~ Volume exceeds capacity, queue is theoretically infinite.									
Queue shown is maximum after two cycles.									
# 95th percentile volume exceeds capacity, queue may be longer.									
Queue shown is maximum after two cycles.									
m Volume for 95th percentile queue is metered by upstream signal.									

HCM Signalized Intersection Capacity Analysis
104: Tatalgar Rd & Cornwall Rd

Total 2032
PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Traffic Volume (vph)	532	681	221	62	928	684	158	516	47
Future Volume (vph)	532	681	221	62	928	684	158	516	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.3	3.6	3.3	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.95	1.00	0.80	0.97	0.80	1.00
Frbp. ped/bikes	1.00	0.99	1.00	0.98	1.00	1.00	1.00	1.00	0.98
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.95	1.00	0.94	1.00	0.99	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	2987	2962	1481	2902	1540	2664	2929	1341	1324
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	2987	2962	1481	2902	1540	2664	2929	1341	1324
Peak-hour factor, PHF	0.93	0.91	0.60	0.75	0.86	0.90	0.60	0.86	0.75
Adj. Flow (vph)	572	748	368	83	1079	760	263	600	63
RTOR Reduction (vph)	0	43	0	0	91	0	5	0	0
Lane Group Flow (vph)	572	1073	0	83	1748	0	263	658	0
Conf. Peds. (#/hr)	25	7	7	7	25	9	18	18	9
Heavy Vehicles (%)	2%	4%	1%	6%	3%	2%	1%	0%	4%
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Prot
Protected Phases	3	8	7	4	5	2	1	6	6
Permitted Phases	12.0	49.0	7.0	44.0	11.0	46.0	14.0	49.0	49.0
Actuated Green, G (s)	13.0	52.0	8.0	47.0	12.0	49.0	15.0	52.0	52.0
Effective Green, g (s)	0.09	0.37	0.06	0.34	0.09	0.35	0.11	0.37	0.37
Actuated g/C Ratio	5.0	7.0	5.0	7.0	5.0	7.0	5.0	7.0	7.0
Clearance Time (s)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Vehicle Extension (s)	277	1100	84	974	132	932	313	498	491
Lane Grp Cap (vph)	c0.19	0.36	0.06	c0.60	0.17	0.25	c0.23	c0.60	0.45
v/s Ratio Prot	2.06	0.98	0.99	1.79	1.99	0.71	2.17	1.62	1.20
v/c Ratio	63.5	43.4	66.0	46.5	64.0	39.3	62.5	44.0	44.0
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	1.23	0.58	0.48
Progression Factor	491.5	21.8	95.0	361.7	472.5	4.5	527.2	280.1	92.5
Incremental Delay, d2	555.0	65.1	160.9	408.2	536.5	43.8	604.3	305.7	112.4
Delay (s)	F	E	F	F	F	D	F	F	F
Level of Service	F	E	F	F	F	D	F	F	F
Approach Delay (s)	231.1	F	397.5	F	183.7	F	339.2	F	F
Approach LOS	F	F	F	F	F	F	F	F	F
Intersection Summary									
HCM 2000 Control Delay	307.2								
HCM 2000 Volume to Capacity ratio	1.81								
Actuated Cycle Length (s)	140.0								
Intersection Capacity Utilization	134.4%								
Analysis Period (min)	15								
c Critical Lane Group	F								

Lanes, Volumes, Timings
105: Trafalgar Rd & QEW EB-Off Ramp

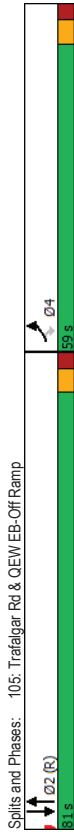
Total 2032
PM Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	987	542	0	1966	1855	0
Future Volume (vph)	987	542	0	1966	1855	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.5	3.6	3.6	3.6	3.6
Lane Util. Factor	0.97	1.00	1.00	*0.80	*0.80	1.00
Flt Protected	0.950					
Satd. Flow (prot)	2958	1423	0	3872	3946	0
Flt Permitted	0.950					
Satd. Flow (perm)	2958	1423	0	3872	3946	0
Right Turn on Red	Yes					Yes
Satd. Flow (RTOR)	6					
Link Speed (k/h)	50			50	50	
Link Distance (m)	199.2			51.4	324.8	
Travel Time (s)	14.3			3.7	23.4	
Peak Hour Factor	0.98	0.92	0.25	0.91	0.90	0.25
Heavy Vehicles (%)	3%	1%	0%	6%	4%	0%
Adj. Flow (vph)	1007	589	0	2160	2061	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1007	589	0	2160	2061	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Right
Median Width(m)	6.6			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.19	1.16	1.14	1.14	1.14	1.14
Turning Speed (k/h)	24	14	24		14	
Number of Detectors	1	Right	Thru	2	2	
Detector Template	2.0	2.0	10.0	10.0	10.0	
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	2.0	0.6	0.6	0.6	
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)			9.4	9.4		
Detector 2 Size(m)			0.6	0.6		
Detector 2 Type			Ch+Ex	Ch+Ex		
Detector 2 Channel						
Detector 2 Extend (s)			0.0	0.0		
Turn Type	Prot	Perm	NA	NA	NA	
Protected Phases	4		2	2	2	
Permitted Phases	4	4		2	2	
Detector Phase	4	4		2	2	

Lanes, Volumes, Timings
105: Trafalgar Rd & QEW EB-Off Ramp

Total 2032
PM Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	10.0	10.0		29.0	29.0	
Minimum Split (s)	38.0	38.0		36.0	36.0	
Total Split (s)	59.0	59.0		81.0	81.0	
Total Split (%)	42.1%	42.1%		57.9%	57.9%	
Maximum Green (s)	52.0	52.0		74.0	74.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	24.0	24.0		22.0	22.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Ad Effct Green (s)	55.0	55.0		77.0	77.0	
Actuated g/C Ratio	0.39	0.39		0.55	0.55	
v/c Ratio	0.87	1.05		1.01	0.95	
Control Delay	48.4	91.9		38.2	24.9	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	48.4	91.9		38.2	24.9	
LOS	D	F		D	C	
Approach Delay	64.4			38.2	24.9	
Approach LOS	E			D	C	
Intersection Summary	CBD					
Area Type:	CBD					
Cycle Length:	140					
Actuated Cycle Length:	140					
Offset:	133.6 (95%), Referenced to phase 2,NBSB and 6., Start of Green					
Natural Cycle:	100					
Control Type:	Actuated-Coordinated					
Maximum v/c Ratio:	1.05					
Intersection Signal Delay:	40.7					
Intersection Capacity Utilization:	83.8%					
Analysis Period (min):	15					
* User Entered Value						



	EBL	EBR	NBT	SBT
Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	1007	589	2160	2061
v/c Ratio	0.87	1.05	1.01	0.95
Control Delay	48.4	91.9	36.2	24.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	48.4	91.9	36.2	24.9
Queue Length 50th (m)	138.1	~185.1	~253.3	212.4
Queue Length 95th (m)	169.1	#260.6	m71.4	m#232.2
Internal Link Dist (m)	175.2	27.4	300.8	
Turn Bay Length (m)				
Base Capacity (vph)	1162	562	2129	2170
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.87	1.05	1.01	0.95

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

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	TT	T		TT	TT	TT
Traffic Volume (vph)	987	542	0	1966	1855	0
Future Volume (vph)	987	542	0	1966	1855	0
Ideal Flow (vphpb)	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.5	3.6	3.6	3.6	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00		*0.80	*0.80	
Flt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	2958	1423		3872	3946	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	2958	1423		3872	3946	
Peak-hour factor, PHF	0.98	0.92	0.25	0.91	0.90	0.25
Adj. Flow (vph)	1007	589	0	2160	2061	0
RTOR Reduction (vph)	0	4	0	0	0	0
Lane Group Flow (vph)	1007	585	0	2160	2061	0
Heavy Vehicles (%)	3%	1%	0%	6%	4%	0%
Turn Type	Prot	Perm	NA	NA	NA	
Protected Phases	4			2	2	
Permitted Phases		4				
Actuated Green, G (s)	52.0	52.0		74.0	74.0	
Effective Green, g (s)	55.0	55.0		77.0	77.0	
Actuated g/C Ratio	0.39	0.39		0.55	0.55	
Clearance Time (s)	7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	1162	559		2129	2170	
v/s Ratio Prot	0.34			c0.56	0.52	
v/s Ratio Perm	c0.41					
v/c Ratio	0.87	1.05		1.01	0.95	
Uniform Delay, d1	39.1	42.5		31.5	29.7	
Progression Factor	1.00	1.00		0.89	0.63	
Incremental Delay, d2	7.0	51.0		10.0	5.5	
Delay (s)	46.1	93.5		38.0	24.2	
Level of Service	D	F		D	C	
Approach Delay (s)	63.6			38.0	24.2	
Approach LOS	E			D	C	

Intersection Summary
 HCM 2000 Control Delay 40.2 HCM 2000 Level of Service D
 HCM 2000 Volume to Capacity ratio 1.03
 Actuated Cycle Length (s) 140.0 Sum of lost time (s) 8.0
 Intersection Capacity Utilization 83.8% ICU Level of Service E
 Analysis Period (min) 15
 c Critical Lane Group

Lanes, Volumes, Timings
106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

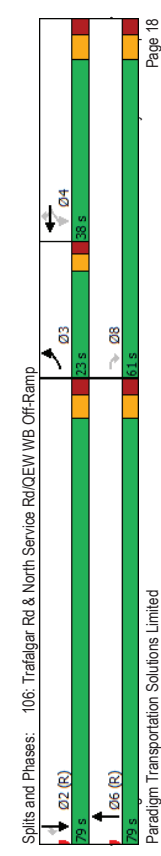
Total 2032
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	3	0	225	541	105	213	0	2530	0	0	1760	12
Traffic Volume (vph)	23	0	225	541	105	213	0	2530	0	0	1760	12
Future Volume (vph)	23	0	225	541	105	213	0	2530	0	0	1760	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.5	3.3	3.6	3.5	3.6	3.6	3.6	3.6	3.6	3.5
Storage Length (m)	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
Storage Lanes	1		1	1	1	1	0	0	0	0	0	1
Taper Length (m)	7.5		7.5	7.5	7.5	7.5	0	0	0	7.5	0	0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.80	1.00	1.00	0.80	1.00
Ped Bike Factor			0.850			0.850					0.850	0.96
Flt Protected	0.950		0.950	0.971		0.971					0.950	0.850
Satd. Flow (prot)	1570	0	1395	1421	1407	1356	0	3909	0	0	3984	1437
Flt Protected	0.950		0.950	0.971		0.971					0.950	0.850
Satd. Flow (perm)	1570	0	1395	1421	1407	1356	0	3909	0	0	3984	1437
Right Turn on Red			Yes			Yes		Yes			Yes	Yes
Satd. Flow (RTOR)			31			92						70
Link Speed (k/h)			50			50		50			50	50
Link Distance (m)			142.1			192.6		324.8			288.2	288.2
Travel Time (s)			10.2			13.9		23.4			19.3	19.3
Conf. Peds. (#/hr)							8	5		5	8	8
Peak Hour Factor	0.25	0.25	0.91	0.88	0.68	0.73	0.25	0.93	0.97	0.25	0.90	0.63
Heavy Vehicles (%)	0%	0%	3%	5%	23%	6%	0%	5%	5%	0%	3%	0%
Adj. Flow (vph)	92	0	247	615	154	292	0	2720	0	0	1956	19
Shared Lane Traffic (%)			38%									
Lane Group Flow (vph)	92	0	247	381	388	292	0	2720	0	0	1956	19
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width(m)	3.3		3.3		3.3		0.0	0.0		0.0	0.0	0.0
Link Offset(m)	0.0		0.0		0.0		0.0	0.0		0.0	0.0	0.0
Crosswalk Width(m)	4.8		4.8		4.8		4.8			4.8		4.8
Two way Left Turn Lane												
Headway Factor	1.19	1.14	1.16	1.19	1.14	1.16	1.14	1.14	1.14	1.14	1.14	1.16
Turning Speed (k/h)	24	14	24	24	14	24	14	24	14	24	24	14
Number of Detectors	1		1		2	1		2		2		1
Detector Template	Left	Right	Thru	Left	Thru	Right	Thru	Thru	Left	Thru	Right	Right
Leading Detector (m)	2.0	2.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Type	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	0.0	0.0	0.0	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
Detector 2 Size(m)	0.6		0.6		0.6		0.6		0.6		0.6	0.6
Detector 2 Type			C+Ex		C+Ex		C+Ex		C+Ex		C+Ex	C+Ex
Detector 2 Channel												

Lanes, Volumes, Timings
106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

Total 2032
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)											0.0	0.0
Turn Type	Prot	Perm	Perm	NA	Perm	NA	NA	NA	NA	NA	NA	Perm
Protected Phases	3			4	4		6				2	2
Permitted Phases	3		8	4	4	4	6				2	2
Switch Phase	3		8	4	4	4	6				2	2
Minimum Initial (s)	7.0		10.0	10.0	10.0	10.0	5.0				28.0	28.0
Minimum Split (s)	23.0		38.0	38.0	38.0	38.0	35.0				35.0	35.0
Total Split (s)	23.0		61.0	38.0	38.0	38.0	79.0				79.0	79.0
Total Split (%)	16.4%		43.6%	27.1%	27.1%	27.1%	56.4%				56.4%	56.4%
Maximum Green (s)	18.0		54.0	31.0	31.0	31.0	72.0				72.0	72.0
Yellow Time (s)	3.0		4.0	4.0	4.0	4.0	4.0				4.0	4.0
All-Red Time (s)	2.0		3.0	3.0	3.0	3.0	3.0				3.0	3.0
Lost Time Adjust (s)	-1.0		-3.0	-3.0	-3.0	-3.0	-3.0				-3.0	-3.0
Total Lost Time (s)	4.0		4.0	4.0	4.0	4.0	4.0				4.0	4.0
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lag				Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes				Yes	Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	4.5				4.5	4.5
Recall Mode	Min		Min	Min	Min	Min	C-Min				C-Min	C-Min
Walk Time (s)	7.0		7.0	7.0	7.0	7.0	7.0				7.0	7.0
Flash Dont Walk (s)	24.0		24.0	24.0	24.0	24.0	21.0				21.0	21.0
Pedestrian Calls (#/hr)			0	0	0	0	0				0	0
Ad Effct Green (s)	14.3		57.0	38.7	38.7	38.7	75.0				75.0	75.0
Actuated g/C Ratio	0.10		0.41	0.28	0.28	0.28	0.54				0.54	0.54
v/c Ratio	0.57		0.42	0.97	1.00	0.66	1.30				0.92	0.92
Control Delay	73.3		28.4	88.9	95.9	39.3	166.3				37.7	37.7
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0				0.0	0.0
Total Delay	73.3		28.4	88.9	95.9	39.3	166.3				37.7	37.7
LOS	E		C	F	F	D	F				D	D
Approach Delay			40.6			77.8					37.4	
Approach LOS			D			E					D	
Intersection Summary												
Area Type:	CBD											
Cycle Length:	140											
Actuated Cycle Length:	140											
Offset:	115.4 (82%), Referenced to phase 2:SBT and 6:NBT, Start of Green											
Natural Cycle:	150											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	1.30											
Intersection Signal Delay:	102.1											
Intersection Capacity Utilization:	87.4%											
Analysis Period (min):	15											
* User Entered Value												



Queues
106: Tatalgar Rd & North Service Rd/QEW WB Off-Ramp

Total 2032
PM Peak Hour

	EBL	EBR	WBL	WBR	NBT	SBT	SBR
Lane Group	92	247	381	388	292	2720	1956
Lane Group Flow (vph)	0.57	0.42	0.97	1.00	0.66	1.30	0.92
v/c Ratio	73.3	28.4	86.9	95.9	39.3	166.3	37.7
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	73.3	28.4	86.9	95.9	39.3	166.3	37.7
Total Delay	26.0	44.4	116.3	~120.2	52.6	~421.7	210.0
Queue Length 50th (m)	11.3	69.4	#195.0	#129.8	64.0m#425.0	241.0	0.0
Queue Length 95th (m)							
Internal Link Dist (m)	50.0		168.6		300.8	244.2	
Turn Bay Length (m)	213	566	392	388	441	2094	2134
Base Capacity (vph)	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.42	0.97	1.00	0.66	1.30	0.92
Intersection Summary							
~ Volume exceeds capacity, queue is theoretically infinite.							
Queue shown is maximum after two cycles.							
# 95th percentile volume exceeds capacity, queue may be longer.							
Queue shown is maximum after two cycles.							
m Volume for 95th percentile queue is metered by upstream signal.							

HCM Signalized Intersection Capacity Analysis
106: Tatalgar Rd & North Service Rd/QEW WB Off-Ramp

Total 2032
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	23	0	225	541	105	213	0	2530	0	0	1760	12	
Traffic Volume (vph)	23	0	225	541	105	213	0	2530	0	0	1760	12	
Future Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Ideal Flow (vphpl)	3.3	3.6	3.5	3.3	3.6	3.5	3.6	3.6	3.6	3.6	3.6	3.5	
Lane Width	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Total Lost time (s)	1.00	1.00	1.00	0.95	0.95	1.00	0.80	0.80	0.80	0.80	0.80	1.00	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Flt	0.95	1.00	0.85	1.00	0.85	1.00	0.85	1.00	0.85	1.00	0.85	1.00	
Flt Protected	1570	1395	1421	1406	1366	3909							
Satd. Flow (prot)	0.95	1.00	0.95	0.97	1.00	1.00							
Flt Permitted	1570	1395	1421	1406	1366	3909							
Satd. Flow (perm)	0.25	0.25	0.91	0.88	0.68	0.73	0.25	0.93	0.97	0.25	0.90	0.63	
Peak-hour factor, PHF	92	0	247	615	154	292	0	2720	0	0	1956	19	
Adj. Flow (vph)	0	0	18	0	0	67	0	0	0	0	0	9	
RTOR Reduction (vph)	92	0	229	381	388	225	0	2720	0	0	1956	10	
Lane Group Flow (vph)							8		5				
Conf. Peds. (#/hr)	0%	0%	3%	5%	23%	6%	0%	5%	5%	0%	3%	0%	
Heavy Vehicles (%)	Prot	Per	Per	Per	NA	Per	NA	NA	NA	Per	NA	Per	
Turn Type	3			4			6				2		
Protected Phases	8	4		4							2		
Permitted Phases	13.3	54.0	35.7	35.7	35.7	35.7	72.0	72.0	72.0	72.0	72.0	72.0	
Actuated Green, G (s)	14.3	57.0	38.7	38.7	38.7	38.7	75.0	75.0	75.0	75.0	75.0	75.0	
Effective Green, g (s)	0.10	0.41	0.28	0.28	0.28	0.28	0.54	0.54	0.54	0.54	0.54	0.54	
Actuated G/C Ratio	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	
Clearance Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Vehicle Extension (s)	160	567	392	388	374	2094							
Lane Grp Cap (vph)	c0.06						c0.70						
v/s Ratio Prot	0.16	0.27	0.28	0.17									
v/s Ratio Perm	0.57	0.40	0.97	1.00	0.60	1.30							
Uniform Delay, d1	60.0	29.4	50.1	50.6	44.0	32.5							
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.04							
Incremental Delay, d2	4.9	0.5	37.9	45.7	2.7	135.6							
Delay (s)	64.9	29.9	88.0	96.3	46.7	169.5							
Level of Service	E	C	F	F	D	F							
Approach Delay (s)	39.4			79.7		169.5							
Approach LOS	D			E		F							
Intersection Summary													
HCM 2000 Control Delay	103.7											HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.13												
Actuated Cycle Length (s)	140.0											Sum of lost time (s)	12.0
Intersection Capacity Utilization	87.4%											ICU Level of Service	E
Analysis Period (min)	15												
c Critical Lane Group													

Lanes, Volumes, Timings
203: Argus Rd & South Service Rd

Total 2032
PM Peak Hour

EBL	EBT	WBT	WBR	SBL	SBR
↖	→	←	↗	↖	↗
EBL	EBT	WBT	WBR	SBL	SBR
12	77	516	174	43	82
12	77	516	174	43	82
1900	1900	1900	1900	1900	1900
1.00	1.00	1.00	1.00	1.00	1.00
0.990	0.990	0.961	0.911	0.983	0.983
0	1402	1609	0	1531	0
0	1402	1609	0	1531	0
50	50	50	50	50	50
122.3	145.7	51.8	51.8	3.7	3.7
1	8.8	10.5	1	5	1
0.25	0.42	0.86	0.72	0.25	0.25
100%	0%	3%	0%	0%	0%
48	183	600	242	172	328
0	231	842	0	500	0
No	No	No	No	No	No
Left	Left	Right	Right	Right	Right
0.0	0.0	0.0	3.6	3.6	3.6
4.8	4.8	4.8	4.8	4.8	4.8
1.14	1.14	1.14	1.14	1.14	1.14
24	Free	Free	Free	Stop	Stop
Intersection Summary					
Area Type: CBD					
Control Type: Unsignalized					
Intersection Capacity Utilization 57.1%					
Analysis Period (min) 15					

HCM Unsignalized Intersection Capacity Analysis
203: Argus Rd & South Service Rd

Total 2032
PM Peak Hour

EBL	EBT	WBT	WBR	SBL	SBR
↖	→	←	↗	↖	↗
EBL	EBT	WBT	WBR	SBL	SBR
12	77	516	174	43	82
12	77	516	174	43	82
Free	Free	Free	Stop	Stop	Stop
0%	0%	0%	0%	0%	0%
0.25	0.42	0.86	0.72	0.25	0.25
48	183	600	242	172	328
1	5	5	1	1	1
3.6	3.6	3.6	3.6	3.6	3.6
1.2	1.2	1.2	1.2	1.2	1.2
0	0	0	0	0	0
None	None	None	None	None	None
358	358	358	358	358	358
843	843	843	843	843	843
843	843	843	843	843	843
5.1	5.1	5.1	5.1	5.1	5.1
3.1	3.1	3.1	3.1	3.1	3.1
90	90	90	90	90	90
494	494	494	494	494	494
EB 1	WB 1	SB 1	EB 1	WB 1	SB 1
231	842	500	231	842	500
48	0	172	48	0	172
0	242	328	0	242	328
494	1700	339	494	1700	339
0.10	0.50	1.47	0.10	0.50	1.47
2.6	0.0	216.5	2.6	0.0	216.5
3.8	0.0	258.4	3.8	0.0	258.4
A	A	F	A	A	F
3.8	0.0	258.4	3.8	0.0	258.4
Intersection Summary					
Average Delay 82.7					
Intersection Capacity Utilization 57.1%					
ICU Level of Service B					
Analysis Period (min) 15					

Lanes, Volumes, Timings
204: Trafalgar Rd & Argus Rd

Total 2032
PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	145	0	2860	2273	690
Future Volume (vph)	0	145	0	2860	2273	690
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.5	3.6	3.6	3.6	3.6
Lane Util. Factor	1.00	1.00	1.00	*0.80	*0.80	0.91
Frt		0.865			0.960	
Flt Protected						
Satd. Flow (prot)	0	1367	0	3636	3808	0
Flt Permitted						
Satd. Flow (perm)	0	1367	0	3636	3808	0
Link Speed (k/h)	50		50	50	50	
Link Distance (m)	145.7		270.2	51.4		
Travel Time (s)	10.5		19.5	3.7		
Confl. Peds. (#/hr)						11
Peak Hour Factor	0.25	0.54	0.25	0.92	0.97	0.82
Heavy Vehicles (%)	0%	7%	0%	7%	4%	2%
Adj. Flow (vph)	0	269	0	3109	2343	841
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	269	0	3109	3184	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0	3.3	3.3	3.3		
Link Offset(m)	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width(m)	4.8		4.8	4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.14	1.16	1.14	1.14	1.14	1.14
Turning Speed (k/h)	24	14	24			14
Sign Control	Stop		Free	Free	Free	
Intersection Summary						
Area Type:	CBD					
Control Type:	Unsignalized					
Intersection Capacity Utilization	82.8%					
Analysis Period (min)	15					
	* User Entered Value					

HCM Unsignalized Intersection Capacity Analysis
204: Trafalgar Rd & Argus Rd

Total 2032
PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	145	0	2860	2273	690
Future Volume (Veh/h)	0	145	0	2860	2273	690
Sign Control	Stop		Free	Free	Free	
Grade	0%		0%	0%	0%	
Peak Hour Factor	0.25	0.54	0.25	0.92	0.97	0.82
Hourly flow rate (vph)	0	269	0	3109	2343	841
Pedestrians	11					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	1					
Right turn flare (veh)			None	None	None	
Median type						
Median storage (veh)						
Upstream signal (m)			270	52		
pX, platoon unblocked	0.67	0.52	0.52			
vC, conflicting volume	3811	1212	3195			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	361	0	1967			
iC, single (s)	6.8	7.0	4.1			
iC, 2 stage (s)						
p0 queue free %	100	51	100			
IC, 2 stage (s)	3.5	3.4	2.2			
p0 capacity (veh/h)	409	546	153			
Direction_Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2 SB 3
Volume Total	269	1036	1036	1036	937	937 1310
Volume Left	0	0	0	0	0	0
Volume Right	269	0	0	0	0	841
CSH	546	1700	1700	1700	1700	1700
Volume to Capacity	0.49	0.61	0.61	0.61	0.55	0.55 0.77
Queue Length 95th (m)	21.6	0.0	0.0	0.0	0.0	0.0 0.0
Control Delay (s)	17.8	0.0	0.0	0.0	0.0	0.0 0.0
Lane LOS	C					
Approach Delay (s)	17.8	0.0			0.0	
Approach LOS	C					
Intersection Summary						
Average Delay	0.7					
Intersection Capacity Utilization	82.8%					
ICU Level of Service	E					
Analysis Period (min)	15					

Lanes, Volumes, Timings
302: Cross Ave & East Driveway Access

Total 2032
PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group						
Lane Configurations		4A	4B		W	
Traffic Volume (vph)	25	1610	957	105	68	23
Future Volume (vph)	25	1610	957	105	68	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt		0.985			0.966	
Flt Protected		0.999			0.964	
Satd. Flow (prot)	0	3182	3138	0	1561	0
Flt Permitted		0.999			0.964	
Satd. Flow (perm)	0	3182	3138	0	1561	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		100.7	122.6		66.8	
Travel Time (s)		7.3	8.8		4.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	1750	1040	114	74	25
Shared Lane Traffic (%)		0	1777	1154	0	99
Lane Group Flow (vph)	No	No	No	No	No	No
Enter Blocked Intersection	Left	Left	Right	Left	Right	Right
Lane Alignment		3.3	3.3		3.6	
Median Width(m)		0.0	0.0		0.0	
Link Offset(m)		4.8	4.8		4.8	
Crosswalk Width(m)		1.14	1.14		1.14	1.14
Two way Left Turn Lane		25	Free	Free	Free	Stop
Headway Factor		1.14	1.14		1.14	1.14
Turning Speed (k/h)		15	15		25	15
Sign Control		Free	Free		Stop	Stop
Intersection Summary	CBD					
Area Type:	CBD					
Control Type:	Unsignalized					
Intersection Capacity Utilization	81.5%					
Analysis Period (min)	15					
ICU Level of Service	D					

HCM Unsignalized Intersection Capacity Analysis
302: Cross Ave & East Driveway Access

Total 2032
PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement						
Lane Configurations		4A	4B		W	
Traffic Volume (veh/h)	25	1610	957	105	68	23
Future Volume (Veh/h)	25	1610	957	105	68	23
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	27	1750	1040	114	74	25
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)		None	None			
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		101	123			
Pk platoon unblocked					0.61	
VC, conflicting volume	1154				2026	577
VC1, stage 1 conf vol						
VC2, stage 2 conf vol						
VCu, unblocked vol	1154				1415	577
IC, single (s)	4.1				6.8	6.9
IC, 2 stage (s)	2.2				3.5	3.3
p0 queue free %	96				2	95
CM capacity (veh/h)	601				75	460
Direction_Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	610	1167	693	461	99	
Volume Left	27	0	0	0	74	
Volume Right	0	0	0	114	25	
CSH	601	1700	1700	1700	95	
Volume to Capacity	0.04	0.69	0.41	0.27	1.04	
Queue Length 95th (m)	1.1	0.0	0.0	0.0	50.5	
Control Delay (s)	1.2	0.0	0.0	0.0	183.9	
Lane LOS	A				F	
Approach Delay (s)	0.4		0.0		183.9	
Approach LOS					F	
Intersection Summary	Unsignalized					
Average Delay	6.3					
Intersection Capacity Utilization	81.5%					
ICU Level of Service	D					
Analysis Period (min)	15					

Lanes, Volumes, Timings
303: North Driveway & Argus Rd

Total 2032
PM Peak Hour

	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	W	W	W	W	W	W
Traffic Volume (vph)	63	73	126	472	91	26
Future Volume (vph)	63	73	126	472	91	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.927				0.970	
Flt Protected				0.990	0.962	
Satd. Flow (prot)	1727	0	0	1844	1738	0
Flt Permitted				0.990	0.962	
Satd. Flow (perm)	1727	0	0	1844	1738	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	55.4			122.3	54.4	
Travel Time (s)	4.0			8.8	3.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	68	79	137	513	99	28
Shared Lane Traffic (%)						
Lane Group Flow (vph)	147	0	0	650	127	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width (m)	0.0			0.0	3.6	
Link Offset (m)	0.0			0.0	0.0	
Crosswalk Width (m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	56.2%					
Analysis Period (min)	15					
	ICU Level of Service B					

HCM Unsignalized Intersection Capacity Analysis
303: North Driveway & Argus Rd

Total 2032
PM Peak Hour

	EBT	EBR	WBL	WBT	NBL	NBR
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	W	W	W	W	W	W
Traffic Volume (veh/h)	63	73	126	472	91	26
Future Volume (Veh/h)	63	73	126	472	91	26
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	68	79	137	513	99	28
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)				None		
Median type				None		
Median storage (veh)						
Upstream signal (m)	236					
pX, platoon unblocked						
vC, conflicting volume		147			894	108
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		147			894	108
iC, single (s)		4.1			6.4	6.2
iC, 2 stage (s)						
p0 queue free %		2.2			3.5	3.3
q0 capacity (veh/h)		90			65	97
qM capacity (veh/h)		1435			282	946
Direction_Lane #	EB 1	WB 1	NB 1			
Volume Total	147	650	127			
Volume Left	0	137	99			
Volume Right	79	0	28			
ESH	1700	1435	333			
Volume to Capacity	0.09	0.10	0.38			
Queue Length 95th (m)	0.0	2.5	13.8			
Control Delay (s)	0.0	2.5	22.3			
Lane LOS	A	C	C			
Approach Delay (s)	0.0	2.5	22.3			
Approach LOS		C	C			
Intersection Summary						
Average Delay	4.8					
Intersection Capacity Utilization	56.2%					
ICU Level of Service	B					
Analysis Period (min)	15					

Queuing and Blocking Report

Total 2032
PM Peak Hour

Intersection: 101: Trafalgar Rd & Cross Ave/South Service Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	B34	SB	SB
	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR
Directions Served												
Maximum Queue (m)	96.0	101.8	75.2	32.3	329.1	324.3	57.4	112.5	120.4	124.3	32.0	32.3
Average Queue (m)	93.8	98.5	27.1	31.1	313.1	290.5	45.0	74.0	81.9	84.6	1.1	22.7
95th Queue (m)	99.2	101.3	58.7	37.1	352.1	417.1	70.7	109.0	116.5	118.8	16.3	39.9
Link Distance (m)	96.2	96.2		313.2	313.2		126.0	126.0	126.0	126.0	101.5	
Upstream Blk Time (%)	16	58	0	81	35	0	0	0	0	0	1	
Queuing Penalty (veh)	0	486	0	0	0	0	2	2	2	2	6	
Storage Bay Dist (m)	130.0			25.0			50.0				25.0	
Storage Blk Time (%)	16	58		65	45		18	19			18	
Queuing Penalty (veh)	100	358		172	105		92	50			78	

Intersection: 101: Trafalgar Rd & Cross Ave/South Service Rd

Movement	SB	SB	SB	TR	TR
	T	R	T	T	R
Directions Served					
Maximum Queue (m)	251.8	253.9	250.2		
Average Queue (m)	145.3	180.0	198.2		
95th Queue (m)	296.2	319.1	310.6		
Link Distance (m)	239.0	239.0	239.0		
Upstream Blk Time (%)	4	14	27		
Queuing Penalty (veh)	32	109	219		
Storage Bay Dist (m)					
Storage Blk Time (%)	34				
Queuing Penalty (veh)	58				

Intersection: 102: GO Bus Terminal/Argus Rd & Cross Ave

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	B14	SB	SB
	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR
Directions Served												
Maximum Queue (m)	27.3	210.2	211.1	27.3	61.1	39.6	70.4	76.9	22.4	191.6	60.2	
Average Queue (m)	8.6	201.9	202.0	20.2	19.0	14.9	30.4	36.6	21.6	182.6	48.3	
95th Queue (m)	28.4	206.4	207.3	31.7	48.6	30.0	59.7	72.0	24.3	187.4	63.0	
Link Distance (m)	196.3	196.3		79.5	79.5	65.7	65.7	65.7	159.0	35.2		
Upstream Blk Time (%)	96	79	0	0	0	0	2	6	6	96	80	
Queuing Penalty (veh)	0	0	0	0	0	0	0	0	0	538	453	
Storage Bay Dist (m)	20.0			20.0			15.0				15.0	
Storage Blk Time (%)	0	89		14	2		89	7			7	
Queuing Penalty (veh)	0	42		33	3		208	22			22	

Queuing and Blocking Report

Total 2032
PM Peak Hour

Intersection: 104: Trafalgar Rd & Cornwall Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	B34	SB	SB
	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR
Directions Served												
Maximum Queue (m)	83.7	87.4	281.2	269.7	87.4	136.9	136.9	32.4	297.7	294.3	86.3	119.7
Average Queue (m)	82.9	87.2	270.2	256.6	33.4	123.6	128.0	32.1	258.0	240.6	63.4	79.7
95th Queue (m)	85.0	87.8	276.0	250.6	88.4	138.0	132.8	33.0	348.2	355.2	104.3	141.7
Link Distance (m)	264.0	264.0		122.1	122.1		286.8	286.8	286.8	286.8	101.5	
Upstream Blk Time (%)	94	8	0	0	33	59	0	0	57	18	25	
Queuing Penalty (veh)	80	80.0	0	0	0	0	25.0		95	7	32	
Storage Bay Dist (m)	31	83	4		0	50			246	11	20	
Storage Blk Time (%)	105	282	20		0	31			246	11	20	
Queuing Penalty (veh)	31	83	4		0	50			246	11	20	

Intersection: 104: Trafalgar Rd & Cornwall Rd

Movement	SB	SB	SB	B34	B34
	T	R	T	T	T
Directions Served					
Maximum Queue (m)	85.2	37.7	50.1	11.4	
Average Queue (m)	35.4	13.6	8.0	0.5	
95th Queue (m)	67.9	29.9	37.7	8.7	
Link Distance (m)	101.5	101.5	128.0	128.0	
Upstream Blk Time (%)	1				
Queuing Penalty (veh)	3				
Storage Bay Dist (m)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 105: Trafalgar Rd & QEW EB-Off Ramp

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB
	L	L	R	T	T	T	T	T	T
Directions Served									
Maximum Queue (m)	177.7	186.4	187.6	37.6	42.9	36.8	317.7	317.2	311.9
Average Queue (m)	60.4	172.3	180.8	28.1	30.7	28.9	297.2	307.6	305.6
95th Queue (m)	150.7	223.6	185.0	33.1	37.6	32.9	353.1	314.5	310.2
Link Distance (m)	176.9	176.9	176.9	27.8	27.8	27.8	300.4	300.4	300.4
Upstream Blk Time (%)	0	56	95	29	34	34	30	54	65
Queuing Penalty (veh)	0	0	0	278	323	325	251	458	546
Storage Bay Dist (m)									
Storage Blk Time (%)									
Queuing Penalty (veh)									

Queuing and Blocking Report

Total 2032
PM Peak Hour

Intersection: 106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

Movement	EB	WB	WB	LT	R	WB	NB	NB	T	T	SB	SB	SB	SB	SB	SB
Directions Served	L	R	L	LT	R	WB	NB	NB	T	T	SB	SB	T	T	T	R
Maximum Queue (m)	57.4	133.2	183.3	188.9	185.7	90.7	96.7	97.6	266.5	271.8	267.9	265.3				
Average Queue (m)	19.3	115.3	164.3	174.5	134.2	49.0	57.8	56.5	259.1	260.6	259.1	247.6				
95th Queue (m)	61.9	154.0	207.6	191.4	256.6	78.5	89.2	87.0	266.6	266.9	263.3	330.9				
Link Distance (m)	119.7	173.2	173.2	173.2	173.2	300.4	300.4	300.4	254.7	254.7	254.7	254.7				
Upstream Blk Time (%)	78	96	92	46	0	0	0	0	76	96	98	82				
Queuing Penalty (veh)	0	0	0	0	0	0	0	0	0	0	0	0				
Storage Bay Dist (m)	50.0															
Storage Blk Time (%)	0	89														
Queuing Penalty (veh)	0	20														

Intersection: 203: Argus Rd & South Service Rd

Movement	EB	WB	SB	SB	SB	SB	SB	SB	SB	SB	SB	SB	SB	SB	SB	SB
Directions Served	LT	TR	LR													
Maximum Queue (m)	16.9	121.9	47.6													
Average Queue (m)	1.8	84.3	37.0													
95th Queue (m)	10.8	160.4	60.8													
Link Distance (m)	108.5	112.4	43.0													
Upstream Blk Time (%)	34	65	0													
Queuing Penalty (veh)	236	0	0													
Storage Bay Dist (m)																
Storage Blk Time (%)																
Queuing Penalty (veh)																

Intersection: 204: Trafalgar Rd & Argus Rd

Movement	EB	NB	NB	SB	SB	SB	SB	SB	SB	SB	SB	SB	SB	SB	SB	SB
Directions Served	R	T	T	T	T	T	T	T	T	T	T	T	T	T	T	R
Maximum Queue (m)	102.7	55.5	66.7	65.8	36.7	44.9	46.4									
Average Queue (m)	42.8	27.5	33.9	35.3	12.9	24.7	34.8									
95th Queue (m)	97.2	53.2	60.1	57.9	34.4	43.6	44.2									
Link Distance (m)	112.4	239.0	239.0	239.0	27.8	27.8	27.8									
Upstream Blk Time (%)	0				2	10	53									
Queuing Penalty (veh)	0				20	77	422									
Storage Bay Dist (m)																
Storage Blk Time (%)																
Queuing Penalty (veh)																

Queuing and Blocking Report

Total 2032
PM Peak Hour

Intersection: 302: Cross Ave & East Driveway Access

Movement	EB	EB	WB	WB	SB	SB	SB	SB	SB	SB	SB	SB	SB	SB	SB	SB
Directions Served	LT	T	TR	LR												
Maximum Queue (m)	93.1	105.2	1.3	59.5												
Average Queue (m)	83.8	56.2	0.0	52.5												
95th Queue (m)	88.1	122.1	0.9	58.5												
Link Distance (m)	79.5	79.5	96.2	52.3												
Upstream Blk Time (%)	54	16	100	0												
Queuing Penalty (veh)	401	117	0	0												
Storage Bay Dist (m)																
Storage Blk Time (%)																
Queuing Penalty (veh)																

Intersection: 303: North Driveway & Argus Rd

Movement	EB	B14	WB	WB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB
Directions Served	TR	T	LT	LR												
Maximum Queue (m)	30.2	1.4	113.4	50.4												
Average Queue (m)	2.4	0.0	106.3	46.1												
95th Queue (m)	14.0	1.0	130.9	51.4												
Link Distance (m)	35.2	159.0	108.5	45.8												
Upstream Blk Time (%)	1		55	99												
Queuing Penalty (veh)	1		329	0												
Storage Bay Dist (m)																
Storage Blk Time (%)																
Queuing Penalty (veh)																

Network Summary

Network wide Queuing Penalty: 7928

Lanes, Volumes, Timings
101: Trafalgar Rd & Cross Ave/South Service Rd

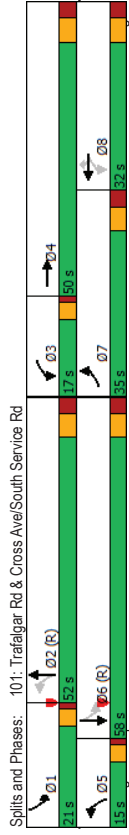
Total 2037
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT
Traffic Volume (vph)	1144	406	208	89	379	186	210	689	1025	430	1044	718
Future Volume (vph)	1144	406	208	89	379	186	210	689	1025	430	1044	718
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.6	3.3	3.6	3.5	3.3	3.6	3.6	3.3	3.6	3.6
Storage Length (m)	130.0	0.0	25.0	0.0	50.0	0.0	50.0	0.0	25.0	0.0	50.0	0.0
Storage Lanes	1	0	1	1	1	1	1	1	0	1	1	0
Taper Length (m)	7.5	1.00	1.00	7.5	1.00	1.00	7.5	1.00	0.80	7.5	1.00	0.80
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.80	0.91	1.00	0.80	0.91	0.99
Ped Bike Factor	1.00	0.99		0.99		0.99	0.86		0.86		0.99	0.99
Frt	0.943			0.850		0.850	0.907		0.907		0.938	0.938
Flt Protected	0.950			0.950		0.950	0.950		0.950		0.950	0.950
Satd. Flow (prot)	2795	1477	0	1525	1583	1382	1428	3182	0	1525	3669	0
Flt Permitted	0.950			0.160		0.069		0.082		0.082		0.082
Satd. Flow (perm)	2792	1477	0	257	1583	1362	134	3182	0	132	3669	0
Right Turn on Red	Yes			Yes		Yes		Yes		Yes		Yes
Satd. Flow (RTOR)	24			179		305		305		146		146
Link Speed (k/h)	50			50		50		50		50		50
Link Distance (m)	130.9			330.4		150.2		150.2		270.2		270.2
Travel Time (s)	9.4			23.8		10.8		10.8		19.5		19.5
Confl. Peds. (#/hr)	1			4		4		10		52		52
Peak Hour Factor	0.87	0.77	0.64	0.77	0.77	0.77	0.81	0.88	0.80	0.84	0.84	0.83
Heavy Vehicles (%)	9%	12%	3%	8%	4%	10%	3%	0%	3%	3%	3%	4%
Adj. Flow (vph)	1315	527	325	116	492	242	259	783	1281	512	1243	865
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1315	852	0	116	492	242	259	2064	0	512	2108	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width (m)	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
Link Offset (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width (m)	4.8			4.8		4.8		4.8		4.8		4.8
Two way Left Turn Lane	1.19	1.14	1.14	1.19	1.14	1.16	1.19	1.14	1.14	1.19	1.14	1.14
Headway Factor	24	14	14	24	14	14	24	14	14	24	14	14
Turning Speed (k/h)	1	2	2	1	2	1	1	2	1	2	1	2
Number of Detectors	Left	Thru	Right	Left	Thru	Right	Left	Thru	Left	Thru	Right	Left
Detector Template	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	10.0	2.0	10.0
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 1 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4			9.4		9.4		9.4		9.4		9.4
Detector 2 Size (m)	0.6			0.6		0.6		0.6		0.6		0.6
Detector 2 Type	Ch+Ex			Ch+Ex		Ch+Ex		Ch+Ex		Ch+Ex		Ch+Ex
Detector 2 Channel												

Lanes, Volumes, Timings
101: Trafalgar Rd & Cross Ave/South Service Rd

Total 2037
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)	0.0			0.0			0.0		0.0		0.0	0.0
Turn Type	Prot	NA		pm+pt	NA	Perm	pm+pt	NA	pm+pt		NA	NA
Protected Phases	7	4	3	8		8	5	2	1		6	6
Permitted Phases	7	4	3	8		8	5	2	1		6	6
Detector Phase	7	4	3	8		8	5	2	1		6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	7.0	27.0	7.0	27.0	7.0	27.0
Minimum Split (s)	17.0	25.0	17.0	25.0	25.0	11.5	34.0	11.5	34.0	11.5	34.0	34.0
Total Split (s)	35.0	50.0	17.0	32.0	32.0	15.0	52.0	15.0	52.0	21.0	58.0	58.0
Total Split (%)	25.0%	35.7%	12.1%	22.9%	22.9%	10.7%	37.1%	10.7%	37.1%	15.0%	41.4%	41.4%
Maximum Green (s)	28.0	43.0	13.0	25.0	25.0	11.0	45.0	11.0	45.0	17.0	51.0	51.0
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-3.0	-3.0	0.0	-3.0	-3.0	0.0	-3.0	0.0	-3.0	0.0	-3.0	-3.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	4.0	4.0	3.5	4.0	4.0	3.0	5.0	3.0	5.0	3.0	5.0
Recall Mode	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0		0		0		0		0
Ad Effct Green (s)	31.0	46.5	40.5	28.0	28.0	59.0	48.0	48.0	69.0	54.0	54.0	54.0
Actuated g/C Ratio	0.22	0.33	0.29	0.20	0.20	0.42	0.34	0.34	0.49	0.39	0.39	0.39
v/c Ratio	2.13	1.68	0.62	1.56	0.58	1.64	2.35dr	2.19	1.68dr	2.19	1.68dr	1.68dr
Control Delay	539.9	345.8	44.0	302.5	20.4	317.1	301.4	301.4	559.5	215.8	215.8	215.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	539.9	345.8	44.0	302.5	20.4	317.1	301.4	301.4	559.5	215.8	215.8	215.8
LOS	F	F	D	F	C	F	F	F	F	F	F	F
Approach Delay	463.6			186.9		303.2		303.2		283.0		283.0
Approach LOS	F			F		F		F		F		F
Intersection Summary												
Area Type:	CBD											
Cycle Length:	140											
Actuated Cycle Length:	140											
Offset: 128 (91%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green												
Natural Cycle:	150											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	2.19											
Intersection Signal Delay:	327.8											
Intersection Capacity Utilization:	141.1%											
Analysis Period (min):	15											
* User Entered Value												
dr Defacto Right Lane. Record with 1 through lane as a right lane.												



Queues
101: Traatagar Rd & Cross Ave/South Service Rd

Total 2037
AM Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group	1315	852	116	492	242	259	2064	512	2108
Lane Group Flow (vph)	2.13	1.68	0.62	1.56	0.58	1.64	2.35dr	2.19	1.68dr
v/c Ratio	539.9	345.8	44.0	302.5	20.4	317.1	301.4	559.5	215.8
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	539.9	345.8	44.0	302.5	20.4	317.1	301.4	559.5	215.8
Total Delay	~313.4	~359.4	19.8	~201.8	15.6	~95.9	~351.5	~227.8	~328.8
Queue Length 50th (m)	#342.1	#356.1	29.8	#219.3	28.9	#62.9m#197.1m#161.5m#201.7			
Queue Length 95th (m)	106.9		306.4			126.2		246.2	
Internal Link Dist (m)									
Turn Bay Length (m)	130.0		25.0			50.0		25.0	
Base Capacity (vph)	618	506	193	316	415	158	1291	234	1504
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	2.13	1.68	0.60	1.56	0.58	1.64	1.60	2.19	1.40

Intersection Summary
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 m Queue shown is maximum after two cycles.
 dr Volume for 95th percentile queue is metered by upstream signal.
 dr Defacto Right Lane. Recode with '1' though lane as a right lane.

HCM Signalized Intersection Capacity Analysis
101: Traatagar Rd & Cross Ave/South Service Rd

Total 2037
AM Peak Hour

Movement	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	TT	TT	T	T	T	TT	TT	T	TT	TT
Traffic Volume (vph)	1144	406	208	89	379	186	210	689	1025	430
Future Volume (vph)	1144	406	208	89	379	186	210	689	1025	430
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.5	3.3	3.6	3.3	3.6	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.80	1.00	0.80
Frbp. ped/bikes	1.00	0.99	1.00	1.00	0.99	1.00	0.86	1.00	0.99	1.00
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.95	1.00	0.94	1.00	0.85	1.00	0.91	1.00	0.94	1.00
Flt Protected	0.95	1.00	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95
Satd. Flow (prot)	2785	1477	1525	1583	1362	1428	3182	1525	3671	1525
Flt Permitted	0.95	1.00	0.16	1.00	1.00	0.09	1.00	0.08	1.00	0.08
Satd. Flow (perm)	2795	1477	257	1583	1362	134	3182	131	3671	131
Peak-hour factor, PHF	0.87	0.77	0.64	0.77	0.77	0.81	0.88	0.80	0.84	0.84
Adj. Flow (vph)	1315	527	395	116	492	242	259	783	1281	512
RTOR Reduction (vph)	0	16	0	0	143	0	200	0	0	90
Lane Group Flow (vph)	1315	836	0	116	492	99	259	1864	0	512
Conf. Peds. (#/hr)	1	4	4	4	1	10	52	52	10	10
Heavy Vehicles (%)	9%	6%	12%	3%	8%	4%	10%	3%	0%	3%
Turn Type	Prot	NA	pm-pt	NA	Perm	pm-pt	NA	pm-pt	NA	NA
Protected Phases	7	4	3	8	8	5	2	1	6	6
Permitted Phases			8		8	2				
Actuated Green, G (s)	28.0	43.5	37.5	25.0	25.0	56.0	45.0	66.0	51.0	66.0
Effective Green, g (s)	31.0	46.5	37.5	28.0	28.0	56.0	48.0	66.0	54.0	66.0
Actuated G/C Ratio	0.22	0.33	0.27	0.20	0.20	0.40	0.34	0.47	0.39	0.47
Clearance Time (s)	7.0	7.0	4.0	7.0	7.0	4.0	7.0	4.0	7.0	4.0
Vehicle Extension (s)	3.0	4.0	3.5	4.0	4.0	3.0	5.0	3.0	5.0	3.0
Lane Grp Cap (vph)	618	490	182	316	272	155	1090	231	1415	231
v/s Ratio Prot	c0.47	c0.57	0.06	0.31	0.11	0.13	0.59	c0.27	0.55	c0.78
v/s Ratio Perm			0.11	0.07	0.07	0.54				
v/c Ratio	2.13	1.71	0.64	1.56	0.36	1.67	2.35dr	2.22	1.68dr	2.22
Uniform Delay, d1	54.5	46.8	42.3	56.0	48.3	39.2	45.0	44.7	43.0	44.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	0.96	1.28	1.06	1.14	1.06
Incremental Delay, d2	513.0	326.4	7.4	265.7	1.1	304.5	319.7	548.7	192.2	548.7
Delay (s)	567.5	373.1	49.8	321.7	49.4	342.1	378.7	596.1	241.1	596.1
Level of Service	F	F	D	F	D	F	F	F	F	F
Approach Delay (s)				207.0						
Approach LOS				F						

Intersection Summary
 HCM 2000 Control Delay 367.3 HCM 2000 Level of Service F
 HCM 2000 Volume to Capacity ratio 2.11
 Actuated Cycle Length (s) 140.0 Sum of lost time (s) 16.0
 Intersection Capacity Utilization 141.1% ICU Level of Service H
 Analysis Period (min) 15
 dr Defacto Right Lane. Recode with '1' though lane as a right lane.
 c Critical Lane Group

Lanes, Volumes, Timings
102: GO Bus Terminal/Argus Rd & Cross Ave

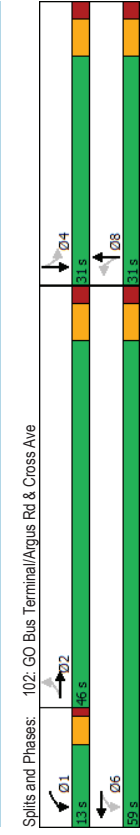
Total 2037
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	50	928	82	212	965	69	95	95	240	313	22	131
Traffic Volume (vph)	50	928	82	212	965	69	95	95	240	313	22	131
Future Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	3.3	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.6
Lane Width (m)	20.0	0.0	20.0	0.0	20.0	0.0	0.0	0.0	15.0	0.0	0.0	0.0
Storage Length (m)	1	0	1	0	1	0	1	0	1	0	1	0
Taper Length (m)	7.5	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.96	1.00	0.96	0.99	0.99	0.879	0.879
Ped Bike Factor	1.00	0.984	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Flt Protected	1570	2861	0	818	3167	0	805	734	0	1570	1259	0
Satd. Flow (prot)	0.230	0.097	0.570	0.570	0.570	0.570	0.570	0.570	0.570	0.570	0.570	0.570
Flt Permitted	380	2861	0	84	3167	0	482	734	0	546	1259	0
Satd. Flow (perm)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Right Turn on Red	19	50	50	17	50	50	17	50	50	17	50	50
Satd. Flow (RTOR)	207.1	92.7	81.9	207.1	92.7	81.9	207.1	92.7	81.9	207.1	92.7	81.9
Link Speed (k/h)	14.9	6.7	6.7	14.9	6.7	6.7	14.9	6.7	6.7	14.9	6.7	6.7
Link Distance (m)	1	3	3	1	3	3	1	3	3	1	3	3
Travel Time (s)	0.52	0.87	0.65	0.84	0.88	0.79	0.53	0.25	0.70	0.78	0.62	0.89
Peak Hour Factor	0%	1%	100%	92%	1%	5%	95%	0%	91%	0%	93%	0%
Heavy Vehicles (%)	96	1067	126	252	1097	87	179	0	343	401	35	147
Adj. Flow (vph)	96	1193	0	252	1184	0	179	343	0	401	182	0
Shared Lane Traffic (%)	No	No	No	No	No	No	No	No	No	No	No	No
Lane Group Flow (vph)	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Enter Blocked Intersection	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
Lane Alignment	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Median Width(m)	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Link Offset(m)	1.19	1.14	1.14	1.19	1.14	1.14	1.19	1.14	1.14	1.19	1.14	1.14
Crosswalk Width(m)	24	14	24	14	24	14	24	14	24	14	24	14
Two way Left Turn Lane	1	2	1	2	1	2	1	2	1	2	1	2
Headway Factor	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru
Turning Speed (k/h)	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0
Number of Detectors	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Template	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Size(m)	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 1 Type	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4	0.6	9.4	0.6	9.4	0.6	9.4	0.6	9.4	0.6	9.4	0.6
Detector 2 Size(m)	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 2 Type	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Detector 2 Channel	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6

Lanes, Volumes, Timings
102: GO Bus Terminal/Argus Rd & Cross Ave

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	2	1	6	6	8	8	4	4	4	4	4	4
Permitted Phases	2	2	2	1	6	8	8	8	8	4	4	4
Detector Phase	2	2	2	1	6	8	8	8	8	4	4	4
Switch Phase	22.0	22.0	8.0	22.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Initial (s)	45.0	45.0	12.5	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0
Minimum Split (s)	46.0	46.0	13.0	59.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0
Total Split (s)	51.1%	51.1%	14.4%	65.6%	34.4%	34.4%	34.4%	34.4%	34.4%	34.4%	34.4%	34.4%
Maximum Green (s)	40.0	40.0	9.0	53.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	5.0	5.0	2.5	5.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Recall Mode	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Act Effct Green (s)	41.6	41.6	54.6	54.6	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0
Actuated Cycle Length: 89.6	0.46	0.46	0.61	0.61	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
v/c Ratio	0.65	0.89	2.03	0.61	1.23	1.00	1.23	1.00	1.23	1.00	1.23	1.00
Control Delay	31.4	31.7	509.6	12.4	184.0	67.3	184.0	67.3	184.0	67.3	184.0	67.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.4	31.7	509.6	12.4	184.0	67.3	184.0	67.3	184.0	67.3	184.0	67.3
LOS	C	C	F	B	F	E	F	E	F	F	B	B
Approach Delay	31.7	31.7	99.7	99.7	107.4	107.4	107.4	107.4	107.4	107.4	107.4	107.4
Approach LOS	C	C	F	F	F	F	F	F	F	F	F	F



Queues
102: GO Bus Terminal/Argus Rd & Cross Ave

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	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group	96	1193	252	1184	179	343	401	182
Lane Group Flow (vph)	0.55	0.89	2.03	0.61	1.23	1.00	2.45	0.40
v/c Ratio	31.4	31.7	509.6	12.4	184.0	67.3	689.4	14.7
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	31.4	31.7	509.6	12.4	184.0	67.3	689.4	14.7
Total Delay	12.0	98.6	-65.1	63.1	-40.8	-35.8	-122.0	11.0
Queue Length 50th (m)	13.2	#124.7	#103.4	79.5	#37.0	0.0	#150.4	13.6
Queue Length 95th (m)	183.1		68.7		57.9		102.3	
Internal Link Dist (m)	20.0		20.0		15.0		15.0	
Turn Bay Length (m)	178	1351	124	1951	145	343	164	450
Base Capacity (vph)	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.88	2.03	0.61	1.23	1.00	2.45	0.40

Intersection Summary
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
102: GO Bus Terminal/Argus Rd & Cross Ave

Total 2037
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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	50	928	82	212	965	69	95	0	240	313	22	131
Future Volume (vph)	50	928	82	212	965	69	95	0	240	313	22	131
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frb. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frb. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.95	1.00	0.98	1.00	0.99	1.00	0.95	1.00	0.95	1.00	0.88	1.00
Flt Protected	1570	2861		818	3167		803	734		1563	1259	
Flt Permitted	0.23	1.00		0.10	1.00		0.57	1.00		0.33	1.00	
Satd. Flow (perm)	380	2861		83	3167		482	734		546	1259	
Peak-hour factor, PHF	0.52	0.87	0.65	0.84	0.88	0.79	0.53	0.25	0.70	0.78	0.62	0.89
Adj. Flow (vph)	96	1067	126	252	1097	87	179	0	343	401	35	147
RTOR Reduction (vph)	0	10	0	0	7	0	0	122	0	0	71	0
Lane Group Flow (vph)	96	1183	0	252	1177	0	179	221	0	401	111	0
Conf. Peds. (#/hr)	1	3	3	3	3	1	3	20	20	20	3	3
Heavy Vehicles (%)	0%	1%	100%	92%	1%	5%	95%	0%	91%	0%	93%	0%
Turn Type	Perm	NA	NA	pm-pt	NA	NA	Perm	NA	NA	Perm	NA	NA
Protected Phases	2	6	6	6	6	6	8	8	8	8	4	4
Permitted Phases	2	6	6	6	6	6	8	8	8	8	4	4
Actuated Green, G (s)	39.6	39.6	41.6	52.6	52.6	54.6	27.0	27.0	27.0	27.0	27.0	27.0
Effective Green, g (s)	41.6	41.6	43.6	54.6	54.6	56.6	29.0	29.0	29.0	29.0	29.0	29.0
Actuated g/C Ratio	0.46	0.46	0.46	0.59	0.61	0.61	0.30	0.30	0.30	0.30	0.30	0.30
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	176	1328		122	1929		145	221		164	379	
v/s Ratio Prot	0.41			c0.21	0.37		0.37	0.30		c0.73	0.09	
v/s Ratio Perm	0.25			c0.99			0.37			c0.73		
v/c Ratio	0.65	0.89	2.07	0.61	1.23	1.00	1.23	1.00	1.00	2.45	0.29	0.29
Uniform Delay, d1	17.2	21.9	23.5	10.9	31.3	31.3	12.0	12.0	12.0	31.3	24.0	24.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.0	8.4	506.6	0.8	151.1	59.8	665.4	0.6	665.4	665.4	0.6	0.6
Delay (s)	23.2	30.3	530.1	11.7	182.4	91.1	699.7	24.6	699.7	699.7	24.6	24.6
Level of Service	C	C	F	B	F	F	F	F	F	F	C	C
Approach Delay (s)	29.8			102.7			122.4			488.9		
Approach LOS	C			F			F			F		

Intersection Summary	
HCM 2000 Control Delay	139.6
HCM 2000 Volume to Capacity ratio	2.21
Actuated Cycle Length (s)	89.6
Intersection Capacity Utilization	101.8%
Analysis Period (min)	15
c Critical Lane Group	

Lanes, Volumes, Timings
104: Trafalgar Rd & Cornwall Rd

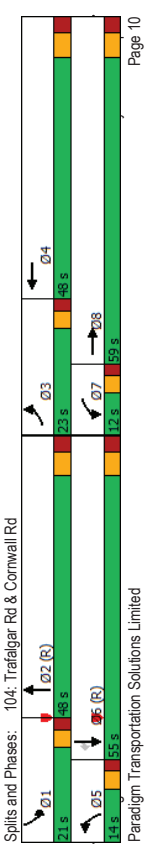
Total 2037
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT
Traffic Volume (vph)	635	706	113	22	604	702	83	647	66	475	548
Future Volume (vph)	635	706	113	22	604	702	83	647	66	475	548
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.3	3.6	3.5
Storage Length (m)	80.0	0.0	80.0	0.0	25.0	0.0	80.0	0.0	80.0	0.0	1
Storage Lanes	2	0	1	0	1	0	1	0	1	0	1
Taper Length (m)	7.5	0.95	0.95	7.5	0.95	0.95	7.5	0.95	7.5	0.95	1.00
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	1.00	0.80	0.95	0.97	0.80	1.00
Ped Bike Factor	1.00	0.99	1.00	0.98	1.00	1.00	0.99	0.99	0.99	0.98	0.98
Frt	0.971	0.921	0.921	0.921	0.921	0.921	0.921	0.921	0.921	0.921	0.850
Flt Protected	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.850
Satd. Flow (prot)	2987	3029	0	1481	2834	0	1540	2659	0	2929	1341
FltP Permitted	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (perm)	2973	3029	0	1475	2834	0	1532	2659	0	2893	1341
Right Turn on Red	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Satd. Flow (RTOR)	25	208	208	25	208	208	25	208	208	25	285
Link Speed (km/h)	50	50	50	50	50	50	50	50	50	50	50
Link Distance (m)	285.8	142.3	142.3	311.4	311.4	311.4	311.4	311.4	311.4	311.4	303.3
Travel Time (s)	20.6	10.2	10.2	22.4	22.4	22.4	22.4	22.4	22.4	22.4	9.4
Confl. Peds. (#/hr)	25	7	7	25	9	9	25	18	18	18	9
Peak Hour Factor	0.93	0.91	0.60	0.75	0.86	0.90	0.60	0.86	0.75	0.84	0.86
Heavy Vehicles (%)	2%	4%	1%	6%	3%	3%	2%	1%	0%	4%	2%
Adj. Flow (vph)	683	776	188	29	702	780	138	752	88	565	637
Shared Lane Traffic (%)	683	964	0	29	1482	0	138	840	0	585	637
Lane Group Flow (vph)	No	No	No	No	No	No	No	No	No	No	No
Enter Blocked Intersection	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left
Lane Alignment	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left
Median Width (m)	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
Link Offset (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width (m)	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Two way Left Turn Lane	1.19	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.16
Headway Factor	24	14	14	24	14	14	24	14	14	24	14
Turning Speed (km/h)	1	2	1	2	1	2	1	2	1	2	1
Number of Detectors	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Right
Detector Template	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0
Detector 1 Type	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex
Detector 1 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4	0.6	9.4	0.6	9.4	0.6	9.4	0.6	9.4	0.6	9.4
Detector 2 Size (m)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Detector 2 Type	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex
Detector 2 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Lanes, Volumes, Timings
104: Trafalgar Rd & Cornwall Rd

Total 2037
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Prot
Protected Phases	3	8	7	4	7	4	5	2	1	6	6
Permitted Phases	3	8	7	4	7	4	5	2	1	6	6
Switch Phase	7.0	10.0	7.0	10.0	7.0	10.0	7.0	10.0	7.0	10.0	20.0
Minimum Initial (s)	12.0	37.0	12.0	37.0	12.0	37.0	12.0	37.0	12.0	37.0	39.0
Minimum Split (s)	23.0	89.0	12.0	48.0	14.0	48.0	10.0%	34.3%	15.0%	39.3%	39.3%
Total Split (%)	16.4%	42.1%	8.6%	34.3%	10.0%	34.3%	10.0%	34.3%	15.0%	39.3%	39.3%
Maximum Green (s)	18.0	52.0	7.0	41.0	9.0	41.0	16.0	48.0	16.0	48.0	48.0
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	4.0
All-Red Time (s)	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-3.0	-1.0	-3.0	-1.0	-3.0	-1.0	-3.0	-1.0	-3.0	-3.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Recall Mode	Max	Max	Max	Max	Max	Max	None	C-Max	Max	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	23.0	23.0	23.0	23.0	23.0	23.0	25.0	25.0	25.0	25.0	25.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0
Ad Effct Green (s)	19.0	55.0	8.0	44.0	10.0	44.0	10.0	44.0	17.0	51.0	51.0
Actuated Cycle Length	0.14	0.39	0.06	0.31	0.07	0.31	0.12	0.36	0.12	0.36	0.36
v/c Ratio	1.69	0.80	0.35	1.43	0.25	1.00	1.25	1.00	1.59	1.31	0.78
Control Delay	355.2	42.7	75.1	232.5	219.7	78.0	219.7	78.0	312.5	169.5	11.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	355.2	42.7	75.1	232.5	219.7	78.0	219.7	78.0	312.5	169.5	11.9
LOS	F	D	E	F	F	F	F	F	F	F	B
Approach Delay	172.3	229.4	98.0	169.8	169.8	169.8	169.8	169.8	169.8	169.8	169.8
Approach LOS	F	F	F	F	F	F	F	F	F	F	F

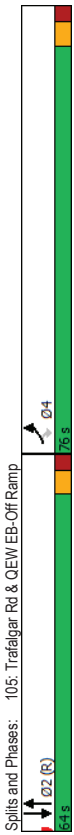


	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBR
Lane Group Flow (vph)	683	964	29	1482	138	840	565	637
v/c Ratio	1.69	0.80	0.35	1.43	1.25	1.00	1.59	1.31
Control Delay	355.2	42.7	75.1	232.5	219.7	78.0	312.5	169.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	355.2	42.7	75.1	232.5	219.7	78.0	312.5	169.5
Queue Length 50th (m)	~149.6	127.0	8.3	~285.9	~50.2	152.0	~124.1	~293.7
Queue Length 95th (m)	#189.5	155.9	16.3	#308.2	#52.6	#192.3	m#74.3	m128.1
Internal Link Dist (m)	261.8		118.3		287.4		106.3	
Turn Bay Length (m)	80.0		80.0		25.0		80.0	
Base Capacity (vph)	405	1205	84	1033	110	841	355	488
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	1.69	0.80	0.35	1.43	1.25	1.00	1.59	1.31
Intersection Summary								
~	Volume exceeds capacity, queue is theoretically infinite.							
	Queue shown is maximum after two cycles.							
#	95th percentile volume exceeds capacity, queue may be longer.							
m	Queue shown is maximum after two cycles.							
	Volume for 95th percentile queue is metered by upstream signal.							

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBR
Movement	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBR
Lane Configurations	TT	TT	TT	TT	TT	TT	TT	TT
Traffic Volume (vph)	635	706	113	22	604	702	83	647
Future Volume (vph)	635	706	113	22	604	702	83	647
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.3	3.6	3.3
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.95	1.00	0.80	0.97	0.80
Frb. ped/bikes	1.00	0.99	1.00	0.98	1.00	1.00	1.00	0.98
Frb. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97	1.00	0.92	1.00	0.98	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	2987	3028	1481	2835	1540	2659	2929	1341
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	2987	3028	1481	2835	1540	2659	2929	1341
Peak-hour factor, PHF	0.93	0.91	0.60	0.75	0.86	0.90	0.86	0.75
Adj. Flow (vph)	683	776	188	29	702	780	138	762
RTOR Reduction (vph)	0	15	0	0	143	0	0	5
Lane Group Flow (vph)	683	949	0	29	1339	0	138	835
Conf. Peds. (#/hr)	25	7	7	25	9	25	9	18
Heavy Vehicles (%)	2%	4%	1%	6%	3%	2%	1%	0%
Turn Type	Prot	NA	NA	Prot	NA	Prot	NA	Prot
Protected Phases	3	8	7	4	5	2	1	6
Permitted Phases								
Actuated Green, G (s)	18.0	52.0	7.0	41.0	9.0	41.0	16.0	48.0
Effective Green, g (s)	19.0	55.0	8.0	44.0	10.0	44.0	17.0	51.0
Actuated g/C Ratio	0.14	0.39	0.06	0.31	0.07	0.31	0.12	0.36
Clearance Time (s)	5.0	7.0	5.0	7.0	5.0	7.0	5.0	7.0
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Lane Grp Cap (vph)	405	1189	84	891	110	835	355	488
v/s Ratio Prot	c0.23	0.31	0.02	c0.47	0.09	0.31	c0.19	c0.47
v/s Ratio Perm	1.69	0.80	0.35	1.50	1.25	1.00	1.59	1.31
Uniform Delay, d1	60.5	37.6	63.5	48.0	65.0	48.0	61.5	44.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.28	0.76
Incremental Delay, d2	319.4	5.6	10.9	232.3	169.2	31.0	267.4	138.8
Delay (s)	379.9	43.2	74.4	280.3	234.2	79.0	346.1	172.8
Level of Service	F	D	E	F	F	E	F	F
Approach Delay (s)								
Approach LOS	F	F	F	F	F	F	F	F
Intersection Summary								
HCM 2000 Control Delay	194.1 HCM 2000 Level of Service							
HCM 2000 Volume to Capacity ratio	1.50							
Actuated Cycle Length (s)	140.0 Sum of lost time (s)							
Intersection Capacity Utilization	120.1% ICU Level of Service							
Analysis Period (min)	15							
c Critical Lane Group								

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	1101	995	0	1927	2074	0
Future Volume (vph)	1101	995	0	1927	2074	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.5	3.6	3.6	3.6	3.6
Lane Util. Factor	0.97	1.00	1.00	*0.80	*0.80	1.00
Flt Protected	0.950					
Satd. Flow (prot)	2958	1423	0	3872	3946	0
Flt Permitted	0.950					
Satd. Flow (perm)	2958	1423	0	3872	3946	0
Right Turn on Red	Yes					Yes
Satd. Flow (RTOR)	1					
Link Speed (k/h)	50			50	50	
Link Distance (m)	199.2			51.4	324.8	
Travel Time (s)	14.3			3.7	23.4	
Peak Hour Factor	0.98	0.92	0.25	0.91	0.90	0.25
Heavy Vehicles (%)	3%	1%	0%	6%	4%	0%
Adj. Flow (vph)	1123	1082	0	2118	2304	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1123	1082	0	2118	2304	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Right
Median Width(m)	6.6	0.0	0.0	0.0	0.0	0.0
Link Offset(m)	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.19	1.16	1.14	1.14	1.14	1.14
Turning Speed (k/h)	24	14	24		14	
Number of Detectors	1	Right	Thru	2	2	
Detector Template	2.0	2.0	10.0	10.0	10.0	
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	2.0	0.6	0.6	0.6	
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Ch+Ex	Ch+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm	NA	NA	NA	
Protected Phases	4			2	2	
Permitted Phases	4	4		2	2	
Detector Phase	4	4		2	2	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	10.0	10.0		29.0	29.0	
Minimum Split (s)	38.0	38.0		36.0	36.0	
Total Split (s)	76.0	76.0		64.0	64.0	
Total Split (%)	54.3%	54.3%		45.7%	45.7%	
Maximum Green (s)	69.0	69.0		57.0	57.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	24.0	24.0		22.0	22.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Ad Effct Green (s)	72.0	72.0		60.0	60.0	
v/c Ratio	0.74	1.48		1.28	1.36	
Control Delay	30.3	251.2		169.4	194.3	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	30.3	251.2		169.4	194.3	
LOS	C	F		F	F	
Approach Delay	138.7			169.4	194.3	
Approach LOS	F			F	F	
Intersection Summary	CBD					
Area Type:	CBD					
Cycle Length:	140					
Actuated Cycle Length:	140					
Offset:	133.6 (95%), Referenced to phase 2:NBSB and 6:, Start of Green					
Natural Cycle:	75					
Control Type:	Actuated-Coordinated					
Maximum v/c Ratio:	1.48					
Intersection Signal Delay:	167.8					
Intersection Capacity Utilization:	119.6%					
Analysis Period (min):	15					
* User Entered Value						



	EBL	EBR	NBT	SBT
Lane Group	1123	1082	2118	2304
Lane Group Flow (vph)	0.74	1.48	1.28	1.36
v/c Ratio	30.3	251.2	169.4	194.3
Control Delay	0.0	0.0	0.0	0.0
Queue Delay	30.3	251.2	169.4	194.3
Total Delay	128.5	~435.8	~327.5	~367.2
Queue Length 50th (m)	156.5	#520.4	m136.1	m#347.2
Queue Length 95th (m)	175.2		27.4	300.8
Internal Link Dist (m)				
Turn Bay Length (m)	1521	732	1659	1691
Base Capacity (vph)	0	0	0	0
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.74	1.48	1.28	1.36

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

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	TT	T		TT	TT	TT
Traffic Volume (vph)	1101	995	0	1927	2074	0
Future Volume (vph)	1101	995	0	1927	2074	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.5	3.6	3.6	3.6	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00		*0.80	*0.80	
Ft	1.00	0.85		1.00	1.00	
Fit Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	2958	1423		3872	3946	
Fit Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	2958	1423		3872	3946	
Peak-hour factor, PHF	0.98	0.92	0.25	0.91	0.90	0.25
Adj. Flow (vph)	1123	1082	0	2118	2304	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1123	1082	0	2118	2304	0
Heavy Vehicles (%)	3%	1%	0%	6%	4%	0%
Turn Type	Prot	Perm	NA	NA	NA	
Protected Phases	4			2	2	
Permitted Phases		4				
Actuated Green, G (s)	69.0	69.0		57.0	57.0	
Effective Green, g (s)	72.0	72.0		60.0	60.0	
Actuated g/C Ratio	0.51	0.51		0.43	0.43	
Clearance Time (s)	7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	1521	731		1659	1691	
v/s Ratio Prot	0.38			0.55	c0.58	
v/s Ratio Perm	0.74	1.48		1.28	1.36	
Uniform Delay, d1	26.6	34.0		40.0	40.0	
Progression Factor	1.00	1.00		1.40	0.85	
Incremental Delay, d2	1.9	223.1		125.0	164.3	
Delay (s)	28.5	257.1		180.8	198.2	
Level of Service	C	F		F	F	
Approach Delay (s)	140.7			180.8	198.2	
Approach LOS	F			F	F	
Intersection Summary						
HCM 2000 Control Delay			173.5		HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			1.43			
Actuated Cycle Length (s)			140.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			119.6%		ICU Level of Service	H
Analysis Period (min)			15			

c Critical Lane Group

Lanes, Volumes, Timings
106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

Total 2037
AM Peak Hour

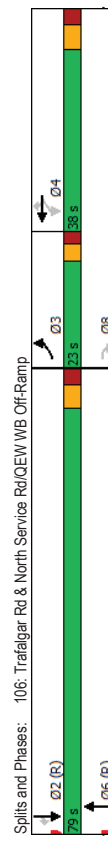
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	1	0	244	568	40	308	0	2150	0	0	2064
Traffic Volume (vph)	1	0	244	568	40	308	0	2150	0	0	2064
Future Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	3.3	3.6	3.5	3.3	3.6	3.5	3.6	3.6	3.6	3.6	3.5
Lane Width (m)	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Storage Length (m)	7.5	1.0	1.0	7.5	1.0	1.0	7.5	1.0	1.0	7.5	1.0
Taper Length (m)	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.80	1.00	1.00	0.80
Lead Utl. Factor	0.850			0.850			0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950	
Satd. Flow (prot)	1570	0	1395	1421	1444	1356	0	3909	0	0	3984
Flt Permitted	0.950			0.950			0.950			0.950	
Satd. Flow (perm)	1570	0	1395	1421	1444	1356	0	3909	0	0	3984
Right Turn on Red	Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)	50	31		50	212		50			50	
Link Speed (km/h)	142.1			192.6			324.8			268.2	
Link Distance (m)	10.2			13.9			23.4			19.3	
Conf. Peds. (#/hr)	0.25	0.25	0.91	0.88	0.73	0.25	0.93	0.97	0.25	0.90	0.63
Peak Hour Factor	0%	0%	3%	5%	23%	6%	0%	5%	5%	0%	3%
Heavy Vehicles (%)	4	0	268	645	59	422	0	2312	0	0	2293
Adj. Flow (vph)	46%			46%			46%			46%	
Shared Lane Traffic (%)	4	0	268	348	356	422	0	2312	0	0	2293
Lane Group Flow (vph)	No	No	No	No	No	No	No	No	No	No	No
Enter Blocked Intersection	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right
Lane Alignment	3.3			3.3			0.0			0.0	
Median Width(m)	0.0			0.0			0.0			0.0	
Link Offset(m)	0.0			0.0			0.0			0.0	
Crosswalk Width(m)	4.8			4.8			4.8			4.8	
Two way Left Turn Lane	1.19	1.14	1.16	1.19	1.14	1.16	1.14	1.14	1.14	1.14	1.16
Headway Factor	24	14	24	24	14	24	14	24	14	24	14
Turning Speed (km/h)	1	1	1	2	1	2	1	2	1	2	1
Number of Detectors	Left	Right	Thru	Right	Thru	Right	Thru	Right	Thru	Right	Thru
Detector Template	2.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	2.0
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	2.0	2.0	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4			9.4			9.4	
Detector 2 Size(m)	0.6			0.6			0.6			0.6	
Detector 2 Type	Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	

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Lanes, Volumes, Timings
106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

Total 2037
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Detector 2 Extend (s)	0.0			0.0			0.0			0.0	
Turn Type	Prot			NA			NA			NA	
Protected Phases	3			4			6			2	
Permitted Phases	3			4			6			2	
Switch Phase	7.0			10.0			10.0			5.0	
Minimum Initial (s)	23.0			38.0			38.0			35.0	
Minimum Split (s)	23.0			38.0			38.0			35.0	
Total Split (s)	16.4%			43.6%			27.1%			56.4%	
Total Split (%)	18.0			54.0			31.0			72.0	
Maximum Green (s)	3.0			4.0			4.0			4.0	
Yellow Time (s)	2.0			3.0			3.0			3.0	
All-Red Time (s)	-1.0			-3.0			-3.0			-3.0	
Lost Time Adjust (s)	4.0			4.0			4.0			4.0	
Total Lost Time (s)	Lead			Lag			Lag			Lag	
Lead/Lag	Yes			Yes			Yes			Yes	
Lead-Lag Optimize?	3.0			3.0			3.0			3.0	
Vehicle Extension (s)	Min			Min			Min			Min	
Recall Mode	7.0			7.0			7.0			7.0	
Walk Time (s)	24.0			24.0			24.0			21.0	
Flash Dont Walk (s)	0			0			0			0	
Pedestrian Calls (#/hr)	8.0			45.0			45.0			75.0	
Ad Effect Green (s)	0.06			0.32			0.32			0.54	
Actuated Cycle Ratio	0.41			0.76			0.73			1.10	
v/c Ratio	64.0			29.5			55.2			80.0	
Control Delay	0.0			0.0			0.0			0.0	
Queue Delay	64.0			29.5			55.2			80.0	
Total Delay	E			C			E			C	
LOS	30.0			45.2			80.0			74.5	
Approach Delay	C			D			F			E	
Approach LOS	Intersection Summary										
Area Type:	CBD										
Cycle Length:	140										
Actuated Cycle Length:	140										
Offset:	115.4 (82%), Referenced to phase 2:SBT and 6:NBT, Start of Green										
Natural Cycle:	150										
Control Type:	Actuated-Coordinated										
Maximum v/c Ratio:	1.10										
Intersection Signal Delay:	69.1										
Intersection Capacity Utilization:	89.7%										
Analysis Period (min):	15										
* User Entered Value											



Splits and Phases: 106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp
Paradigm Transportation Solutions Limited
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	EBL	EBR	WBL	WBR	NBT	SBT	SBR
Lane Group	4	268	348	356	422	2312	2293
Lane Group Flow (vph)	0.04	0.46	0.76	0.77	0.73	1.10	1.07
v/c Ratio	0.04	0.46	0.76	0.77	0.73	1.10	1.07
Control Delay	64.0	29.5	55.1	55.2	28.5	80.0	75.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.0	29.5	55.1	55.2	28.5	80.0	75.0
Queue Length 50th (m)	1.1	49.7	96.0	98.4	56.2	~315.2	~308.8
Queue Length 95th (m)	1.4	76.9	134.4	95.7	60.1	m167.4	#341.5
Internal Link Dist (m)			168.6		300.8	244.2	
Turn Bay Length (m)	50.0						
Base Capacity (vph)	213	566	456	464	579	2094	2134
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.46	0.76	0.77	0.73	1.10	1.07
Intersection Summary							
~ Volume exceeds capacity, queue is theoretically infinite.							
Queue shown is maximum after two cycles.							
# 95th percentile volume exceeds capacity, queue may be longer.							
Queue shown is maximum after two cycles.							
m Volume for 95th percentile queue is metered by upstream signal.							

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	0	244	568	40	308	0	2150	0	0	2064	8
Traffic Volume (vph)	1	0	244	568	40	308	0	2150	0	0	2064	8
Future Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	3.3	3.6	3.5	3.3	3.6	3.5	3.6	3.6	3.6	3.6	3.6	3.5
Lane Width	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	1.00	1.00	1.00	0.95	0.95	1.00	0.80	0.80	0.80	0.80	0.80	1.00
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.96
Frb. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frb. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt	0.95	1.00	0.85	1.00	0.96	1.00	0.85	1.00	1.00	1.00	1.00	0.85
Flt Protected	1570	1395	1421	1444	1356	3909						3984
Satd. Flow (prot)	0.95	1.00	0.95	0.96	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.95
Satd. Flow (perm)	1570	1395	1421	1444	1356	3909						3984
Peak-hour factor, PHF	0.25	0.25	0.81	0.88	0.68	0.73	0.25	0.93	0.97	0.25	0.90	0.63
Adj. Flow (vph)	4	0	268	645	59	422	0	2312	0	0	2293	13
RTOR Reduction (vph)	0	0	18	0	0	144	0	0	0	0	0	0
Lane Group Flow (vph)	4	0	250	348	356	278	0	2312	0	0	2293	7
Conf. Peds. (#/hr)							8		5			8
Heavy Vehicles (%)	0%	0%	3%	5%	23%	6%	0%	5%	5%	0%	0%	3%
Turn Type	Prot	Perm	Perm	NA	Perm	NA	Perm	NA	NA	Perm	NA	Perm
Protected Phases	3		4		4		6					2
Permitted Phases	8	4	4		4		4					2
Actuated Green, G (s)	7.0	54.0	42.0	42.0	42.0	42.0	72.0	72.0	72.0	72.0	72.0	72.0
Effective Green, g (s)	8.0	57.0	45.0	45.0	45.0	45.0	75.0	75.0	75.0	75.0	75.0	75.0
Actuated G/C Ratio	0.06	0.41	0.32	0.32	0.32	0.32	0.54	0.54	0.54	0.54	0.54	0.54
Clearance Time (s)	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.5	4.5	4.5	4.5	4.5	4.5
Lane Grp Cap (vph)	89	567	456	464	435	2094						2134
v/s Ratio Prot	0.00						0.59					0.58
v/s Ratio Perm	0.04	0.44	0.76	0.77	0.64	1.10	1.10	1.10	1.10	1.10	1.10	0.01
Uniform Delay, d1	62.4	30.0	42.7	42.8	40.6	32.5	32.5	32.5	32.5	32.5	32.5	15.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.02	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.5	7.4	7.4	3.1	47.7						43.0
Delay (s)	62.6	30.5	50.1	50.2	43.7	80.9						75.5
Level of Service	E	C	D	D	D	F						E
Approach Delay (s)	31.0			47.7		80.9						75.2
Approach LOS	C			D		F						E
Intersection Summary												
HCM 2000 Control Delay			70.3									E
HCM 2000 Volume to Capacity ratio			0.95									
Actuated Cycle Length (s)			140.0									12.0
Intersection Capacity Utilization			89.7%									E
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings
203: Argus Rd & South Service Rd

Total 2037
AM Peak Hour

EBL	EBT	WBT	WBR	SBL	SBR
1	101	835	268	92	4
1	101	835	268	92	4
1900	1900	1900	1900	1900	1900
1.00	1.00	1.00	1.00	1.00	1.00
0.999	0.963	0.994			
0	1681	1612	0	1622	0
0	1681	1612	0	1622	0
50	50	50			
116.7	145.7	51.8			
8.4	10.5	3.7			
1	1	5			
0.25	0.42	0.86	0.72	0.25	0.25
100%	0%	3%	0%	0%	0%
4	240	971	372	368	16
0	244	1343	0	384	0
No	No	No	No	No	No
Left	Left	Right	Right	Right	Right
0.0	0.0	0.0	3.6		
0.0	0.0	0.0	4.8		
1.14	1.14	1.14	1.14	1.14	1.14
24	Free	Free	Free	Stop	Stop

Area Type: CBD
Control Type: Unsignalized
Intersection Capacity Utilization 79.8%
Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
203: Argus Rd & South Service Rd

Total 2037
AM Peak Hour

EBL	EBT	WBT	WBR	SBL	SBR
1	101	835	268	92	4
1	101	835	268	92	4
Free	Free	Free	Stop	Stop	Stop
0%	0%	0%	0%	0%	0%
0.25	0.42	0.86	0.72	0.25	0.25
4	240	971	372	368	16
1	5				
3.6	3.6				
1.2	1.2				
0	0				
None	None				
358					
1344			1411	1159	
1344			1411	1159	
5.1			6.4	6.2	
3.1			3.5	3.3	
99			0	93	
292			151	240	
EB 1	WB 1	SB 1			
244	1343	384			
4	0	368			
0	372	16			
292	1700	153			
0.01	0.79	2.50			
0.3	0.0	265.3			
0.6	0.0	742.1			
A		F			
0.6	0.0	742.1			
F		F			
Intersection Summary					
Average Delay		144.6			
Intersection Capacity Utilization		79.8%	ICU Level of Service	D	
Analysis Period (min)		15			

Lanes, Volumes, Timings
204: Trafalgar Rd & Argus Rd

Total 2037
AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	204	0	2270	2214	1003
Future Volume (vph)	0	204	0	2270	2214	1003
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.5	3.6	3.6	3.6	3.6
Lane Util. Factor	1.00	1.00	1.00	*0.80	*0.80	0.91
Frt	0.865				0.948	
Flt Protected						
Satd. Flow (prot)	0	1367	0	3636	3766	0
Flt Permitted						
Satd. Flow (perm)	0	1367	0	3636	3766	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	145.7			270.2	51.4	
Travel Time (s)	10.5			19.5	3.7	
Confl. Peds. (#/hr)						11
Peak Hour Factor	0.25	0.54	0.25	0.92	0.97	0.82
Heavy Vehicles (%)	0%	7%	0%	7%	4%	2%
Adj. Flow (vph)	0	378	0	2467	2282	1223
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	378	0	2467	3505	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0	3.3	3.3	3.3	3.3	
Link Offset(m)	0.0	0.0	0.0	0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.14	1.16	1.14	1.14	1.14	1.14
Turning Speed (k/h)	24	14	24			14
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	CBD					
Control Type:	Unsignalized					
Intersection Capacity Utilization	93.5%					
Analysis Period (min)	15					
ICU Level of Service	F					
* User Entered Value						

HCM Unsignalized Intersection Capacity Analysis
204: Trafalgar Rd & Argus Rd

Total 2037
AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	204	0	2270	2214	1003
Future Volume (Veh/h)	0	204	0	2270	2214	1003
Sign Control	Stop		Free	Free	Free	
Grade	0%		0%	0%	0%	
Peak Hour Factor	0.25	0.54	0.25	0.92	0.97	0.82
Hourly flow rate (vph)	0	378	0	2467	2282	1223
Pedestrians	11					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	1					
Right turn flare (veh)			None	None	None	
Median type						
Median storage (veh)						
Upstream signal (m)			270	52		
pX, platoon unblocked	0.58	0.58	0.58			
VC, conflicting volume	3727	1383	3516			
VC1, stage 1 conf vol						
VC2, stage 2 conf vol						
VCu, unblocked vol	3174	0	2812			
IC, single (s)	6.8	7.0	4.1			
IC, 2 stage (s)						
p0 queue free %	3.5	3.4	2.2			
IC, 2 stage (s)	100	39	100			
p0 capacity (veh/h)	5	617	80			
Direction_Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2 SB 3
Volume Total	378	822	822	913	913	1679
Volume Left	0	0	0	0	0	0
Volume Right	378	0	0	0	0	1223
CSH	617	1700	1700	1700	1700	1700
Volume to Capacity	0.61	0.48	0.48	0.48	0.54	0.54 0.99
Queue Length 95th (m)	33.3	0.0	0.0	0.0	0.0	0.0 0.0
Control Delay (s)	19.6	0.0	0.0	0.0	0.0	0.0 0.0
Lane LOS	C					
Approach Delay (s)	19.6	0.0			0.0	
Approach LOS	C					
Intersection Summary						
Average Delay	1.2					
Intersection Capacity Utilization	93.5%					
ICU Level of Service	F					
Analysis Period (min)	15					

Lanes, Volumes, Timings
207: Argus Rd & East-West Local Rd

Total 2037
AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	W					
Lane Configurations						
Traffic Volume (vph)	0	0	0	119	434	553
Future Volume (vph)	0	0	0	119	434	553
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected				0.924		
Satd. Flow (prot)	1863	0	0	1863	1721	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1721	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	103.3			126.3	54.4	
Travel Time (s)	7.4			9.1	3.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	129	472	601
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	129	1073	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Right
Median Width(m)	3.6			3.3	3.3	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	60.0%					
Analysis Period (min)	15					
ICU Level of Service	B					

HCN Unsignalized Intersection Capacity Analysis
207: Argus Rd & East-West Local Rd

Total 2037
AM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	W					
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	119	434	553
Future Volume (Veh/h)	0	0	0	119	434	553
Sign Control	Stop			Free	Free	Free
Grade	0%			0%	0%	0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	129	472	601
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)				None	None	None
Median type						
Upstream signal (m)				126		
Median storage (veh)						
Upstream signal (m)				126		
pX, platoon unblocked						
VC, conflicting volume	902	772	1073			
VC1, stage 1 conf vol						
VC2, stage 2 conf vol						
VCu, unblocked vol	902	772	1073			
IC, single (s)	6.4	6.2	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
CM capacity (veh/h)	308	399	650			
Direction_Lane #	EB 1	NB 1	SB 1			
Volume Total	0	129	1073			
Volume Left	0	0	0			
Volume Right	0	0	601			
CSH	1700	650	1700			
Volume to Capacity	0.00	0.00	0.63			
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	60.0%					
ICU Level of Service	B					
Analysis Period (min)	15					

Lanes, Volumes, Timings
302: Cross Ave & East Driveway Access

Total 2037
AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
EBL	→	←	←	←	←	←
EBT	→	←	←	←	←	←
WBT	→	←	←	←	←	←
WBR	→	←	←	←	←	←
SBL	→	←	←	←	←	←
SBR	→	←	←	←	←	←
Intersection Summary	ICU Level of Service C					
Area Type:	CBD					
Control Type:	Unsignalized					
Intersection Capacity Utilization	66.5%					
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
302: Cross Ave & East Driveway Access

Total 2037
AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
EBL	→	←	←	←	←	←
EBT	→	←	←	←	←	←
WBT	→	←	←	←	←	←
WBR	→	←	←	←	←	←
SBL	→	←	←	←	←	←
SBR	→	←	←	←	←	←
Intersection Summary	ICU Level of Service C					
Average Delay	431.1					
Intersection Capacity Utilization	66.5%					
ICU Level of Service	C					
Analysis Period (min)	15					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4↑	4↑		W	
Traffic Volume (veh/h)	2	1631	1264	43	128	5
Future Volume (Veh/h)	2	1631	1264	43	128	5
Sign Control	Free	Free	Free	Free	Stop	Stop
Grade	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	1773	1374	47	139	5
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None	None	None	None	None	None
Median storage (veh)						
Upstream signal (m)	93	131				
pX, platoon unblocked					0.65	
vC, conflicting volume	1421				2288	710
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1421				1897	710
IC, single (s)	4.1				6.8	6.9
IC, 2 stage (s)	2.2				3.5	3.3
p0 queue free %	100				0	99
CM capacity (veh/h)	475				39	376
Direction_Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 1
Volume Total	583	1182	916	505	144	144
Volume Left	2	0	0	0	139	5
Volume Right	0	0	0	47	5	5
CSH	475	1700	1700	1700	41	41
Volume to Capacity	0.00	0.70	0.54	0.30	3.55	3.55
Queue Length 95th (m)	0.1	0.0	0.0	0.0	Err	Err
Control Delay (s)	0.1	0.0	0.0	0.0	Err	Err
Lane LOS	A				F	F
Approach Delay (s)	0.0		0.0		Err	Err
Approach LOS					F	F
Intersection Summary	ICU Level of Service C					
Average Delay	431.1					
Intersection Capacity Utilization	66.5%					
ICU Level of Service	C					
Analysis Period (min)	15					

Lanes, Volumes, Timings
303: North Driveway & Argus Rd

Total 2037
AM Peak Hour

Direction	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	32	21	49	790	197	70
Traffic Volume (vph)	32	21	49	790	197	70
Future Volume (vph)	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	1.00	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor	0.946					
Flt Protected			0.997	0.964		
Satd. Flow (prot)	1762	0	0	1857	1733	0
Flt Permitted			0.997	0.964		
Satd. Flow (perm)	1762	0	0	1857	1733	0
Link Speed (k/h)	50		50	50	50	
Link Distance (m)	61.0		116.7	66.7		
Travel Time (s)	4.4		8.4	4.8		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	35	23	53	859	214	76
Shared Lane Traffic (%)						
Lane Group Flow (vph)	58	0	0	912	290	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Right
Median Width (m)	0.0		0.0	3.6		
Link Offset (m)	0.0		0.0	0.0		
Crosswalk Width (m)	4.8		4.8	4.8		
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25	25	25	15
Sign Control	Free			Free	Stop	Stop
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	72.8%					
Analysis Period (min)	15					
ICU Level of Service	C					

HCM Unsignalized Intersection Capacity Analysis
303: North Driveway & Argus Rd

Total 2037
AM Peak Hour

Direction	EBT	EBR	WBL	WBT	NBL	NBR
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	32	21	49	790	197	70
Traffic Volume (veh/h)	32	21	49	790	197	70
Future Volume (Veh/h)	32	21	49	790	197	70
Sign Control	Free		Free	Stop	Stop	Stop
Grade	0%		0%	0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	35	23	53	859	214	76
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)	None		None			
Median type						
Median storage (veh)						
Upstream signal (m)	242					
pK, platoon unblocked						
vC, conflicting volume		58		1012	46	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		58		1012	46	
iC, single (s)		4.1		6.4	6.2	
iC, 2 stage (s)						
p0 queue free %		2.2		3.5	3.3	
IF (s)				97	16	93
qM capacity (veh/h)		1546		256	1023	
Direction_Lane #	EB 1	WB 1	NB 1			
Volume Total	58	912	290			
Volume Left	0	53	214			
Volume Right	23	0	76			
CSH	1700	1546	319			
Volume to Capacity	0.03	0.03	0.91			
Queue Length 95th (m)	0.0	0.9	70.3			
Control Delay (s)	0.0	0.9	66.9			
Lane LOS	A	F	F			
Approach Delay (s)	0.0	0.9	66.9			
Approach LOS	F	F	F			
Intersection Summary						
Average Delay		16.1				
Intersection Capacity Utilization		72.8%			ICU Level of Service	C
Analysis Period (min)		15				

Queuing and Blocking Report

Total 2037
AM Peak Hour

Intersection: 101: Trafalgar Rd & Cross Ave/South Service Rd

Movement	EB		EB		WB		WB		NB		NB		B34		B34	
	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR
Directions Served	104.4	111.0	106.4	32.3	331.7	325.9	55.9	80.7	96.4	148.8	64.4	109.4				
Maximum Queue (m)	101.8	106.4	66.3	19.6	318.4	305.8	25.9	36.1	45.0	148.8	5.9	102.7				
Average Queue (m)	107.3	109.7	110.5	38.0	345.4	393.4	50.5	69.7	74.6	149.0	34.7	110.5				
95th Queue (m)	104.4	104.4		313.2	313.2		128.1	128.1	128.1	128.1	101.5	101.5				
Link Distance (m)	6	55	5	91	47	0	0	0	0	87	7	7				
Upstream Blk Time (%)	0	488	42	25.0	0	0	0	0	0	574	49	49				
Queuing Penalty (veh)	130.0			6	80	2	1									
Storage Bay Dist (m)	37	317	24	71	5	2										
Queuing Penalty (veh)																

Intersection: 101: Trafalgar Rd & Cross Ave/South Service Rd

Movement	SB		SB		SB		SB		SB		SB		B34		B34	
	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR
Directions Served	138.3	32.4	251.1	251.6	245.1											
Maximum Queue (m)	127.7	32.0	218.3	184.3	152.8											
Average Queue (m)	133.9	35.7	301.1	304.7	266.2											
95th Queue (m)	101.5		238.9	238.9	238.9											
Link Distance (m)	87		35	4	2											
Upstream Blk Time (%)	577		279	33	13											
Queuing Penalty (veh)	250		80	10												
Storage Bay Dist (m)	278		45													
Queuing Penalty (veh)																

Intersection: 102: GO Bus Terminal/Argus Rd & Cross Ave

Movement	EB		EB		WB		WB		NB		NB		SB		SB	
	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR
Directions Served	27.3	213.5	213.5	27.4	75.7	68.6	81.6	85.2	22.4	111.8						
Maximum Queue (m)	11.9	203.2	203.6	25.4	50.8	35.4	48.4	77.7	21.8	107.2						
Average Queue (m)	32.3	209.5	210.3	31.2	77.0	62.5	93.3	93.6	24.2	113.3						
95th Queue (m)	196.3	196.3		72.4	72.4	66.0	66.0	66.0	106.2							
Link Distance (m)	91	78		2	0	13	80	63								
Upstream Blk Time (%)	0	0	0	20.0	0	0	0	15.0								
Queuing Penalty (veh)	1	88		43	8		91	10								
Storage Bay Dist (m)	4	44		209	17		140	32								
Queuing Penalty (veh)																

Queuing and Blocking Report

Total 2037
AM Peak Hour

Intersection: 104: Trafalgar Rd & Cornwall Rd

Movement	EB		EB		WB		WB		NB		NB		SB		SB	
	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR
Directions Served	83.7	87.4	277.2	269.7	46.7	129.4	138.9	32.3	297.4	294.3	69.6	77.1				
Maximum Queue (m)	78.1	87.3	269.3	222.6	6.4	118.2	129.0	14.3	294.3	290.0	37.0	40.3				
Average Queue (m)	106.0	87.7	273.0	359.5	30.9	147.0	135.1	34.2	327.1	303.3	64.6	69.7				
95th Queue (m)			264.0	264.0	122.1	122.1	122.1	122.1	286.8	286.8	101.5	101.5				
Link Distance (m)			96	10	19	97	0	0	56	90	0	0				
Upstream Blk Time (%)	80.0	80.0	0	0	80.0	0	0	0	25.0	0	0	0				
Queuing Penalty (veh)	4	86	0	6	6	9	26	1	2							
Storage Bay Dist (m)	14	303	2	1	28	21	28	21	28	21	1	5				
Queuing Penalty (veh)																

Intersection: 104: Trafalgar Rd & Cornwall Rd

Movement	SB		SB		R		R		R		R	
	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR
Directions Served	61.4	24.3										
Maximum Queue (m)	26.6	8.0										
Average Queue (m)	52.3	18.6										
95th Queue (m)	101.5	101.5										
Link Distance (m)												
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)												
Queuing Penalty (veh)												

Intersection: 105: Trafalgar Rd & QEW EB-Off Ramp

Movement	EB		EB		NB		NB		SB		SB	
	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR
Directions Served	174.4	186.3	191.3	34.4	45.4	36.6	316.4	323.1	311.7			
Maximum Queue (m)	63.1	172.2	182.0	28.4	30.8	29.4	289.0	303.2	305.7			
Average Queue (m)	142.1	231.0	186.2	30.8	38.2	33.7	362.6	317.0	310.4			
95th Queue (m)	176.9	176.9	176.9	27.8	27.8	27.8	300.4	300.4	300.4			
Link Distance (m)	0	47	85	38	40	39	17	36	51			
Upstream Blk Time (%)	0	0	0	291	306	297	164	350	490			
Queuing Penalty (veh)												
Storage Bay Dist (m)												
Queuing Penalty (veh)												

Queuing and Blocking Report

Total 2037
AM Peak Hour

Intersection: 106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

Movement	EB	EB	WB	WB	WB	NB	NB	NB	T	T	T	SB	SB	SB	SB	R
Directions Served	L	R	L	LT	R	T	T	T				T	T	T	T	
Maximum Queue (m)	1.5	133.2	186.0	187.3	185.9	68.0	78.5	71.0	269.3	271.9	264.9	264.9	266.4	266.4	266.4	266.4
Average Queue (m)	0.0	101.4	163.5	168.1	125.0	31.2	39.8	37.7	259.9	261.1	259.3	259.3	254.7	254.7	254.7	254.7
95th Queue (m)	1.0	161.3	211.1	210.4	268.1	59.4	70.5	67.2	265.1	267.7	263.0	263.0	303.8	303.8	303.8	303.8
Link Distance (m)	119.7	173.2	173.2	173.2	173.2	300.4	300.4	300.4	254.7	254.7	254.7	254.7	254.7	254.7	254.7	254.7
Upstream Blk Time (%)	59	34	70	34	0	0	0	0	79	97	99	99	99	99	99	99
Queuing Penalty (veh)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Storage Bay Dist (m)	50.0															
Storage Blk Time (%)	75															
Queuing Penalty (veh)	1															

Intersection: 203: Argus Rd & South Service Rd

Movement	EB	WB	SB	SB	SB	SB	SB	SB	SB	SB	SB	SB	SB	SB	SB
Directions Served	LT	TR	LR												
Maximum Queue (m)	49.5	119.6	40.0												
Average Queue (m)	9.5	67.1	20.7												
95th Queue (m)	43.4	150.9	44.2												
Link Distance (m)	102.8	112.4	43.0												
Upstream Blk Time (%)	18	19													
Queuing Penalty (veh)	178	0													
Storage Bay Dist (m)															
Storage Blk Time (%)															
Queuing Penalty (veh)															

Intersection: 204: Trafalgar Rd & Argus Rd

Movement	EB	NB	NB	SB	SB	SB	SB	SB	SB	SB	SB	SB	SB	SB	SB
Directions Served	R	T	T	T	T	T	T	TR							
Maximum Queue (m)	104.5	84.9	76.2	71.5	37.2	45.7	46.7	46.7							
Average Queue (m)	54.1	54.6	49.8	47.4	19.3	16.8	23.6	23.6							
95th Queue (m)	124.2	78.4	66.5	64.5	41.7	38.7	46.8	46.8							
Link Distance (m)	112.4	238.9	238.9	238.9	27.8	27.8	27.8	27.8							
Upstream Blk Time (%)	21				20	3	16	16							
Queuing Penalty (veh)	40				200	31	160	160							
Storage Bay Dist (m)															
Storage Blk Time (%)															
Queuing Penalty (veh)															

Queuing and Blocking Report

Total 2037
AM Peak Hour

Intersection: 207: Argus Rd & East-West Local Rd

Movement	SB	B14	T	T	T	T	T	T
Directions Served	TR							
Maximum Queue (m)	66.8	70.3						
Average Queue (m)	53.5	53.6						
95th Queue (m)	76.7	84.3						
Link Distance (m)	35.6	42.1						
Upstream Blk Time (%)	69	61						
Queuing Penalty (veh)	676	607						
Storage Bay Dist (m)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 302: Cross Ave & East Driveway Access

Movement	EB	EB	WB	WB	SB	SB	SB	SB
Directions Served	LT	T	T	TR	LR			
Maximum Queue (m)	85.1	95.8	14.9	4.6	33.9			
Average Queue (m)	76.1	65.3	1.0	0.2	28.1			
95th Queue (m)	82.5	118.3	9.3	3.3	33.6			
Link Distance (m)	72.4	72.4	104.4	104.4	27.4			
Upstream Blk Time (%)	48	27			100			
Queuing Penalty (veh)	359	197			0			
Storage Bay Dist (m)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 303: North Driveway & Argus Rd

Movement	EB	WB	NB	NB	LR	LR	LR	LR
Directions Served	TR	LT						
Maximum Queue (m)	11.2	107.2	66.4					
Average Queue (m)	0.4	82.8	55.4					
95th Queue (m)	4.0	145.6	76.1					
Link Distance (m)	42.1	102.8	58.0					
Upstream Blk Time (%)	33	89						
Queuing Penalty (veh)	279	0						
Storage Bay Dist (m)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Network Summary

Network wide Queuing Penalty: 8564

Lanes, Volumes, Timings
101: Trafalgar Rd & Cross Ave/South Service Rd

Total 2037
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT
Traffic Volume (vph)	1407	412	223	302	362	378	342	1400	199	192	1428	662
Future Volume (vph)	1407	412	223	302	362	378	342	1400	199	192	1428	662
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.6	3.3	3.6	3.5	3.3	3.6	3.6	3.3	3.6	3.6
Storage Length (m)	130.0	0.0	25.0	0.0	50.0	0.0	50.0	0.0	25.0	0.0	50.0	0.0
Storage Lanes	1	0	1	1	1	1	1	1	0	1	1	0
Taper Length (m)	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.80	0.91	1.00	0.80	0.91
Ped Bike Factor	1.00	0.99	0.99	0.99	0.99	0.99	0.97	0.97	0.99	0.99	0.99	0.99
Frt	0.941						0.850	0.980				0.952
Flt Protected	0.950			0.950			0.950				0.950	
Satd. Flow (prot)	2795	1473	0	1525	1583	1382	1428	3804	0	1525	3739	0
Flt Permitted	0.950			0.107			0.095			0.103		
Satd. Flow (perm)	2792	1473	0	172	1583	1362	143	3804	0	165	3739	0
Right Turn on Red	Yes			Yes			Yes		Yes		Yes	
Satd. Flow (RTOR)	36			125			18			86		
Link Speed (k/h)	50			50			50			50		
Link Distance (m)	122.6			330.4			150.2			270.2		
Travel Time (s)	8.8			23.8			10.8			19.5		
Conf. Peds. (#/hr)	4			4			4			4		
Peak Hour Factor	0.87	0.77	0.64	0.77	0.77	0.77	0.81	0.88	0.80	0.84	0.84	0.83
Heavy Vehicles (%)	9%	12%	3%	8%	8%	4%	10%	3%	0%	3%	3%	4%
Adj. Flow (vph)	1617	535	348	392	470	491	422	1591	249	229	1700	798
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1617	883	0	392	470	491	422	1840	0	229	2498	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Right	Left	Right	Left	Right	Left	Right
Median Width(m)	6.6			6.6			3.3			3.3		
Link Offset(m)	0.0			0.0			0.0			0.0		
Crosswalk Width(m)	4.8			4.8			4.8			4.8		
Two way Left Turn Lane	1.19	1.14	1.14	1.19	1.14	1.16	1.19	1.14	1.14	1.19	1.14	1.14
Headway Factor	24	14	14	24	24	14	24	14	14	24	24	14
Turning Speed (k/h)	1	2	2	1	2	1	1	2	1	2	1	2
Number of Detectors	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Detector Template	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 1 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4			9.4			9.4		
Detector 2 Size(m)	0.6			0.6			0.6			0.6		
Detector 2 Type	Ch+Ex			Ch+Ex			Ch+Ex			Ch+Ex		
Detector 2 Channel	0.6			0.6			0.6			0.6		

Lanes, Volumes, Timings
101: Trafalgar Rd & Cross Ave/South Service Rd

Total 2037
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		0.0
Turn Type	Prot	NA	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4		8	8	2	5	2	1	6		6
Permitted Phases	7	4		8	8	2	5	2	1	6		6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	7.0	27.0	7.0	27.0	7.0	27.0
Minimum Split (s)	17.0	25.0	25.0	25.0	25.0	25.0	11.5	34.0	11.5	34.0	11.5	34.0
Total Split (s)	30.0	79.0	49.0	49.0	49.0	49.0	15.0	49.0	15.0	49.0	15.0	49.0
Total Split (%)	21.4%	56.4%	35.0%	35.0%	35.0%	35.0%	10.7%	35.0%	10.7%	35.0%	10.7%	35.0%
Maximum Green (s)	23.0	72.0	42.0	42.0	42.0	42.0	11.0	42.0	11.0	42.0	11.0	42.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	1.0	3.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	0.0	-3.0	0.0	-3.0	0.0	-3.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	4.0	4.0	4.0	4.0	4.0	3.0	5.0	3.0	5.0	3.0	5.0
Recall Mode	Min	Min	Min	Min	Min	Min	Min	C-Max	Min	C-Max	Min	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0			0		0		0	
Ad Effct Green (s)	26.0	75.0	42.0	45.0	45.0	45.0	56.0	45.0	56.0	45.0	56.0	45.0
Actuated v/c Ratio	0.19	0.54	0.30	0.32	0.32	0.32	0.40	0.32	0.40	0.32	0.36	0.30
v/c Ratio	3.12	1.10	7.69	0.93	0.94	0.94	2.67	1.49	1.68	2.12	1.68	2.12
Control Delay	976.0	92.1	3056.5	71.3	61.6	772.9	259.2	353.4	530.3	353.4	530.3	353.4
Queue Delay	0.0	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	976.0	93.9	3056.5	71.3	61.6	772.9	259.2	353.4	530.3	353.4	530.3	353.4
LOS	F	F	F	F	F	F	F	F	F	F	F	F
Approach Delay	664.5			932.7			355.0			355.0		515.4
Approach LOS	F			F			F			F		F
Intersection Summary												
Area Type:	CBD											
Cycle Length:	140											
Actuated Cycle Length:	140											
Offset: 128 (91%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green												
Natural Cycle:	100											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	7.69											
Intersection Signal Delay:	580.4											
Intersection Capacity Utilization:	147.6%											
Analysis Period (min):	15											
* User Entered Value												

Queues
101: Tatalgar Rd & Cross Ave/South Service Rd

Total 2037
PM Peak Hour

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group	1617	883	392	470	491	422	1840	229	2498
Lane Group Flow (vph)	3.12	1.10	7.69	0.93	0.94	2.67	1.49	1.68	2.12
v/c Ratio	976.0	92.1	3056.5	71.3	61.6	772.9	259.2	353.4	530.3
Control Delay	0.0	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	976.0	93.9	3056.5	71.3	61.6	772.9	259.2	353.4	530.3
Total Delay	~423.0	~285.8	~209.9	132.3	110.7	~195.3	~307.8	~83.5	~475.0
Queue Length 50th (m)	#448.3	#278.4	#232.6	145.0	124.2	m#116.7	m#47.5	m#83.5	m#409.6
Queue Length 95th (m)									
Internal Link Dist (m)	130.0	98.6	25.0	306.4	306.4	126.2	126.2	246.2	246.2
Turn Bay Length (m)	130.0	98.6	25.0	306.4	306.4	126.2	126.2	246.2	246.2
Base Capacity (vph)	519	805	51	508	522	158	1234	136	1181
Starvation Cap Reductn	0	61	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	3.12	1.19	7.69	0.93	0.94	2.67	1.49	1.68	2.12

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

HCM Signalized Intersection Capacity Analysis
101: Tatalgar Rd & Cross Ave/South Service Rd

Total 2037
PM Peak Hour

Movement	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	TT	TT	T	T	T	TT	TT	T	TT	TT
Traffic Volume (vph)	1407	412	223	302	362	378	342	1400	199	192
Future Volume (vph)	1407	412	223	302	362	378	342	1400	199	192
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.3	3.6	3.6	3.3	3.6
Total Lost time (s)	4.0	4.0	7.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.80	1.00	0.80
Frbp. ped/bikes	1.00	0.99	1.00	1.00	0.99	1.00	0.97	1.00	0.99	1.00
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.95	1.00	0.94	1.00	0.94	1.00	0.98	1.00	0.95	1.00
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	2785	1472	1525	1583	1362	1428	3803	1525	3740	3740
Flt Permitted	0.95	1.00	0.11	1.00	1.00	0.10	1.00	0.10	1.00	1.00
Satd. Flow (perm)	2785	1472	172	1583	1362	143	3803	165	3740	3740
Peak-hour factor, PHF	0.87	0.77	0.64	0.77	0.77	0.81	0.88	0.80	0.84	0.84
Adj. Flow (vph)	1617	535	348	392	470	491	422	1591	249	229
RTOR Reduction (vph)	0	17	0	0	0	85	0	12	0	0
Lane Group Flow (vph)	1617	866	0	392	470	406	422	1828	0	229
Conf. Peds. (#/hr)	1	4	4	4	4	1	10	52	52	10
Heavy Vehicles (%)	9%	6%	12%	3%	8%	4%	10%	3%	0%	3%
Turn Type	Prot	NA	Perm	NA	Perm	pm-pt	NA	pm-pt	3%	4%
Protected Phases	7	4	8	8	5	2	1	6	NA	NA
Permitted Phases	8	8	8	8	2	2	6	6	6	6
Actuated Green, G (s)	23.0	72.0	42.0	42.0	42.0	53.0	42.0	47.0	39.0	42.0
Effective Green, g (s)	26.0	75.0	42.0	45.0	45.0	53.0	45.0	47.0	42.0	42.0
Actuated G/C Ratio	0.19	0.54	0.30	0.32	0.32	0.38	0.32	0.34	0.30	0.30
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	4.0	7.0	4.0	7.0	7.0
Vehicle Extension (s)	3.0	4.0	4.0	4.0	4.0	3.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	519	788	51	508	437	155	1222	133	1122	1122
v/s Ratio Prot	c0.58	0.59	0.30	0.30	c0.21	0.48	0.10	0.65	0.48	0.48
v/s Ratio Perm	3.12	1.10	7.69	0.93	0.93	2.72	1.50	1.72	2.17	2.17
Uniform Delay, d1	57.0	32.5	49.0	45.9	46.0	38.3	47.5	41.1	49.0	49.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.17	1.17	1.31	1.17	1.17
Incremental Delay, d2	957.1	62.7	3048.9	23.1	26.3	776.8	223.5	342.8	529.5	529.5
Delay (s)	1014.1	95.2	3067.9	69.0	72.3	821.6	278.8	396.5	566.6	566.6
Level of Service	F	F	F	E	E	F	F	F	F	F
Approach Delay (s)	689.6	F	947.7	F	F	380.1	F	570.6	F	F
Approach LOS	F	F	F	F	F	F	F	F	F	F

Intersection Summary	Value	Unit
HCM 2000 Control Delay	613.2	s
HCM 2000 Volume to Capacity ratio	4.38	
Actuated Cycle Length (s)	140.0	s
Intersection Capacity Utilization	147.6%	%
Analysis Period (min)	15	min
c Critical Lane Group		

Lanes, Volumes, Timings
102: GO Bus Terminal/Argus Rd & Cross Ave

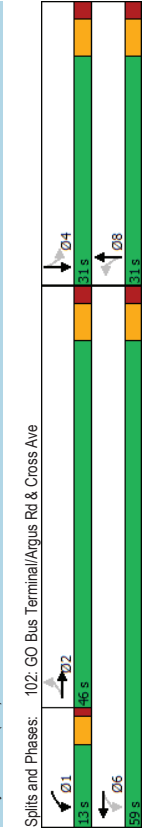
Total 2037
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1	1
Traffic Volume (vph)	62	1327	72	198	611	167	167	167	3	166	287	26
Future Volume (vph)	62	1327	72	198	611	167	167	167	3	166	287	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.6
Storage Length (m)	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	15.0	0.0	0.0
Storage Lanes	1	0	0	1	0	0	1	0	0	1	0	0
Taper Length (m)	7.5	0.95	0.95	7.5	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor	1.00	0.95	0.95	1.00	0.99	0.99	1.00	0.97	0.99	0.99	0.99	0.99
Ped Bike Factor	1.00	1.00	0.99	1.00	0.99	1.00	0.97	0.97	0.99	0.99	0.99	0.99
Frt	0.990	0.990	0.990	0.965	0.965	0.965	0.957	0.957	0.886	0.886	0.886	0.886
Flt Protected	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (prot)	1570	2981	0	818	3060	0	805	759	0	1570	1225	0
Flt Permitted	0.315	0.091	0.091	0.578	0.578	0.578	0.468	0.468	0.468	0.468	0.468	0.468
Satd. Flow (perm)	520	2981	0	78	3060	0	489	759	0	762	1225	0
Right Turn on Red	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Satd. Flow (RTOR)	11	11	82	82	82	149	149	149	134	134	134	134
Link Speed (k/h)	50	50	50	50	50	50	50	50	50	50	50	50
Link Distance (m)	207.1	207.1	100.7	100.7	100.7	81.9	81.9	81.9	123.5	123.5	123.5	123.5
Travel Time (s)	14.9	14.9	7.3	7.3	7.3	5.9	5.9	5.9	8.9	8.9	8.9	8.9
Confl. Peds. (#/hr)	1	3	3	3	3	1	3	20	20	20	20	3
Peak Hour Factor	0.52	0.87	0.65	0.84	0.88	0.79	0.53	0.25	0.70	0.78	0.62	0.89
Heavy Vehicles (%)	0%	1%	100%	92%	1%	5%	95%	0%	91%	0%	93%	0%
Adj. Flow (vph)	119	1525	111	236	694	211	315	12	237	368	42	134
Shared Lane Traffic (%)												
Lane Group Flow (vph)	119	1636	0	236	905	0	315	249	0	368	176	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width (m)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
Link Offset (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width (m)	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Two way Left Turn Lane	1.19	1.14	1.14	1.19	1.14	1.14	1.14	1.14	1.14	1.19	1.14	1.14
Headway Factor	24	14	14	24	14	14	24	14	14	24	14	14
Turning Speed (k/h)	1	2	1	2	1	2	1	2	1	2	1	2
Number of Detectors	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru
Detector Template	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 1 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4	0.6	9.4	0.6	9.4	0.6	9.4	0.6	9.4	0.6	9.4	0.6
Detector 2 Size (m)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Detector 2 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 2 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Lanes, Volumes, Timings
102: GO Bus Terminal/Argus Rd & Cross Ave

Total 2037
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	2	1	6	6	8	8	8	8	8	4	4	4
Permitted Phases	2	2	2	1	6	8	8	8	8	4	4	4
Detector Phase	2	2	2	1	6	8	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	22.0	22.0	8.0	22.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	45.0	45.0	12.5	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0
Total Split (s)	46.0	46.0	13.0	59.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0
Total Split (%)	51.1%	51.1%	14.4%	65.6%	34.4%	34.4%	34.4%	34.4%	34.4%	34.4%	34.4%	34.4%
Maximum Green (s)	40.0	40.0	9.0	53.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	5.0	5.0	2.5	5.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Recall Mode	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Act Effct Green (s)	42.0	42.0	55.0	55.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0
Actuated g/C Ratio	0.47	0.47	0.61	0.61	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
v/c Ratio	0.49	1.17	1.95	0.48	2.16	0.75	1.61	0.38	0.38	1.61	0.38	0.38
Control Delay	25.3	110.0	476.6	9.6	564.6	27.8	322.0	10.2	10.2	322.0	10.2	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.3	110.0	476.6	9.6	564.6	27.8	322.0	10.2	10.2	322.0	10.2	10.2
LOS	C	F	F	A	F	C	F	C	F	F	B	B
Approach Delay	104.2	104.2	106.2	106.2	327.6	327.6	327.6	327.6	327.6	327.6	327.6	327.6
Approach LOS	F	F	F	F	F	F	F	F	F	F	F	F
Intersection Summary												
Area Type:	CBD											
Cycle Length:	90											
Actuated Cycle Length:	90											
Natural Cycle:	90											
Control Type:	Semi Act-Uncoordinated											
Maximum v/c Ratio:	2.16											
Intersection Signal Delay:	152.1											
Intersection LOS:	F											
Intersection Capacity Utilization:	102.8%											
Analysis Period (min):	15											



Queues
102: GO Bus Terminal/Argus Rd & Cross Ave

Total 2037
PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group	119	1636	236	905	315	249	368	176
Lane Group Flow (vph)	0.49	1.17	1.95	0.48	2.16	0.75	1.61	0.38
v/c Ratio	25.3	110.0	476.6	9.6	564.6	27.8	322.0	10.2
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	25.3	110.0	476.6	9.6	564.6	27.8	322.0	10.2
Total Delay	14.4	~189.2	~60.0	38.8	~92.4	15.9	~97.0	5.5
Queue Length 50th (m)	14.7	#220.8	#98.0	50.8	#73.3	0.0	#125.7	8.1
Queue Length 95th (m)	183.1		76.7			57.9		99.5
Internal Link Dist (m)	20.0		20.0			150		
Turn Bay Length (m)	242	1397	121	1901	146	332	228	461
Base Capacity (vph)	0	0	0	0	0	0	0	0
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	0.49	1.17	1.95	0.48	2.16	0.75	1.61	0.38
Intersection Summary								
~ Volume exceeds capacity, queue is theoretically infinite.								
Queue shown is maximum after two cycles.								
# 95th percentile volume exceeds capacity, queue may be longer.								
Queue shown is maximum after two cycles.								

HCM Signalized Intersection Capacity Analysis
102: GO Bus Terminal/Argus Rd & Cross Ave

Total 2037
PM Peak Hour

Movement	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR	
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	
Traffic Volume (vph)	62	1327	72	198	611	167	167	3	166	
Future Volume (vph)	62	1327	72	198	611	167	167	3	166	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	3.3	3.6	3.6	3.3	3.6	3.3	3.6	3.3	3.6	
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	
Frbp. ped/bikes	1.00	1.00	1.00	0.99	1.00	0.97	1.00	0.99	1.00	
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.89	
Flt Protected	1569	2980	818	3060	803	759	1548	1225		
Flt Permitted	0.31	1.00	0.09	1.00	0.58	1.00	0.47	1.00		
Satd. Flow (perm)	520	2980	78	3060	489	759	762	1225		
Peak-hour factor, PHF	0.52	0.87	0.65	0.84	0.88	0.79	0.53	0.25	0.70	
Adj. Flow (vph)	119	1525	111	236	694	211	315	12	237	
RTOR Reduction (vph)	0	6	0	0	32	0	104	0	0	
Lane Group Flow (vph)	119	1630	0	236	873	0	315	145	0	
Conf. Peds. (#/hr)	1	3	3	1	3	1	3	20	3	
Heavy Vehicles (%)	0%	1%	100%	92%	1%	5%	95%	0%	91%	
Turn Type	Perm	NA	pm-pt	NA	Perm	NA	Perm	NA	Perm	
Protected Phases	2	6	1	6	8	8	8	8	4	
Permitted Phases	2	6	6	6	8	8	8	8	4	
Actuated Green, G (s)	40.0	40.0	53.0	53.0	25.0	25.0	25.0	25.0	25.0	
Effective Green, g (s)	42.0	42.0	53.0	55.0	27.0	27.0	27.0	27.0	27.0	
Actuated g/C Ratio	0.47	0.47	0.59	0.61	0.30	0.30	0.30	0.30	0.30	
Clearance Time (s)	6.0	6.0	4.0	6.0	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	5.0	5.0	2.5	5.0	4.0	4.0	4.0	4.0	4.0	
Lane Grp Cap (vph)	242	1390	119	1870	146	227	228	367	0.07	
v/s Ratio Prot	0.23	0.55	c0.20	0.29	0.19	0.19	0.19	0.19	0.07	
v/s Ratio Perm	0.49	1.17	1.98	0.47	2.16	0.64	1.61	0.22	0.48	
Uniform Delay, d1	16.6	24.0	26.5	9.5	31.5	27.3	31.5	23.6	0.22	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.3	85.7	471.1	0.4	542.9	6.5	295.7	0.4	0.4	
Delay (s)	19.9	109.7	497.6	9.9	574.4	33.7	327.2	24.1	0.4	
Level of Service	B	F	F	A	F	C	F	C	C	
Approach Delay (s)	B	F	F	A	F	C	F	C	C	
Approach LOS	F	F	F	F	F	F	F	F	F	
Intersection Summary										
HCM 2000 Control Delay	155.4								HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.05									
Actuated Cycle Length (s)	90.0								Sum of lost time (s)	12.0
Intersection Capacity Utilization	102.8%								ICU Level of Service	G
Analysis Period (min)	15									
c. Critical Lane Group										

Lanes, Volumes, Timings
104: Trafalgar Rd & Cornwall Rd

Total 2037
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT	HT
Traffic Volume (vph)	596	808	248	55	1084	775	177	565	47	624	782	586
Future Volume (vph)	596	808	248	55	1084	775	177	565	47	624	782	586
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.5
Storage Length (m)	80.0	0.0	80.0	0.0	80.0	0.0	25.0	0.0	80.0	0.0	80.0	1
Storage Lanes	2	0	1	0	1	0	1	0	1	0	1	1
Taper Length (m)	7.5	0.95	0.95	7.5	0.95	0.95	7.5	0.95	7.5	0.95	7.5	0.95
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	0.95	1.00	0.80	0.95	0.97	0.80	1.00
Ped Bike Factor	1.00	0.99	1.00	0.98	1.00	0.98	1.00	1.00	0.99	0.98	1.00	0.98
Frt	0.952			0.939			0.987			0.850		0.850
Flt Protected	0.950			0.950			0.950			0.950		0.950
Satd. Flow (prot)	2987	2967	0	1481	2906	0	1540	2668	0	2929	1341	1356
FltP Permitted	0.950			0.950			0.950			0.950		0.950
Satd. Flow (perm)	2981	2967	0	1477	2906	0	1534	2668	0	2887	1341	1324
Right Turn on Red	Yes			Yes			Yes			Yes		Yes
Satd. Flow (RTOR)	62			131			6			6		128
Link Speed (k/h)	50			50			50			50		50
Link Distance (m)	285.8			142.3			311.4			130.3		130.3
Travel Time (s)	20.6			10.2			22.4			9.4		9.4
Confl. Peds. (#/hr)	25			7			25			9		18
Peak Hour Factor	0.93	0.91	0.60	0.75	0.86	0.90	0.60	0.86	0.75	0.84	0.86	0.80
Heavy Vehicles (%)	2%	4%	1%	6%	3%	3%	2%	1%	0%	4%	2%	6%
Adj. Flow (vph)	641	888	413	73	1260	861	295	657	63	743	909	733
Shared Lane Traffic (%)												
Lane Group Flow (vph)	641	1301	0	73	2121	0	295	720	0	743	909	733
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Left	Right
Median Width (m)	6.6			6.6			6.6			6.6		6.6
Link Offset (m)	0.0			0.0			0.0			0.0		0.0
Crosswalk Width (m)	4.8			4.8			4.8			4.8		4.8
Two way Left Turn Lane	1.19	1.14	1.14	1.19	1.14	1.14	1.19	1.14	1.14	1.19	1.14	1.16
Headway Factor	24	14	14	24	14	14	24	14	14	24	14	14
Turning Speed (k/h)	1	2	1	1	2	1	2	1	2	1	2	1
Number of Detectors	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Right	Right
Detector Template	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	2.0
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Type	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex
Detector 1 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	9.4			9.4			9.4			9.4		9.4
Detector 2 Size (m)	0.6			0.6			0.6			0.6		0.6
Detector 2 Type	C+Ex			C+Ex			C+Ex			C+Ex		C+Ex
Detector 2 Channel	0.0			0.0			0.0			0.0		0.0

Lanes, Volumes, Timings
104: Trafalgar Rd & Cornwall Rd

Total 2037
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		0.0
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	3	8	7	4	7	4	5	2	5	2	1	6
Permitted Phases	3	8	7	4	7	4	5	2	5	2	1	6
Detector Phase	3	8	7	4	7	4	5	2	5	2	1	6
Switch Phase												
Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	10.0	7.0	10.0	7.0	10.0	7.0	20.0
Minimum Split (s)	12.0	37.0	12.0	37.0	12.0	37.0	12.0	39.0	12.0	39.0	12.0	39.0
Total Split (s)	17.0	56.0	12.0	51.0	16.0	53.0	11.4%	37.9%	13.5%	40.0%	19.0	56.0
Total Split (%)	12.1%	40.0%	8.6%	36.4%	11.4%	37.9%	13.5%	40.0%	13.5%	40.0%	13.5%	40.0%
Maximum Green (s)	12.0	49.0	7.0	44.0	11.0	46.0	14.0	49.0	14.0	49.0	4.0	4.0
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0
Lost Time Adjust (s)	-1.0	-3.0	-1.0	-3.0	-1.0	-3.0	-1.0	-3.0	-1.0	-3.0	-1.0	-3.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Recall Mode	Max	Max	Max	Max	Max	Max	None	C-Max	Max	C-Max	Max	C-Max
Walk Time (s)	7.0			7.0			7.0			7.0		7.0
Flash Dont Walk (s)	23.0			23.0			25.0			25.0		25.0
Pedestrian Calls (#/hr)	0			0			0			0		0
Act Effct Green (s)	13.0	52.0	8.0	47.0	12.0	49.0	15.0	52.0	15.0	52.0	4.0	4.0
Actuated g/C Ratio	0.09	0.37	0.06	0.34	0.09	0.35	0.11	0.37	0.11	0.37	0.37	0.37
v/c Ratio	2.31	1.14	0.87	2.00	2.23	0.77	2.37	1.83	2.37	1.83	1.28	1.28
Control Delay	629.1	112.4	131.3	477.3	607.0	46.6	647.3	393.0	647.3	393.0	144.7	144.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	629.1	112.4	131.3	477.3	607.0	46.6	647.3	393.0	647.3	393.0	144.7	144.7
LOS	F	F	F	F	F	F	F	D	F	F	F	F
Approach Delay	283.0			465.8			209.5			395.9		395.9
Approach LOS	F			F			F			F		F



Queues
104: Tatalgar Rd & Cornwall Rd

Total 2037
PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	641	1301	73	2121	295	720	743	909	733
v/c Ratio	2.31	1.14	0.87	2.00	2.23	0.77	2.37	1.83	1.28
Control Delay	629.1	1124	131.3	477.3	607.0	46.6	647.3	393.0	144.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	629.1	1124	131.3	477.3	607.0	46.6	647.3	393.0	144.7
Queue Length 50th (m)	~156.5	~226.8	21.5	~496.5	~138.5	115.3	~188.5	~493.1	~242.1
Queue Length 95th (m)	#195.8	#272.3	#93.7	#507.2	#119.1	136.7	#664.4	#60.6	#15.9
Internal Link Dist (m)	261.8		118.3		287.4			106.3	
Turn Bay Length (m)	80.0		80.0		25.0		80.0		
Base Capacity (vph)	277	1141	84	1062	132	937	313	498	572
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	2.31	1.14	0.87	2.00	2.23	0.77	2.37	1.83	1.28
Intersection Summary									
~ Volume exceeds capacity, queue is theoretically infinite.									
Queue shown is maximum after two cycles.									
# 95th percentile volume exceeds capacity, queue may be longer.									
Queue shown is maximum after two cycles.									
m Volume for 95th percentile queue is metered by upstream signal.									

HCM Signalized Intersection Capacity Analysis
104: Tatalgar Rd & Cornwall Rd

Total 2037
PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Movement	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	TT	TT	F	TT	TT	TT	TT	TT	TT
Traffic Volume (vph)	596	808	248	55	1084	775	177	565	47
Future Volume (vph)	596	808	248	55	1084	775	177	565	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.3	3.6	3.3	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.95	1.00	0.80	0.97	0.80	1.00
Frbp. ped/bikes	1.00	0.99	1.00	0.98	1.00	1.00	1.00	1.00	0.98
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.95	1.00	0.94	1.00	0.99	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	2987	2968	1481	2907	1540	2667	2929	1341	1324
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	2987	2968	1481	2907	1540	2667	2929	1341	1324
Peak-hour factor, PHF	0.93	0.91	0.60	0.75	0.86	0.90	0.86	0.75	0.84
Adj. Flow (vph)	641	888	413	73	1260	861	295	657	63
RTOR Reduction (vph)	0	39	0	0	87	0	0	4	0
Lane Group Flow (vph)	641	1262	0	73	2034	0	295	716	0
Conf. Peds. (#/hr)	25	7	7	7	25	9	18	18	9
Heavy Vehicles (%)	2%	4%	1%	6%	3%	2%	1%	0%	4%
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Prot
Protected Phases	3	8	7	4	5	2	1	6	6
Permitted Phases	12.0	49.0	7.0	44.0	11.0	46.0	14.0	49.0	49.0
Actuated Green, G (s)	13.0	52.0	8.0	47.0	12.0	49.0	15.0	52.0	52.0
Effective Green, g (s)	0.09	0.37	0.06	0.34	0.09	0.35	0.11	0.37	0.37
Actuated g/C Ratio	5.0	7.0	5.0	7.0	5.0	7.0	5.0	7.0	7.0
Clearance Time (s)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Vehicle Extension (s)	277	1102	84	975	132	933	313	498	491
Lane Grp Cap (vph)	c0.21	0.43	0.05	c0.70	0.19	0.27	c0.25	c0.68	0.49
v/s Ratio Prot	2.31	1.15	0.87	2.09	2.23	0.77	2.37	1.83	1.33
v/c Ratio	63.5	44.0	65.5	46.5	64.0	40.4	62.5	44.0	44.0
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	1.23	0.46	0.30
Progression Factor	602.6	76.4	66.7	492.3	579.4	6.0	619.1	372.1	149.4
Incremental Delay, d2	666.1	120.4	132.2	538.8	643.4	46.5	695.7	392.3	162.7
Delay (s)	F	F	F	F	F	D	F	F	F
Level of Service	F	F	F	F	F	D	F	F	F
Approach Delay (s)	300.5		525.3		219.9		416.3		F
Approach LOS	F		F		F		F		F
Intersection Summary									
HCM 2000 Control Delay	391.7 HCM 2000 Level of Service								
HCM 2000 Volume to Capacity ratio	2.06								
Actuated Cycle Length (s)	140.0 Sum of lost time (s)								
Intersection Capacity Utilization	150.7% ICU Level of Service								
Analysis Period (min)	15								
c Critical Lane Group	F								

Lanes, Volumes, Timings
105: Trafalgar Rd & QEW EB-Off Ramp

Total 2037
PM Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	1100	633	0	2282	2223	0
Future Volume (vph)	1100	633	0	2282	2223	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.5	3.6	3.6	3.6	3.6
Lane Util. Factor	0.97	1.00	1.00	*0.80	*0.80	1.00
Flt Protected	0.950					
Satd. Flow (prot)	2958	1423	0	3872	3946	0
Flt Permitted	0.950					
Satd. Flow (perm)	2958	1423	0	3872	3946	0
Right Turn on Red	Yes					Yes
Satd. Flow (RTOR)	2					
Link Speed (k/h)	50			50	50	
Link Distance (m)	199.2			51.4	324.8	
Travel Time (s)	14.3			3.7	23.4	
Peak Hour Factor	0.98	0.92	0.25	0.91	0.90	0.25
Heavy Vehicles (%)	3%	1%	0%	6%	4%	0%
Adj. Flow (vph)	1122	688	0	2508	2470	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1122	688	0	2508	2470	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Right
Median Width(m)	6.6			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.19	1.16	1.14	1.14	1.14	1.14
Turning Speed (k/h)	24	14	24		14	
Number of Detectors	1	Right	Thru	2	2	
Detector Template	2.0	2.0	10.0	10.0	10.0	
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	2.0	0.6	0.6	0.6	
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)			9.4	9.4		
Detector 2 Size(m)			0.6	0.6		
Detector 2 Type			Ch+Ex	Ch+Ex		
Detector 2 Channel						
Detector 2 Extend (s)			0.0	0.0		
Turn Type	Prot	Perm	NA	NA	NA	
Protected Phases	4		2	2	2	
Permitted Phases	4	4	2	2	2	
Detector Phase	4	4	2	2	2	

Lanes, Volumes, Timings
105: Trafalgar Rd & QEW EB-Off Ramp

Total 2037
PM Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	10.0	10.0		29.0	29.0	
Minimum Split (s)	38.0	38.0		36.0	36.0	
Total Split (s)	60.0	60.0		80.0	80.0	
Total Split (%)	42.9%	42.9%		57.1%	57.1%	
Maximum Green (s)	53.0	53.0		73.0	73.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Recall Mode	None	None		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	24.0	24.0		22.0	22.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Ad Effct Green (s)	56.0	56.0		76.0	76.0	
Actuated g/C Ratio	0.40	0.40		0.54	0.54	
v/c Ratio	0.95	1.21		1.19	1.15	
Control Delay	57.2	146.1		116.9	90.6	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	57.2	146.1		116.9	90.6	
LOS	E	F		F	F	
Approach Delay	91.0			116.9	90.6	
Approach LOS	F			F	F	
Intersection Summary	CBD					
Area Type:	CBD					
Cycle Length:	140					
Actuated Cycle Length:	140					
Offset:	133.6 (95%), Referenced to phase 2,NBSB and 6:, Start of Green					
Natural Cycle:	150					
Control Type:	Actuated-Coordinated					
Maximum v/c Ratio:	1.21					
Intersection Signal Delay:	100.4					
Intersection Capacity Utilization:	97.9%					
Analysis Period (min):	15					
* User Entered Value						

	EBL	EBR	NBT	SBT
Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	1122	688	2508	2470
v/c Ratio	0.95	1.21	1.19	1.15
Control Delay	57.2	146.1	116.9	90.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	57.2	146.1	116.9	90.6
Queue Length 50th (m)	161.5	~244.2	~356.2	~350.7
Queue Length 95th (m)	#203.6	#322.7	m64.6	m311.1
Internal Link Dist (m)	175.2	27.4	300.8	
Turn Bay Length (m)				
Base Capacity (vph)	1183	570	2101	2142
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.95	1.21	1.19	1.15

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

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	TT	TT		TT	TT	TT
Traffic Volume (vph)	1100	633	0	2282	2223	0
Future Volume (vph)	1100	633	0	2282	2223	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.5	3.6	3.6	3.6	3.6
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00		*0.80	*0.80	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	2958	1423		3872	3946	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	2958	1423		3872	3946	
Peak-hour factor, PHF	0.98	0.92	0.25	0.91	0.90	0.25
Adj. Flow (vph)	1122	688	0	2508	2470	0
RTOR Reduction (vph)	0	1	0	0	0	0
Lane Group Flow (vph)	1122	687	0	2508	2470	0
Heavy Vehicles (%)	3%	1%	0%	6%	4%	0%
Turn Type	Prot	Perm	NA	NA	NA	
Protected Phases	4			2	2	
Permitted Phases		4				
Actuated Green, G (s)	53.0	53.0		73.0	73.0	
Effective Green, g (s)	56.0	56.0		76.0	76.0	
Actuated g/C Ratio	0.40	0.40		0.54	0.54	
Clearance Time (s)	7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	1183	569		2101	2142	
v/s Ratio Prot	0.38			c0.65	0.63	
v/s Ratio Perm	c0.48					
v/c Ratio	0.95	1.21		1.19	1.15	
Uniform Delay, d1	40.6	42.0		32.0	32.0	
Progression Factor	1.00	1.00		0.94	0.59	
Incremental Delay, d2	15.3	108.9		87.6	69.5	
Delay (s)	55.9	150.9		117.7	88.3	
Level of Service	E	F		F	F	
Approach Delay (s)	92.0			117.7	88.3	
Approach LOS	F			F	F	

Intersection Summary
 HCM 2000 Control Delay 100.1 HCM 2000 Level of Service F
 HCM 2000 Volume to Capacity ratio 1.20
 Actuated Cycle Length (s) 140.0 Sum of lost time (s) 8.0
 Intersection Capacity Utilization 97.9% ICU Level of Service F
 Analysis Period (min) 15
 c Critical Lane Group

Lanes, Volumes, Timings
106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

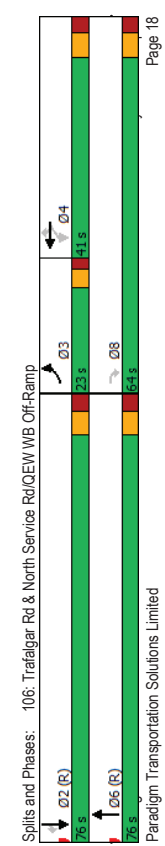
Total 2037
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	26	0	255	616	120	232	0	2798	0	0	2005	14
Future Volume (vph)	26	0	255	616	120	232	0	2798	0	0	2005	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.5	3.3	3.6	3.5	3.6	3.6	3.6	3.6	3.6	3.5
Storage Length (m)	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
Storage Lanes	1		1	1	1	1	0	0	0	0	0	1
Taper Length (m)	7.5	1.00	1.00	0.95	0.95	1.00	1.00	0.80	1.00	1.00	0.80	1.00
Ped Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.80	1.00	1.00	0.80	1.00
Lead Bike Factor			0.850			0.850					0.850	0.850
Flt Protected	0.950		0.950	0.971		0.971						
Satd. Flow (prot)	1570	0	1395	1421	1406	1356	0	3909	0	0	3984	1437
Flt Permitted	0.950		0.950	0.971		0.971						
Satd. Flow (perm)	1570	0	1395	1421	1406	1356	0	3909	0	0	3984	1380
Right Turn on Red	Yes		Yes			Yes		Yes			Yes	
Satd. Flow (RTOR)			31			84					70	
Link Speed (km/h)	50		50			50		50			50	
Link Distance (m)	142.1		192.6			324.8		268.2			268.2	
Travel Time (s)	10.2		13.9			23.4		19.3			19.3	
Conf. Peds. (#/hr)						8		5			5	
Peak Hour Factor	0.25	0.25	0.91	0.88	0.73	0.25	0.93	0.97	0.25	0.90	0.90	0.63
Heavy Vehicles (%)	0%	0%	3%	5%	23%	6%	0%	5%	5%	0%	3%	0%
Adj. Flow (vph)	104	0	280	700	176	318	0	3009	0	0	2228	22
Shared Lane Traffic (%)			38%									
Lane Group Flow (vph)	104	0	280	434	442	318	0	3009	0	0	2228	22
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width (m)	3.3		3.3			3.3		3.3			3.3	
Link Offset (m)	0.0		0.0			0.0		0.0			0.0	
Crosswalk Width (m)	4.8		4.8			4.8		4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.19	1.14	1.16	1.19	1.14	1.16	1.14	1.14	1.14	1.14	1.14	1.16
Turning Speed (km/h)	24	14	24	24	14	24	14	24	14	24	14	24
Number of Detectors	1		1		2	1		2		2		1
Detector Template	Left	Right	Left	Thru	Right	Thru	Left	Thru	Right	Thru	Right	Right
Leading Detector (m)	2.0	2.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size (m)	2.0	2.0	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Type	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position (m)	0.0	0.0	0.0	9.4	0.0	9.4	0.0	9.4	0.0	9.4	0.0	9.4
Detector 2 Size (m)	0.6		0.6			0.6		0.6			0.6	
Detector 2 Type	C+Ex		C+Ex			C+Ex		C+Ex			C+Ex	

Lanes, Volumes, Timings
106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

Total 2037
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)												
Turn Type	Prot	Perm	NA	Perm	NA	Perm	NA	NA	NA	NA	NA	Perm
Protected Phases	3			4		4	6					2
Permitted Phases	3		8	4	4	4	6					2
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0	10.0	5.0					28.0
Minimum Split (s)	23.0	38.0	38.0	38.0	38.0	38.0	35.0					35.0
Total Split (s)	23.0	64.0	41.0	41.0	41.0	41.0	76.0					76.0
Total Split (%)	16.4%	45.7%	29.3%	29.3%	29.3%	29.3%	54.3%					54.3%
Maximum Green (s)	18.0	57.0	34.0	34.0	34.0	34.0	69.0					69.0
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	4.0					4.0
All-Red Time (s)	2.0	3.0	3.0	3.0	3.0	3.0	3.0					3.0
Lost Time Adjust (s)	-1.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0					-3.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0					4.0
Lead/Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes					
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.5					4.5
Recall Mode	Min	Min	Min	Min	Min	Min	C-Min					C-Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0					7.0
Flash Dont Walk (s)	24.0	24.0	24.0	24.0	24.0	24.0	21.0					21.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0					0
Ad Effct Green (s)	15.1	60.0	40.9	40.9	40.9	40.9	72.0					72.0
Actuated v/c Ratio	0.11	0.43	0.29	0.29	0.29	0.29	0.51					0.51
v/c Ratio	0.62	0.46	1.05	1.08	0.70	1.50	1.09					1.09
Control Delay	74.8	27.9	104.3	113.2	42.0	253.6	81.5					81.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0					0.0
Total Delay	74.8	27.9	104.3	113.2	42.0	253.6	81.5					81.5
LOS	E	C	F	F	D	F	F					F
Approach Delay	40.6	D	91.0	F	253.6	F	F					80.7
Approach LOS	D	D	F	F	F	F	F					F
Intersection Summary	CBD											
Area Type:	CBD											
Cycle Length:	140											
Actuated Cycle Length:	140											
Offset:	115.4 (82%), Referenced to phase 2:SBT and 6:NBT, Start of Green											
Natural Cycle:	150											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	1.50											
Intersection Signal Delay:	156.4											
Intersection Capacity Utilization:	95.9%											
Analysis Period (min):	15											
* User Entered Value												



Queues
106: Tatalgar Rd & North Service Rd/QEW WB Off-Ramp

Total 2037
PM Peak Hour

	EBL	EBR	WBL	WBR	NBT	SBT	SBR
Lane Group	104	280	434	442	318	3009	2228
Lane Group Flow (vph)	0.62	0.46	1.05	1.08	0.70	1.50	1.09
v/c Ratio	0.62	0.46	1.05	1.08	0.70	1.50	1.09
Control Delay	74.8	27.9	104.3	113.2	42.0	253.6	81.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.8	27.9	104.3	113.2	42.0	253.6	81.5
Queue Length 50th (m)	29.3	50.7	~145.4	~151.8	62.1	~505.6	~303.2
Queue Length 95th (m)	12.4	77.7	#221.0	#149.0	72.5m#428.8	#336.5	0.0
Internal Link Dist (m)			168.6		300.8	244.2	
Turn Bay Length (m)	50.0						
Base Capacity (vph)	213	615	415	410	455	2010	2048
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.46	1.05	1.08	0.70	1.50	1.09
Intersection Summary							
~	Volume exceeds capacity, queue is theoretically infinite.						
~	Queue shown is maximum after two cycles.						
#	95th percentile volume exceeds capacity, queue may be longer.						
m	Queue shown is maximum after two cycles.						
m	Volume for 95th percentile queue is metered by upstream signal.						

HCM Signalized Intersection Capacity Analysis
106: Tatalgar Rd & North Service Rd/QEW WB Off-Ramp

Total 2037
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	0	255	616	120	232	0	2798	0	0	2005	14
Future Volume (vph)	26	0	255	616	120	232	0	2798	0	0	2005	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.5	3.3	3.6	3.5	3.6	3.6	3.6	3.6	3.6	3.5
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.80	1.00	1.00	0.80	1.00
Frb. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frb. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	1.00	1.00	1.00	0.95
Satd. Flow (prot)	1570	1395	1421	1406	1356	3909					3984	1380
Flt Permitted	0.95	1.00	1.00	0.95	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	1570	1395	1421	1406	1356	3909					3984	1380
Peak-hour factor, PHF	0.25	0.25	0.91	0.88	0.68	0.73	0.25	0.93	0.97	0.25	0.90	0.63
Adj. Flow (vph)	104	0	280	700	176	318	0	3009	0	0	2228	22
RTOR Reduction (vph)	0	0	18	0	0	59	0	0	0	0	0	11
Lane Group Flow (vph)	104	0	262	434	442	259	0	3009	0	0	2228	11
Conf. Peds. (#/hr)							8		5		5	8
Heavy Vehicles (%)	0%	0%	3%	5%	23%	6%	0%	5%	5%	0%	3%	0%
Turn Type	Prot	Perm	Perm	NA	Perm	NA	Perm	NA	NA	Perm	NA	Perm
Protected Phases	3			4		4		6			2	
Permitted Phases	8		4			4					2	
Actuated Green, G (s)	14.1	57.0	37.9	37.9	37.9	37.9	69.0	69.0	69.0	69.0	69.0	69.0
Effective Green, g (s)	15.1	60.0	40.9	40.9	40.9	40.9	72.0	72.0	72.0	72.0	72.0	72.0
Actuated G/C Ratio	0.11	0.43	0.29	0.29	0.29	0.29	0.51	0.51	0.51	0.51	0.51	0.51
Clearance Time (s)	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.5	4.5	4.5	4.5	4.5	4.5
Lane Grp Cap (vph)	169	597	415	410	396	2010					2048	709
v/s Ratio Prot	c0.07						c0.77				0.56	
v/s Ratio Perm	0.62	0.44	1.05	1.08	0.65	1.50	1.50	1.50	1.09	0.02	1.09	0.02
Uniform Delay, d1	59.7	28.2	49.5	49.5	43.3	34.0	34.0	34.0	34.0	16.7	34.0	16.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.08	1.08	1.08	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.5	0.5	56.6	66.9	3.8	223.9				48.4	0.0	0.0
Delay (s)	66.2	28.7	106.2	116.5	47.2	260.6				82.4	16.7	16.7
Level of Service	E	C	F	F	D	F	F	F	F	D	F	B
Approach Delay (s)		38.8		94.3		260.6				81.8		
Approach LOS		D		F		F				F		
Intersection Summary												
HCM 2000 Control Delay		160.3										F
HCM 2000 Volume to Capacity ratio		1.26										
Actuated Cycle Length (s)		140.0								12.0		
Intersection Capacity Utilization		95.9%								F		
Analysis Period (min)		15										
c. Critical Lane Group												

Lanes, Volumes, Timings
203: Argus Rd & South Service Rd

Total 2037
PM Peak Hour

EBL	EBT	WBT	WBR	SBL	SBR
↖	→	←	↗	↖	↗
EBL	EBT	WBT	WBR	SBL	SBR
13	119	601	289	64	19
13	119	601	289	64	19
1900	1900	1900	1900	1900	1900
1.00	1.00	1.00	1.00	1.00	1.00
0.992	0.992	0.992	0.992	0.969	0.963
0	1468	1596	0	1596	0
0	1468	1596	0	1596	0
50	50	50	50	50	50
122.3	145.7	145.7	51.8	51.8	51.8
8.8	10.5	10.5	3.7	3.7	3.7
1	1	1	5	5	1
0.25	0.42	0.86	0.72	0.25	0.25
100%	0%	3%	0%	0%	0%
52	283	699	401	256	76
0	335	1100	0	332	0
No	No	No	No	No	No
Left	Left	Left	Right	Right	Right
0.0	0.0	0.0	3.6	3.6	3.6
4.8	4.8	4.8	4.8	4.8	4.8
1.14	1.14	1.14	1.14	1.14	1.14
24	Free	Free	Free	Stop	Stop
Intersection Summary					
Area Type: CBD					
Control Type: Unsignalized					
Intersection Capacity Utilization 66.9%					
ICU Level of Service C					
Analysis Period (min) 15					

HCM Unsignalized Intersection Capacity Analysis
203: Argus Rd & South Service Rd

Total 2037
PM Peak Hour

EBL	EBT	WBT	WBR	SBL	SBR
↖	→	←	↗	↖	↗
EBL	EBT	WBT	WBR	SBL	SBR
13	119	601	289	64	19
13	119	601	289	64	19
Free	Free	Free	Stop	Stop	Stop
0%	0%	0%	0%	0%	0%
0.25	0.42	0.86	0.72	0.25	0.25
52	283	699	401	256	76
1	5	5	3.6	3.6	3.6
1.2	1.2	1.2	1.2	1.2	1.2
0	0	0	0	0	0
None	None	None	None	None	None
358	358	358	358	358	358
1101	1101	1101	1292	902	902
1101	1101	1101	1292	902	902
5.1	5.1	5.1	6.4	6.2	6.2
3.1	3.1	3.1	3.5	3.3	3.3
86	86	86	0	78	78
377	377	377	156	339	339
EB 1	WB 1	SB 1	EB 1	WB 1	SB 1
335	1100	332	335	1100	332
52	0	256	52	0	256
0	401	76	0	401	76
377	1700	178	377	1700	178
0.14	0.65	1.87	0.14	0.65	1.87
3.8	0.0	195.1	3.8	0.0	195.1
4.7	0.0	455.4	4.7	0.0	455.4
A	A	F	A	A	F
4.7	0.0	455.4	4.7	0.0	455.4
Intersection Summary					
Average Delay 86.5					
Intersection Capacity Utilization 66.9%					
ICU Level of Service C					
Analysis Period (min) 15					

Lanes, Volumes, Timings
204: Trafalgar Rd & Argus Rd

Total 2037
PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	212	0	3110	2949	890
Future Volume (vph)	0	212	0	3110	2949	890
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.5	3.6	3.6	3.6	3.6
Lane Util. Factor	1.00	1.00	1.00	*0.80	*0.80	0.91
Ped. Bike Factor		0.865			0.961	
Flt Protected						
Satd. Flow (prot)	0	1367	0	3836	3812	0
Flt Permitted						
Satd. Flow (perm)	0	1367	0	3836	3812	0
Link Speed (k/h)	50		50	50	50	
Link Distance (m)	145.7		270.2	51.4		
Travel Time (s)	10.5		19.5	3.7		
Confl. Peds. (#/hr)						11
Peak Hour Factor	0.25	0.54	0.25	0.92	0.97	0.82
Heavy Vehicles (%)	0%	7%	0%	7%	4%	2%
Adj. Flow (vph)	0	393	0	3380	3040	1085
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	393	0	3380	4125	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0	3.3	3.3	3.3		
Link Offset(m)	0.0	0.0	0.0	0.0	0.0	0.0
Crosswalk Width(m)	4.8		4.8	4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.14	1.16	1.14	1.14	1.14	1.14
Turning Speed (k/h)	24	14	24			14
Sign Control	Stop		Free	Free	Free	
Intersection Summary						
Area Type:	CBD					
Control Type:	Unsignalized					
Intersection Capacity Utilization	106.9%					
Analysis Period (min)	15					
ICU Level of Service	G					
* User Entered Value						

HCM Unsignalized Intersection Capacity Analysis
204: Trafalgar Rd & Argus Rd

Total 2037
PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	212	0	3110	2949	890
Future Volume (Veh/h)	0	212	0	3110	2949	890
Sign Control	Stop		Free	Free	Free	
Grade	0%		0%	0%	0%	
Peak Hour Factor	0.25	0.54	0.25	0.92	0.97	0.82
Hourly flow rate (vph)	0	393	0	3380	3040	1085
Pedestrians	11					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	1					
Right turn flare (veh)			None	None	None	
Median type						
Median storage (veh)						
Upstream signal (m)			270	52		
pk. platoon unblocked	0.60	0.47	0.47			
vC, conflicting volume	4720	1567	4136			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1852	0	3723			
IC, single (s)	6.8	7.0	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.4	2.2			
p0 queue free %	100	21	100			
dm capacity (veh/h)	40	496	28			
Direction_Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2 SB 3
Volume Total	393	1127	1127	1127	1216	1216 1693
Volume Left	0	0	0	0	0	0
Volume Right	393	0	0	0	0	1085
CSH	486	1700	1700	1700	1700	1700
Volume to Capacity	0.79	0.66	0.66	0.66	0.72	0.72 1.00
Queue Length 95th (m)	58.4	0.0	0.0	0.0	0.0	0.0 0.0
Control Delay (s)	34.6	0.0	0.0	0.0	0.0	0.0 0.0
Lane LOS	D					
Approach Delay (s)	34.6	0.0			0.0	
Approach LOS	D					
Intersection Summary						
Average Delay	1.7					
Intersection Capacity Utilization	106.9%					
ICU Level of Service	G					
Analysis Period (min)	15					

Lanes, Volumes, Timings
207: Argus Rd & East-West Local Rd

Total 2037
PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group	W					
Lane Configurations						
Traffic Volume (vph)	0	0	0	232	437	148
Future Volume (vph)	0	0	0	232	437	148
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected				0.966		
Satd. Flow (prot)	1863	0	0	1863	1799	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1799	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	94.4			123.5	57.2	
Travel Time (s)	6.8			8.9	4.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	252	475	161
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	252	636	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Right
Median Width(m)	3.6			3.3	3.3	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	35.3%					
Analysis Period (min)	15					
ICU Level of Service A						

HCM Unsignalized Intersection Capacity Analysis
207: Argus Rd & East-West Local Rd

Total 2037
PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	W					
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	232	437	148
Future Volume (Veh/h)	0	0	0	232	437	148
Sign Control	Stop			Free	Free	Free
Grade	0%			0%	0%	0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	252	475	161
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)				None	None	None
Median type						
Median storage (veh)						
Upstream signal (m)				123		
pX, platoon unblocked						
VC, conflicting volume	808	556	636			
VC1, stage 1 conf vol						
VC2, stage 2 conf vol						
VCu, unblocked vol	808	556	636			
IC, single (s)	6.4	6.2	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
CM capacity (veh/h)	351	531	947			
Direction_Lane #	EB 1	NB 1	SB 1			
Volume Total	0	252	636			
Volume Left	0	0	0			
Volume Right	0	0	161			
ESH	1700	947	1700			
Volume to Capacity	0.00	0.00	0.37			
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	35.3%					
ICU Level of Service	A					
Analysis Period (min)	15					

Lanes, Volumes, Timings
302: Cross Ave & East Driveway Access

Total 2037
PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group						
Lane Configurations		4A	4B		W	
Traffic Volume (vph)	25	1974	1261	105	68	23
Future Volume (vph)	25	1974	1261	105	68	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt		0.988			0.966	
Flt Protected		0.999			0.964	
Satd. Flow (prot)	0	3182	3147	0	1561	0
Flt Permitted		0.999			0.964	
Satd. Flow (perm)	0	3182	3147	0	1561	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		100.7	122.6		66.8	
Travel Time (s)		7.3	8.8		4.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	2146	1371	114	74	25
Shared Lane Traffic (%)		0	2173	1485	0	99
Lane Group Flow (vph)	No	No	No	No	No	No
Enter Blocked Intersection	Left	Left	Right	Left	Right	Right
Lane Alignment		3.3	3.3		3.6	
Median Width (m)		0.0	0.0		0.0	
Link Offset (m)		4.8	4.8		4.8	
Crosswalk Width (m)		1.14	1.14		1.14	1.14
Two way Left Turn Lane		25	Free		15	25
Headway Factor		1.14	1.14		1.14	1.14
Turning Speed (k/h)		Free	Free		Stop	Stop
Sign Control						
Intersection Summary	CBD					
Area Type:	CBD					
Control Type:	Unsignalized					
Intersection Capacity Utilization	92.6%					
Analysis Period (min)	15					
ICU Level of Service	F					

HCM Unsignalized Intersection Capacity Analysis
302: Cross Ave & East Driveway Access

Total 2037
PM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Movement						
Lane Configurations		4A	4B		W	
Traffic Volume (veh/h)	25	1974	1261	105	68	23
Future Volume (Veh/h)	25	1974	1261	105	68	23
Sign Control	Free	Free	Free	Free	Stop	Stop
Grade	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	27	2146	1371	114	74	25
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)		None	None			
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		101	123			
Pk platoon unblocked					0.55	
Vc, conflicting volume	1485				2555	742
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1485				2194	742
IC, single (s)	4.1				6.8	6.9
IC, 2 stage (s)	2.2				3.5	3.3
p0 queue free %	94				0	93
CM capacity (veh/h)	449				20	358
Direction_Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 1
Volume Total	742	1431	914	571	99	99
Volume Left	27	0	0	0	74	25
Volume Right	0	0	0	114	25	
CSH	449	1700	1700	1700	26	26
Volume to Capacity	0.06	0.84	0.54	0.34	3.78	
Queue Length 95th (m)	1.5	0.0	0.0	0.0	Err	
Control Delay (s)	1.8	0.0	0.0	0.0	Err	
Lane LOS	A				F	
Approach Delay (s)	0.6		0.0		Err	
Approach LOS					F	
Intersection Summary	Intersection Summary					
Average Delay	263.8					
Intersection Capacity Utilization	92.6%					
ICU Level of Service	F					
Analysis Period (min)	15					

Lanes, Volumes, Timings
303: North Driveway & Argus Rd

Total 2037
PM Peak Hour

	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	106	73	126	494	91	26
Traffic Volume (vph)	106	73	126	494	91	26
Future Volume (vph)	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	1.00	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor	0.945				0.970	
Flt Protected				0.990	0.962	
Satd. Flow (prot)	1760	0	0	1844	1738	0
Flt Permitted				0.990	0.962	
Satd. Flow (perm)	1760	0	0	1844	1738	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	55.4			122.3	54.4	
Travel Time (s)	4.0			8.8	3.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	115	79	137	537	99	28
Shared Lane Traffic (%)						
Lane Group Flow (vph)	194	0	0	674	127	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	15	25	25	25	25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	59.6%					
Analysis Period (min)	15					
	ICU Level of Service B					

HCM Unsignalized Intersection Capacity Analysis
303: North Driveway & Argus Rd

Total 2037
PM Peak Hour

	EBT	EBR	WBL	WBT	NBL	NBR
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	106	73	126	494	91	26
Traffic Volume (veh/h)	106	73	126	494	91	26
Future Volume (Veh/h)	106	73	126	494	91	26
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	115	79	137	537	99	28
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)	None			None		
Median type						
Median storage (veh)						
Upstream signal (m)	236					
pX, platoon unblocked						
vC, conflicting volume		194		966	154	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		194		966	154	
iC, single (s)		4.1		6.4	6.2	
iC, 2 stage (s)						
p0 queue free %		2.2		3.5	3.3	
qM capacity (veh/h)		1379		254	891	
Direction_Lane #	EB 1	WB 1	NB 1			
Volume Total	194	674	127			
Volume Left	0	137	99			
Volume Right	79	0	28			
CSH	1700	1379	302			
Volume to Capacity	0.11	0.10	0.42			
Queue Length 95th (m)	0.0	2.6	16.0			
Control Delay (s)	0.0	2.5	25.3			
Lane LOS	A	D				
Approach Delay (s)	0.0	2.5	25.3			
Approach LOS		D				
Intersection Summary						
Average Delay	4.9					
Intersection Capacity Utilization	59.6%					
ICU Level of Service	B					
Analysis Period (min)	15					

Queuing and Blocking Report

Total 2037
PM Peak Hour

Intersection: 101: Trafalgar Rd & Cross Ave/South Service Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	B34	B34	T	T	T
	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L
Directions Served															
Maximum Queue (m)	96.0	104.1	86.8	32.3	330.1	324.8	57.4	131.3	116.5	114.6	10.6	9.0			
Average Queue (m)	93.1	98.4	27.9	30.9	320.1	308.3	51.8	82.1	75.0	74.4	2.2	0.8			
95th Queue (m)	99.2	101.5	64.2	36.2	326.7	374.6	68.6	141.3	116.1	107.2	16.8	9.2			
Link Distance (m)	96.2	96.2		313.2	313.2		126.0	128.0	128.0	101.5	101.5				
Upstream Blk Time (%)	14	62	1	84	31		8	0	0	0					
Queuing Penalty (veh)	0	634	7	0	0	0	54	1	1	0					
Storage Bay Dist (m)	130.0			25.0			50.0								
Storage Blk Time (%)	14	62		56	44		47		9						
Queuing Penalty (veh)	97	437		202	132		219		32						

Intersection: 101: Trafalgar Rd & Cross Ave/South Service Rd

Movement	SB	SB	SB	SB	TR	TR
	L	T	T	TR	L	TR
Directions Served						
Maximum Queue (m)	32.3	253.3	254.7	252.1		
Average Queue (m)	22.9	185.7	231.0	238.9		
95th Queue (m)	38.1	307.4	291.3	285.9		
Link Distance (m)	239.0	239.0	239.0	239.0		
Upstream Blk Time (%)	6	19	45			
Queuing Penalty (veh)	62	189	474			
Storage Bay Dist (m)	25.0					
Storage Blk Time (%)	13	40				
Queuing Penalty (veh)	63	77				

Intersection: 102: GO Bus Terminal/Argus Rd & Cross Ave

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB	SB	TR	TR
	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR
Directions Served												
Maximum Queue (m)	27.3	212.7	210.8	27.4	75.1	55.8	84.3	84.0	22.4	108.0		
Average Queue (m)	7.8	202.1	201.9	24.3	37.2	20.5	64.3	71.0	21.5	104.2		
95th Queue (m)	26.8	207.3	207.5	31.8	76.2	45.0	100.0	99.8	24.4	110.2		
Link Distance (m)	196.3	196.3		79.5	79.5	65.7	65.7			103.5		
Upstream Blk Time (%)	94	80		0	34	59				76		
Queuing Penalty (veh)	0	0		1	0	0				333		
Storage Bay Dist (m)	20.0			20.0			15.0					
Storage Blk Time (%)	0	91		30	4		94		6			
Queuing Penalty (veh)	0	56		90	9		137		18			

Queuing and Blocking Report

Total 2037
PM Peak Hour

Intersection: 104: Trafalgar Rd & Cornwall Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	TR	TR	TR
	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L	TR	L
Directions Served															
Maximum Queue (m)	83.7	87.5	280.5	272.8	87.3	133.0	137.1	32.3	300.1	292.9	78.4	104.4			
Average Queue (m)	82.6	87.3	270.5	250.2	24.8	121.0	128.3	32.1	288.9	267.4	51.6	62.3			
95th Queue (m)	85.8	87.7	276.4	325.0	74.4	141.8	133.6	33.5	314.0	373.1	90.7	118.4			
Link Distance (m)	264.0	264.0		122.1	122.1		286.8	286.8		101.5	101.5				
Upstream Blk Time (%)	95	12		28	60		89	28		10					
Queuing Penalty (veh)	0	0		0	0		0	0		68					
Storage Bay Dist (m)	80.0	80.0		80.0			25.0								
Storage Blk Time (%)	37	81		3	0	49	95	4		3					
Queuing Penalty (veh)	150	327		18	0	27	269	7		53					

Intersection: 104: Trafalgar Rd & Cornwall Rd

Movement	SB	SB	B34	B34	T	T
	T	R	T	T	T	T
Directions Served						
Maximum Queue (m)	60.8	34.3	25.5	7.6		
Average Queue (m)	32.3	11.6	3.4	0.3		
95th Queue (m)	56.5	25.5	24.1	5.4		
Link Distance (m)	101.5	101.5	128.0	128.0		
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 105: Trafalgar Rd & QEW EB-Off Ramp

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB	SB	TR	TR
	L	R	T	T	T	T	L	TR	L	TR	L	TR
Directions Served												
Maximum Queue (m)	176.9	185.9	188.2	34.7	41.0	38.0	318.7	319.5	314.8			
Average Queue (m)	73.6	172.6	181.5	26.8	30.0	28.6	300.9	308.3	306.0			
95th Queue (m)	169.6	226.6	184.8	33.5	37.6	33.1	332.7	316.6	311.3			
Link Distance (m)	176.9	176.9	176.9	27.8	27.8	27.8	300.4	300.4	300.4			
Upstream Blk Time (%)	0	51	93	25	34	35	26	50	66			
Queuing Penalty (veh)	0	0	0	256	351	361	246	481	637			
Storage Bay Dist (m)												
Storage Blk Time (%)												
Queuing Penalty (veh)												

Queuing and Blocking Report

Total 2037
PM Peak Hour

Intersection: 106: Trafalgar Rd & North Service Rd/QEW WB Off-Ramp

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB	SB	SB	SB
	L	R	L	LT	R	T	T	T	T	T	T	R
Directions Served												
Maximum Queue (m)	57.4	135.6	184.5	187.8	182.7	80.6	98.6	94.3	268.9	269.3	267.6	263.3
Average Queue (m)	20.0	118.9	159.3	177.2	132.1	46.9	57.2	55.5	260.1	260.3	259.3	256.0
95th Queue (m)	63.0	151.0	227.6	184.3	256.9	73.0	86.4	82.0	265.5	265.3	263.8	263.7
Link Distance (m)	119.7	173.2	173.2	173.2	173.2	300.4	300.4	300.4	254.7	254.7	254.7	254.7
Upstream Blk Time (%)	85	55	96	49	0	0	0	0	82	98	99	82
Queuing Penalty (veh)	0	0	0	0	0	0	0	0	0	0	0	0
Storage Bay Dist (m)	50.0											
Storage Blk Time (%)	0	93										
Queuing Penalty (veh)	0	24										

Intersection: 203: Argus Rd & South Service Rd

Movement	EB	WB	SB
	LT	TR	LR
Directions Served			
Maximum Queue (m)	30.4	108.2	46.3
Average Queue (m)	7.6	32.4	22.2
95th Queue (m)	28.7	112.5	47.9
Link Distance (m)	108.5	112.4	43.0
Upstream Blk Time (%)	9	22	0
Queuing Penalty (veh)	77	0	0
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 204: Trafalgar Rd & Argus Rd

Movement	EB	NB	NB	SB	SB	SB	SB	SB	SB
	R	T	T	T	T	TR	T	TR	TR
Directions Served									
Maximum Queue (m)	115.8	52.8	57.1	60.0	46.5	43.3	47.6	47.6	47.6
Average Queue (m)	89.9	18.0	24.0	29.0	15.4	27.1	34.9	34.9	34.9
95th Queue (m)	138.4	44.4	49.7	55.0	39.1	39.5	44.3	44.3	44.3
Link Distance (m)	112.4	239.0	239.0	239.0	27.8	27.8	27.8	27.8	27.8
Upstream Blk Time (%)	24				4	12	48	48	48
Queuing Penalty (veh)	44				36	112	454	454	454
Storage Bay Dist (m)									
Storage Blk Time (%)									
Queuing Penalty (veh)									

Queuing and Blocking Report

Total 2037
PM Peak Hour

Intersection: 207: Argus Rd & East-West Local Rd

Movement	SB	B14
	TR	T
Directions Served		
Maximum Queue (m)	64.1	59.4
Average Queue (m)	55.9	44.1
95th Queue (m)	76.2	68.0
Link Distance (m)	36.5	36.6
Upstream Blk Time (%)	85	73
Queuing Penalty (veh)	485	426
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 302: Cross Ave & East Driveway Access

Movement	EB	WB	SB
	LT	TR	LR
Directions Served			
Maximum Queue (m)	92.8	103.8	5.6
Average Queue (m)	83.9	66.4	0.2
95th Queue (m)	88.8	124.9	2.5
Link Distance (m)	79.5	79.5	96.2
Upstream Blk Time (%)	60	27	95
Queuing Penalty (veh)	533	238	0
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 303: North Driveway & Argus Rd

Movement	EB	WB	NB	LR
	TR	LT	LR	LR
Directions Served				
Maximum Queue (m)	32.7	112.0	57.2	57.2
Average Queue (m)	3.3	70.1	44.9	44.9
95th Queue (m)	17.6	134.7	63.7	63.7
Link Distance (m)	36.6	108.5	45.8	45.8
Upstream Blk Time (%)	0	21	87	87
Queuing Penalty (veh)	1	127	0	0
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 9162

Appendix I

Sensitivity Test Synchro Analysis

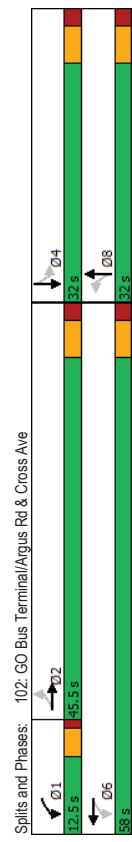


Lanes, Volumes, Timings
102: GO Bus Terminal/Argus Rd & Cross Ave

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	52	928	82	212	965	69	95	0	240	441	22
Future Volume (vph)	52	928	82	212	965	69	95	0	240	441	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	3.6	3.6	3.3	3.6	3.6	3.3	3.6	3.6	3.3	3.6
Storage Length (m)	20.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	15.0	0.0	0.0
Storage Lanes	1	0	1	0	1	0	1	0	1	0	1
Taper Length (m)	7.5	0.95	0.95	7.5	0.95	0.95	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	0.96	0.96	0.99	0.99	0.879
Ped Bike Factor	1.00	1.00	0.984	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989
Flt Protected	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Satd. Flow (prot)	1570	2861	0	818	3167	0	805	734	0	1570	1259
Flt Permitted	0.224	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095
Satd. Flow (perm)	370	2861	0	82	3167	0	486	734	0	566	1259
Right Turn on Red	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Satd. Flow (RTOR)	19	50	50	16	50	50	169	50	50	180.7	96
Link Speed (k/h)	207.1	92.7	92.7	180.7	92.7	92.7	180.7	92.7	92.7	180.7	92.7
Link Distance (m)	14.9	6.7	6.7	14.9	6.7	6.7	5.9	5.9	20	20	13.0
Confli. Peds. (#/hr)	3	3	3	3	3	3	3	3	3	3	3
Peak Hour Factor	0.52	0.87	0.65	0.84	0.88	0.79	0.53	0.25	0.70	0.78	0.62
Heavy Vehicles (%)	0%	1%	100%	92%	1%	5%	95%	0%	91%	0%	93%
Adj. Flow (vph)	100	1067	126	252	1097	87	179	0	343	565	35
Shared Lane Traffic (%)	100	1193	0	252	1184	0	179	343	0	585	182
Lane Group Flow (vph)	No	No	No	No	No	No	No	No	No	No	No
Enter Blocked Intersection	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right
Lane Alignment	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
Median Width(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Link Offset(m)	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Crosswalk Width(m)	1.19	1.14	1.14	1.19	1.14	1.14	1.19	1.14	1.14	1.19	1.14
Two way Left Turn Lane	24	14	14	24	14	14	24	14	14	24	14
Headway Factor	1	2	2	1	2	2	1	2	2	1	2
Turning Speed (k/h)	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left
Number of Detectors	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0
Detector Template	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0
Detector 1 Size(m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0
Detector 1 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 1 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4	0.6	9.4	0.6	9.4	0.6	9.4	0.6	9.4	0.6	9.4
Detector 2 Size(m)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Detector 2 Type	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex	Ch+Ex
Detector 2 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Lanes, Volumes, Timings
102: GO Bus Terminal/Argus Rd & Cross Ave

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA	NA
Protected Phases	2	1	6	6	8	8	4	4	4	4	4
Permitted Phases	2	2	2	1	6	8	8	8	8	4	4
Switch Phase	22.0	22.0	8.0	22.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Initial (s)	45.0	45.0	12.5	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0
Minimum Split (s)	45.5	45.5	12.5	58.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0
Total Split (%)	50.6%	50.6%	13.9%	64.4%	35.6%	35.6%	35.6%	35.6%	35.6%	35.6%	35.6%
Maximum Green (s)	39.5	39.5	8.5	52.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	5.0	5.0	2.5	5.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Recall Mode	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0
Act Effct Green (s)	41.3	41.3	53.8	53.8	28.0	28.0	28.0	28.0	28.0	28.0	28.0
Actuated g/C Ratio	0.46	0.46	0.60	0.60	0.31	0.31	0.31	0.31	0.31	0.31	0.31
v/c Ratio	0.69	0.90	2.14	0.62	1.19	1.00	1.00	1.00	1.00	3.21	0.40
Control Delay	35.4	32.9	555.7	13.1	163.1	66.3	66.3	66.3	66.3	1023.5	14.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.4	32.9	555.7	13.1	163.1	66.3	66.3	66.3	66.3	1023.5	14.7
LOS	D	C	F	B	F	E	F	E	F	F	B
Approach Delay	33.0	33.0	108.3	108.3	99.5	99.5	99.5	99.5	99.5	777.7	F
Approach LOS	C	C	F	F	F	F	F	F	F	F	F
Intersection Summary											
Area Type:	CBD										
Cycle Length:	90										
Actuated Cycle Length:	89.8										
Natural Cycle:	120										
Control Type:	Semi Act-Uncoordinated										
Maximum v/c Ratio:	3.21										
Intersection Signal Delay:	207.9										
Intersection LOS:	F										
Intersection Capacity Utilization:	109.7%										
ICU Level of Service H											
Analysis Period (min)	15										



Queues
102: GO Bus Terminal/Argus Rd & Cross Ave

Total 2037 Sensitivity
AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	100	1193	252	1184	179	343	565	182
v/c Ratio	0.59	0.90	2.14	0.62	1.19	1.00	3.21	0.40
Control Delay	35.4	32.9	555.7	13.1	163.1	66.3	1023.5	14.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.4	32.9	555.7	13.1	163.1	66.3	1023.5	14.7
Queue Length 50th (m)	13.0	99.8	-66.6	65.4	-39.6	36.4	-182.4	11.5
Queue Length 95th (m)	14.0	#129.2	#104.9	82.2	#35.7	0.0	#182.2	14.1
Internal Link Dist (m)	183.1		68.7		57.9		156.7	
Turn Bay Length (m)	20.0		20.0		15.0		15.0	
Base Capacity (vph)	170	1331	118	1909	151	344	176	458
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	0.59	0.90	2.14	0.62	1.19	1.00	3.21	0.40
Intersection Summary								
~ Volume exceeds capacity, queue is theoretically infinite.								
Queue shown is maximum after two cycles.								
# 95th percentile volume exceeds capacity, queue may be longer.								
Queue shown is maximum after two cycles.								

HCM Signalized Intersection Capacity Analysis
102: GO Bus Terminal/Argus Rd & Cross Ave

Total 2037 Sensitivity
AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Movement	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Traffic Volume (vph)	52	928	82	212	965	69	95	0
Future Volume (vph)	52	928	82	212	965	69	95	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.6	3.6	3.3	3.6	3.3	3.6	3.3
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00
Frt	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Flt Protected	1570	2861	818	3167	803	734	1563	1259
Flt Permitted	0.22	1.00	0.09	1.00	0.57	1.00	0.35	1.00
Satd. Flow (perm)	370	2861	81	3167	486	734	565	1259
Peak-hour factor, PHF	0.52	0.87	0.65	0.84	0.88	0.79	0.53	0.25
Adj. Flow (vph)	100	1067	126	252	1097	87	179	0
RTOR Reduction (vph)	0	10	0	0	6	0	116	0
Lane Group Flow (vph)	100	1183	0	252	1178	0	179	227
Conf. Peds. (#/hr)	1	3	3	3	1	3	20	20
Heavy Vehicles (%)	0%	1%	100%	92%	1%	5%	95%	0%
Turn Type	Perm	NA	pm-pt	NA	Perm	NA	Perm	NA
Protected Phases	2	6	6	6	8	8	4	4
Permitted Phases	2	39.3	51.8	51.8	26.0	26.0	26.0	26.0
Actuated Green, G (s)	41.3	41.3	51.8	53.8	28.0	28.0	28.0	28.0
Effective Green, g (s)	0.46	0.46	0.58	0.60	0.31	0.31	0.31	0.31
Actuated g/C Ratio	6.0	6.0	4.0	6.0	6.0	6.0	6.0	6.0
Clearance Time (s)	5.0	5.0	2.5	5.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	170	1315	116	1897	151	228	176	392
Lane Grp Cap (vph)	0.41	c0.20	0.37	c1.04	0.37	c1.00	0.09	c1.00
v/s Ratio Prot	0.27	0.59	0.90	2.17	0.62	1.19	0.99	0.30
v/c Ratio	18.0	22.3	23.4	11.5	30.9	30.8	30.9	23.4
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Progression Factor	7.8	9.1	554.9	0.9	131.7	57.7	1009.2	0.6
Incremental Delay, d2	25.8	31.4	578.3	12.4	182.6	88.6	1040.1	24.0
Delay (s)	C	C	F	B	F	F	F	C
Level of Service	C	C	F	B	F	F	F	C
Approach Delay (s)	31.0	C	111.7	F	114.0	F	792.6	F
Approach LOS	C	C	F	F	F	F	F	F
Intersection Summary								
HCM 2000 Control Delay	213.1		HCM 2000 Level of Service		F			
HCM 2000 Volume to Capacity ratio	2.56							
Actuated Cycle Length (s)	69.8		Sum of lost time (s)		12.0			
Intersection Capacity Utilization	109.7%		ICU Level of Service		H			
Analysis Period (min)	15							
c Critical Lane Group								

Lanes, Volumes, Timings
203: Argus Rd & South Service Rd

HCM Unsignalized Intersection Capacity Analysis
203: Argus Rd & South Service Rd

Total 2037 Sensitivity
AM Peak Hour

Total 2037 Sensitivity
AM Peak Hour

EBL	EBT	WBT	WBR	SBL	SBR
↖	→	←	↗	↖	↗
EBL	EBT	WBT	WBR	SBL	SBR
0	101	835	268	0	4
0	101	835	268	0	4
1900	1900	1900	1900	1900	1900
1.00	1.00	1.00	1.00	1.00	1.00
0.963					0.865
0	1710	1612	0	0	1479
0	1710	1612	0	0	1479
50	50			50	
116.7	145.7			51.8	
8.4	10.5			3.7	
1		1	5	1	
0.25	0.42	0.86	0.72	0.25	0.25
100%	0%	3%	0%	0%	0%
0	240	971	372	0	16
0	240	1343	0	0	16
No	No	No	No	No	No
Left	Left	Right	Left	Right	Right
0.0	0.0	0.0	0.0	0.0	0.0
4.8	4.8			4.8	
1.14	1.14	1.14	1.14	1.14	1.14
24		14	24	14	
Free	Free	Free	Stop	Stop	
Intersection Summary					
Area Type: CBD					
Control Type: Unsignalized					
Intersection Capacity Utilization 77.3%					
ICU Level of Service D					
Analysis Period (min) 15					

EBL	EBT	WBT	WBR	SBL	SBR
↖	→	←	↗	↖	↗
EBL	EBT	WBT	WBR	SBL	SBR
0	101	835	268	0	4
0	101	835	268	0	4
Free	Free	Free	Stop	Stop	Stop
0%	0%	0%	0%	0%	0%
0.25	0.42	0.86	0.72	0.25	0.25
0	240	971	372	0	16
1	5			1	
3.6	3.6			3.6	
1.2	1.2			1.2	
0	0			0	
None	None			None	
None	None			None	
358					
1344				1403	1159
1344				1403	1159
5.1				6.4	6.2
3.1				3.5	3.3
100				100	93
292				155	240
EB 1	WB 1	SB 1			
240	1343	16			
0	0	0			
0	372	16			
1700	1700	240			
0.14	0.79	0.07			
0.0	0.0	1.7			
0.0	0.0	21.1			
0.0	0.0	21.1			
0.0	0.0	21.1			
Intersection Summary					
Average Delay 0.2					
Intersection Capacity Utilization 77.3%					
ICU Level of Service D					
Analysis Period (min) 15					

Lanes, Volumes, Timings
 302: Cross Ave & East Driveway Access

HCM Unsignalized Intersection Capacity Analysis
 302: Cross Ave & East Driveway Access

Total 2037 Sensitivity
 AM Peak Hour

	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group						
Lane Configurations	↔↔	↔↔	↔↔	↔↔	↔↔	↔↔
Traffic Volume (vph)	0	1761	1264	43	0	5
Future Volume (vph)	0	1761	1264	43	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt		0.985				0.865
Flt/Protected						
Satd. Flow (prot)	0	3185	3169	0	0	1450
Flt/Permitted						
Satd. Flow (perm)	0	3185	3169	0	0	1450
Link Speed (k/h)		50	50		50	
Link Distance (m)		92.7	130.9		41.6	
Travel Time (s)		6.7	9.4		3.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1914	1374	47	0	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1914	1421	0	0	5
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Right	Left	Right
Median Width(m)		3.3	3.3		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25	Free	Free	Free	Free	15
Sign Control		Free	Free	Free	Free	Stop
Intersection Summary						
Area Type:	CBD					
Control Type:	Unsignalized					
Intersection Capacity Utilization	57.4%					
Analysis Period (min)	15					
	ICU Level of Service B					

	EBL	EBT	WBT	WBR	SBL	SBR
Movement						
Lane Configurations	↔↔	↔↔	↔↔	↔↔	↔↔	↔↔
Traffic Volume (veh/h)	0	1761	1264	43	0	5
Future Volume (Veh/h)	0	1761	1264	43	0	5
Sign Control	Free	Free	Free	Free	Stop	Stop
Grade	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1914	1374	47	0	5
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)		None	None	None		
Median type		None	None	None		
Median storage (veh)		93	131			
Upstream signal (m)						
pX, platoon unblocked					0.64	
vC, conflicting volume	1421				2354	710
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1421				1998	710
iC, single (s)	4.1				6.8	6.9
iC, 2 stage (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
CM capacity (veh/h)	475				34	376
Direction_Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 1
Volume Total	957	957	916	505	5	5
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	47	5	5
vSH	1700	1700	1700	1700	376	376
Volume to Capacity	0.56	0.56	0.54	0.30	0.01	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.3	0.3
Control Delay (s)	0.0	0.0	0.0	0.0	14.7	14.7
Lane LOS					B	B
Approach Delay (s)	0.0	0.0	0.0	14.7		
Approach LOS				B		
Intersection Summary						
Average Delay	0.0					
Intersection Capacity Utilization	57.4%					
ICU Level of Service	B					
Analysis Period (min)	15					

Lanes, Volumes, Timings
303: North Driveway & Argus Rd

HCM Unsignalized Intersection Capacity Analysis
303: North Driveway & Argus Rd

Total 2037 Sensitivity
AM Peak Hour

Total 2037 Sensitivity
AM Peak Hour

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	EB	EB	WB	WB	NB	NB
Traffic Volume (veh/h)	32	23	49	790	325	70
Future Volume (veh/h)	32	23	49	790	325	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr	0.944			0.976		
Flt Protected				0.997	0.960	
Satd. Flow (prot)	1758	0	0	1857	1745	0
Flt Permitted				0.997	0.960	
Satd. Flow (perm)	1758	0	0	1857	1745	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	61.0			116.7	66.7	
Travel Time (s)	4.4			8.4	4.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	35	25	53	859	353	76
Shared Lane Traffic (%)						
Lane Group Flow (vph)	60	0	0	912	429	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width (m)	0.0			0.0	3.6	
Link Offset (m)	0.0			0.0	0.0	
Crosswalk Width (m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	79.9%					
Analysis Period (min)	15					
ICU Level of Service	D					

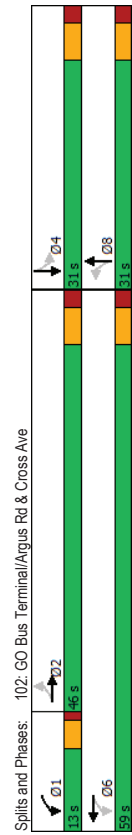
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	EB	EB	WB	WB	NB	NB
Traffic Volume (veh/h)	32	23	49	790	325	70
Future Volume (veh/h)	32	23	49	790	325	70
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	35	25	53	859	353	76
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)				None		
Median type				None		
Median storage (veh)						
Upstream signal (m)	242					
pX, platoon unblocked						
vC, conflicting volume			60		1012	48
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			60		1012	48
iC, single (s)			4.1		6.4	6.2
iC, 2 stage (s)						
p0 queue free %			2.2		3.5	3.3
qM capacity (veh/h)			1544		256	1022
Direction_Lane #	EB 1	WB 1	NB 1			
Volume Total	60	912	429			
Volume Left	0	53	353			
Volume Right	25	0	76			
cSH	1700	1544	295			
Volume to Capacity	0.04	0.03	1.45			
Queue Length 95th (m)	0.0	0.9	188.6			
Control Delay (s)	0.0	0.9	255.2			
Lane LOS	A	F	F			
Approach Delay (s)	0.0	0.9	255.2			
Approach LOS	F	F	F			
Intersection Summary						
Average Delay			78.7			
Intersection Capacity Utilization			79.9%			
ICU Level of Service			D			
Analysis Period (min)			15			

Lanes, Volumes, Timings
102: GO Bus Terminal/Argus Rd & Cross Ave

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR	Sensitivity
Lane Configurations	87	1327	72	198	611	167	167	167	3	166	355	26
Traffic Volume (vph)	87	1327	72	198	611	167	167	167	3	166	355	26
Future Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	3.3	3.6	3.6	3.3	3.6	3.6	3.6	3.6	3.6	3.3	3.6	3.6
Lane Width (m)	20.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	15.0	0.0	0.0
Storage Length (m)	1	0	1	0	1	0	1	0	1	0	1	0
Taper Length (m)	7.5	0.95	7.5	0.95	7.5	0.95	7.5	0.95	7.5	0.95	7.5	0.95
Lane Util. Factor	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00	0.99	0.99	1.00	0.97	1.00	0.97	0.99	0.99	0.99	0.99
Frt	0.990			0.965			0.857				0.886	
Flt Protected	0.950		0.950		0.950		0.950		0.950		0.950	
Satd. Flow (prot)	1570	2981	0	818	3060	0	805	759	0	1570	1225	0
Flt Permitted	0.315		0.091		0.578		0.468		0.468		0.468	
Satd. Flow (perm)	520	2981	0	78	3060	0	489	759	0	762	1225	0
Right Turn on Red	Yes		Yes		Yes		Yes		Yes		Yes	
Satd. Flow (RTOR)	11		82		82		149		149		134	
Link Speed (k/h)	50		50		50		50		50		50	
Link Distance (m)	207.1		100.7		100.7		81.9		81.9		180.7	
Travel Time (s)	14.9		7.3		7.3		5.9		5.9		13.0	
Confl. Peds. (#/hr)	3		3		3		3		3		20	
Peak Hour Factor	0.52	0.87	0.65	0.84	0.88	0.79	0.53	0.25	0.70	0.78	0.62	0.89
Heavy Vehicles (%)	0%	1%	100%	92%	1%	5%	95%	0%	91%	0%	93%	0%
Adj. Flow (vph)	167	1525	111	236	694	211	315	12	237	455	42	134
Shared Lane Traffic (%)												
Lane Group Flow (vph)	167	1636	0	236	905	0	315	249	0	455	176	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width(m)	3.3		3.3		3.3		3.3		3.3		3.3	
Link Offset(m)	0.0		0.0		0.0		0.0		0.0		0.0	
Crosswalk Width(m)	4.8		4.8		4.8		4.8		4.8		4.8	
Two way Left Turn Lane												
Headway Factor	1.19	1.14	1.14	1.19	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	24	14	24	14	24	14	24	14	24	14	24	14
Number of Detectors	1	2	1	2	1	2	1	2	1	2	1	2
Detector Template	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru	Left	Thru
Leading Detector (m)	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0	2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6	2.0	0.6
Detector 1 Type	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex	C+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4		9.4		9.4		9.4		9.4		9.4	
Detector 2 Size(m)	0.6		0.6		0.6		0.6		0.6		0.6	
Detector 2 Type	C+Ex		C+Ex		C+Ex		C+Ex		C+Ex		C+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings
102: GO Bus Terminal/Argus Rd & Cross Ave

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR	Sensitivity
Detector 2 Extend (s)	0.0		0.0		0.0		0.0		0.0		0.0	0.0
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	2	1	6		6		8		8		4	4
Permitted Phases	2	2	2	6	1	6	8	8	8	4	4	4
Detector Phase	2	2	2	1	6	8	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	22.0	22.0	8.0	22.0	10.0	22.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	45.0	45.0	12.5	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0
Total Split (s)	46.0	46.0	13.0	59.0	31.0	59.0	31.0	31.0	31.0	31.0	31.0	31.0
Total Split (%)	51.1%	51.1%	14.4%	65.6%	34.4%	65.6%	34.4%	34.4%	34.4%	34.4%	34.4%	34.4%
Maximum Green (s)	40.0	40.0	9.0	53.0	25.0	53.0	25.0	25.0	25.0	25.0	25.0	25.0
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead									
Lead-Lag Optimize?	Yes	Yes	Yes									
Vehicle Extension (s)	5.0	5.0	2.5	5.0	4.0	5.0	4.0	4.0	4.0	4.0	4.0	4.0
Recall Mode	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Act Effct Green (s)	42.0	42.0	55.0	55.0	27.0	55.0	27.0	27.0	27.0	27.0	27.0	27.0
Actuated g/C Ratio	0.47	0.47	0.61	0.61	0.30	0.61	0.30	0.30	0.30	0.30	0.30	0.30
v/c Ratio	0.69	1.17	1.95	0.48	2.16	0.75	2.16	0.75	2.00	0.38	2.00	0.38
Control Delay	36.8	110.0	476.6	9.6	564.6	27.8	486.2	10.2	486.2	10.2	486.2	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.8	110.0	476.6	9.6	564.6	27.8	486.2	10.2	486.2	10.2	486.2	10.2
LOS	D	F	F	A	F	C	F	C	F	B	F	B
Approach Delay	103.2		106.2		327.6		327.6		327.6		353.4	
Approach LOS	F		F		F		F		F		F	
Intersection Summary												
Area Type:	CBD											
Cycle Length:	90											
Actuated Cycle Length:	90											
Natural Cycle:	100											
Control Type:	Semi Act-Uncoordinated											
Maximum v/c Ratio:	2.16											
Intersection Signal Delay:	172.8											
Intersection LOS:	F											
Intersection Capacity Utilization:	106.9%											
ICU Level of Service G												
Analysis Period (min)	15											



Queues
102: GO Bus Terminal/Argus Rd & Cross Ave

Total 2037 Sensitivity
PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group	167	1636	236	905	315	249	455	176
Lane Group Flow (vph)	0.69	1.17	1.95	0.48	2.16	0.75	2.00	0.38
v/c Ratio	36.8	110.0	476.6	9.6	564.6	27.8	486.2	10.2
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	36.8	110.0	476.6	9.6	564.6	27.8	486.2	10.2
Total Delay	23.0	~189.2	~60.0	38.8	~92.4	15.9	~130.3	5.5
Queue Length 50th (m)	21.0	#220.8	#98.0	50.8	#73.3	0.0	#158.2	8.1
Queue Length 95th (m)	183.1		76.7		57.9		156.7	
Internal Link Dist (m)	20.0		20.0		150		15.0	
Turn Bay Length (m)	242	1397	121	1901	146	332	228	461
Base Capacity (vph)	0	0	0	0	0	0	0	0
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	0.69	1.17	1.95	0.48	2.16	0.75	2.00	0.38
Intersection Summary								
~	Volume exceeds capacity, queue is theoretically infinite.							
	Queue shown is maximum after two cycles.							
#	95th percentile volume exceeds capacity, queue may be longer.							
	Queue shown is maximum after two cycles.							

HCM Signalized Intersection Capacity Analysis
102: GO Bus Terminal/Argus Rd & Cross Ave

Total 2037 Sensitivity
PM Peak Hour

Movement	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	87	1327	72	198	611	167	167	3	166
Traffic Volume (vph)	87	1327	72	198	611	167	167	3	166
Future Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	3.3	3.6	3.6	3.3	3.6	3.3	3.6	3.6	3.6
Lane Width	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	1.00	0.95	1.00	0.95	1.00	0.97	1.00	0.99	1.00
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frbp. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Flt Protected	1569	2980	818	3060	803	759	1548	1225	1225
Satd. Flow (prot)	0.31	1.00	0.09	1.00	0.58	1.00	0.47	1.00	1.00
Flt Permitted	520	2980	78	3060	489	759	762	1225	1225
Satd. Flow (perm)	0.52	0.87	0.65	0.84	0.88	0.79	0.53	0.25	0.70
Peak-hour factor, PHF	167	1525	111	236	694	211	315	12	237
Adj. Flow (vph)	0	6	0	0	32	0	104	0	94
RTOR Reduction (vph)	167	1630	0	236	873	0	315	145	0
Lane Group Flow (vph)	1	3	3	1	3	1	3	20	20
Conf. Peds. (#/hr)	0%	1%	100%	92%	1%	5%	95%	0%	91%
Heavy Vehicles (%)	Perm	NA	NA	pm-pt	NA	Perm	NA	Perm	NA
Turn Type	2	6	6	6	8	8	8	8	4
Protected Phases	40.0	40.0	53.0	53.0	25.0	25.0	25.0	25.0	25.0
Permitted Phases	42.0	42.0	53.0	55.0	27.0	27.0	27.0	27.0	27.0
Actuated Green, G (s)	0.47	0.47	0.59	0.61	0.30	0.30	0.30	0.30	0.30
Effective Green, g (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Actuated g/C Ratio	5.0	5.0	2.5	5.0	4.0	4.0	4.0	4.0	4.0
Clearance Time (s)	242	1390	119	1870	146	227	228	367	367
Vehicle Extension (s)	0.55	0.20	0.29	0.29	0.64	0.19	0.60	0.07	0.07
Lane Grp Cap (vph)	0.69	1.17	1.98	0.47	2.16	0.64	2.00	0.22	0.22
v/s Ratio Prot	18.9	24.0	26.5	9.5	31.5	27.3	31.5	23.6	23.6
v/s Ratio Perm	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay, d1	10.3	85.7	471.1	0.4	542.9	6.5	463.3	0.4	463.3
Progression Factor	29.2	109.7	497.6	9.9	574.4	33.7	494.8	24.1	24.1
Incremental Delay, d2	C	F	F	A	F	C	F	C	C
Delay (s)	F	F	F	F	F	F	F	F	F
Level of Service	F	F	F	F	F	F	F	F	F
Approach Delay (s)	102.3		110.8		335.7		363.5		363.5
Approach LOS	F		F		F		F		F
Intersection Summary									
HCM 2000 Control Delay	176.2								
HCM 2000 Volume to Capacity ratio	2.05								
Actuated Cycle Length (s)	90.0								
Intersection Capacity Utilization	106.9%								
Analysis Period (min)	15								
c. Critical Lane Group									

Lanes, Volumes, Timings
203: Argus Rd & South Service Rd

HCM Unsignalized Intersection Capacity Analysis
203: Argus Rd & South Service Rd

Total 2037 Sensitivity
PM Peak Hour

Total 2037 Sensitivity
PM Peak Hour

EBL	EBT	WBT	WBR	SBL	SBR
↖	→	←	↗	↖	↗
EBL	EBT	WBT	WBR	SBL	SBR
0	119	601	289	0	19
0	119	601	289	0	19
1900	1900	1900	1900	1900	1900
1.00	1.00	1.00	1.00	1.00	1.00
		0.951			0.865
0	1710	1596	0	0	1479
0	1710	1596	0	0	1479
50	50			50	
122.3	145.7			51.8	
8.8	10.5			3.7	
1		1	5	1	
0.25	0.42	0.86	0.72	0.25	0.25
100%	0%	3%	0%	0%	0%
0	283	699	401	0	76
0	283	1100	0	0	76
No	No	No	No	No	No
Left	Left	Right	Left	Right	Right
0.0	0.0	0.0	0.0	0.0	0.0
4.8	4.8			4.8	
1.14	1.14	1.14	1.14	1.14	1.14
24		14	24	14	
Free	Free	Free	Free	Stop	Stop
Intersection Summary					
Area Type: CBD					
Control Type: Unsignalized					
Intersection Capacity Utilization 65.1%					
ICU Level of Service C					
Analysis Period (min) 15					

EBL	EBT	WBT	WBR	SBL	SBR
↖	→	←	↗	↖	↗
EBL	EBT	WBT	WBR	SBL	SBR
0	119	601	289	0	19
0	119	601	289	0	19
Free	Free	Free	Free	Stop	Stop
0%	0%	0%	0%	0%	0%
0.25	0.42	0.86	0.72	0.25	0.25
0	283	699	401	0	76
1	5			1	
3.6	3.6			3.6	
1.2	1.2			1.2	
0	0			0	
None	None			None	
358					
1101				1188	902
1101				1188	902
5.1				6.4	6.2
3.1				3.5	3.3
100				100	78
377				209	339
EB 1	WB 1	SB 1			
283	1100	76			
0	0	0			
0	401	76			
1700	1700	339			
0.17	0.65	0.22			
0.0	0.0	6.8			
0.0	0.0	18.7			
C					
0.0	0.0	18.7			
C					
Intersection Summary					
Average Delay 1.0					
Intersection Capacity Utilization 65.1%					
ICU Level of Service C					
Analysis Period (min) 15					

Lanes, Volumes, Timings
302: Cross Ave & East Driveway Access

HCM Unsignalized Intersection Capacity Analysis
302: Cross Ave & East Driveway Access

Total 2037 Sensitivity
PM Peak Hour

Total 2037 Sensitivity
PM Peak Hour

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔↔	↔↔	↔↔	↔↔	↔↔	↔↔
Traffic Volume (veh/h)	0	2067	1261	105	0	23
Future Volume (Veh/h)	0	2067	1261	105	0	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Fr		0.988				0.865
Flt Protected						
Satd. Flow (prot)	0	3185	3147	0	0	1450
Flt Permitted						
Satd. Flow (perm)	0	3185	3147	0	0	1450
Link Speed (k/h)		50	50			50
Link Distance (m)		100.7	122.6			66.8
Travel Time (s)		7.3	8.8			4.8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2247	1371	114	0	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	2247	1485	0	0	25
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Right	Left	Right
Median Width(m)		3.3	3.3			0.0
Link Offset(m)		0.0	0.0			0.0
Crosswalk Width(m)		4.8	4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (k/h)	25	Free	Free	Free	25	15
Sign Control		Free	Free	Free	Stop	Stop
Intersection Summary						
Area Type:	CBD					
Control Type:	Unsignalized					
Intersection Capacity Utilization	66.8%					
Analysis Period (min)	15					
ICU Level of Service	C					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔↔	↔↔	↔↔	↔↔	↔↔	↔↔
Traffic Volume (veh/h)	0	2067	1261	105	0	23
Future Volume (Veh/h)	0	2067	1261	105	0	23
Sign Control	Free	Free	Free	Free	Stop	Stop
Grade		0%	0%		0%	0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2247	1371	114	0	25
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)			None	None		
Median type			None	None		
Median storage (veh)			101	123		
Upstream signal (m)						
pX, platoon unblocked						0.55
vC, conflicting volume	1485				2552	742
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1485				2187	742
iC, single (s)	4.1				6.8	6.9
iC, 2 stage (s)	2.2				3.5	3.3
p0 queue free %	100				100	93
qM capacity (veh/h)	449				21	358
Direction_Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 1
Volume Total	1124	1124	914	571	25	25
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	114	25	25
vSH	1700	1700	1700	1700	358	358
Volume to Capacity	0.66	0.66	0.54	0.34	0.07	0.07
Queue Length 95th (m)	0.0	0.0	0.0	0.0	1.8	1.8
Control Delay (s)	0.0	0.0	0.0	0.0	15.8	15.8
Lane LOS					C	C
Approach Delay (s)	0.0	0.0	0.0	0.0	15.8	15.8
Approach LOS					C	C
Intersection Summary						
Average Delay	0.1					
Intersection Capacity Utilization	66.8%					
ICU Level of Service	C					
Analysis Period (min)	15					

Lanes, Volumes, Timings
303: North Driveway & Argus Rd

HCM Unsignalized Intersection Capacity Analysis
303: North Driveway & Argus Rd

Total 2037 Sensitivity
PM Peak Hour

Total 2037 Sensitivity
PM Peak Hour

Area Type:	EBT	EBR	WBL	WBT	NBL	NBR
Other:						
Control Type: Unsignalized						
Intersection Capacity Utilization	64.9%					
Analysis Period (min)	15					
ICU Level of Service	C					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	106	98	126	494	159	26
Traffic Volume (veh/h)	106	98	126	494	159	26
Future Volume (Veh/h)	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	1.00	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor	0.935					
Flt Protected				0.990	0.959	
Satd. Flow (prot)	1742	0	0	1844	1752	0
Flt Permitted				0.990	0.959	
Satd. Flow (perm)	1742	0	0	1844	1752	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	55.4			122.3	54.4	
Travel Time (s)	4.0			8.8	3.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	115	107	137	537	173	28
Shared Lane Traffic (%)						
Lane Group Flow (vph)	222	0	0	674	201	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	15			25	25	15
Sign Control	Free			Free	Stop	

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	106	98	126	494	159	26
Traffic Volume (veh/h)	106	98	126	494	159	26
Future Volume (Veh/h)	106	98	126	494	159	26
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	115	107	137	537	173	28
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)	None			None		
Median type						
Median storage (veh)						
Upstream signal (m)	236					
pX platoon unblocked						
vC, conflicting volume		222		980	168	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		222		980	168	
iC, single (s)		4.1		6.4	6.2	
iC, 2 stage (s)						
p0 queue free %		2.2		3.5	3.3	
qM capacity (veh/h)		90		31	97	
qM capacity (veh/h)		1347		249	876	
Direction_Lane #	EB 1	WB 1	NB 1			
Volume Total	222	674	201			
Volume Left	0	137	173			
Volume Right	107	0	28			
ESH	1700	1347	277			
Volume to Capacity	0.13	0.10	0.73			
Queue Length 95th (m)	0.0	2.7	41.3			
Control Delay (s)	0.0	2.6	46.2			
Lane LOS	A	E	E			
Approach Delay (s)	0.0	2.6	46.2			
Approach LOS	E	E	E			
Intersection Summary						
Average Delay		10.0				
Intersection Capacity Utilization		64.9%				
ICU Level of Service		C				
Analysis Period (min)		15				