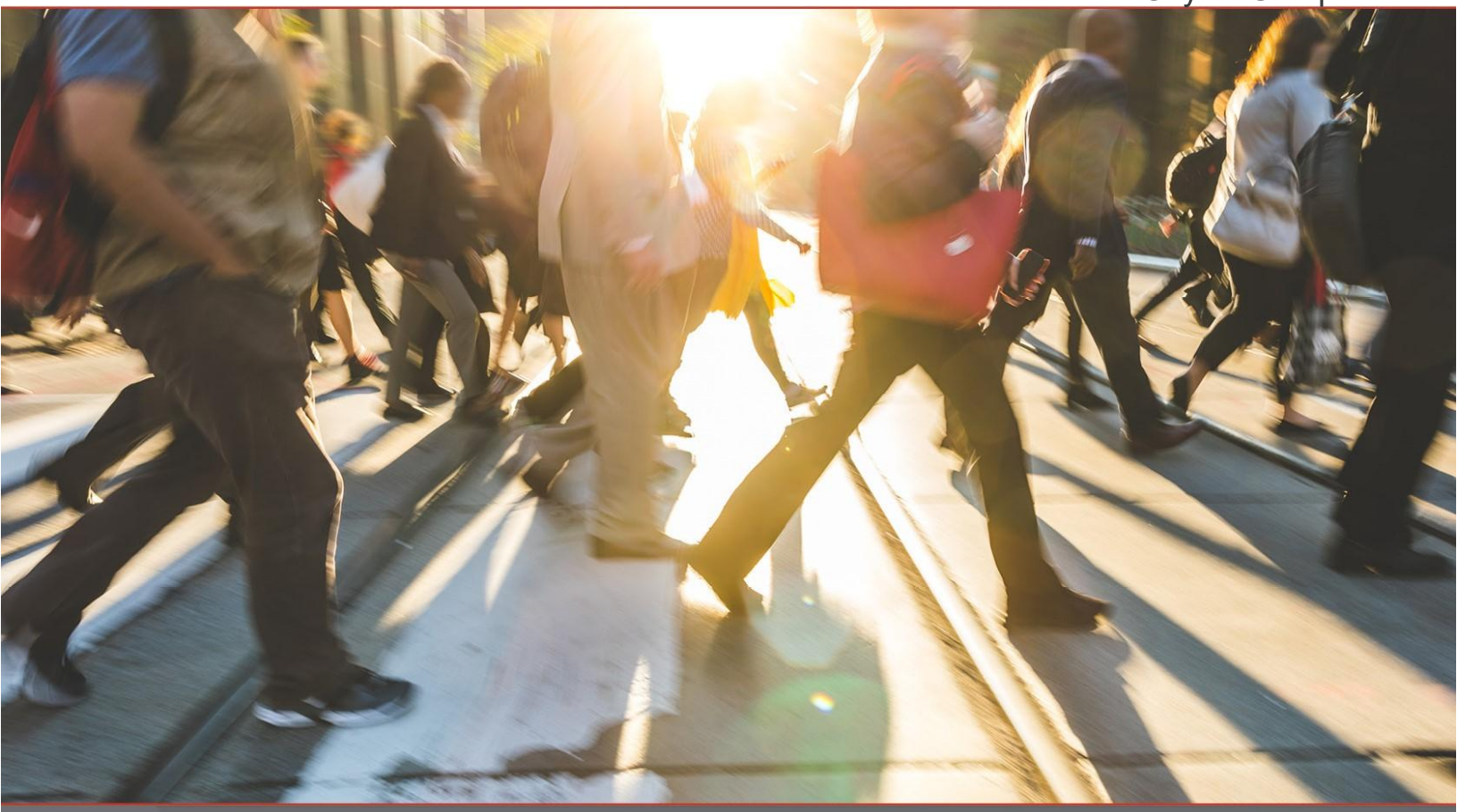
210 - 222 COLLEGE AVENUE EAST PURPOSE-BUILT POST-SECONDARY STUDENT RESIDENCE

Transportation Impact Study
City of Guelph



Prepared For: EM Guelph Developments Limited Partnership

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

TABLE OF APPENDICES

1.0 INTRODUCTION

BA Group is retained by EM Guelph Developments Limited Partnership to provide transportation advisory services in relation to an Official Plan Amendment (OPA) and Zoning By-law Amendment (ZBA) being made to the City of Guelph to permit a purpose-built post-secondary student residence on the lands municipally addressed 210 – 222 College Avenue East in the City of Guelph (the "Site"). The Site location is illustrated in **Figure 1**.

1.1 Existing Site

The Site is located on College Avenue East in Guelph, immediately north of the University of Guelph campus and approximately 130 metres east of the College Avenue East / East Ring Road intersection. The Site is currently comprised of three single detached homes and is bound by a single detached home to the west, the Cutten Fields private golf course to the north, vacant land to the east, and the University of Guelph to the south. As part of the proposed development, the three existing single detached homes will be demolished and replaced with a purpose-built student rental apartment. Further details regarding the proposed development are provided in **Section 2.0**.

1.2 Report Purpose

BA Group has reviewed the key transportation-related aspects of the Site, including the following:

Development Proposal

- A summary of the development program and key transportation elements, including vehicle access and circulation, loading, and parking facilities (both vehicular and bicycle parking);

Policy and Transportation Context

- A review of the evolving area planning context, including key provincial and municipal policies, plans, and programs relevant to the proposed development;
- A review of existing and future transportation context in the area of the Site;

Site Planning

- A review of the parking (both vehicle and bicycle) and loading requirements and proposed supplies for the Site;
- A review of the functionality and appropriateness of the proposed on-Site transportation facilities.

Transportation Demand Management (TDM) and Toronto Green Standards (TGS)

- A review of TDM measures to encourage, facilitate, and support non-automobile travel to / from the Site;

Multimodal Travel Demand

- A summary of expected travel characteristics and associated travel demand forecasts for pedestrians, cyclists, transit users, and automobile users of the proposed development;
- An assessment of study area vehicle traffic activity during the weekday morning and afternoon peak hours under existing, future background, and future total conditions;

Traffic Operations Assessment

- An assessment of the traffic operations at intersections in the area under existing and future traffic conditions including an assessment of the operational impacts of the proposed development on the area street network.

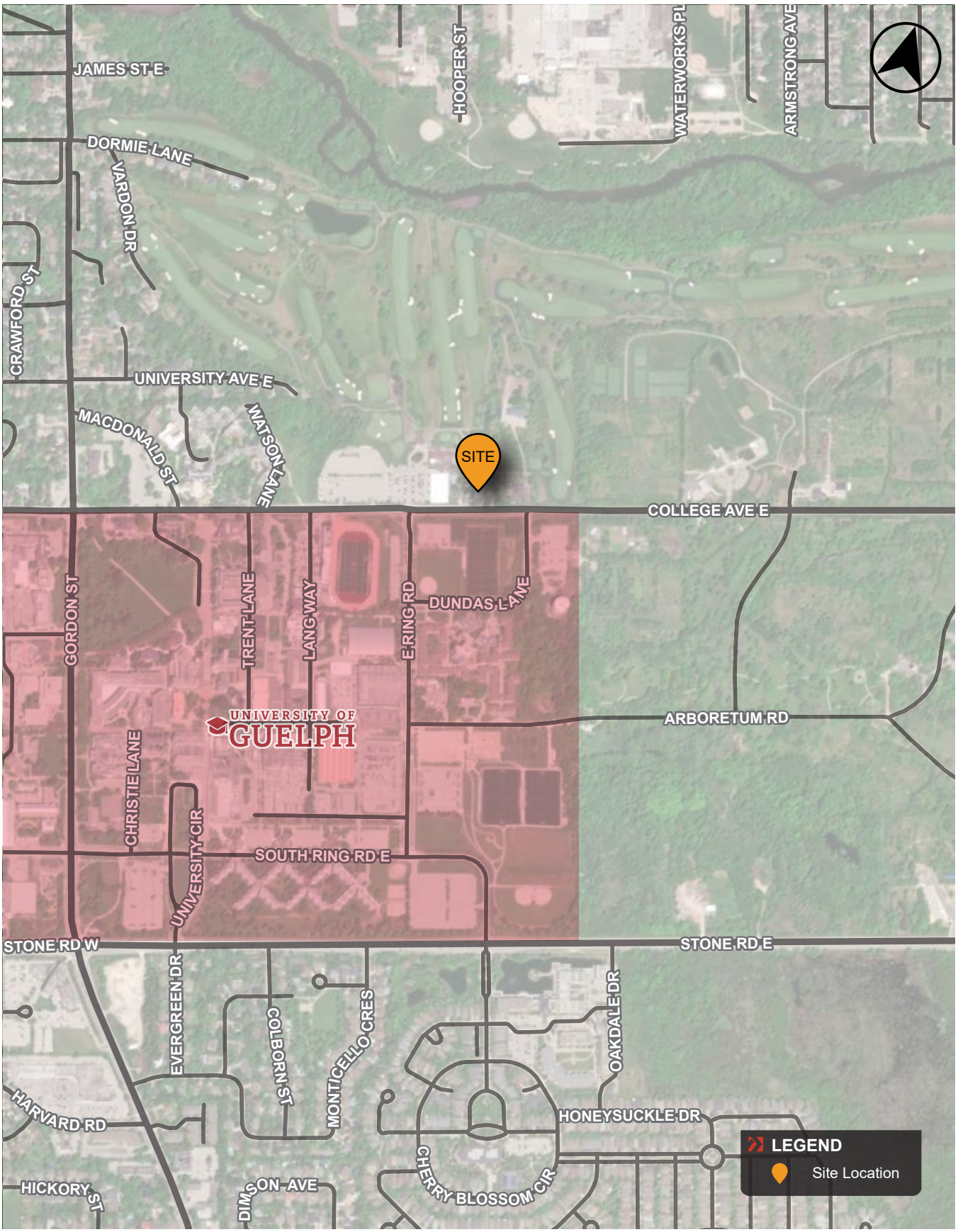

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FIGURE 1 SITE LOCATION

2.0 DEVELOPMENT PROGRAM

The Site is envisioned as a purpose-built post-secondary student residence comprising a single tower with 153 post-secondary student resident units. The Site Concept Plan is illustrated in **Figure 2** and reduced scale architectural plans of the proposed development are provided in **Appendix A** for reference.

2.1 Development Overview

Table 1 summarizes the key development proposal elements, including residential unit mix, parking supply bicycle parking supply, and loading facilities.

Table 1 Development Proposal Summary

Use	Statistics	
Residential Units	2-Bedroom	24 units
	3-Bedroom	35 units
	4-Bedroom	94 units
	Total	**153 units**
Parking Supply	Resident	52 spaces
	Visitor	13 spaces
	Total	**65 spaces**
Bicycle Parking Supply	Long-Term	194 spaces
	Short-Term	16 spaces
	Total	**210 spaces**
Loading Supply	1 Loading Space & 1 Moving Staging Space	

Notes:
1. Based on Site statistics provided by 5468796 Architecture, dated January 9th, 2026.

2.2 Key Transportation Elements

2.2.1 Site Access Review

Vehicle Access

Vehicle access to / from the Site will be provided via STOP-controlled driveway from College Avenue East, approximately 70 metres west of the existing College Avenue East / Dundas Lane intersection, and approximately 165 metres east of the existing signalized College Avenue East / East Ring Road intersection. Notably, an existing Site driveway for 222 College Avenue currently exists in the location proposed for the future Site driveway.

The proposed Site driveway provides access to the underground parking facilities, dedicated loading facilities, and proposed pick-up / drop-off facilities for the Site.

Pedestrian Access

Pedestrian access to / from the Site will be provided via a primary entrance along the south frontage adjacent to College Avenue East as well as two supplemental accesses along the west frontage of the Site. Dedicated pedestrian walkways are provided as connections between Site accesses to the external area pedestrian network.

2.2.2 Vehicular Parking Supply

A total of 65 vehicle parking spaces (0.42 spaces / unit) are proposed for the Site, including 52 resident spaces and 13 residential visitor spaces. The proposed vehicle parking supply aligns with the recommended parking strategy for the Site, which is discussed in greater detail in **Section 5.2**.

Vehicle parking for the Site will be located entirely within two levels of underground parking, which can be accessed via the drive aisle along the east frontage of the Site.

2.2.3 Bicycle Parking Supply and Access

A total of 210 bicycle parking spaces are proposed for the Site, including 194 long-term spaces and 16 short-term spaces. The proposed bicycle parking supply for the Site meets and exceeds the overall requirements stipulated in the Zoning By-law (2023)-20790.

Long-term bicycle parking spaces are proposed to be provided on the P2 level of the underground parking garage, and can be accessed by the service elevator provided within the loading area on the east side of the Site. Short-term bicycle parking spaces are provided along the south frontage of the Site, fronting onto College Avenue East, providing convenient access to the primary pedestrian entrance for the Site.

2.2.4 Loading Supply and Access

One loading space is proposed to accommodate waste management and general building maintenance / service operations and can be accessed via the drive aisle along the east frontage of the Site. An additional moving staging space is proposed within the P1 level of the underground parking garage.

2.2.5 Pick-Up / Drop-Off Facilities and Access

One pick-up / drop-off (PUDO) space is proposed to accommodate short-term vehicle activity on the Site, located near the primary entrance of the Site. The PUDO space is accessible via the Site driveway.

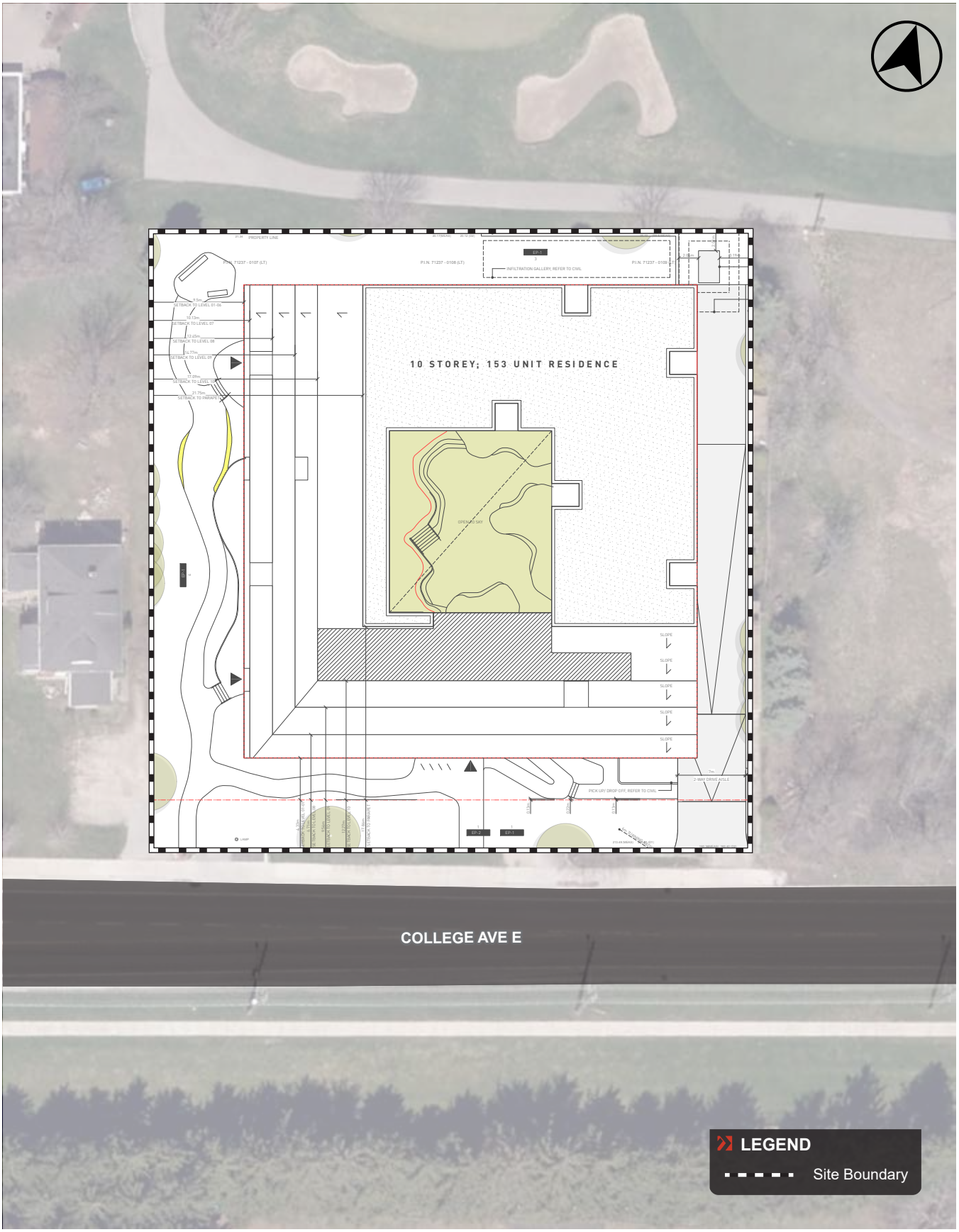

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FIGURE 2 SITE PLAN

3.0 PLANNING AND POLICY CONTEXT

3.1 Provincial Planning Statement (2024)

On October 20th, 2024, the *2024 Provincial Planning Statement* ("2024 PPS") took effect, replacing *A Place to Grow: Growth Plan for the Greater Golden Horseshoe* and the *2020 Provincial Policy Statement* with an integrated planning statement.

The 2024 PPS in-part provides the following policy directives to municipalities with respect to transportation infrastructure and its integration with land uses:

> *2.1.6 Planning authorities should support the achievement of complete communities by:*
>
> *a) Accommodating an appropriate range and mix of land uses, housing options, transportation options with multimodal access, employment, public service facilities and other institutional uses (including schools and associated child care facilities, long-term care facilities, places of worship and cemeteries), recreation, parks and open space, and other uses to meet long-term needs.*
>
> *2.2.1 c) Promoting densities for new housing which efficiently use land, resources, infrastructure and public service facilities, and support the use of active transportation.*
>
> *2.2.1 d) Requiring transit-supportive development and prioritizing intensification, including potential air rights development, in proximity to transit, including corridors and stations.*
>
> *3.2.2 Efficient use should be made of existing and planned infrastructure, including through the use of transportation demand management strategies, where feasible.*
>
> *3.2.3 As part of a multimodal transportation system, connectivity within and among transportation systems and modes should be planned for, maintained and, where possible, improved, including connections which cross jurisdictional boundaries.*
>
> *3.9.1 Healthy, active, and inclusive communities should be promoted by: a) Planning public streets, spaces and facilities to be safe, meet the needs of persons of all ages and abilities, including pedestrians, foster social interaction and facilitate active transportation and community connectivity.*

The current proposal for the Site is consistent with the 2024 PPS. It represents an intensification of uses near existing and planned transportation infrastructure that makes efficient use of infrastructure and public service facilities in proximity to institutional uses. The current proposal also incorporates TDM strategies that promote a healthy community and multi-modal transportation system.

3.2 City of Guelph Policies

3.2.1 City of Guelph Official Plan (February 2024 Consolidation)

The *City of Guelph Official Plan, February 2024 Consolidation* (the "2024 Guelph OP") sets the planning framework to guide the future growth and development of the City. Specifically, Section 3.9 and 5 of the 2024 Guelph OP states that the City's transportation system will:

- Provide access to multi-modal transportation alternatives to reduce automobile dependence;
- Promote the use of active transportation to access schools, home, and other goods and services; and
- Ensure a safe environment that is well-coordinated between various modes of transportation (i.e., cycling and walking).

As per Schedule 1a (Urban Structure) of the 2024 Guelph OP, the Site is located within a designated Built-Up Area, which indicates that this area is planned to accommodate intensification. Additionally, the road network surrounding the Site is composed of Arterial and University Roads, as per Schedule 5 (Road and Trail Network), and as discussed further in **Section 4.1**.

The 2024 Guelph OP also provides policies pertaining to Transportation Demand Management (TDM) within the City, and acknowledges its contribution to creating and supporting an overall integrated and sustainable transportation system. TDM measures as they relate to the Site are provided in **Section 8.0**.

3.2.2 City of Guelph Transportation Master Plan (2022)

The *City of Guelph Transportation Master Plan (2022)* (the "Guelph TMP") provides a framework for transit, cycling, and active transportation network expansions within the City. The Guelph TMP is a key study which identifies and plans for network improvements to address existing issues and accommodate future growth in the City to a 2051 horizon. The Guelph TMP provides the following transportation-related goals for the City's transportation network:

- Create a City where people of all ages and physical abilities can travel safely using any transportation mode;
- Create a comprehensive and reliable transportation system;
- Transit services that provide a greater level of convenience than travelling by car; and
- Guelph's transportation system will plan for the changes of tomorrow, while delivering high level service today.

Further, the Guelph TMP sets out recommendations for the City's transit services, road network, and active transportation infrastructure. Notably, the Guelph TMP provides the following transportation-related recommendations for areas near the Site:

- Identifies College Avenue and Gordon Street as part of the Cycling Spine Network;
- Identifies Gordon Street south of College Avenue East as suitable for an enhanced pedestrian realm; and
- Identifies Gordon Street as part of the Quality Transit Network.

3.2.2.1 College Avenue Feasibility Study

Per recommendations of the Guelph TMP, a feasibility study was conducted in 2023 for College Avenue to implement All Ages and Abilities ("AAA") cycling facilities. The study corridor includes College Avenue from Janefield Avenue to Dundas Lane (the east extent of the study area for this report). This study acknowledges that College Avenue is an important corridor providing connections to the University of Guelph and its transit terminal. Through this study, a hybrid design was selected for implementation on this corridor, and the planned cycling infrastructure will prove to be advantageous for the Site, as discussed further in **Section 4.3.2**.

3.2.2.2 Gordon Street Feasibility Study

Per recommendations of the Guelph TMP, a feasibility study was conducted in 2023 for Gordon Street to implement All Ages and Abilities ("AAA") cycling facilities. The study corridor includes Gordon Street from Clair Avenue to Lowes Road, and Edinburgh Road to Waterloo Avenue. The latter segment of the corridor provides direct connections to College Avenue. This study states that Gordon Street is a key transportation link for the City, providing connections to the City's downtown and the University of Guelph. Through this study, cycling infrastructure improvements were considered and they will prove to be advantageous for the Site, as discussed further in **Section 4.3.2**.

3.2.3 Bicycle-Friendly Guelph–Cycling Master Plan (2012)

The *Bicycle-Friendly Guelph--Cycling Master Plan (2012)* ("Guelph CMP") provides the framework for developing the City's cycling network to encourage sustainable modes of transport to reach various destinations. The Guelph CMP provides principles to guide the development of the City's cycling network, which includes the following:

- Cycling is an essential mode of transport in Guelph;
- Every street is a cycling street and bicycles are also vehicles; and
- A successful cycling network is a result of a well-integrated transportation network.

As it relates to the Site, the Guelph CMP identifies College Avenue, both east and west, as a suitable corridor to implement bicycle lanes. Further, it states that the University of Guelph is one of the major cyclists' destinations in the City.

3.2.4 University of Guelph Campus Master Plan (2013)

The *University of Guelph's Campus Master Plan* ("Campus MP") provides a strategic framework for the Campus that can accommodate future growth, but does not rely on growth. The vision this document sets out is a campus that is walkable and well-integrated, with increased opportunities to utilize multimodal transport, with enhanced connectivity and accessibility.

The Campus MP area is generally bounded by College Avenue in the north, Trillium Trail in the east, Edinburgh Road South in the west, and Stone Road in the south. The Site, while located off campus and outside of the master plan area, is directly adjacent to the north of campus and is therefore influenced by ongoing planning and improvements occurring as part of the Campus MP. Furthermore, College Avenue East provides connections to Gordon Street, which is planned to be a key street in the Campus MP and which is envisioned to be enhanced and updated to support multiple modes of transport (as further detailed in the Guelph TMP).

Other roads within the study area of this report, including Dundas Lane and East Ring Road, are identified as bicycle routes in the Campus MP, and both these roads directly connect to College Avenue immediately south of the Site. The intersection of College Avenue East and East Ring Road is identified as a gateway, which is defined as an area that provides a transition from the City to the campus.

On this basis, and in consideration of the proximity of the Site to the University of Guelph campus and the intended future users of the Site, future connectivity within and across the University and its integration to the broader area transportation network are expected to influence travel behaviours of future Site residents.

4.0 AREA TRANSPORTATION CONTEXT

4.1 Area Road Network

4.1.1 Existing Area Road Network

The existing area road network around the Site consists of Arterial and University roads. Characteristics of the area road network are summarized in **Table 2**, and illustrated in **Figure 3**.

Table 2 Existing Area Road Network

Road Name	Parking Regulations	Description	Cross-Section
Arterial Roads			
College Avenue	Parking prohibited	College Avenue is generally an east-west Arterial Road that extends from Victoria Street South in the east to Stone Road West in the west. College Avenue has a posted speed limit of 60 km/h east of the Site, and 40 km/h in the area of the Site.	***Between Victoria Street South and Dundas Lane:*** • Midblock cross-section includes two vehicles lanes (one in each direction). ***Between Dundas Lane and East Ring Road:*** • Midblock cross-section includes two vehicles lanes (one in each direction). • Dedicated left-turn lane provided at East Ring Road. • Dedicated bicycle lanes provided on both sides with pavement markings. ***Between East Ring Road and Lang Way:*** • Midblock cross-section includes two vehicles lanes (one in each direction) and a central two-way left-turn lane. • Dedicated bicycle lanes provided on both sides with pavement markings.
Gordon Street	Parking prohibited	Gordon Street is generally a north-south Arterial Road that extends from Waterloo Avenue in the north to Maltby Road East in the south. Gordon Street continues further south as Brock Road north. Gordon Street has a posted speed limit of 40 km/h in the area of the Site.	• Midblock cross-section includes two vehicles lanes (one in each direction). • Additional turning lanes are provided at key intersections. • Dedicated bicycle lanes provided on both sides with pavement markings.

Road Name	Parking Regulations	Description	Cross-Section
University Roads			
Dundas Lane	**Area for paid parking on north side only:** Permits not valid, and parking is prohibited from 1 a.m. to 6 a.m., December to March 31. **Area for parking by permit on north side only**: Parking is permitted from 8 a.m. to 5 p.m., Monday to Friday. **East portion of road:** Parking prohibited on both sides.	Dundas Lane is an 'L-shaped' University Road that extends from East Ring Road in the west to College Avenue East in the north. Dundas Lane has a posted speed limit of 30 km/h.	• Midblock cross-section includes two vehicle lanes (one in each direction).
East Ring Road	**Paid Parking South of Parking Lot 7 on west side only:** Permits not valid and parking prohibited from 1 a.m. to 6 a.m., December to March 31.	East Ring Road is generally a north-south University Road that extends from College Avenue East in the north to South Ring Road East. East Ring Road has a posted speed limit of 30 km/h.	• Midblock cross-section includes two vehicle lanes (one in each direction). • Additional turning lanes are provided at key intersections. • Dedicated bicycle lanes provided on both sides with pavement markings.

4.1.2 Planned Area Road Improvements

College Avenue

Per the Guelph TMP, major improvements are proposed on College Avenue. Specifically, College Avenue from Hanlon Parkway to Gordon Street is planned to be widened to four lanes.

Gordon Street

The Gordon Street Feasibility Study discussed in **Section 3.2.2.2** recommends Gordon Street to be widened from two to four lanes between Stone Road and College Avenue to accommodate two bus-only lanes (one in each direction), which will help optimize the transit network along this corridor. Furthermore, with the University of Guelph located adjacent to this segment of Gordon Street, wider facilities and medians are deemed appropriate to accommodate the increased pedestrian and cycling activity. Numerous protected intersections are proposed along Gordon Street, including at its intersection with College Avenue, which will enhance safety for both pedestrians and cyclists.

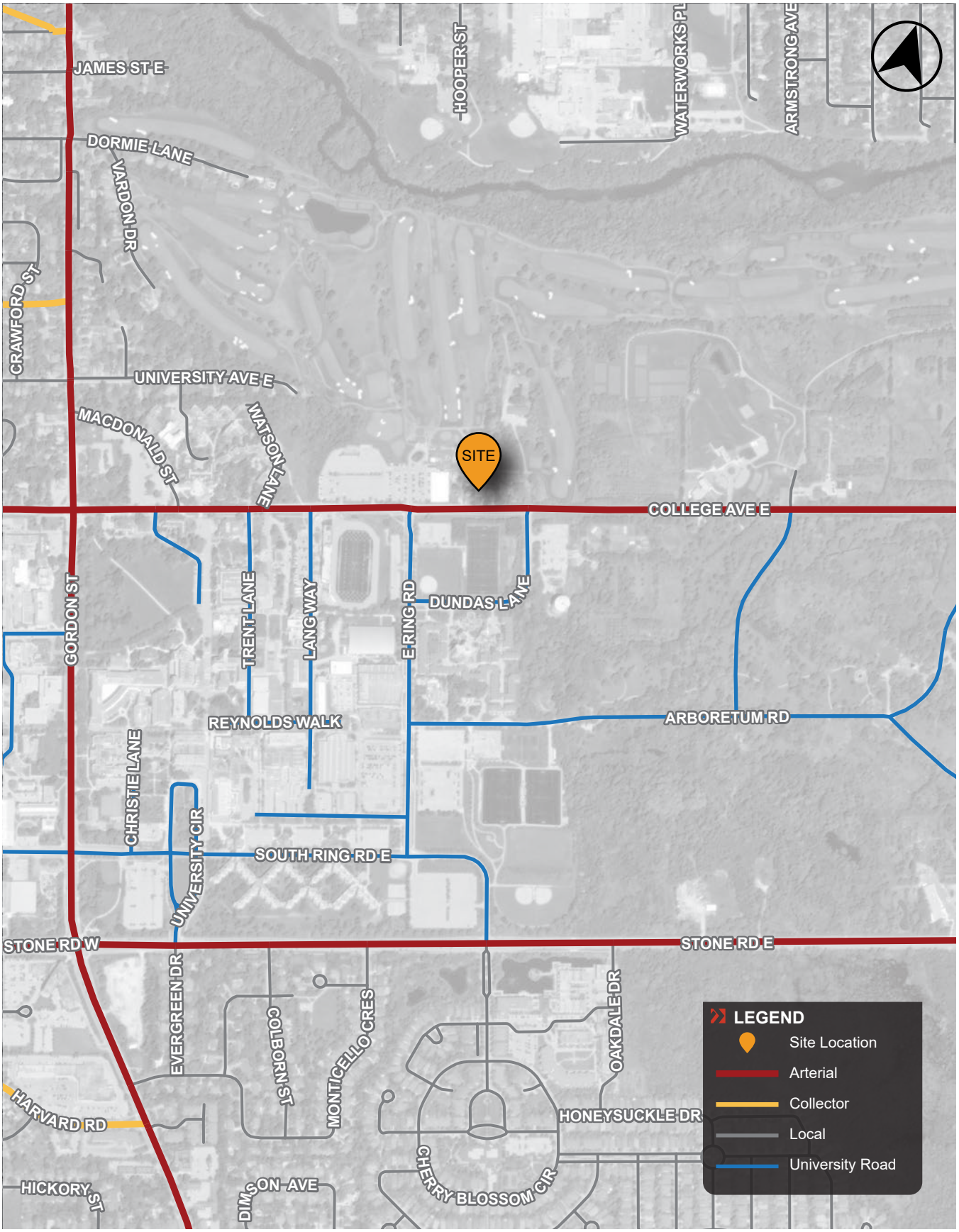

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FIGURE 3 AREA ROAD NETWORK

4.2 Area Transit Network

4.2.1 Existing Area Transit Network

The Site area is currently served by Guelph Transit bus routes within the vicinity of the Site, and College Avenue East connects to Gordon Street which is a transit spine providing access to downtown Guelph and the surrounding area, as well as numerous GO transit routes which provide connections to regional destinations. **Table 3** provides a summary of the routes that service the immediate vicinity of the Site and **Figure 4** illustrates the area transit network in the surrounding of the Site.

It is noted that the University of Guelph's transit terminal is within walking distance of the Site, and numerous additional Guelph Transit bus routes are accessible from this terminal including routes 5 (Goodwin), 6 (Ironwood), 7 (Niska), 17 (Woodlawn Watson), 18 (Watson Woodlawn), 50U (Scottsdale), 52U (Kortright), 56U (Colonial), and 58U (Edinburgh).

Table 3 Existing Area Transit Network

Route	Headways (Peak Hours)	Nearest Stop(s)	Description
GO Bus Service			
17 Waterloo / Hamilton	~1 hour	Gordon Street @ Stone Road	GO bus Route 17 Waterloo / Hamilton operates in a generally east-west direction between the City of Waterloo in the West and the City of Hamilton in the east. Route 17 services various universities including the University of Guelph, as well as Guelph Central GO Station.
29 Guelph / Mississauga	~1 hour	Gordon Street @ Stone Road	GO bus Route 29 Guelph / Mississauga operates in a generally east-west direction between Guelph Central GO Station in the west and Kipling GO Station in the east. Route 29 services the University of Guelph.
48 Guelph / Highway 407 Bus Terminal	~1 hour	Gordon Street @ Stone Road	GO bus route 48 Guelph / Highway 407 Bus Terminal operates in a generally east-west direction between the University of Guelph in the west and the Highway 407 Bus Terminal in the City of Vaughan in the east.
Guelph Transit Bus Service			
1 Edinburgh College	~30 minutes	Gordon Street @ College Avenue	Route 1 Edinburgh College operates in a generally north-south direction between the area of College Avenue / Gordon Street in the north and the area of Edinburgh Road South / Gordon Street in the south. Route 1 services the University of Guelph transit terminal, and commercial uses like the Campus Estates Plaza and Stone Road Mall.

Route	Headways (Peak Hours)	Nearest Stop(s)	Description
2 College Edinburgh	~30 minutes	Gordon Street @ McGilvray	Route 2 College Edinburgh operates in a generally north-south direction between the area of College Avenue / Gordon Street in the north and the area of Edinburgh Road South / Gordon Street in the south. Route 2 services the University of Guelph transit terminal, and commercial uses like the Campus Estates Plaza and Stone Road Mall. Note that Route 2 becomes Route 15 (University College) at the University of Guelph transit terminal.
15 College	~30 minutes	East Ring Road @ Dundas Lane East Ring Road @ Arboretum Road College Avenue @ McDonald	Route 15 College operates in a generally east-west direction between East Ring Road in the east and the area of College Avenue West / Stone Road West in the west. Route 15 services the University of Guelph transit terminal, Stone Road Mall, and the residential area by Dovercliffe Park. Note that Route 15 becomes Route 2 (College Edinburgh) at the University of Guelph transit terminal.
99 Mainline	~10 minutes	Gordon Street @ College Avenue Gordon Street @ McGilvray	Route 99 Mainline operates in a generally north-south direction on Woolwich Street, Norfolk Street, and Gordon Street between SmartCentres Guelph in the north and the area of Gordon Street / Clair Road in the south. Route 99 services the University of Guelph transit terminal. various parks, and residential and commercial areas.

4.2.2 Planned Area Transit Improvements

Per the Guelph TMP, College Avenue and Gordon Street are identified as part of the Quality Transit Network. As such, both corridors are planned to undergo infrastructure improvement and enhancements to provide more reliable and safe transportation services. College Avenue is subject to a potential widening to four lanes west of Gordon Street, which will prove to be advantageous for Guelph Transit Route 15 (College) running along this corridor. Further, Gordon Street north of College Avenue is stated to be optimized in terms of transit route operations running along this segment of the corridor. South of College Avenue, Gordon Street is subject to a potential widening to four lanes. The Gordon Street Feasibility Study notes that this road widening will allow the accommodation of two dedicated bus lanes (one in each direction). The planned dedicated bus lanes will significantly improve transit service along the Gordon Street corridor, which is a major transit spine accommodating multiple routes that service the University of Guelph transit terminal and the rest of the City.

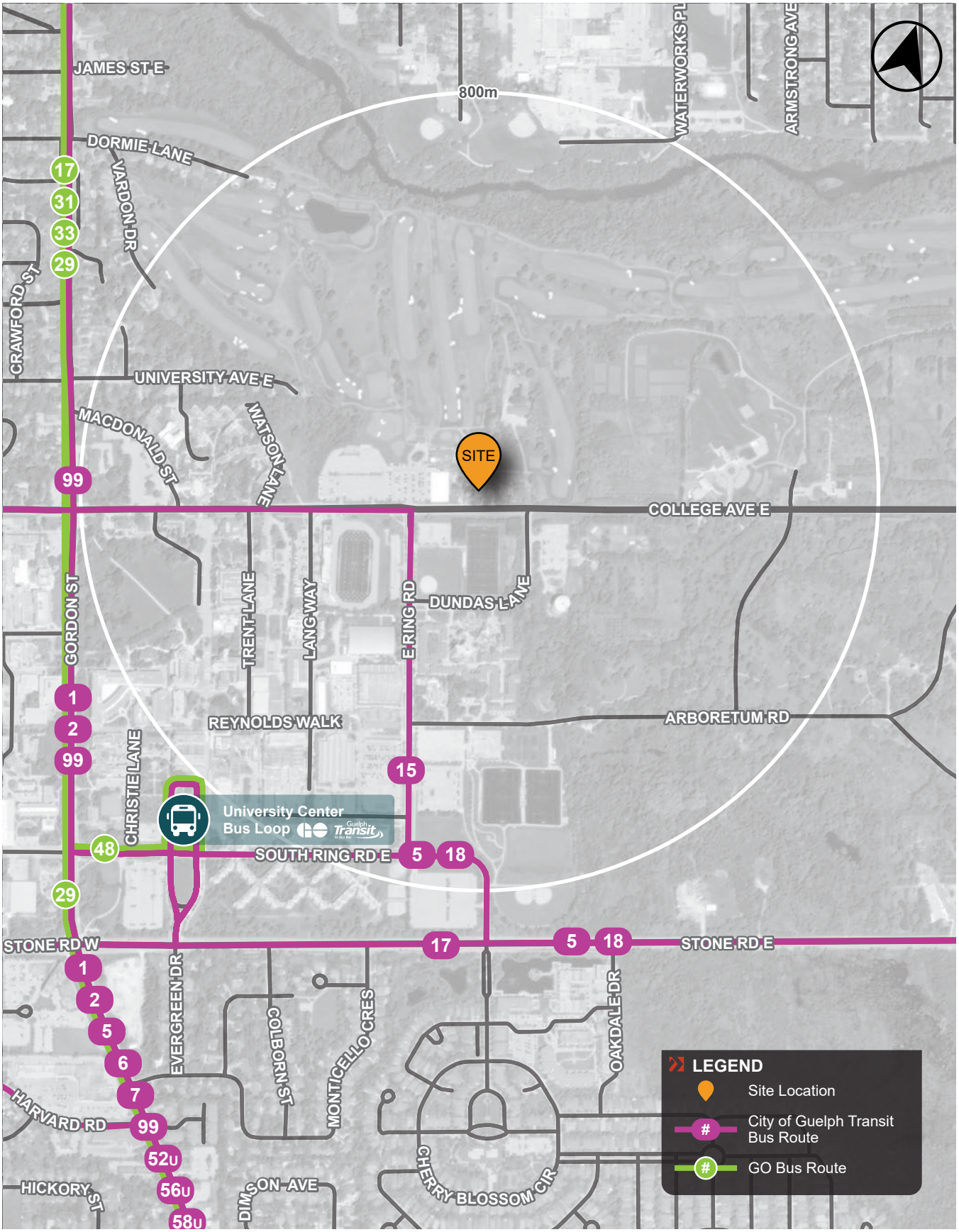

FIGURE 4 AREA TRANSIT NETWORK

4.3 Area Cycling Network

4.3.1 Existing Area Cycling Network

The existing cycling infrastructure is limited within the vicinity of the Site, which includes the bike route on College Avenue on both the north and south side of the road, and on East Ring Road on both sides of the road. College Avenue East connects to Gordon Street, which is known as a cycling spine providing connections to the broader City of Guelph cycling network.

The existing bike route on College Avenue extends from Dundas Lane in the east to the end of College Avenue West, indicated with pavement markings on both sides of the road. However, there is a disconnect between Janefield Avenue and Hanlon Parkway along College Avenue West, which is planned to be connected in the future as discussed in **Section 4.3.2**. This bike route connects to the existing bike route on Gordon Street. The bike route on East Ring Road extends from College Avenue East in the north to South Ring Road in the south, connecting to the bike route on South Ring Road.

While limited cycling infrastructure exists today, there are proposed cycling infrastructure enhancements planned for the area around the Site, discussed further in **Section 4.3.2**.

Figure 5 illustrates the existing cycling network in the vicinity of the Site.

4.3.2 Planned Area Cycling Network

Numerous cycling infrastructure improvements are planned along the College Avenue and Gordon Street corridors in the area of the Site, and both corridors are identified as part of the Cycling Spine Network as per the Guelph TMP. The planned cycling infrastructure improvements are summarized in **Table 4**.

Table 4 Planned Cycling Infrastructure Improvements

Cycling Route	Orientation	Facility Type	Extent	Source
College Avenue	East-West	'AAA' cycling facilities (protected bike lanes)	Edinburgh Road South to Dundas Lane	College Avenue Feasibility Study
		Bike lanes	Hanlon Parkway to Edinburgh Road South	Bicycle-Friendly Guelph–Cycling Master Plan
		Bike lanes	Dundas Lane to Victoria Road South	Bicycle-Friendly Guelph–Cycling Master Plan Guelph CMP
Gordon Street	North-South	'AAA' cycling facilities (1.8-metre cycle tracks on both sides)	College Avenue to Stone Road	Gordon Street Feasibility Study
		Street renewal (dedicated bike lanes)	College Avenue to Stone Road (extent of Guelph CMP)	Guelph CMP

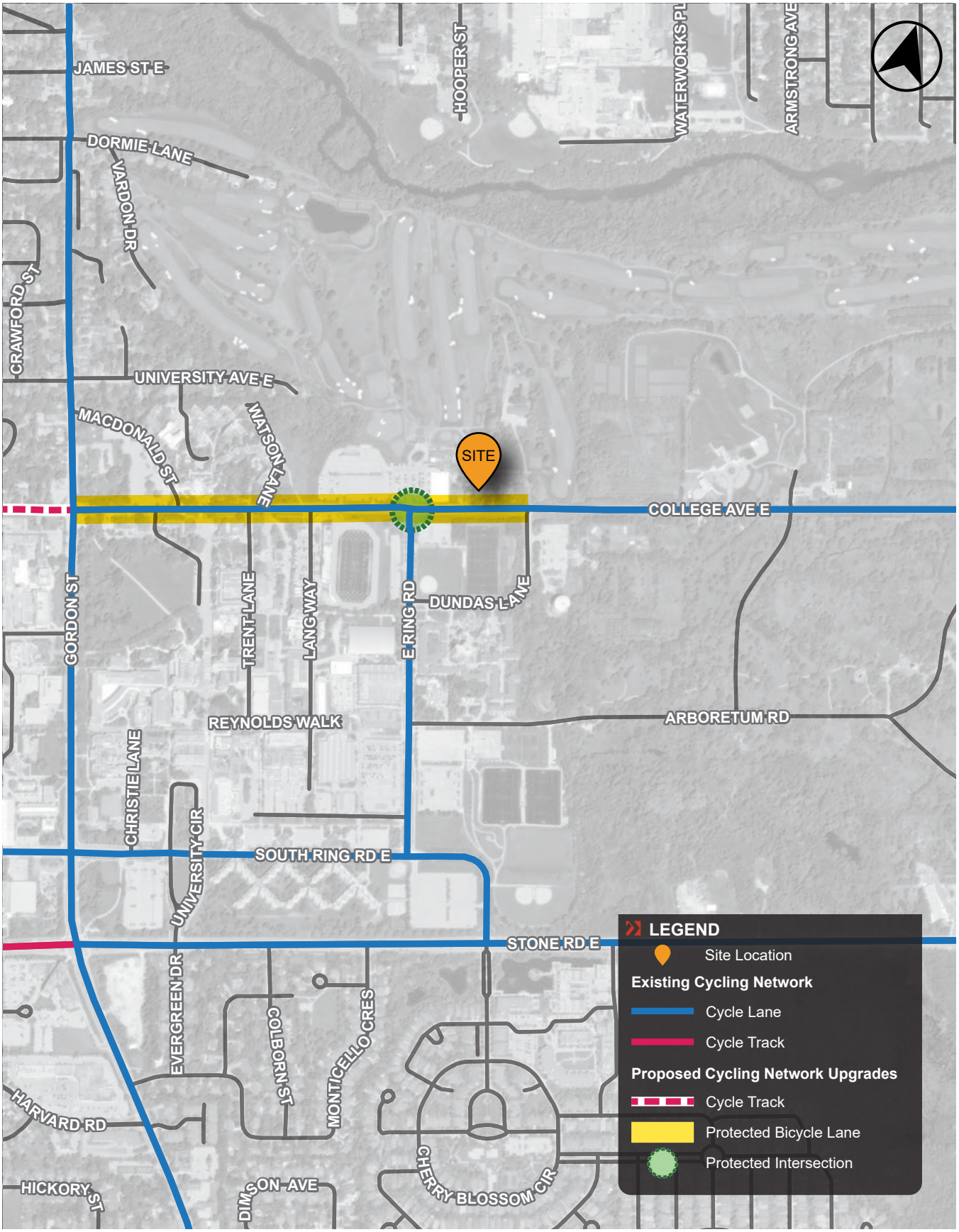

FIGURE 5 AREA CYCLING NETWORK

4.4 Area Pedestrian Network

4.4.1 Existing Area Pedestrian Network

Pedestrian Infrastructure

The Site is located on the north side of College Avenue East, which currently has sidewalks on both sides of the road starting approximately 200 metres west of Dundas Lane going westward to the end of College Avenue. Additionally, there are signalized pedestrian crossings in all directions at the College Avenue East / East Ring Road intersection (approximately 130 metres from the Site). East Ring Road provides sidewalks on both sides of the road approximately 80 metres south of its intersection with College Avenue East. There are sidewalks on the east and south sides of Dundas Lane.

More broadly, the University of Guelph provides a robust and established network of pedestrian connections to serve students, employees, and visitors of the University. These connections provide further connectivity to the broader area pedestrian network, including facilities on Gordon Street and Stone Road East on the east and south sides of campus, respectively.

Pedestrian Destinations

The Site is located just north of the University of Guelph campus, which contains numerous local amenities and services. Furthermore, the Site is located an approximately 15-minute walk from the University of Guelph's transit terminal, which provides access to numerous transit routes connecting to destinations throughout the City. Established existing pedestrian connections on the University of Guelph campus provide convenient access to the University transit terminal, which facilitates connectivity for other day-to-day needs which may not be readily met on campus such as groceries, recreation, food stores, and other discretionary trips.

Figure 6 illustrates the existing pedestrian network within the vicinity of the Site.

4.4.2 Planned Area Pedestrian Network

The Guelph TMP indicates that an enhanced pedestrian realm is planned along the Gordon Street corridor south of College Avenue, connecting to the existing pedestrian facilities within the vicinity of the Site. As it relates to the Site, Gordon Street between College Avenue and South Ring Road will undergo a widening from two to four lanes with improved pedestrian facilities, which is listed under the 2022-2031 projects table in the Guelph TMP. Additionally, the segment of Gordon Street from College Avenue to Stone Road is identified to be a part of the Pedestrian Priority Network, which entails having wider sidewalks and an overall higher-quality walking environment where there is the greatest amount of pedestrian traffic, such as the area surrounding the University of Guelph campus. Review of the Campus MP indicates that the Gordon Street renewal is expected to better accommodate pedestrians through expanded sidewalks and an upgrade of pedestrian crossings throughout the corridor.

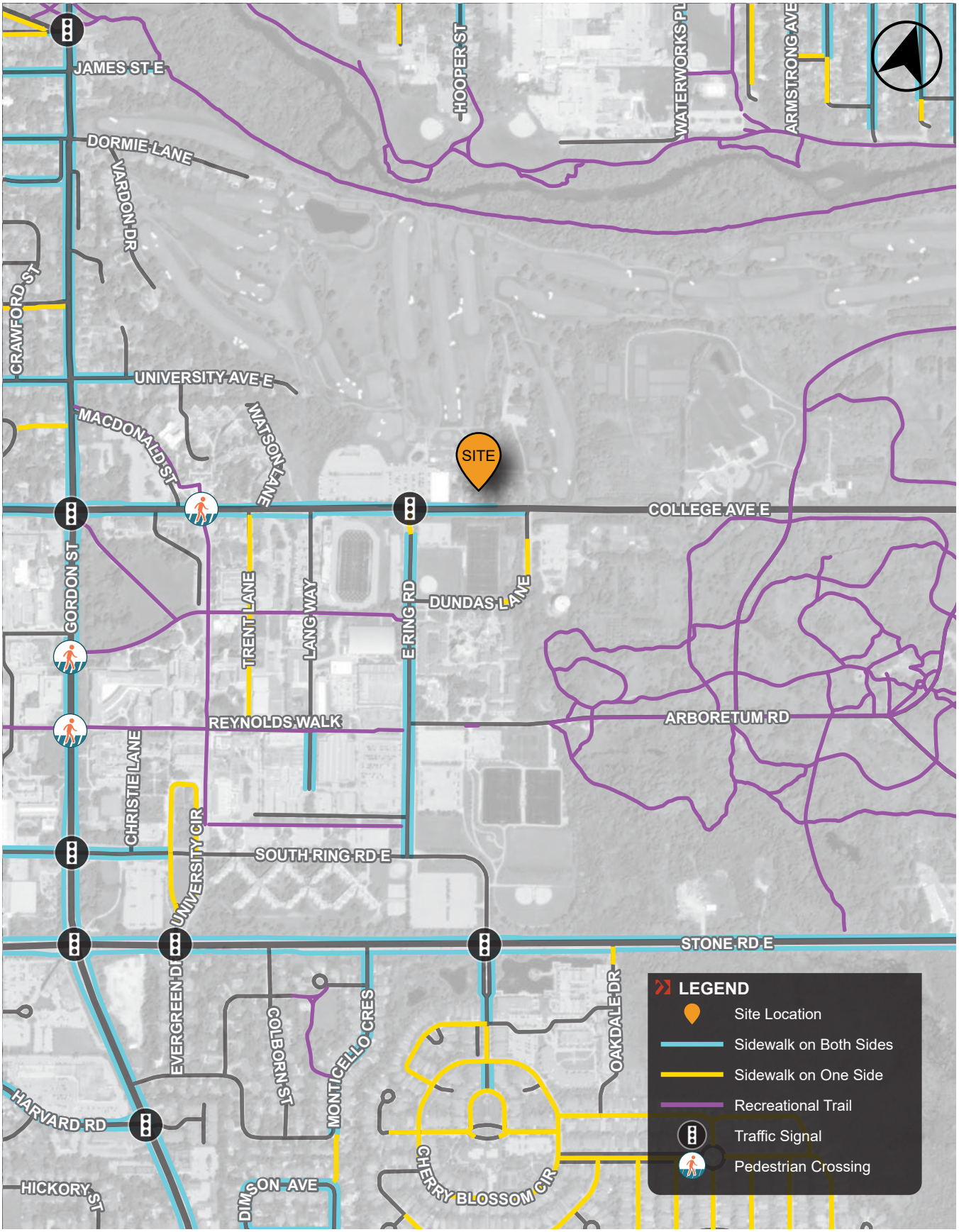

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FIGURE 6 AREA PEDESTRIAN NETWORK

5.0 VEHICULAR PARKING CONSIDERATIONS

5.1 Guelph Zoning By-law (2023)-20790 Vehicular Parking Requirements

The Site is subject to the residential parking rates for "Apartment Building" uses per Guelph Zoning By-law (2023)-20790. A summary of the vehicular parking requirements for the Site is provided in **Table 5**.

Table 5 Zoning By-law (2023)-20790 Vehicular Parking Requirements

Use	Units[1]	Minimum Parking Rate		Minimum Parking Requirement[3]
Residential[2]	153 units	First 20 Units	1.5 spaces / unit	**30 spaces**
		Subsequent Units	1.25 spaces / unit	**167 spaces**
		Total Residential		**197 spaces**
Residential Visitor[2]		**20% of Residential Requirement**		**40 spaces**
Resident				**157 spaces**

Notes:
1. Based on Site statistics provided by 5468796 Architecture, dated January 9th, 2026.
2. Resident and residential visitor parking rates are consistent with those for Apartment Buildings.
3. Calculated minimum parking requirements resulting in a fraction shall be rounded up to the next higher whole number.

5.1.1 Accessible Parking Requirements

Zoning By-law (2023)-20790 requires that accessible parking be provided at the following rate, based on the required supply of parking on-Site:

- **101 to 200 required parking spaces:** 1 accessible parking space plus an additional 3% of total spaces (rounded up to the nearest whole number) with an equal number of Type A and Type B accessible parking spaces.
- If an odd number of accessible parking spaces is required, the additional space may be a Type B accessible parking space.

Application of the above-noted accessible parking rates results in a requirement of 7 accessible parking spaces for the Site, including 3 Type A spaces and 4 Type B spaces.

5.1.2 Electric Vehicle Parking Requirements

Zoning By-law (2023)-20790 requires that electric vehicle parking be provided at the following rates for multi-unit building without a (PA) suffix:

- A minimum of 80% of the total required parking spaces for apartment buildings shall be provided as designed electric vehicle parking spaces.

Application of the vehicular parking rates for the Site results in a requirement to provide a total of 197 parking spaces. Therefore, 158 parking spaces (80% of total spaces) are required to be designed electric vehicle parking spaces capable of being retrofitted with electric vehicle charging infrastructure in the future.

5.1.3 Compact Car Permissions

Zoning By-law (2023)-20790 permits up to 15% of the minimum required parking spaces to be provided and maintained as parking for compact vehicles. Minimum dimensions for compact parking spaces are as follows:

- Minimum width of 2.4 metres; and
- Minimum length of 5.5 metres.

Per Zoning By-law (2023)-20790, parallel parking spaces and accessible parking spaces may not be provided with the dimensions of compact parking spaces.

5.2 Recommended Vehicular Parking Strategy

The vehicular parking strategy for the Site recommends the following minimum parking rate requirements:

- Provide residential parking at a minimum rate of 0.42 spaces / unit, inclusive of resident and residential visitor spaces.
- Dedicate 20% of the required residential parking spaces (rounded up to the next whole number) for use by residential visitors, in accordance with the requirements stipulated in Zoning By-law (2023)-20790.
- Provide accessible parking in accordance with the requirements stipulated in Zoning By-law (2023)-20790.

The proposed parking strategy for the Site reflects the expected needs of post-secondary students in the City of Guelph by providing an appropriate supply of vehicle parking, while recognizing that University students largely rely on transit, cycling, and walking as primary travel modes for school-based and discretionary trips during their school terms. The acceptability of the proposed on-Site parking strategy is discussed in greater detail, below.

5.2.1 Appropriateness of Proposed Vehicular Parking Strategy

BA Group has undertaken parking demand studies at three distinct student-oriented apartment buildings located in the City of Guelph and City of Waterloo to validate the proposed parking strategy. **Table 6** summarizes the peak parking demands for these sites, in the context of the proposed overall parking supply rate for the Site.

Table 6 Student-Oriented Apartment Parking Demand Review

Site	Date	Unit Count	Distance to Campus	Peak Demand[2]
601 Scottsdale Drive Guelph	Tue, Nov 25th, 2025	164 units	***University of Guelph*** ~1.8 km (~25-minute walk)	**0.27 spaces / unit**
228 Albert Street Waterloo	Tue, Dec 2nd, 2025	104 units	***Wilfred Laurier University*** ~75 m (~1-minute walk) ***University of Waterloo*** ~800 m (~10-minute walk)	**0.32 spaces / unit**
246 Albert Street Waterloo	Tue, Dec 2nd, 2025	58 units	***Wilfred Laurier University*** ~170 m (~2-minute walk) ***University of Waterloo*** ~900 m (~12-minute walk)	**0.21 spaces / unit**
Recommended Parking Rate[1]		**153 units**	***University of Guelph*** ~120 m (~2-minute walk)	**0.42 spaces / unit**

Notes:
1. Based on Site statistics provided by 5468796 Architecture, dated January 9th, 2026.
2. Peak parking demands / proposed parking supply reflect overall parking activity levels inclusive of resident and residential visitor activity, consistent with Zoning By-law (2023)-20790 requirements for "Apartment Buildings".

As indicated above, the recommended parking strategy for the Site aligns with observed parking demands at comparable student-oriented apartment buildings in both the City of Guelph and City of Waterloo. Furthermore, the geographic context of the Site is comparable to those of the proxy sites, with respect to its location relative to the most proximate post-secondary institutions. On this basis, the proposed overall parking rate for the Site of 0.42 spaces / unit is considered appropriate and reflective of expected parking demands for a student-oriented apartment building near the University of Guelph campus.

5.3 Proposed Parking Supply

5.3.1 Overall Parking Supply

A total of 65 parking spaces are proposed for the Site, including 52 spaces dedicated for Site residents and 13 spaces dedicated for residential visitors. The proposed parking supply meets the recommended parking strategy for the Site by providing an overall parking supply of 0.42 spaces / unit, with 20% of spaces dedicated for residential visitors.

5.3.2 Accessible Parking Supply

A total of 4 accessible parking spaces are proposed for the Site, including 2 Type A and 2 Type B spaces. The proposed accessible parking supply meets the Zoning By-law (2023)-20790 accessible parking requirements when applied to the proposed parking supply of 65 spaces.

5.3.3 Electric Vehicle Parking Strategy

Consistent with Zoning By-law (2023)-20790, 53 spaces (80%) are being provided as designed electric vehicle parking spaces.

5.3.4 Compact Vehicle Parking Supply

Conforming with Zoning By-law (2023)-20790, 6 spaces (9%) are proposed to be provided for compact vehicles, conforming to the minimum dimension requirements and other restrictions (parallel spaces and accessible spaces) stipulated in the Zoning By-law.

5.4 Vehicle Parking Summary

The above review of parking considerations for the Site confirms that, while the recommended parking strategy for the Site provides reduced overall parking requirements relative Zoning By-law (2023)-20790 requirements, the functional needs of the Site will be met. On this basis, the recommended parking strategy and proposed parking supply for the Site is appropriate.

6.0 BICYCLE PARKING CONSIDERATIONS

6.1 Guelph Zoning By-law (2023)-20790 Bicycle Parking Requirements

The Site is subject to the bicycle parking requirements for "Residential" uses including "Apartment Building" set forth in the Zoning By-law (2023)-20790. A summary of the bicycle parking requirements for the Site is provided in **Table 7**.

Table 7 Zoning By-law (2023)-20790 Bicycle Parking Requirements

Use	Units[1]	Minimum Rate		Minimum Requirement[2]
Residential	153 units	Long-Term	1 space / unit	**153 spaces**
		Short-Term	0.1 spaces / unit	**16 spaces**
		Total		**169 spaces**

Notes:
1. Based on Site statistics provided by 5468796 Architecture, dated January 9th, 2026.
2. Calculated minimum parking requirements resulting in a fraction shall be rounded up to the next higher whole number.

Application of the bicycle parking rates per Zoning By-law (2023)-20790 results in a requirement to provide a total of 169 bicycle parking spaces, inclusive of 153 long-term spaces, and 16 short-term spaces.

6.2 Proposed Bicycle Parking Supply and Facilities

A total of 210 bicycle parking spaces are proposed for the Site, including 194 long-term bicycle parking spaces and 16 short-term bicycle parking spaces, exceeding the overall requirements stipulated in Zoning By-law (2023)-20790.

Long-term bicycle parking spaces are proposed to be provided on the P2 level of the underground parking garage, and can be accessed by the service elevator provided within the loading area on the east side of the Site. Short-term bicycle parking spaces are provided along the south frontage of the Site, fronting onto College Avenue East, providing convenient access to the primary pedestrian entrance for the Site.

7.0 LOADING CONSIDERATIONS

7.1 Loading Requirements

Zoning By-law (2023)-20790 does not provide a specific minimum required loading space rate for the Site. Notwithstanding, loading spaces have been provided to appropriately accommodate waste collection, building operations / service, and moving activities on-Site.

7.2 Proposed Loading Supply and Facilities

The Site is expected to experience various types of loading activities associated with typical building operations, including waste collection, general building maintenance / service, and resident-related moving activities. To accommodate these activities, the following loading facilities are provided on-Site:

- A loading bay on the east side of the Site, accessible via a 7-metre drive aisle and located at the same elevation as the P1 level of the parking garage; and
- A dedicated moving staging space located within the P1 level of the parking garage, adjacent to the elevators.

The proposed loading facilities separate typical building maintenance, service, and waste collection activities from resident-related moving activities, and provide for the functional needs of the Site.

Vehicle manoeuvring diagrams demonstrating the acceptability of the loading facilities to accommodate waste collection and other related building operations are provided in **Appendix B**.

8.0 TRANSPORTATION DEMAND MANAGEMENT

Transportation Demand Management ("TDM") refers to a framework of strategies to reduce congestion, minimize the number of single-occupant vehicles, encourage non-auto modes of travel, and reduce overall vehicle dependency to create a sustainable transportation system. A TDM Plan seeks to change how, when, where, and why people travel. Further, it works to promote the use of more active and sustainable transportation modes, which respond to the needs of residents and Site visitors with various abilities.

TDM strategies have multiple benefits including the following:

- Reduced auto-related emissions to improve air quality;
- Decreased traffic congestion to reduce travel time;
- Reduced personal transportation costs and energy consumption; and
- Support Official Plan policies and Provincial smart growth objectives.

The City of Guelph *Transportation Impact Study Guidelines* (October 2023) ("Guelph TIS Guidelines") provide a suite of recommended TDM measures which may be incorporated into development applications to contribute towards mitigating auto travel associated with new development. These potential TDM measures have been considered in the preparation of the proposed TDM Plan.

The following outlines measures that are currently incorporated within the Site plan or are recommended to be implemented to support TDM. It is important to note that these TDM strategies will be refined throughout the design process and through subsequent submissions. A summary of the proposed and potential TDM measures are provided in **Table 8**.

Table 8 Proposed Transportation Demand Management Plan

Focus Area	Intent	Implementation
Pedestrian Connectivity	A high-quality, safe, connection between the Site and transit stops, cycling network, public road system, and University of Guelph campus encourages residents and Site visitors to travel around the Site area without a vehicle.	• Pedestrian facilities (i.e., sidewalks) along Site's frontage on College Avenue East will be improved as part of the proposed development. • Quality internal pedestrian connections (including the north-south pedestrian walkway along the west frontage) will facilitate access for residents and Site visitors to the external pedestrian network.
Transit Use	Support for and the promotion of the use of area transit service for both short and long-distance travel by residents and visitors will reduce the overall use of a vehicle and the need to own one.	• The Site is within walking distance to the University of Guelph transit terminal, which is serviced by numerous existing local and regional transit routes. • Information packages will be made available to students with details regarding available area transit services and access to key destinations across the City.
Bicycle Infrastructure	Provide cycling infrastructure that supports and promotes cycling as a convenient and viable travel alternative to the personal automobile.	• The proposed development includes 194 long-term bicycle parking spaces and 16 publicly accessible short-term spaces, exceeding Zoning By-law requirements. • The long-term bicycle parking spaces are provided in secured and weather protected facilities on the P2 level of the underground parking garage. • Consideration for the future implementation of an on-Site bike repair station at the Site Plan Application stage for use by resident and Site visitors.
Parking Facilities	Reduced parking standards within the proposed development encourages residents and visitors to re-consider the use or ownership of a vehicle.	• The applicant will provide unbundled parking (i.e., parking spaces are secured separate from the leasing of dwelling units) for the development. This allows future residents to only acquire parking if required. • Parking spaces on-site will be provided entirely underground to maximize the pedestrian realm and encourage the use of other non-auto means. • The proposed residential parking supply will be provided at a reduced rate relative to Zoning By-law (2023)-20790 requirements.
Ride Sharing	Alternative options to car ownership includes the use of ride-sharing services (e.g., Uber, Lyft). Facilitating pick-up and drop-off activities makes this alternative to car ownership attractive and convenient.	• Pick-up / drop-off activities will be managed on-site near the accessible main building entrance.
Communication	Provide opportunities to navigate and utilize non-auto infrastructure and amenities, as well as encourage internal or shorter daily trips without reliance on a vehicle.	• Provision of effective on-site wayfinding and signage to direct Site users to on-site TDM-related services and amenities (e.g., bicycle parking).

9.0 MULTIMODAL TRAVEL DEMAND FORECASTING

9.1 Person Trip Forecasting

BA Group has reviewed person-based travel activity rates at student-oriented rental apartments to forecast expected travel demands associated with the Site. Person trip data for student-oriented apartments has been reviewed on a "per bedroom" basis to control for unit size between proxy sites. The adopted "per bedroom" trip rate was then converted to a "per unit" rate for consistency with standard trip generation approaches for residential developments.

The observed proxy sites are located in Toronto and proximate to the University of Toronto (253 College Street proxy site) and Toronto Metropolitan University (186 Jarvis Street proxy site). Notwithstanding that these proxy sites are located in Toronto, person-based student travel activity during weekday peak hours is primarily driven by school-based activities, which are generally consistent across institutions. On this basis, the observed proxy data is appropriate and applicable for use in this review.

Table 9 summarizes the observed and adopted person trip rates on a "per bedroom" and "per unit" basis.

Table 9 Person Trip Generation Review

Site	Survey Date	AM Peak Hour			PM Peak Hour		
		In	Out	2-Way	In	Out	2-Way
253 College Street Toronto (890 Beds)	Thu, Sept 18, 2025	0.01	0.15	0.16	0.18	0.12	0.30
	Fr, Sept 19, 2025	0.02	0.12	0.14	0.20	0.15	0.34
	Tue, Sept 23, 2025	0.02	0.13	0.15	0.20	0.16	0.36
186 Jarvis Street Toronto (1,000 beds)	Tue, Sept 30, 2025	0.02	0.07	0.09	0.09	0.09	0.18
	Wed, Oct 01, 2025	0.01	0.06	0.08	0.10	0.07	0.17
	Fri, Oct 03, 2025	0.02	0.07	0.08	0.10	0.09	0.19
Adopted Person Trip Rate (per Bedroom)		**0.05**	**0.10**	**0.15**	**0.15**	**0.10**	**0.25**
Effective Person Trip Rate (per Unit)		**0.17**	**0.35**	**0.52**	**0.52**	**0.35**	**0.87**
Forecasted Person Trips (153 units)		**25**	**55**	**80**	**80**	**55**	**135**

As indicated above, the Site is forecasted to generate in the order of 80 and 135 two-way person trips per unit during the weekday morning and afternoon peak hours, respectively. The effective person trip rates on a "per unit" basis exceeds the rates typically observed at residential developments and are representative of the heightened travel activities often observed by students travelling to / from campus for classes, extracurricular activities, etc. during peak periods.

9.2 Mode Share Review

Trips generated by Site residents during the weekday morning and afternoon peak hours are primarily expected to be made to / from the University of Guelph campus, which is located immediately south of the Site on the south side of College Avenue East. In this context, BA Group has reviewed Transportation Tomorrow Survey (TTS) mode share data for existing travel patterns for home-based school trips made to / from the University of Guelph starting and ending entirely within the City of Guelph.

Table 10 summarizes the review of home-based school trips made to / from the University of Guelph. This review includes 2016 and 2022 TTS data, as the 2022 TTS was undertaken during the recovery period from the COVID-19 pandemic, where on-campus University-related classes / activities may have been impacted as a result of in-person restrictions. Detailed TTS mode share queries are provided in **Appendix C**.

Table 10 University of Guelph Home-Based School Trip Mode Shares

Mode	2016		2022	
	AM	PM	AM	PM
Auto Driver	16%	12%	22%	21%
Auto Passenger	6%	4%	8%	5%
Transit	58%	56%	41%	40%
PUDO	0%	1%	0%	0%
Cycle	6%	6%	10%	9%
Walk	14%	22%	19%	25%
Total	**100%**	**100%**	**100%**	**100%**

Notes:
1. TTS mode share queries for home-based school trips made to / from the University of Guelph (2006 GTA zones 8056 & 8057) within the City of Guelph (Planning District 70).

The above review indicates that auto mode shares for home-based school trips to / from the University of Guelph made entirely within the City of Guelph increased between 2016 and 2022 in the order of approximately 6% - 9%, while transit mode shares decreased in the order of approximately 16% - 17%. Other travel modes, including cycling and walking, have remained generally stable (<5% fluctuation) between the 2016 and 2022 TTS.

Given that the recovery of home-based school trip mode shares in 2026 to pre-COVID activity levels (i.e. 2016 TTS data) is unknown at this time, the 2022 TTS mode share has been adopted for the Site as a conservative forecast of travel behaviours for future residents. The adopted mode share for the Site is provided in **Table 11**.

It is expected that the majority of Site-related trips made during the weekday morning and afternoon peak hours will be to / from the University of Guelph, and can readily and most conveniently be made by active modes of travel, the adopted mode share reflects a proportion of residents who may travel to other locations outside of the University during these times (e.g. grocery shopping, part-time employment, other discretionary trips, etc.). We also note that the closest transit stops are located over 800 metres from the Site (on the University campus and at the College Avenue East / Gordon Street intersection); therefore, transit trips generated by the Site will functionally serve as active transportation trips to / from the immediate Site area.

Table 11 Adopted Mode Share

Mode	2022	
	AM	PM
Auto Driver	22%	21%
Auto Passenger	8%	5%
Transit	41%	40%
PUDO	0%	0%
Cycle	10%	9%
Walk	19%	25%
Total	**100%**	**100%**

Notes:
1. TTS mode share queries for home-based school trips made to / from the University of Guelph (2006 GTA zones 8056 & 8057) within the City of Guelph (Planning District 70).
2. Peak hour mode shares reflect two-way trips.

9.3 Multimodal Travel Demand Forecasts

The forecasted person trips derived in **Table 9** have been assigned to various travel modes based on the adopted mode share presented in **Table 11** to generate multimodal travel demand forecasts for the Site. Multimodal travel demand forecasts for the Site are provided in **Table 12**.

Table 12 Multimodal Travel Demand Forecasts

Travel Mode Share			AM			PM		
			In	Out	2-Way	In	Out	2-Way
Person Trip Rate (per Unit)			**0.17**	**0.35**	**0.52**	**0.52**	**0.35**	**0.87**
Person Trips (153 Units)			**25**	**55**	**80**	**80**	**55**	**135**
Mode	**AM**	**PM**	**Multimodal Forecasting**					
Auto Driver	22%	21%	10	10	20	15	15	30
Auto Passenger	8%	5%	0	5	5	5	0	5
Transit	41%	40%	5	25	30	35	20	55
PUDO	0%	0%	0	0	0	0	0	0
Cycle	10%	9%	5	5	10	5	5	10
Walk	19%	25%	5	10	15	20	15	35
Total			**25**	**55**	**80**	**80**	**55**	**135**

9.4 Vehicle Trip Generation Review

The adopted person trip generation and mode share results in the order of 20 and 30 two-way vehicle trips during the weekday morning and afternoon peak hours, respectively. The resulting vehicle trips correspond to effective two-way vehicle trip rates of 0.13 and 0.19 during the weekday morning and afternoon peak hours, respectively.

To validate the effective two-way vehicle trip rates for the Site, BA Group has undertaken a vehicle trip generation survey at a student-oriented apartment building at 601 Scottsdale Drive, Guelph. Details of the proxy site survey and its comparison to the effective vehicle trip rates for the Site are summarized in **Table 13**.

Table 13 Site-Related Vehicle Trip Generation Review

Site	Survey Date	AM Peak Hour			PM Peak Hour		
		In	Out	2-Way	In	Out	2-Way
Proxy Vehicle Trip Generation Rate							
601 Scottsdale Drive, Guelph (164 units)	Tue, November 25, 2025	0.05	0.04	0.10	0.09	0.09	0.18
Forecasted Site Effective Vehicle Trip Rate							
Forecasted Auto Driver Trips		10	10	20	15	15	30
Effective Vehicle Trip Generation Rates (153 units)		**0.06**	**0.06**	**0.13**	**0.09**	**0.09**	**0.19**

As indicated above, the effective vehicle trip generation rates for the Site are comparable, and higher, than the observed vehicle trip generation rates for an existing student-oriented apartment elsewhere in Guelph. On this basis, the adopted mode share and corresponding effective vehicle trip generation rates are appropriate for the Site.

10.0 TRAFFIC VOLUMES FORECASTING

The traffic volumes forecasting parameters adopted as part of this Study have been confirmed with City of Guelph staff through a Terms-of-Reference circulated on November 13th, 2025. The Terms-of-Reference and associated City of Guelph correspondence are provided in **Appendix D** for reference.

10.1 Study Area

The adopted study area for this analysis includes the following intersections:

- College Avenue East / East Ring Road (signalized intersection)
- College Avenue East / Dundas Lane (unsignalized intersection)
- College Avenue East / Site Driveway (proposed future unsignalized intersection)

10.2 Forecast Scenarios and Design Periods

Traffic volumes forecasting and operations analysis have been undertaken for the weekday morning and weekday afternoon street-peak hours under the following conditions:

- Existing Traffic Conditions (2025) – traffic activity under current conditions.
- Future Background Traffic Conditions (2030 and 2035) – traffic activity levels 5 and 10 years into the future considering allowances for general corridor growth as well as additional allocations for the future Guelph Innovation District as coordinated with City of Guelph staff and discussed in further detail in **Section 10.4**.
- Future Total Traffic Conditions (2030 and 2035) – traffic activity levels 5 and 10 years into the future, considering future background conditions and forecasted Site-generated vehicle trips on the study area road network.

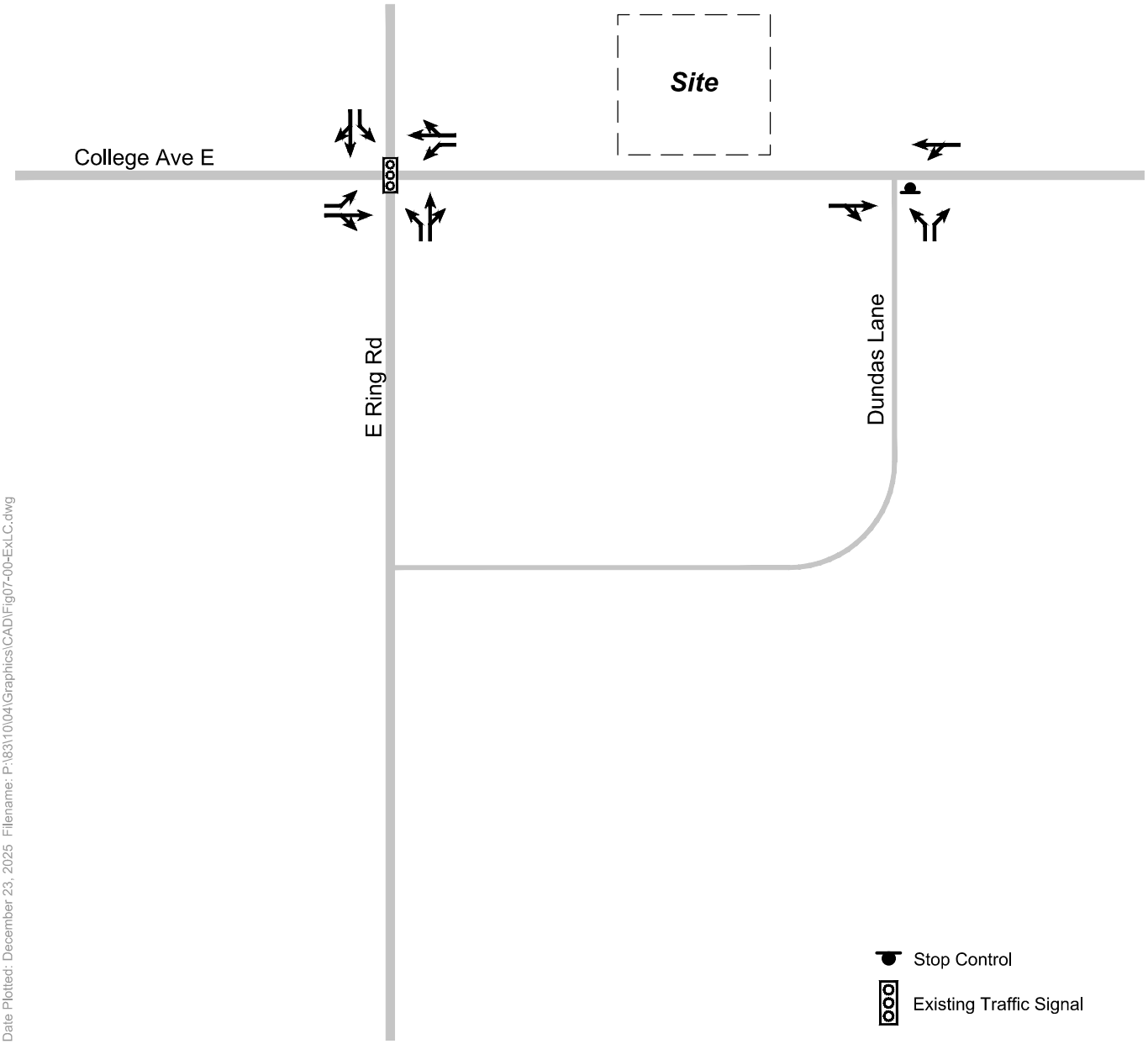
10.3 Existing Traffic Volumes

Existing study area traffic volumes were established for the weekday morning and afternoon peak hours using traffic count data obtained from traffic surveys undertaken by Spectrum Traffic Data Inc. **Table 14** summarizes the traffic counts. Existing and future lane configurations are illustrated in Figure 7 and Figure 8, respectively.

Turning movement counts are provided in **Appendix E**. Existing traffic volumes are illustrated in **Figure 9**.

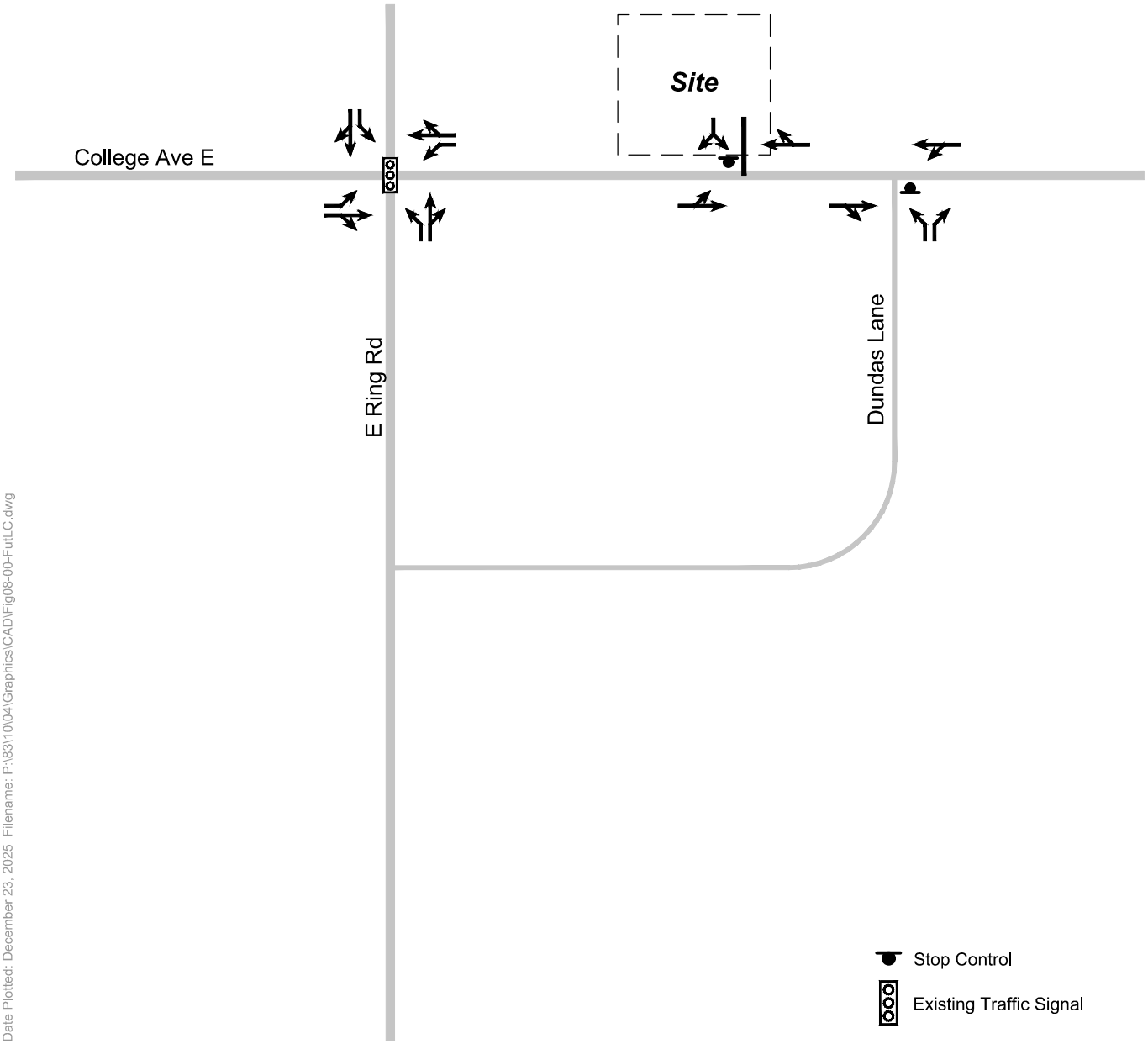
Table 14 Existing Turning Movement Counts Summary

Intersection	Control Type	Date Counted	Data Source
College Avenue East / East Ring Road	Signalized	Thurs, Nov. 20, 2025	Spectrum Traffic Data Inc.
College Avenue East / Dundas Lane	Unsignalized		
College Avenue East / 210 College Street (future Site Driveway Location)	Unsignalized		



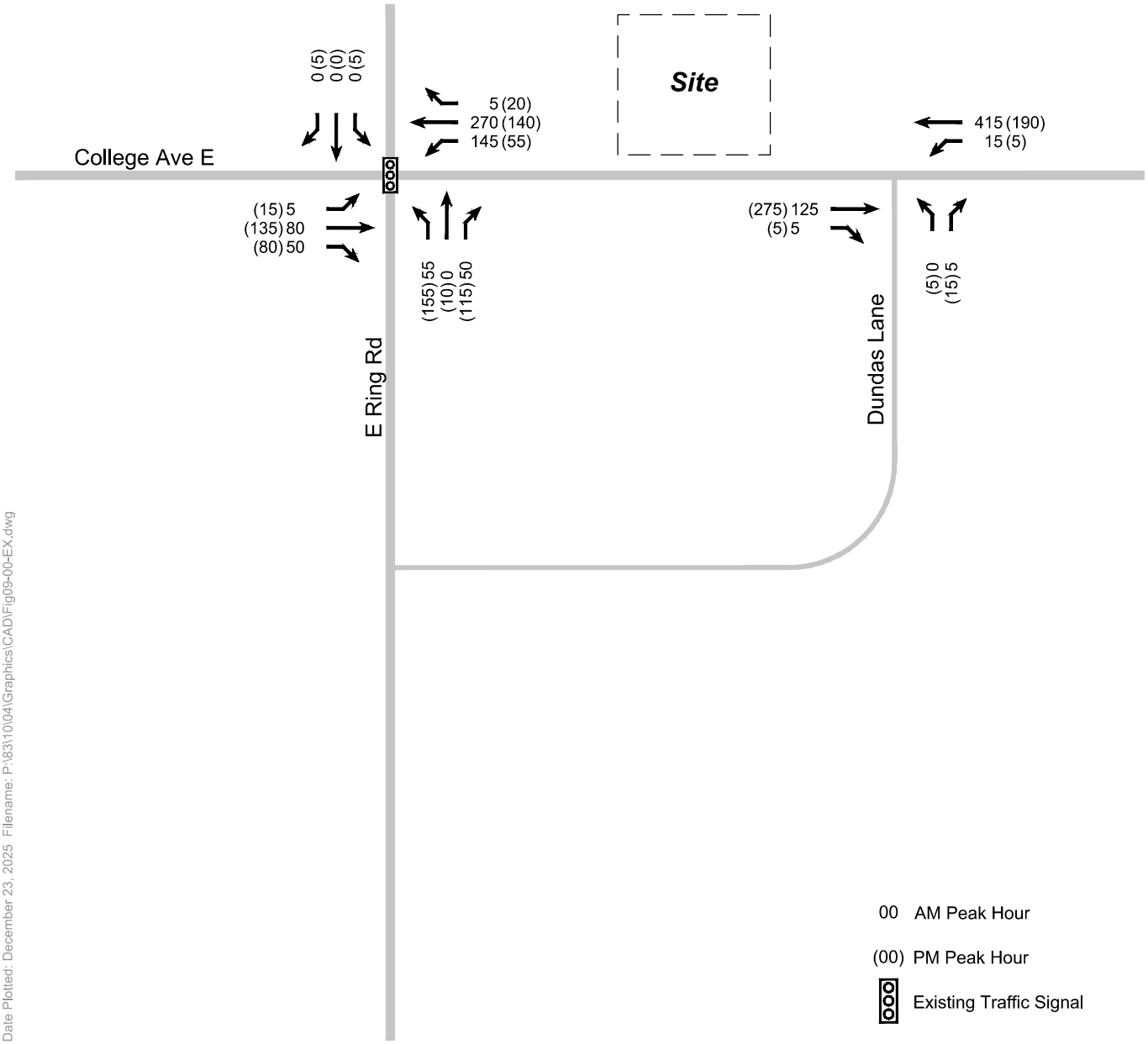
Date Plotted: December 23, 2025 Filename: P:\83\10\04\Graphics\CAD\Fig07-00-ExLC.dwg

FIGURE 7 EXISTING LANE CONFIGURATION AND TRAFFIC CONTROL



Date Plotted: December 23, 2025 Filename: P:\83\10\04\Graphics\CAD\Fig08-00-FutLC.dwg

FIGURE 8 FUTURE LANE CONFIGURATION AND TRAFFIC CONTROL



Date Plotted: December 23, 2025 Filename: P:\83\10\04\Graphics\CAD\Fig09-00-EX.dwg

FIGURE 9 EXISTING TRAFFIC VOLUMES

10.4 Future Background Traffic Volumes

Traffic allocations to account for future area growth under 2030 and 2035 conditions have been confirmed with City of Guelph staff through correspondence related to a Terms-of-Reference submitted on November 20th, 2025.

10.4.1 Corridor Growth

As coordinated with City of Guelph staff, the following corridor growth assumptions have been applied along College Avenue East:

- 1.5% corridor growth eastbound and westbound from 2025 to 2030.
- 1.0% corridor growth eastbound and westbound from 2030 to 2035.

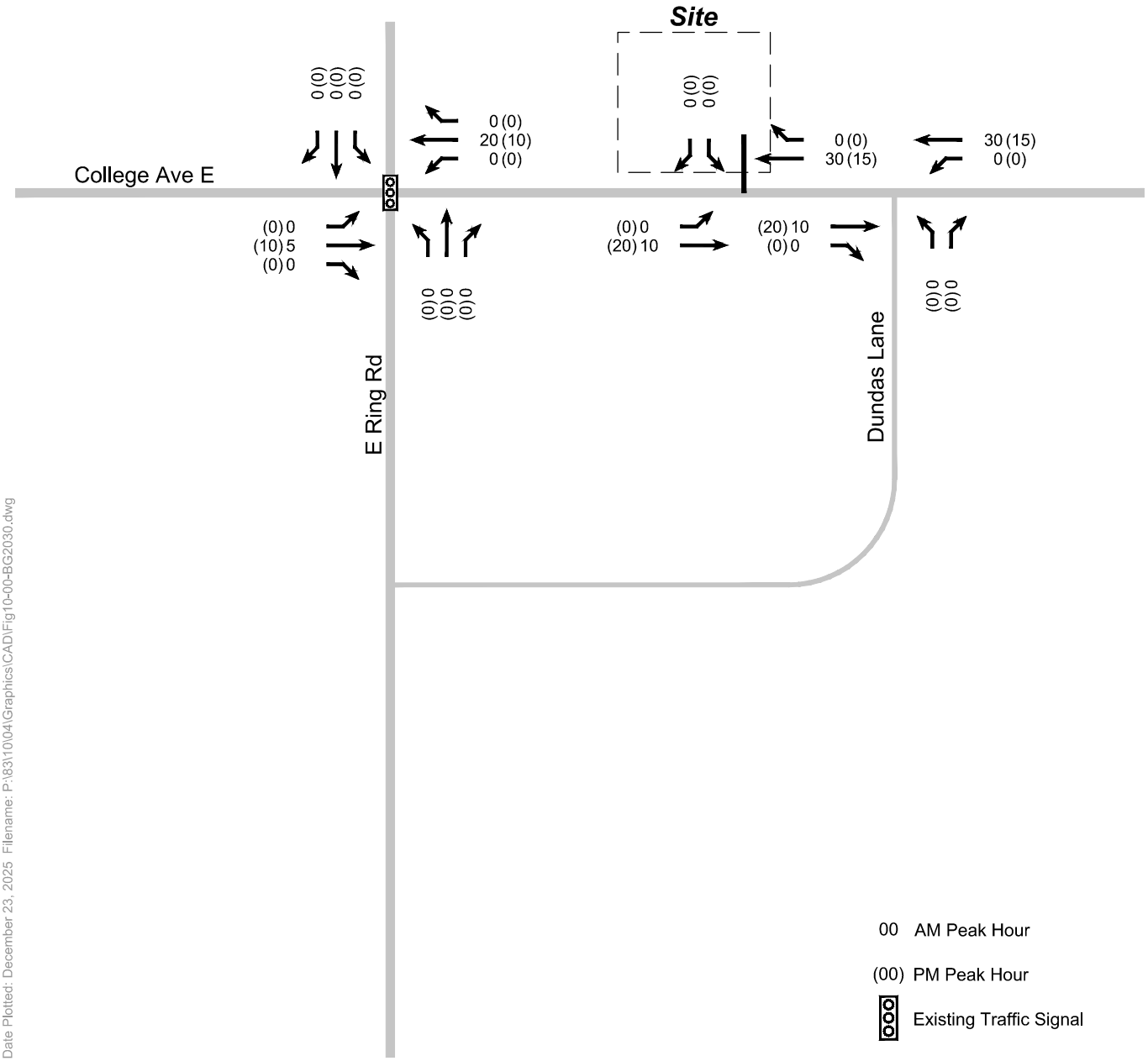
10.4.2 Area Background Development Allocations

As coordinated with City of Guelph staff, the following traffic allocations have been made along College Avenue East to account for future development of the Guelph Innovation District under the 2035 horizon period:

- 100 vehicles per hour eastbound and westbound during the morning peak hour.
- 125 vehicles per hour eastbound and westbound during the afternoon peak hour.

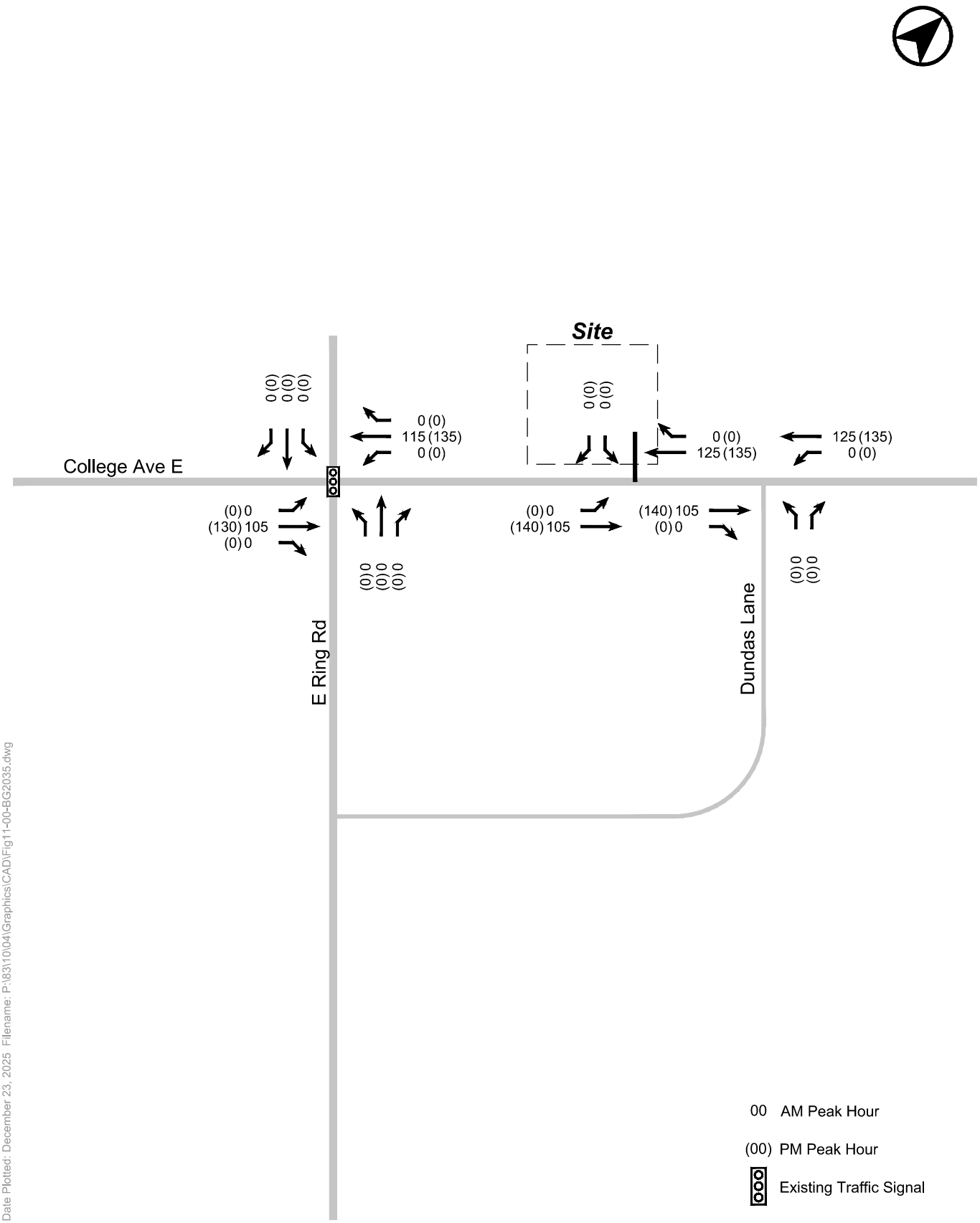
Background traffic volumes (corridor growth + area background development allocations) under the 2030 and 2035 horizon periods are illustrated in **Figure 10** and **Figure 11**, respectively.

Future background traffic volumes under the 2030 and 2035 horizon periods are illustrated in **Figure 12** and **Figure 13**, respectively.



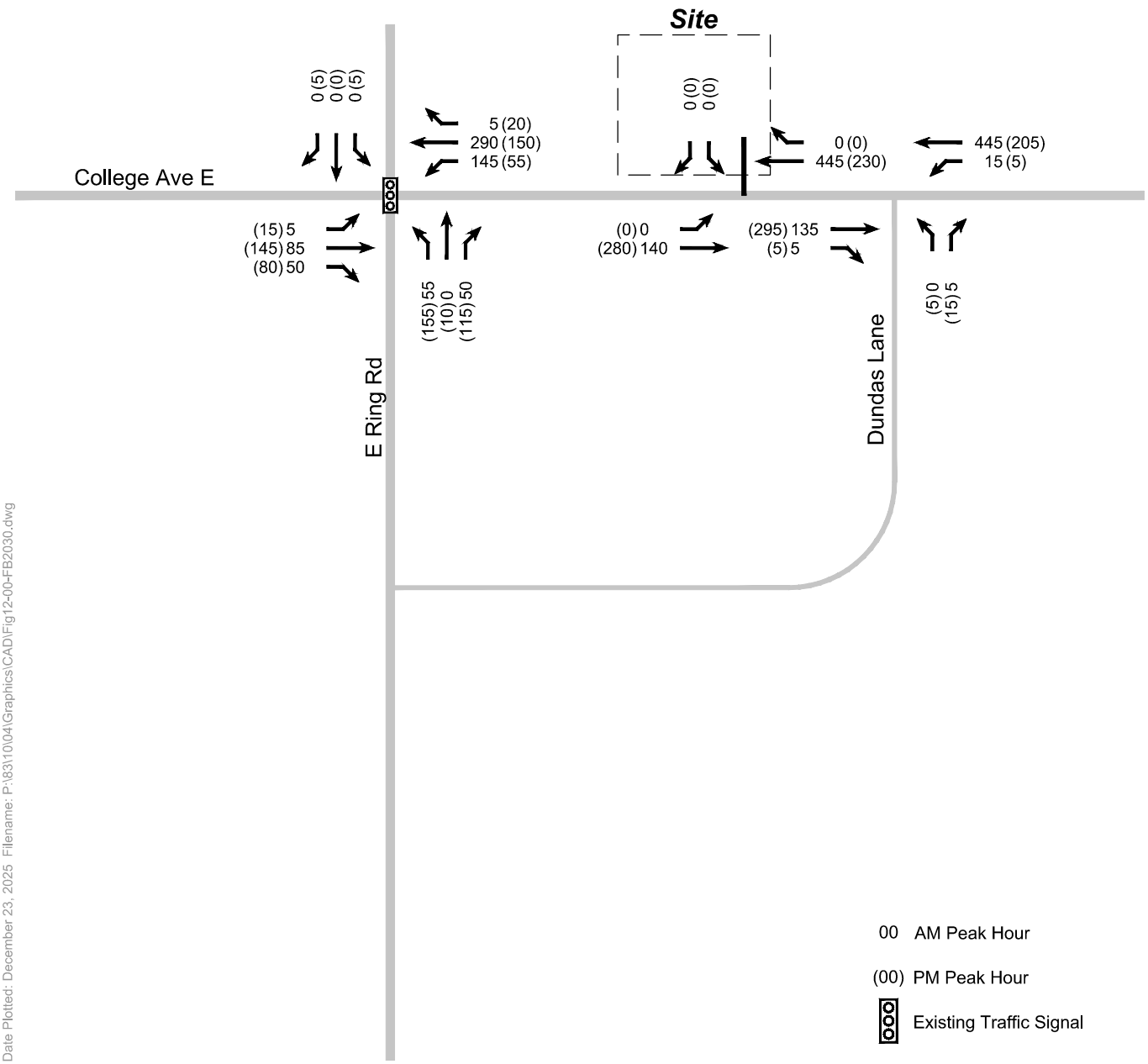
Date Plotted: December 23, 2025 Filename: P:\83\10\04\Graphics\CAD\Fig10-00-BG2030.dwg

FIGURE 10 2030 BACKGROUND TRAFFIC VOLUMES ALLOCATIONS



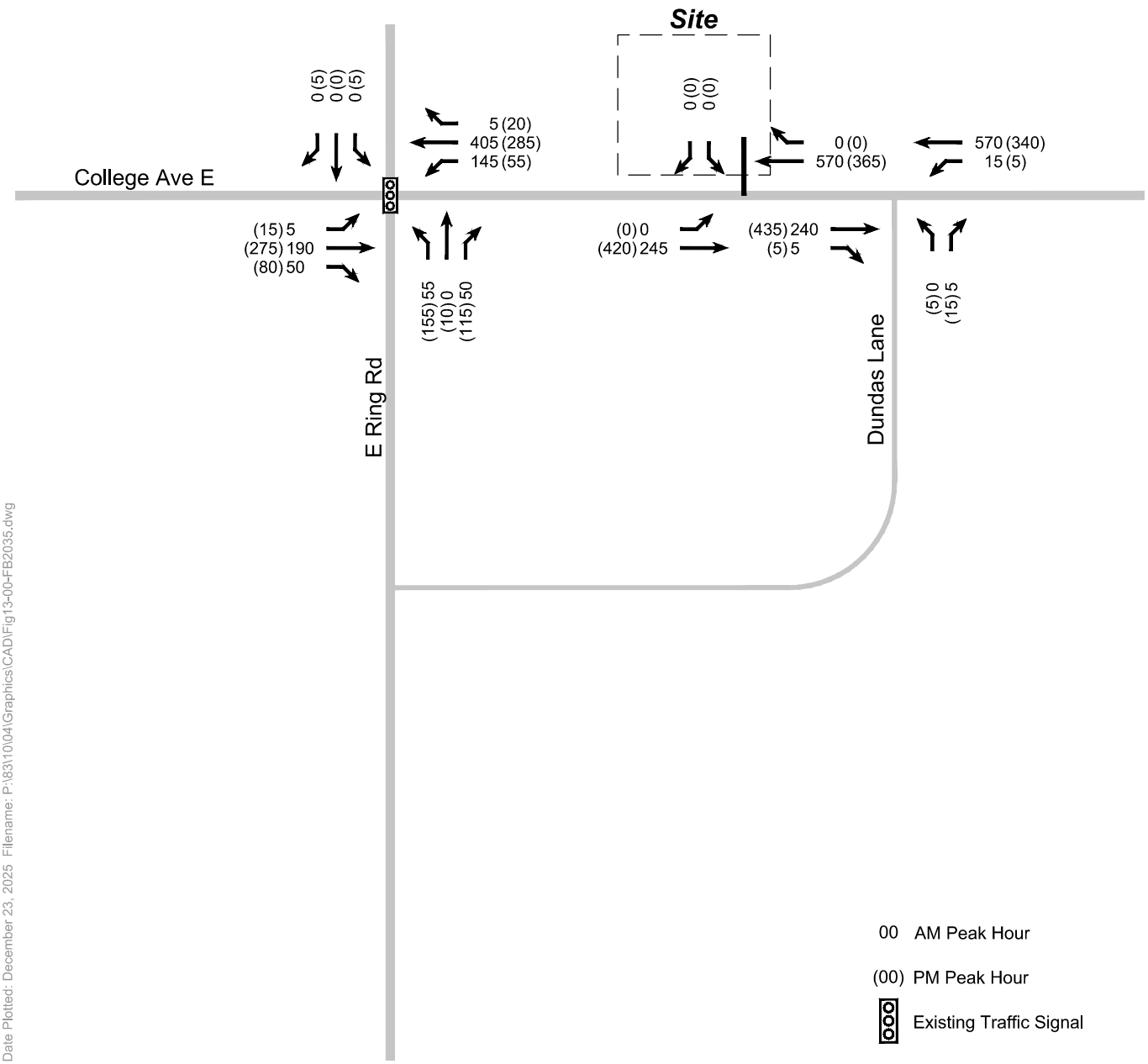
Date Plotted: December 23, 2025 Filename: P:\83\10\04\Graphics\CAD\Fig11-00-BG2035.dwg

FIGURE 11 2035 BACKGROUND TRAFFIC VOLUMES ALLOCATIONS



Date Plotted: December 23, 2025 Filename: P:\83\10\04\Graphics\CAD\Fig12-00-FB2030.dwg

FIGURE 12 2030 FUTURE BACKGROUND TRAFFIC VOLUMES



Date Plotted: December 23, 2025 Filename: P:\83\10\04\Graphics\CAD\Fig13-00-FB2035.dwg

FIGURE 13 2035 FUTURE BACKGROUND TRAFFIC VOLUMES

10.5 Site Traffic Volumes

As derived in **Section 9.0**, the Site is forecasted to generate in the order of 20 and 30 two-way vehicle trips during the weekday morning and afternoon peak hours, respectively.

10.5.1 Site Traffic Distribution

The distribution of Site traffic has been reviewed on the basis of 2022 TTS queries for home-based vehicle trips in the area of the Site. **Table 15** summarizes the adopted Site traffic distribution, and detailed TTS queries are provided in **Appendix F**.

Table 15 Adopted Site Traffic Distribution

Direction	Route	AM	PM
East	College Avenue East	25%	25%
West	College Avenue East	65%	65%
South	East Ring Road	10%	10%

10.5.2 Site Traffic Volumes Summary

The forecasted vehicle trip generation for the Site is summarized in **Table 16** and is illustrated in **Figure 14**.

Table 16 Site Vehicle Trip Generation

	AM Peak Hour			PM Peak Hour		
	In	Out	2-Way	In	Out	2-Way
Forecasted Auto Driver Trips	10	10	20	15	15	30

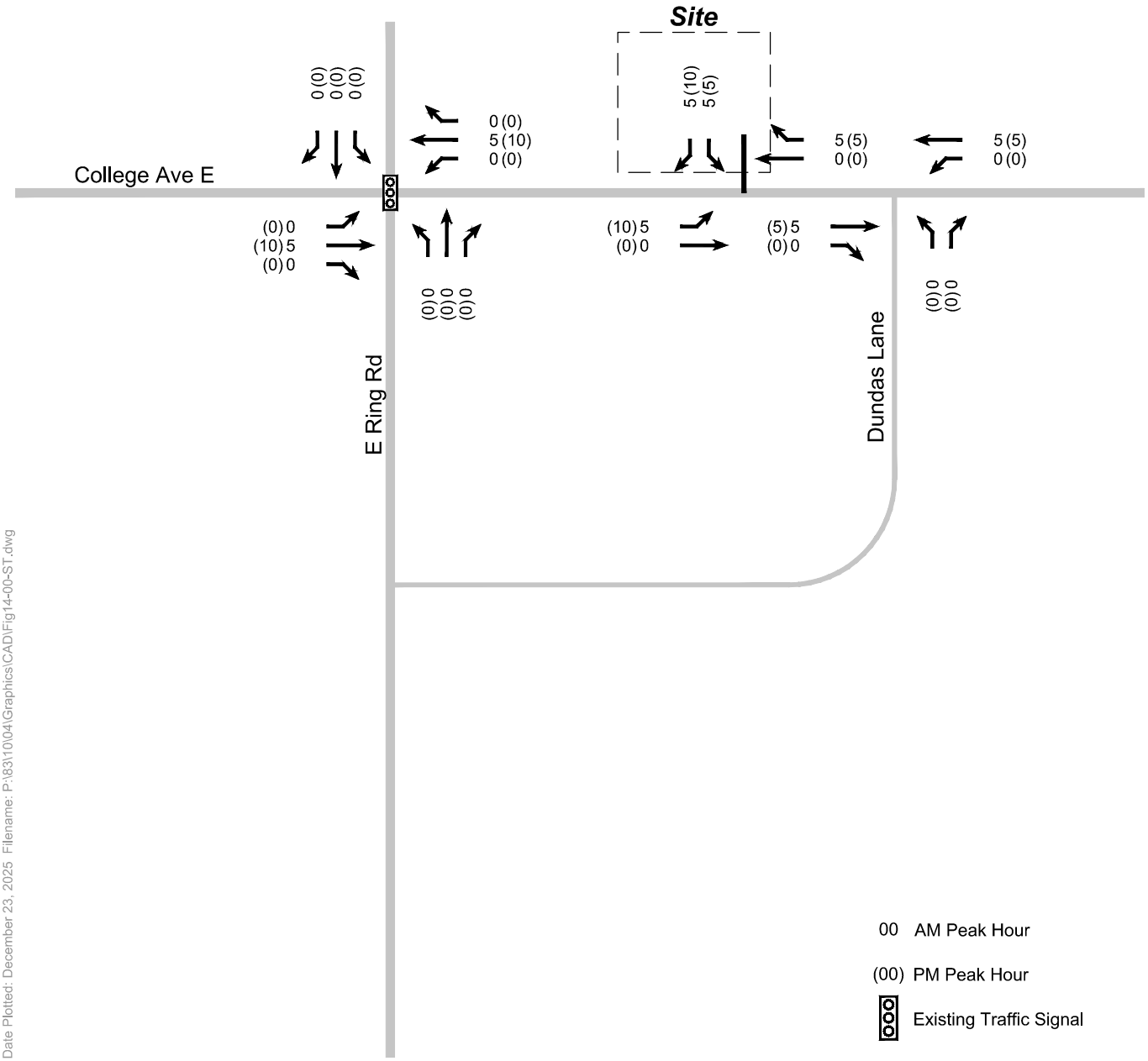


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FIGURE 14 SITE TRAFFIC VOLUMES

10.6 Future Total Traffic Volumes

Future total traffic volumes, which reflect the addition of future background traffic volumes and Site-related traffic volumes, for the 2030 and 2035 horizon periods are illustrated in **Figure 15** and **Figure 16**, respectively.

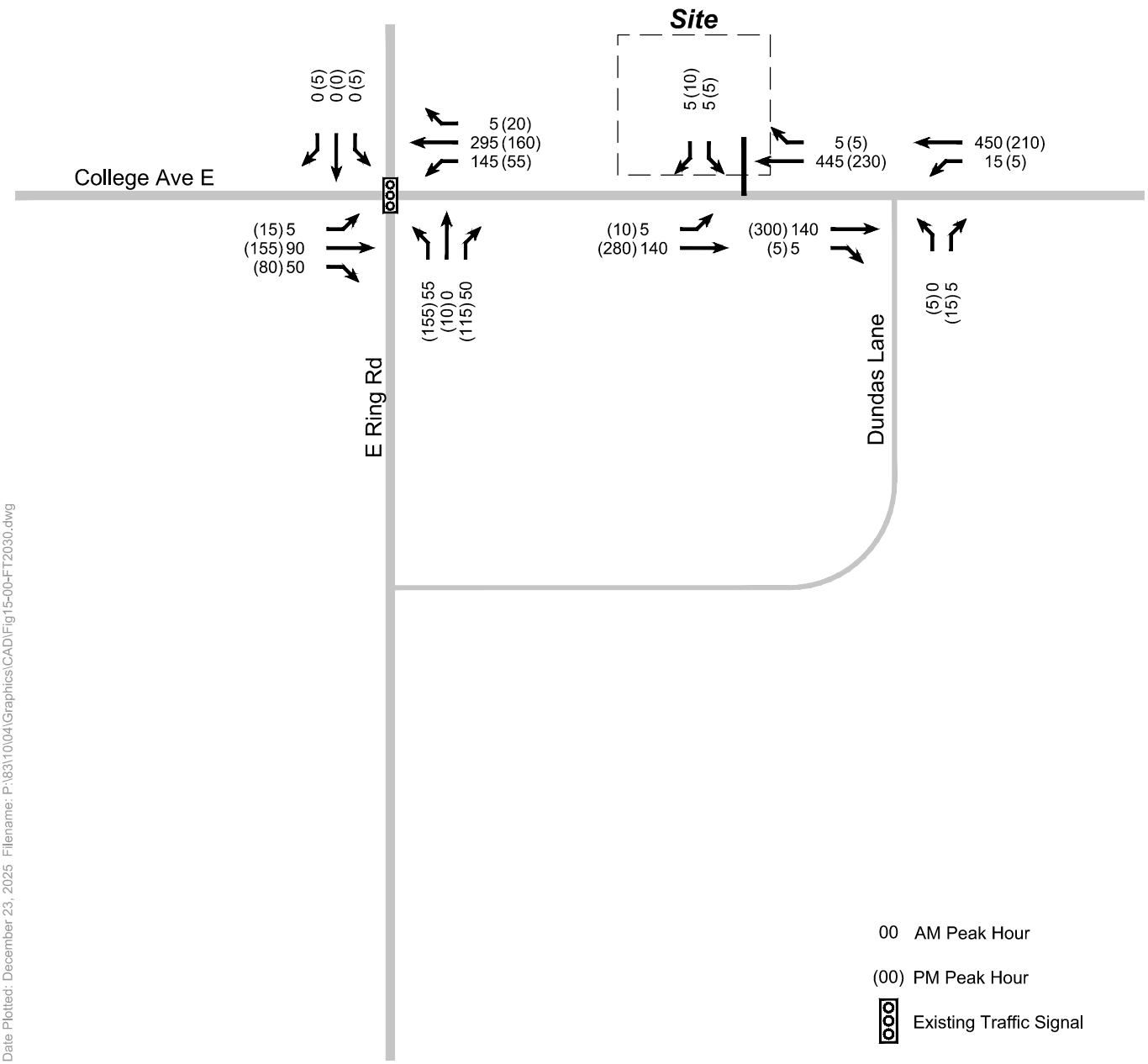

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FIGURE 15 2030 FUTURE TOTAL TRAFFIC VOLUMES

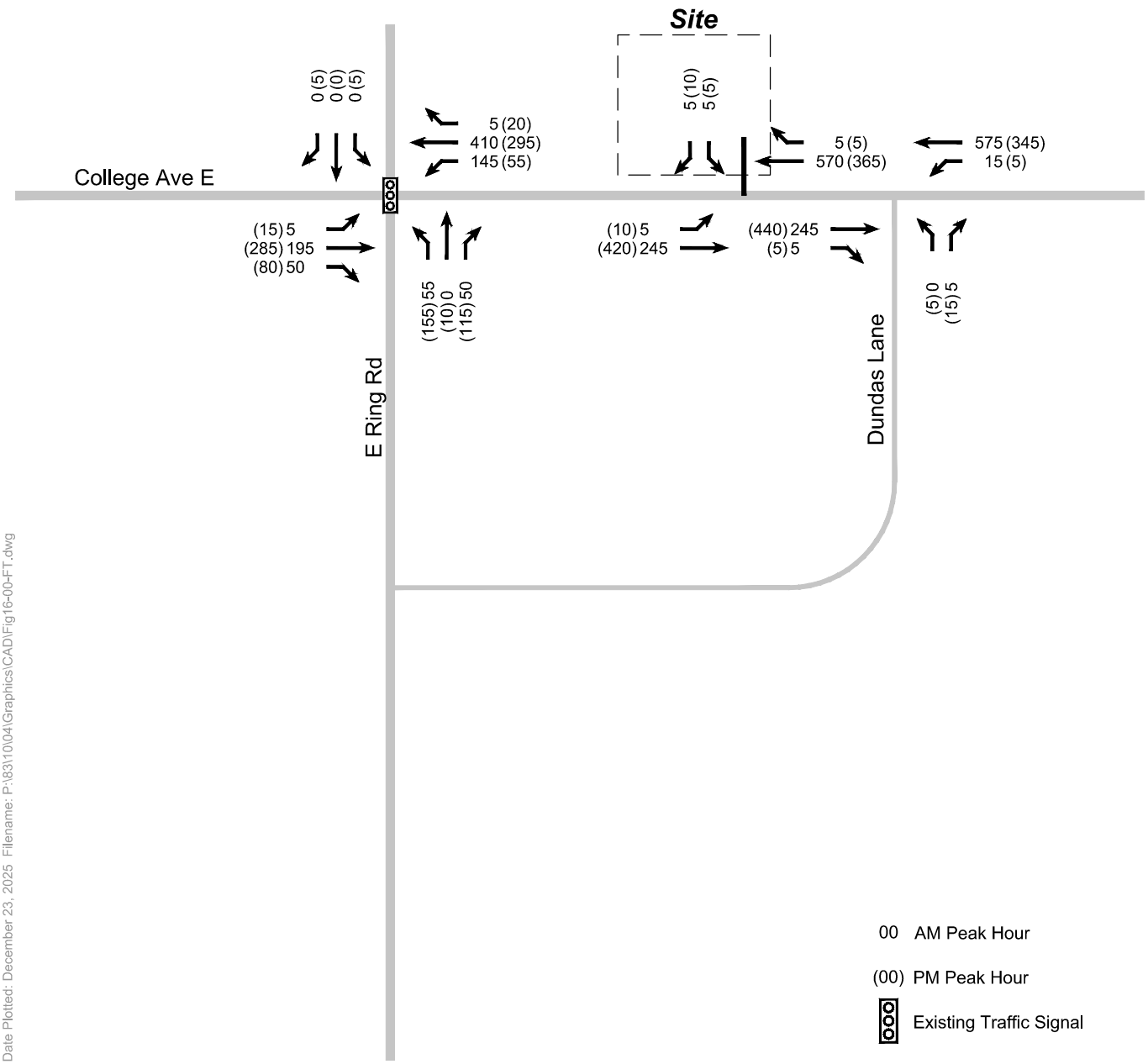

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FIGURE 16 2035 FUTURE TOTAL TRAFFIC VOLUMES

11.0 TRAFFIC OPERATIONS ASSESSMENT

11.1 Analysis Methodology

Traffic operations assessments have been undertaken at the study area intersections using standard capacity analysis procedures for signalized and unsignalized intersections as follows.

Signalized Intersections

Analyses undertaken at intersections under signalized traffic control utilize methodologies and procedures outlined in the Highway Capacity Manual (HCM) 2000 and Synchro Version 11, and in accordance with the City of Guelph's *Transportation Impact Study Guidelines (2023)*. Outputs of the signalized intersection assessment include volume to capacity ratios (v/c), whereby a v/c index of 1.00 indicates 'at or near capacity' conditions. Intersection movements and overall intersection operations are also assigned a level-of-service, in accordance with HCM 2000 criteria for signalized intersections, as follows:

- LOS A: Control Delay ≤ 10s
- LOS B: 10s < Control Delay ≤ 20s
- LOS C: 20s < Control Delay ≤ 35s
- LOS D: 35s < Control Delay ≤ 55s
- LOS E: 55s < Control Delay ≤ 80s
- LOS F: Control Delay > 80s

Unsignalized Intersections

Unsignalized intersection analyses have been carried out using standard capacity procedures for intersections operating under "two-way" and "all-way" STOP control and in accordance with HCM 2000 methodologies. Outputs of the unsignalized intersection assessment includes a level-of-service designation, ranging from A to F, providing a relative indication of the level of delay experienced by motorists completing a movement at an intersection. LOS A represents conditions under which motorists would experience little delay, while LOS F represents conditions where motorists would experience extended delays. HCM 2000 LOS criteria for unsignalized intersections are as follows:

- LOS A: Control Delay ≤ 10s
- LOS B: 10s < Control Delay ≤ 15s
- LOS C: 15s < Control Delay ≤ 25s
- LOS D: 25s < Control Delay ≤ 35s
- LOS E: 35s < Control Delay ≤ 50s
- LOS F: Control Delay > 50s

11.2 Network-Wide Parameters

Signal Timings

Existing signal timing plans for the College Avenue East / East Ring Road intersection were obtained from the City of Guelph and have been incorporated in this analysis. Existing timings have been adopted under all analysis scenarios. Signal timing plans are provided in **Appendix G** for reference.

Base Saturation Flow Rates

A base saturation flow rate of 1,900 pcuphlg (passenger car units per hour per lane green) has been adopted under all traffic analysis scenarios.

Heavy Vehicle Assumptions

Heavy vehicle percentages used for this analysis are consistent with those observed in the existing intersection turning movement counts.

Lost Time Adjustment

For the purposes of this analysis, a lost time adjustment of 0 seconds has conservatively been employed under all traffic analysis scenarios.

Lane Utilization Factors

Default Synchro lane utilization factors (LUF) have been adopted under all traffic analysis scenarios for this analysis.

Peak Hour Factors

For the purposes of this analysis, peak hour factors (PHF) observed as part of existing intersection turning movement counts have been adopted under all traffic analysis scenarios. Where PHF data was unavailable, a factor of 0.92 has been adopted.

11.3 Signalized Intersections Analysis Results

Traffic operations analysis for the College Avenue East / East Ring Road intersection under existing, future background (2030 and 2035) and future total (2030 and 2035) conditions is summarized below. Detailed Synchro capacity analysis reports are provided in **Appendix H** for reference.

11.3.1 College Avenue East / East Ring Road Capacity Results

Table 17 summarizes the intersection capacity results for the College Avenue East / East Ring Road intersection under existing, future background, and future total conditions.

Table 17 College Avenue East / East Ring Road Capacity Results

Lane Group	Existing		Future Background (2030)		Future Background (2035)		Future Total (2030)		Future Total (2035)	
	v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS
EBL	0.01 (0.03)	A (A)	0.01 (0.03)	A (A)	0.01 (0.04)	A (A)	0.01 (0.03)	A (A)	0.01 (0.04)	A (A)
EBTR	0.13 (0.27)	A (A)	0.14 (0.29)	A (A)	0.26 (0.46)	A (A)	0.14 (0.31)	A (A)	0.26 (0.47)	A (A)
WBL	0.26 (0.13)	A (A)	0.26 (0.13)	A (A)	0.27 (0.14)	A (A)	0.26 (0.13)	A (A)	0.27 (0.14)	A (A)
WBTR	0.32 (0.23)	A (A)	0.34 (0.24)	A (A)	0.44 (0.40)	A (A)	0.35 (0.25)	A (A)	0.45 (0.41)	A (A)
NBL	0.30 (0.50)	B (B)	0.30 (0.50)	B (B)	0.33 (0.53)	B (B)	0.30 (0.50)	B (B)	0.33 (0.53)	B (B)
NBTR	0.03 (0.10)	B (B)	0.03 (0.10)	B (B)	0.03 (0.10)	B (B)	0.03 (0.10)	B (B)	0.03 (0.10)	B (B)
SBL	-- (0.02)	-- (A)	-- (0.02)	-- (A)	-- (0.02)	-- (B)	-- (0.02)	-- (A)	-- (0.02)	-- (B)
SBTR	-- (0.00)	-- (A)	-- (0.00)	-- (A)	-- (0.00)	-- (B)	-- (0.00)	-- (A)	-- (0.00)	-- (B)
Overall	**0.32 (0.36)**	**A (A)**	**0.33 (0.37)**	**A (A)**	**0.42 (0.48)**	**A (A)**	**0.34 (0.38)**	**A (A)**	**0.42 (0.49)**	**A (A)**

Notes:
1. XX (XX) – Weekday Morning Peak Hour (Weekday Afternoon Peak Hour).

Under existing conditions, the College Avenue East / East Ring Road intersection operates within capacity and under acceptable levels of service with v/c ratios of 0.32 and 0.36 during the weekday morning and afternoon peak hours, respectively.

Under future background conditions (2030 and 2035), the College Avenue East / East Ring Road intersection operates within capacity and under acceptable levels of service with v/c ratios of 0.33 and 0.37 under the 2030 horizon and 0.42 and 0.48 under the 2035 horizon.

Under future total conditions (2030 and 2035), the College Avenue East / East Ring Road intersection operates within capacity and under acceptable levels of service with v/c ratios of 0.34 and 0.38 under the 2030 horizon and 0.42 and 0.49 under the 2035 horizon.

Based on the foregoing, the College Avenue East / East Ring Road intersection can acceptably accommodate forecasted Site-related vehicle traffic, and no specific improvements to signal timings are recommended.

11.3.2 College Avenue East / East Ring Road Queueing Results

Table 18 summarizes the intersection queueing results for the College Avenue East / East Ring Road intersection under existing, future background, and future total conditions.

Table 18 College Avenue East / East Ring Road Queueing Results

Lane Group	Available Storage	Existing		Future Background (2030)		Future Background (2035)		Future Total (2030)		Future Total (2035)	
		50th %ile	95th %ile	50th %ile	95th %ile	50th %ile	95th %ile	50th %ile	95th %ile	50th %ile	95th %ile
EBL	40 m	0.2 (0.6)	1.4 (3.4)	0.2 (0.6)	1.4 (3.5)	0.2 (0.6)	1.4 (3.6)	0.2 (0.6)	1.4 (3.5)	0.2 (0.6)	1.4 (3.6)
EBTR	380 m	3.2 (6.1)	9.3 (19.9)	3.4 (6.8)	9.8 (21.3)	9.3 (15.2)	19.7 (41.3)	3.6 (7.4)	10.1 (22.9)	9.6 (16.0)	20.2 (42.9)
WBL	50 m	6.4 (2.2)	14.5 (8.6)	6.4 (2.2)	14.7 (8.6)	6.5 (2.2)	15.6 (9.0)	6.4 (2.2)	14.7 (8.7)	6.5 (2.2)	15.6 (9.1)
WBTR	>500 m	12.4 (5.9)	23.8 (17.8)	13.5 (6.4)	25.9 (19.2)	20.6 (13.7)	38.9 (36.5)	13.8 (6.9)	26.3 (20.3)	20.9 (14.3)	39.5 (38.1)
NBL	90 m	2.9 (7.0)	8.8 (18.6)	3.0 (7.0)	9.1 (19.0)	3.4 (7.9)	11.0 (24.7)	3.0 (7.0)	9.2 (19.5)	3.4 (8.0)	11.1 (25.1)
NBTR	190 m	0.0 (0.4)	0.0 (7.5)	0.0 (0.4)	0.0 (7.7)	0.0 (0.5)	0.0 (9.5)	0.0 (0.4)	0.0 (7.9)	0.0 (0.5)	0.0 (9.7)
SBL	15 m	-- (0.2)	-- (1.7)	-- (0.2)	-- (1.8)	-- (0.3)	-- (2.3)	-- (0.2)	-- (1.8)	-- (0.3)	-- (2.2)

Notes:
1. XX (XX) – Weekday Morning Peak Hour (Weekday Afternoon Peak Hour).

As indicated above, 50th and 95th percentile queueing activity at the College Avenue East / East Ring Road intersection is expected to be acceptably accommodated within the existing available storage areas for all movements. No specific infrastructure improvements are recommended at this intersection to accommodate future Site-related traffic.

11.4 Unsignalized Intersections Analysis Results

Traffic operations analysis for the College Avenue East / Dundas Lane and College Avenue East / Site Driveway intersections under existing, future background (2030 and 2035) and future total (2030 and 2035) conditions are summarized below. Detailed Synchro capacity analysis reports are provided in **Appendix H** for reference.

11.4.1 Unsignalized Intersections Capacity Results

Table 19 summarizes the unsignalized intersection capacity results for the College Avenue East / Dundas Lane and College Avenue East / Site Driveway intersections under existing, future background, and future total conditions

Table 19 Unsignalized Intersections Capacity Results

Lane Group	Existing		Future Background (2030)		Future Background (2035)		Future Total (2030)		Future Total (2035)	
	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)
College Avenue East / Dundas Lane										
EBTR	A (A)	0.0 (0.0)	A (A)	0.0 (0.0)	A (A)	0.0 (0.0)	A (A)	0.0 (0.0)	A (A)	0.0 (0.0)
WBTL	A (A)	0.4 (0.2)	A (A)	0.4 (0.2)	A (A)	0.4 (0.2)	A (A)	0.4 (0.2)	A (A)	0.4 (0.2)
NBLR	B (B)	13.1 (10.4)	B (B)	13.3 (10.6)	B (B)	14.7 (12.4)	B (B)	13.3 (10.7)	B (B)	14.8 (12.4)
College Avenue East / Site Driveway										
EBTL	*Intersection does not existing under existing or future background (2030 and 2035) conditions.*						A (A)	0.3 (0.4)	A (A)	0.2 (0.3)
WBTR							A (A)	0.0 (0.0)	A (A)	0.0 (0.0)
SBLR							B (B)	13.1 (10.5)	C (B)	16.1 (12.4)

Notes:
1. XX (XX) – Weekday Morning Peak Hour (Weekday Afternoon Peak Hour).

As indicated above, the College Avenue East / Dundas Lane and College Avenue East / Site Driveway intersections are expected to operate with acceptable levels of service and delays under all assessed conditions.

11.4.2 Unsignalized Intersections Queueing Results

Table 20 summarizes the intersection queueing results for the College Avenue East / Dundas Lane and College Avenue East / Site Driveway intersections under existing, future background, and future total conditions.

Table 20 Unsignalized Intersections Queueing Results

Lane Group	Available Storage	Existing	Future Background (2030)	Future Background (2035)	Future Total (2030)	Future Total (2035)
		95th %ile	95th %ile	95th %ile	95th %ile	95th %ile
College Avenue East / Dundas Lane						
WBTL	>500 m	0.3 (0.1)	0.3 (0.1)	0.3 (0.1)	0.3 (0.1)	0.3 (0.1)
NBLR	380 m	0.3 (0.5)	0.3 (0.5)	0.4 (0.7)	0.3 (0.5)	0.4 (0.7)
College Avenue East / Site Driveway						
EBTL	140 m	*Intersection does not existing under existing or future background (2030 and 2035) conditions.*			0.1 (0.2)	0.2 (0.2)
SBLR	<10 m				0.6 (0.6)	0.9 (0.8)

As indicated above, 95th percentile queueing activities at the College Avenue East / Dundas Lane and College Avenue East / Site Driveway intersections are expected to be acceptably accommodated within the existing available storage areas for all movements. No specific infrastructure improvements are recommended at these intersections to accommodate future Site-related traffic.

12.0 SUMMARY AND CONCLUSIONS

BA Group is retained by EM Guelph Developments Limited Partnership to provide transportation advisory services in relation to an Official Plan Amendment (OPA) and Zoning By-law Amendment (ZBA) being made to the City of Guelph to permit a purpose-built student rental apartment on the lands municipally addressed 210 – 222 College Avenue East in the City of Guelph.

A summary of the proposed development, its policy and area context, as well as key findings and recommendations enclosed in this report is provided below:

Development Program

1. The proposed development consists of 153 units in a mix of 2-bed, 3-bed, and 4-bed units.
2. A total of 65 vehicle parking spaces are proposed for the Site at an overall rate of 0.42 spaces / unit, including 52 resident spaces and 13 residential visitors. A total of 4 accessible spaces are proposed to be distributed between the resident and residential visitor parking supply. All vehicle parking is proposed to be provided within a 2-level underground parking garage which can be accessed by a Site driveway from College Avenue East on the east frontage of the property.
3. A total of 210 bicycle parking spaces are proposed for the Site, including 194 long-term spaces and 16 short-term spaces. Long-term bicycle parking spaces are proposed to be located on the P2 level of the underground parking garage and short-term spaces are proposed to be located at-grade near the primary pedestrian access along the south frontage of the Site.
4. One loading space is proposed on-Site to accommodate waste collection and other miscellaneous building operations / service requirements. The loading space is provided at the same elevation as P1 of the underground parking garage, and can be accessed via the proposed Site driveway.
5. An additional moving staging area is proposed within P1 of the underground parking garage to support moving activities at the start and end of the academic year.
6. One pick-up / drop-off space is proposed to accommodate short-term vehicle activity on the Site, located near the primary entrance of the Site. The PUDO space is accessible via the Site driveway.

Policy and Area Transportation Context

7. The proposed development is supported by a robust provincial and municipal policy context which encourages appropriately located density in areas where access to appropriate transportation infrastructure is available.
8. The Site is supported by a robust hierarchical area transportation network that consists of Arterial and Collector Roads, existing and planned active transportation infrastructure (including new cycling and pedestrian facilities along College Avenue East across the Site frontage), and transit services which can be accessed via the nearby University of Guelph Transit Terminal.

Vehicular Parking Considerations

9. City of Guelph Zoning By-law (2023)-20790 requires the Site to provide a total of 197 parking spaces, including 157 resident spaces and 40 residential visitor spaces.

10. A total of 7 accessible parking spaces are required by Zoning By-law (2023)-20790 based on the minimum parking requirements for the Site.

11. Zoning By-law (2023)-20790 requires that 158 spaces (80% of total requirement) be provided as designed electric vehicle spaces, capable of being retrofitted with electric vehicle charging infrastructure in the future.

12. Up to 15% of required parking spaces are permitted to be provided and maintained for use by compact vehicles, per Zoning By-law (2023)-20790.

13. The following parking strategy is proposed for the Site:

    - Provide residential parking at a minimum rate of 0.42 spaces / unit, inclusive of resident and residential visitor spaces.
    - Dedicate 20% of the required residential parking spaces (rounded up to the next whole number) for use by residential visitors, in accordance with the requirements stipulated in Zoning By-law (2023)-20790.
    - Provide accessible parking in accordance with the requirements stipulated in Zoning By-law (2023)-20790.

14. The proposed parking strategy for the Site reflects the expected needs of post-secondary students in the City of Guelph by providing an appropriate supply of vehicle parking, while recognizing that University students largely rely on transit, cycling, and walking as primary travel modes for school-based and discretionary trips during their school terms.

15. The proposed parking strategy has been reviewed in the context of existing observed parking demands at comparable student-oriented apartment buildings in the City of Guelph and City of Waterloo. This review confirms that the proposed minimum overall parking rate will appropriately accommodate parking demands for the Site.

16. The proposed parking supply for the Site consists of the following:

    a. 65 parking spaces, including 52 resident spaces and 13 residential visitor spaces.
    b. 4 accessible parking spaces, distributed across the resident and residential visitor parking supply.
    c. 53 designed electric vehicle parking spaces; and
    d. 6 compact vehicle spaces.

17. The proposed parking supply for the Site aligns with the proposed parking strategy and is expected to appropriately accommodate the needs of Site users.

Bicycle Parking Considerations

18. Zoning By-law (2023)-20790 requires a total of 169 bicycle parking spaces for the Site, including 153 long-term spaces and 16 short-term spaces.

19. A total of 210 bicycle parking spaces are proposed for the Site, including 194 long-term spaces and 16 short-term spaces.

20. The proposed bicycle parking supply meets and exceeds the requirements stipulated in Zoning By-law (2023)-20790.

Loading Considerations

21. Zoning By-law (2023)-20790 does not provide a specific minimum required loading space rate for the Site. Notwithstanding, loading spaces have been provided to appropriately accommodate waste collection, building operations / service, and moving activities on-Site.

22. The following loading facilities are provided on-Site:

    a. A loading bay on the east side of the Site, accessible via a 7-metre drive aisle and located at the same elevation as the P1 level of the parking garage; and

    b. A dedicated moving staging space located within the P1 level of the parking garage, adjacent to the elevators.

23. The proposed loading facilities separate typical building maintenance, service, and waste collection activities from resident-related moving activities, and provide for the functional needs of the Site.

Transportation Demand Management

24. A comprehensive Transportation Demand Management plan is proposed to support alternative transportation opportunities for Site users. These measures will continue to be refined through subsequent Site Plan Approval applications.

Multimodal Travel Demand Forecasting

25. Multimodal travel demand forecasting has been undertaken for the Site in-part through reviews of existing student-oriented apartment buildings near university campuses.

26. The proposed development is forecasted to generate in the order of 80 and 135 two-way person trips during the weekday morning and afternoon peak hours, respectively.

27. The adopted mode share for the Site is consistent with observed home-based school trips to / from the University of Guelph which are made entirely within the City of Guelph based on a review of 2016 and 2022 TTS data.

28. The Site is expected to generate the following trips during the weekday morning and afternoon peak hours, respectively:

    a. 20 and 30 vehicle trips

    b. 30 and 55 transit trips; and

c. 25 and 45 active trips.

29. The effective two-way vehicle trip rates for the Site are comparable to observed vehicle trip rates at 601 Scottsdale Drive, Guelph, a comparable student-oriented apartment building.

Traffic Volumes Forecasting and Operations Assessment

30. Traffic volumes forecasting has been undertaken to assess potential future conditions on the area road network in the context of the proposed development.

31. Allowances for new traffic from area growth have been considered in this analysis as confirmed with City of Guelph staff through a Terms-of-Reference circulated on November 13th, 2025. Allowances have been made for the future Guelph Innovation District and for general corridor growth along College Avenue East.

32. Study area intersection operations have been assessed under existing conditions, future background conditions (2030 and 2035) and future total conditions (2030 and 2035).

33. Under all conditions, the study area intersections are expected to operate within capacity and under acceptable levels of service. Site-related impacts to intersection operations is negligible.

34. No specific signal timing or physical infrastructure improvements are recommended within the study area road network to accommodate future background or future total traffic activity.

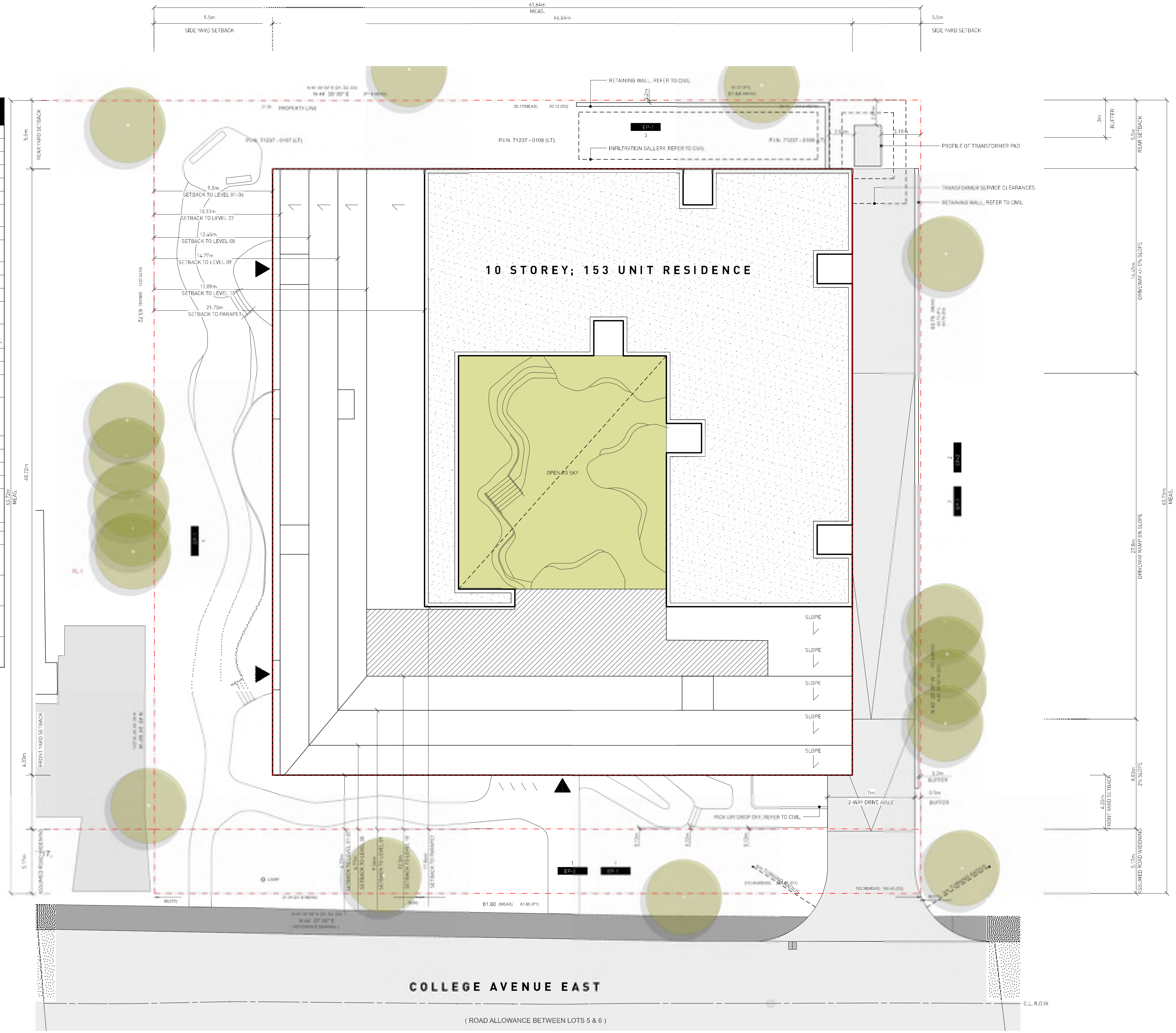
Overall Conclusion

35. The findings of this study confirm that travel demands generated by the proposed development can be acceptably accommodated on the area transportation network, and that the proposed on-Site transportation infrastructure is appropriate to accommodate the needs of Site users.

Appendix A:
Reduced Scale Architectural Plans

High Density Residential 7 RH.7 Zone

Zoning Regulation RH.7 Zone	Required	Provided	Compliance
Permitted Uses	Apartment Building	Post Secondary Student Residence	No
Minimum Lot Frontage	30 meters (Table 6.32 RH.7)	60.61 meters (meas.)	Yes
Residential Density Units per Hectare (uph)	Minimum: 100 uph Maximum:150 uph (Table 6.32 RH.7)	425 uph	No
Unit Count		153 units	
Unit Mix		2 Bedroom Units: 24 3 Bedroom Units: 35 4 Bedroom Units: 94	
Front Yard or Exterior Side Yard Setback	Minimum: 6m Maximum: 11m	4.3 meters	No
Interior Side Yard Setback	Minimum: 3m (Where windows of a habitable room face an interior side yard, the minimum interior side yard setback shall me 7.5m)	East: 5.5m to building face East: 0.2m to retaining wall of ramp West: 9.5m	East: No West: Yes
Minimum Rear Yard	7.5 meters (Table 6.33 RH.7)	North: 5.5 meters	No
Buffer Strip	Minimum: 3m	North: 5.5m East: 0.2m to Parking Ramp West: 9.5m	North: Yes East: No West: Yes
Landscaped Open Space (minimum)	40% of Lot Area	40% Softscape, Hardscape, Green/Blue Roof	Yes
Maximum Building Height	10 Storeys (Table 6.34 RH.7) in accordance with Section 4.14	10 Storeys in accordance with Section 4.14	Yes
Minimum Building Height	3 Storeys	10 Storey s in accordance with Section 4.14	Yes
Floorplate Size (maximum)	7th and 8th Storeys: 1200 m2 Each storey above 9th storey: 1000m2	7th Storey: 1564 m2 8th Storey: 1278 m2 9th Storey: 1095 m2 10th Storey: 870 m2	7th: No 8th: No 9th: No 10th: Yes
Building Stepbacks (minimum)	3m for all portions of the building above the 6th storey facing a street for buildings located within 15m of a street	7th Storey Stepback: 0m 8th Storey Stepback: 2.44m 9th Storey Stepback: 5.21m 10th Storey Stepback: 7.97m	7th Storey: No 8th Storey: No 9th Storey: Yes 10th Storey: Yes
Building Length (maximum)	75m for buildings located within 15m of a street for the portion of the building adjacent to the street	46.6 meters	Yes
Active Entrance	Minimum of 1 active entrance for every 30m of street line	1 Active Entrance	No
Tower Separation	Tower portion of a building shall be setback a minimum of 12.5m from an interior side lot line and a rear lot line measured perpendicularly from the exterior wall of the 6th storey.	North: 5.5m East: 5.5m West: 13.6m	North: no East: no West: yes
Common Amenity Area (minimum)	20m2 per dwelling unit	Interior Common Amenity: 1627.29 m2 Exterior Common Amenity: 420.76 m2 Exterior Landscape Common Amenity: 429 m2 Total Common Amenity Area: 2477.05 m2 Common Amenity per Unit: 16.19 m2	No
Angular Plane	30 degrees measured from property line of interior side yard when adjacent to RL.1 zone	West: 61 degrees	No
Angular Plane	In accordance with Section 4.14.4: angular plane of 45 degrees from the centre line of the street	South: 45 degrees	Yes
Compact Parking Space Dimensions	Maximum 15% of minimum required parking may be designed for compact vehicles (minimum size 2.4m width x 5.5m length)	6 spaces at 2.4m x 5.5m (9%)	Yes
Minimum Parking Space Dimensions	2.75m width x 5.5m length excluding any obsturctions	2.75m x 5.5m excluding any obstructions	Yes
Required Parking Rates in All Zones Except Downtown Zones	Apartment Building, Minimum Required: 1.5 spaces per dwelling unit for the first 20 dwelling units; 1.25 spaces per dwelling unit for units in excess of 20. Minimum 20% of the required parking spaces shall be for the use of visitor parking: 197 spaces required (40 visitor)	65 spaces (13 visitor spaces, 20%)	No
Accessible Parking City of Guelph Facility Accessibility Design Manual July 2013 (page 62)	Type A - Accessible Van Spaces = 1 (2015 Accessibility Design Manual section 4.3.12 / page 64)	2	Yes
	Type B - Accessible Spaces = 2 (2015 Accessibility Design Manual section 4.3.12 / page 64)	2	Yes
Loading Bays	1 Loading Bay, minimum dimensions 11.4m (Length) x 6m (Width) x 6.5m (height), minimum 4.5m overhead clearance path to loading bay	1 Loading Bay, minimum dimensions 11.4m (Length) x 6m (Width) x 6.5m (height), minimum 4.5m overhead clearance path to loading bay	Yes
Electrical Vehicle Parking	Minimum 80% of total require parking spaces	65 spaces x 0.8= 52 spaces	Yes
Required Bicycle Parking Rates in All Zones Except Downtown Zones	Minimum Bicycle Parking (short term): 16 (0.1 s/u); Minimum Bicycle Parking (long term) 153 (1 s/u)	16 short term; 194 long term	Yes
Bicycle Parking Space & Aisle Dimensions	Minimum dimension 0.6m width by 1.8m length with minimum vertical clearance of 1.9m and accessed by an aisle with minimum width of 1.5m	1.8mx 0.6m with 1.9m vertical clearance and aisle width of 1.5m	Yes



1 SITE PLAN
SP-1 SCALE: 1:150

Drawn By: NC
Checked By: SR
Printing Date: 2026.01.09

The Contractor shall verify all dimensions, datums and levels prior to commencement of work.

All errors and omissions to be reported to the Architect before proceeding.

This drawing must not be scaled.

Any unauthorized alteration of the electronic data which constitute this document will void all responsibility for the altered document by the Architect.

This drawing is not to be used for building purposes until countersigned by:

5468796 ARCHITECTURE INC
266 MCDERMOT AVE
Winnipeg MB R3B 0S8
P: 204.480.8421
F: 204.480.8876

210-214-222 COLLEGE AVE EAST

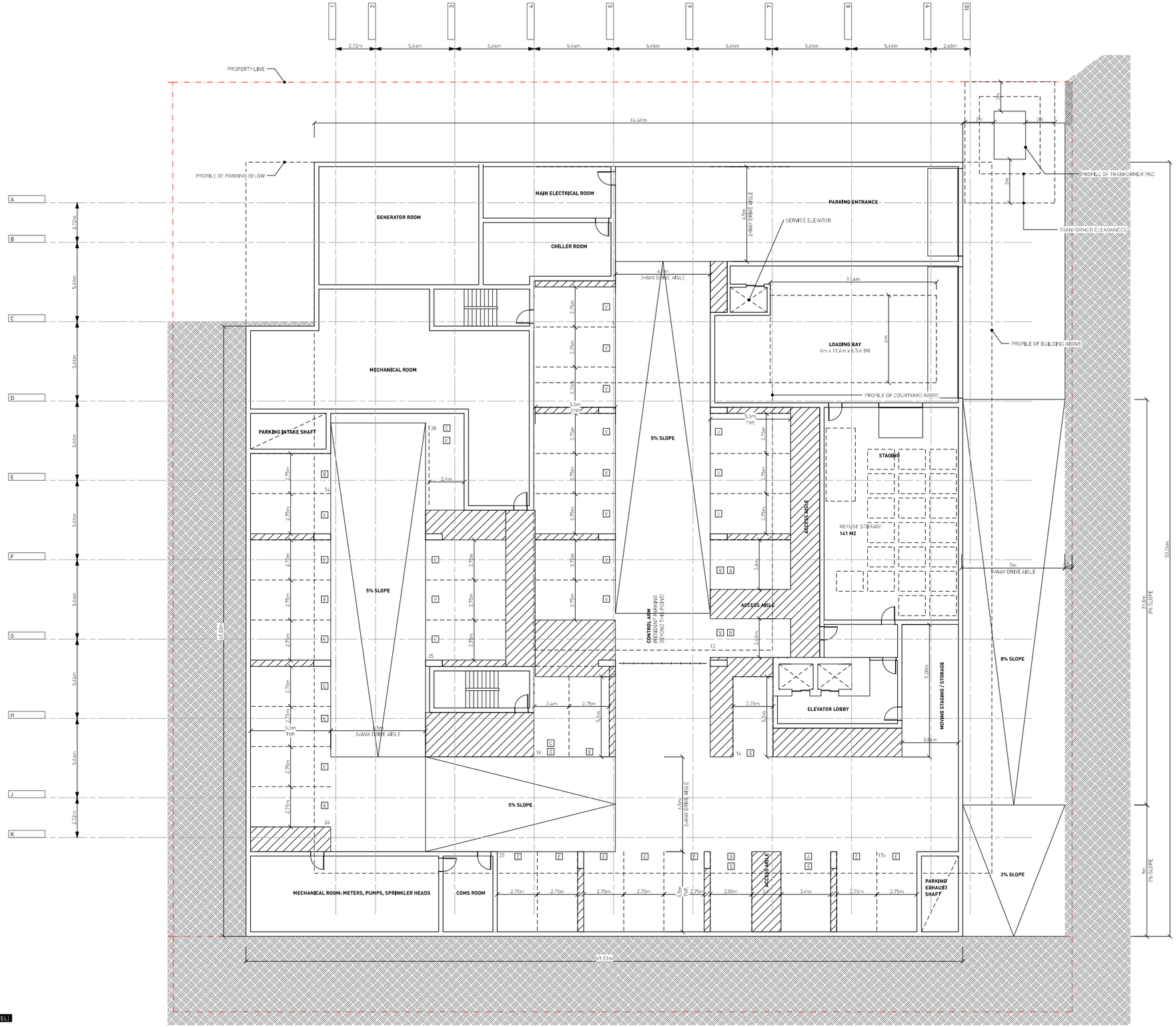
GUELPH ON CAN

SITE PLAN

Project 0837

Sheet

SP-1



1 FP-1 P1 – FLOOR PLAN [PARKING ENTRY LEVEL]
SCALE: 1:125

LEGEND

- A ACCESSIBLE PARKING SPOT TYPE A (2 TOTAL)
- B ACCESSIBLE PARKING SPOT TYPE B (2 TOTAL)
- C COMPACT PARKING SPOT (6 TOTAL)
- V VISITOR PARKING SPOT (13 TOTAL)
- E ELECTRIC VEHICLE PARKING SPOT (52 TOTAL)

65 PARKING SPOTS TOTAL

194 LONG-TERM BICYCLE PARKING SPOTS TOTAL

Drawn By: NC
Checked By: SR
Printing Date: 2026.01.09

5 4 6 8 7 9 6
ARCHITECTURE INC
266 MCDERMOT AVE
Winnipeg MB R3B 0S8
P: 204.480.8421
F: 204.480.8876

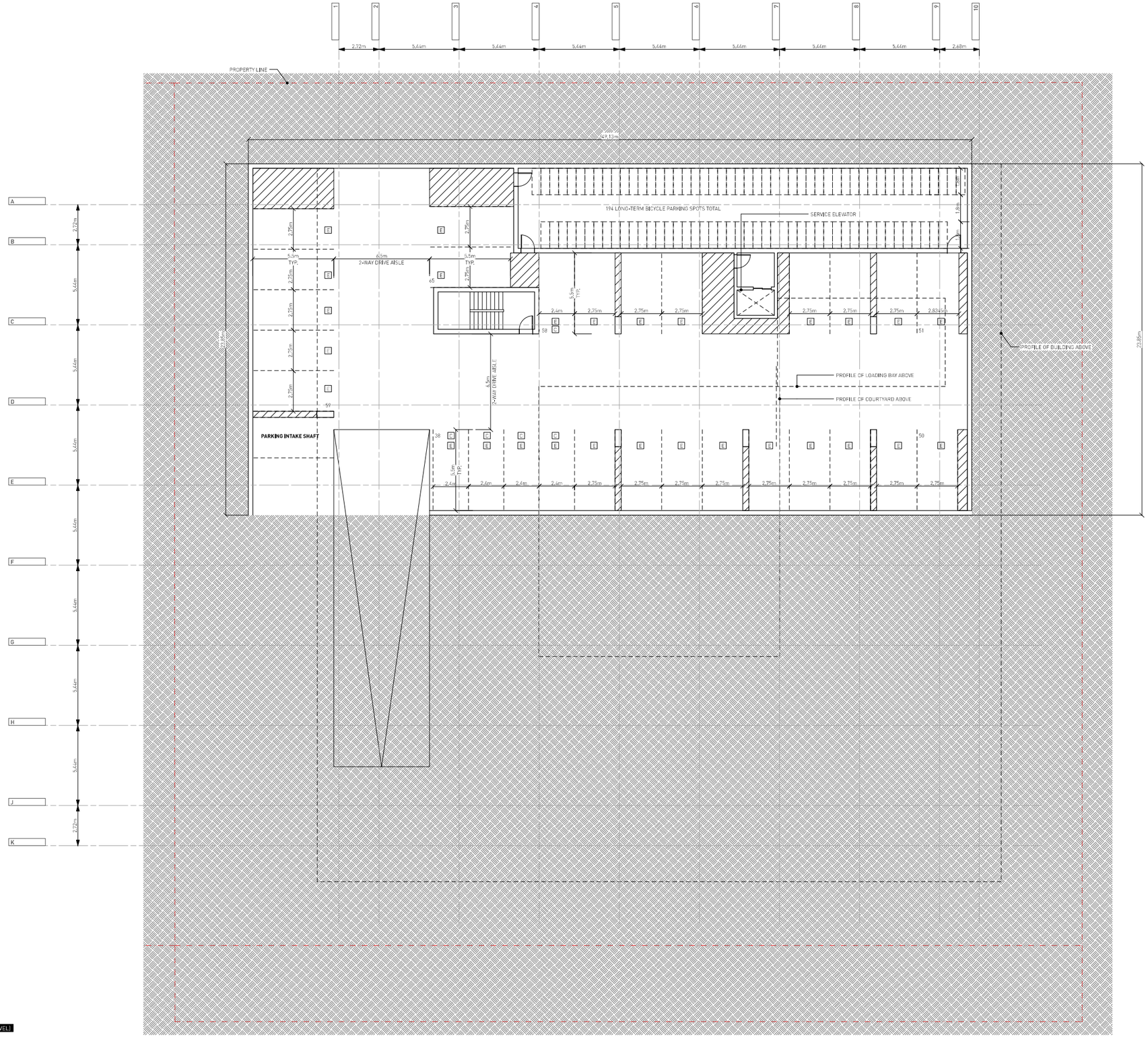
210-214-222 COLLEGE AVE EAST

GUELPH ON CAN

PARKING LEVEL FLOOR PLAN (ENTRY)

Project 0837

Sheet FP-1



LEGEND

- A ACCESSIBLE PARKING SPOT TYPE A (2 TOTAL)
- B ACCESSIBLE PARKING SPOT TYPE B (2 TOTAL)
- C COMPACT PARKING SPOT (6 TOTAL)
- V VISITOR PARKING SPOT (13 TOTAL)
- E ELECTRIC VEHICLE PARKING SPOT (52 TOTAL)

65 PARKING SPOTS TOTAL

194 LONG-TERM BICYCLE PARKING SPOTS TOTAL

Drawn By: NC
Checked By: SR
Printing Date: 2026.01.09

NOT FOR CONSTRUCTION

1 / FP-2 P1 - FLOOR PLAN (PARKING LOWER LEVEL)
SCALE: 1:125

5 4 6 8 7 9 6
ARCHITECTURE INC
266 MCDERMOT AVE
Winnipeg MB R3B 0S8
P: 204.480.8421
F: 204.480.8876

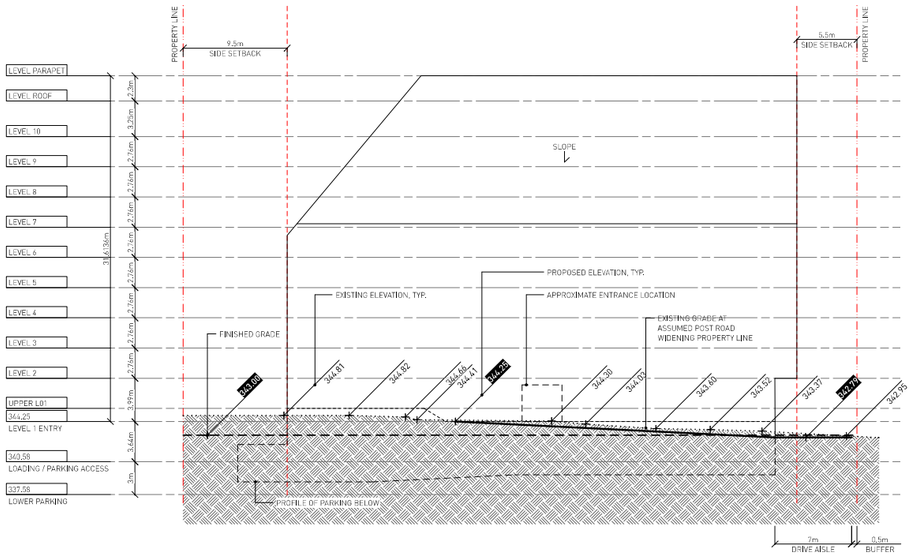
210-214-222 COLLEGE AVE EAST

GUELPH ON CAN

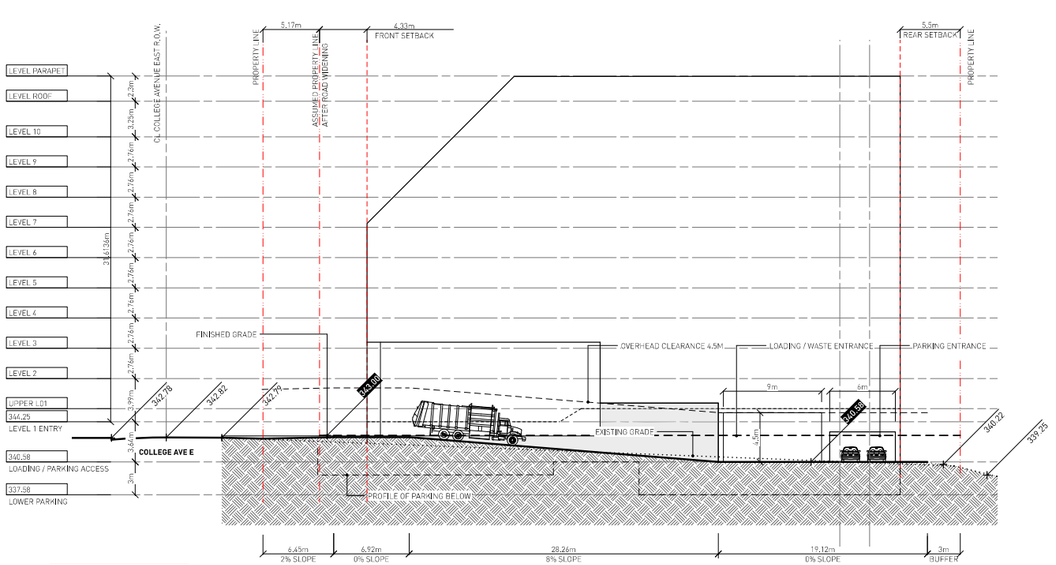
PARKING LEVEL FLOOR PLAN (LOW)

Project 0837

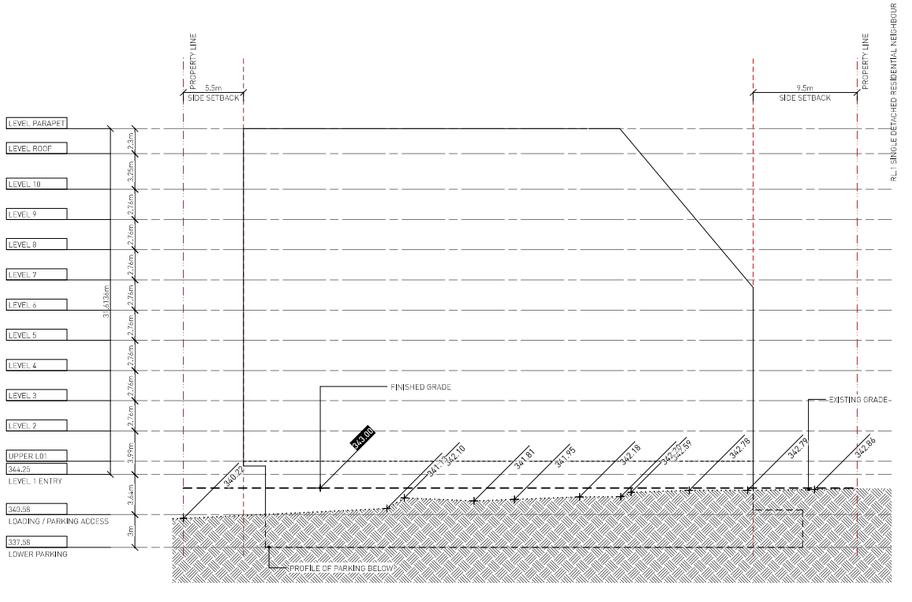
Sheet FP-2



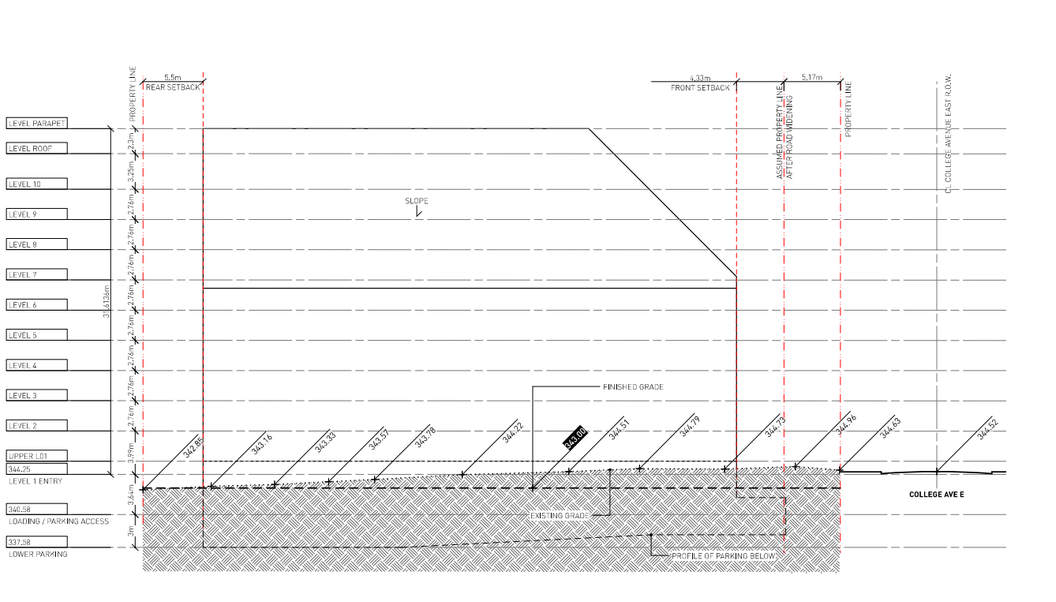
1 BUILDING ELEVATION SOUTH
EP-1 SCALE: 1:250



2 BUILDING ELEVATION EAST
EP-1 SCALE: 1:250



3 BUILDING ELEVATION NORTH
EP-1 SCALE: 1:250



4 BUILDING ELEVATION WEST
EP-1 SCALE: 1:250

Drawn By: NC
Checked By: SR
Printing Date: 2026.01.09

The Contractor shall verify all dimensions, datums and levels prior to commencement of work.

All errors and omissions to be reported to the Architect before proceeding.

This drawing must not be scaled.

This drawing is not to be used for building purposes until countersigned by:

NOT FOR CONSTRUCTION

5 4 6 8 7 9 6
ARCHITECTURE INC
266 MCDERMOT AVE
Winnipeg MB R3B 0S8
P: 204.480.8421
F: 204.480.8876

210-214-222 COLLEGE AVE EAST

GUELPH ON CAN

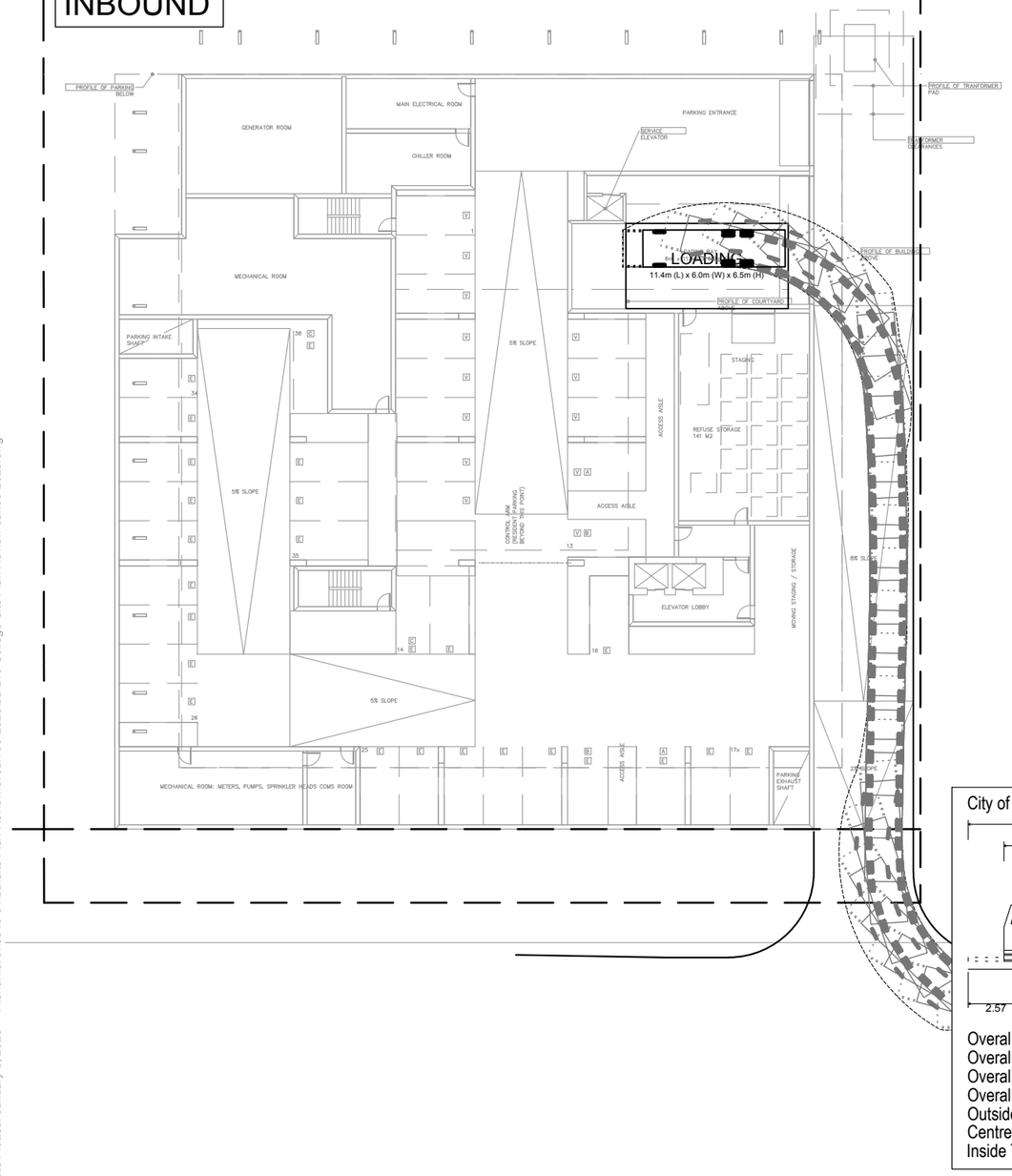
ELEVATIONS

Project 0837

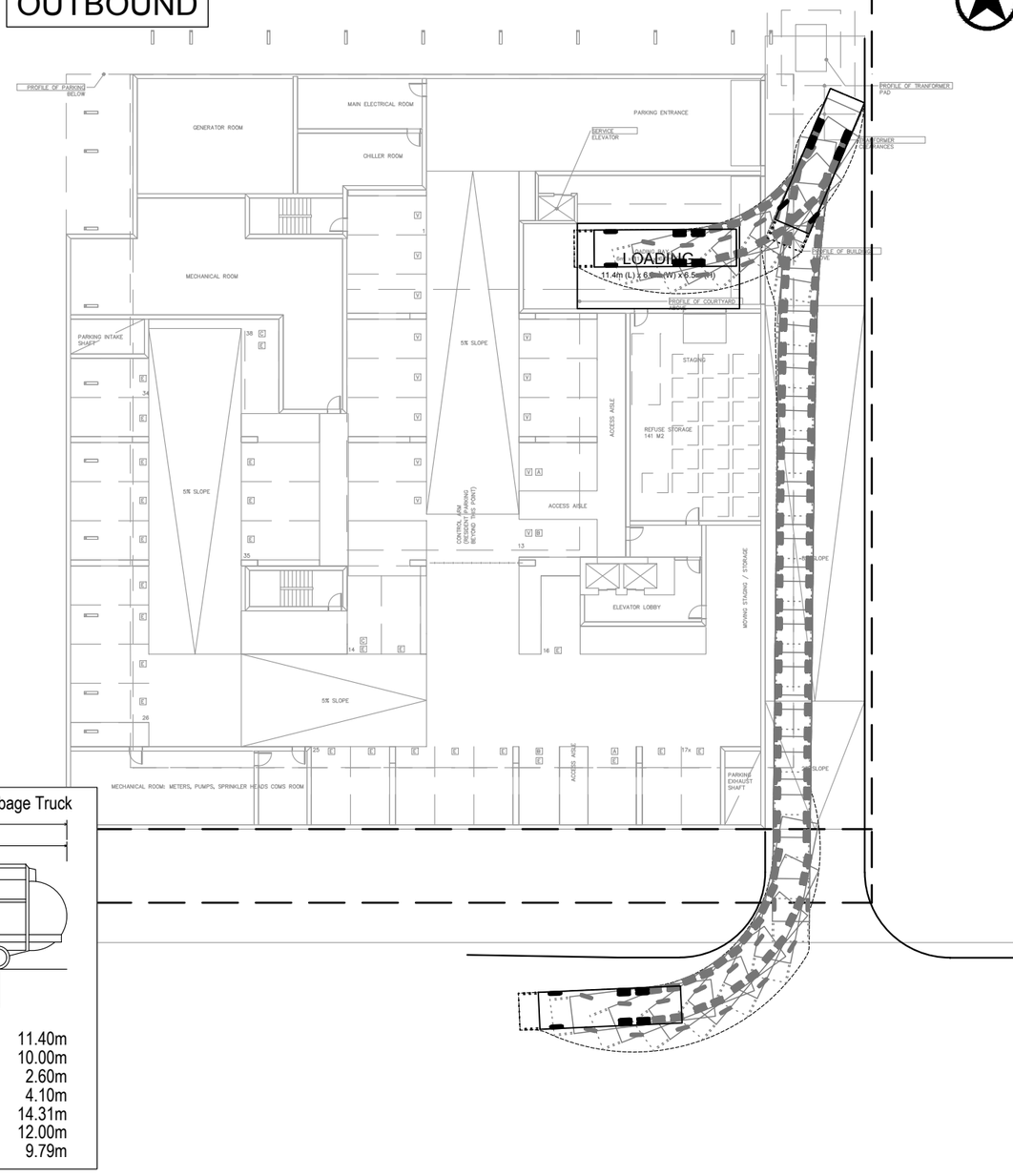
Sheet EP-1

Appendix B:
Vehicle Manoeuvring Diagrams

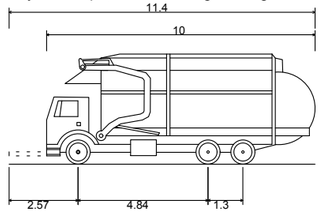
INBOUND



OUTBOUND



City of Guelph, Front Loading Garbage Truck



Overall Length (forks down)	11.40m
Overall Length (forks up)	10.00m
Overall Width	2.60m
Overall Body Height	4.10m
Outside Turning Radius	14.31m
Centreline Radius	12.00m
Inside Turning Radius	9.79m

BA Group

210-222 COLLEGE AVENUE EAST

VEHICLE MANOEUVRING DIAGRAM
CITY OF GUELPH GARBAGE TRUCK

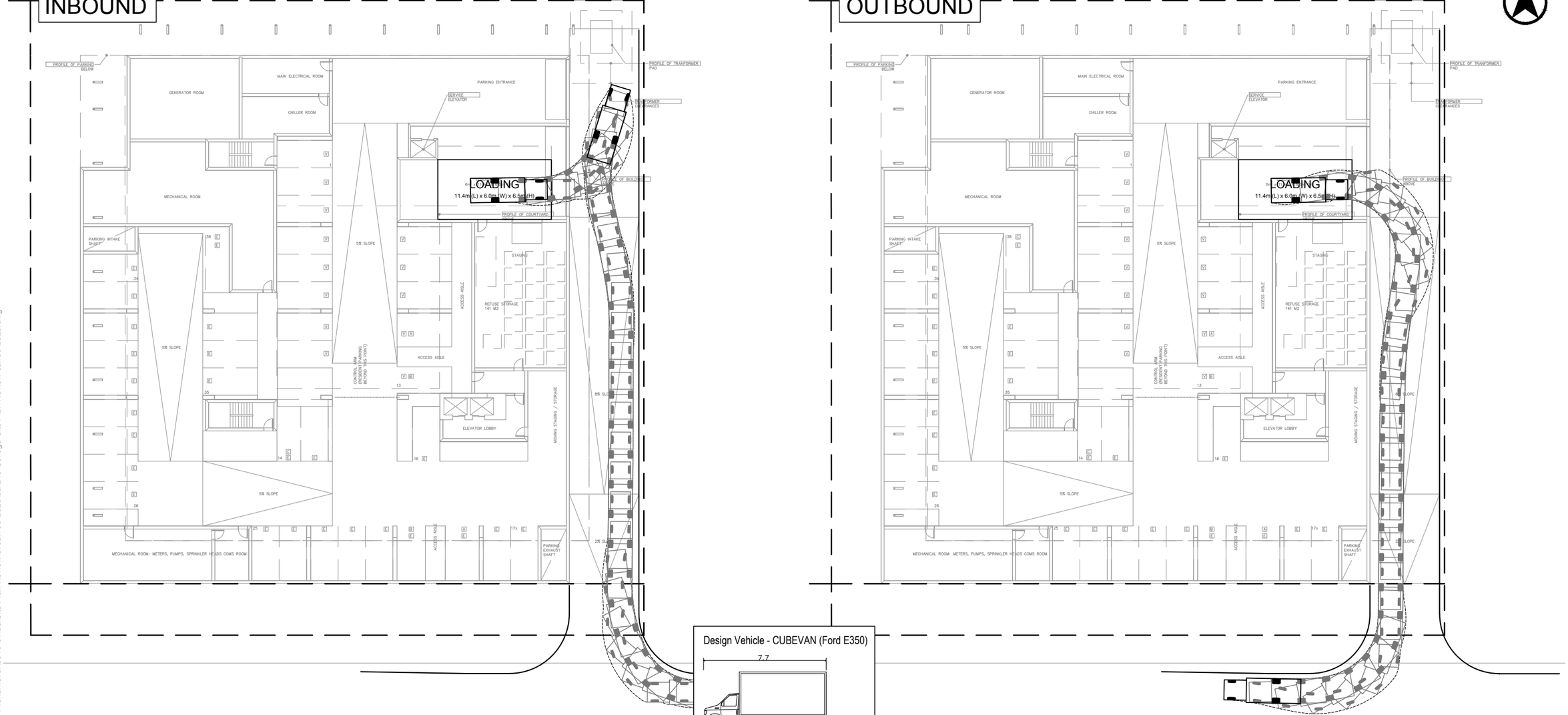
Project:	210-222 College Ave E
Project No.	8310-04
Date:	January 8, 2026
Revised:	--

Scale 1:400 — 0 2 4 6 8 10 20m

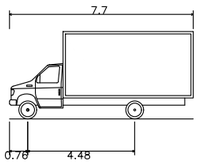
Drawing No. VMD-01

INBOUND

OUTBOUND



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

BA Group

210-222 COLLEGE AVENUE EAST

VEHICLE MANOEUVRING DIAGRAM

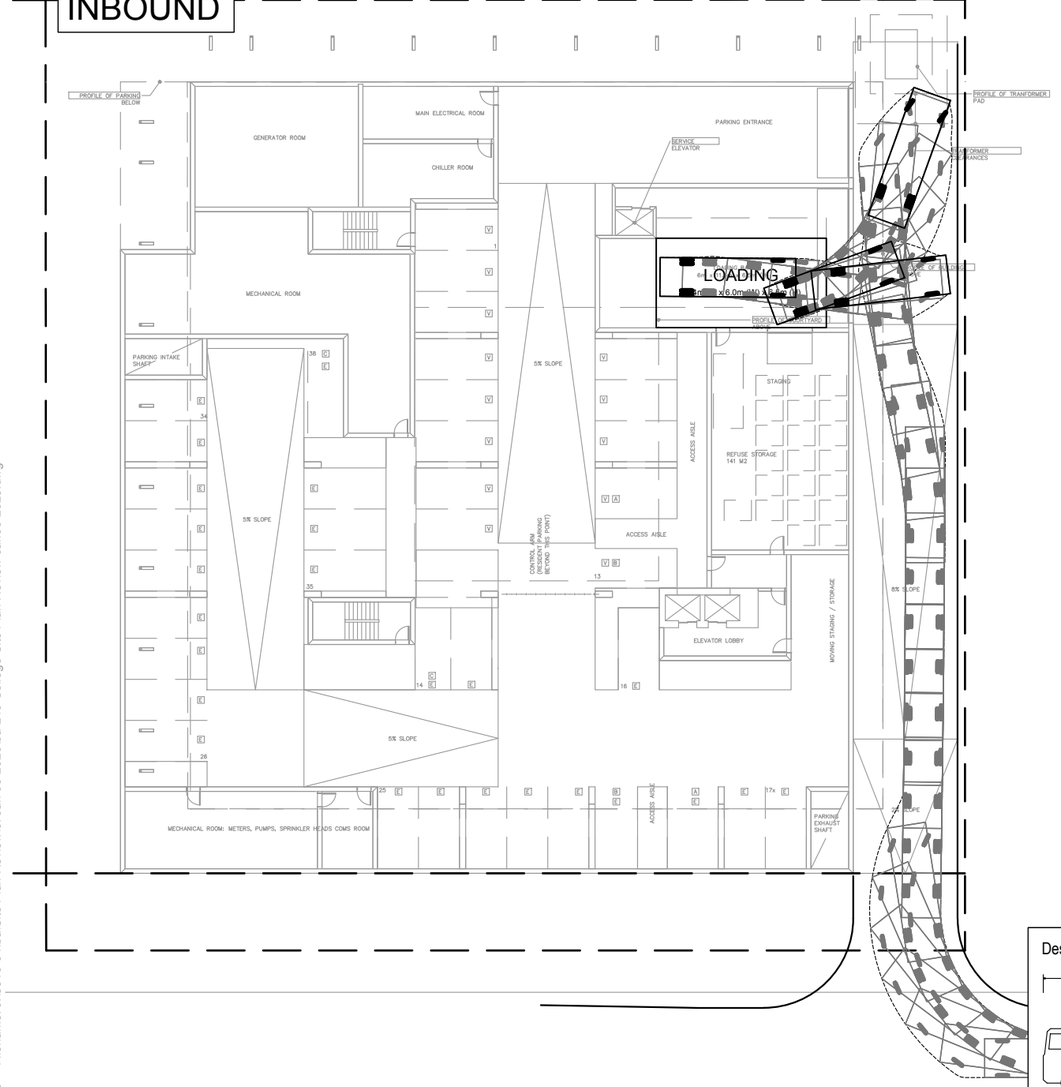
CUBE VAN

Project:	210-222 College Ave E
Project No.	8310-04
Date:	January 8, 2026
Revised:	--

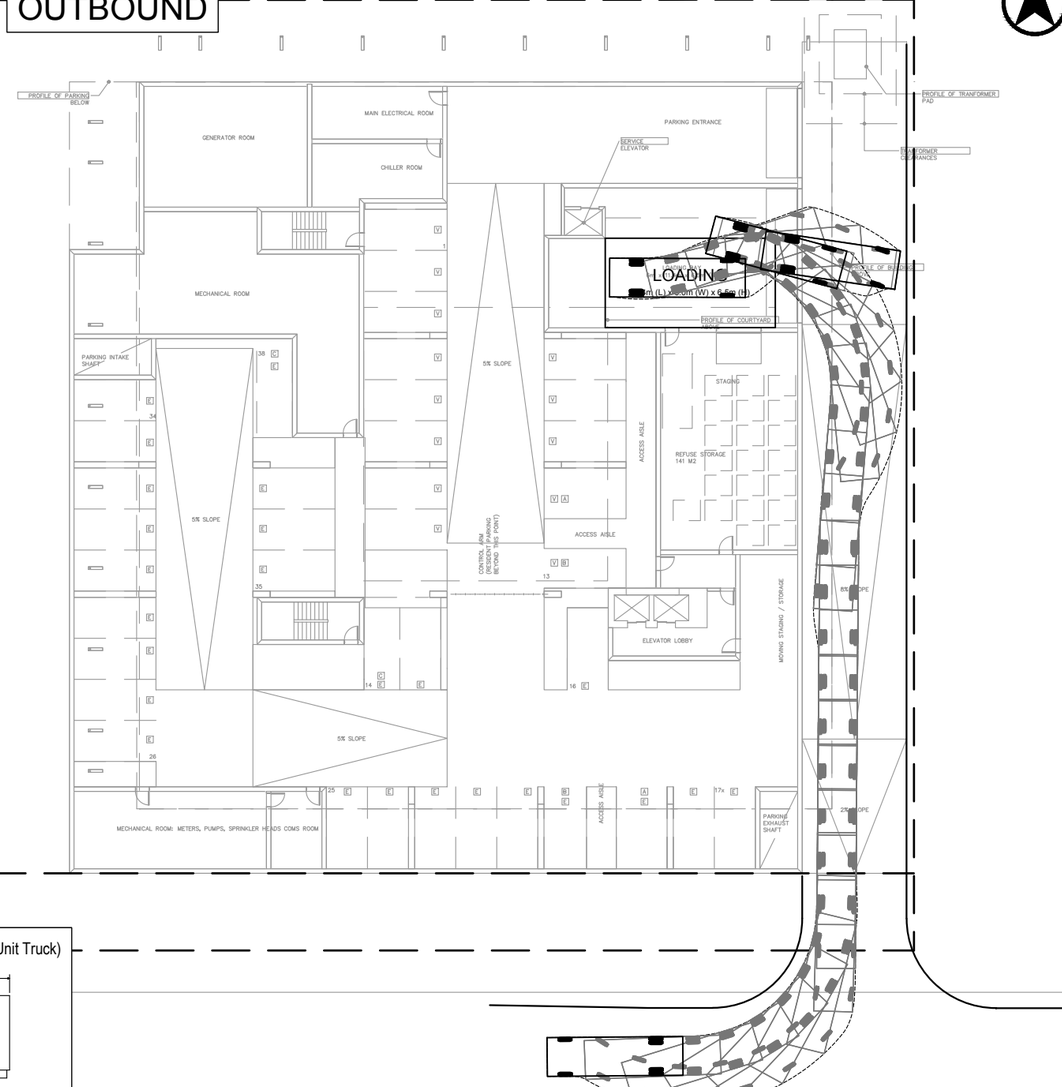
Scale 1:400 (0 2 4 6 8 10 20m)

Drawing No. VMD-02

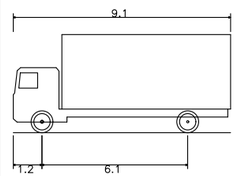
INBOUND



OUTBOUND



Design Vehicle - TAC SU (Single Unit Truck)



Overall Length	9.10m
Overall Width	2.60m
Overall Body Height	4.11m
Outside Turning Radius	13.40m
Inside Turning Radius	8.60m

BA Group

210-222 COLLEGE AVENUE EAST

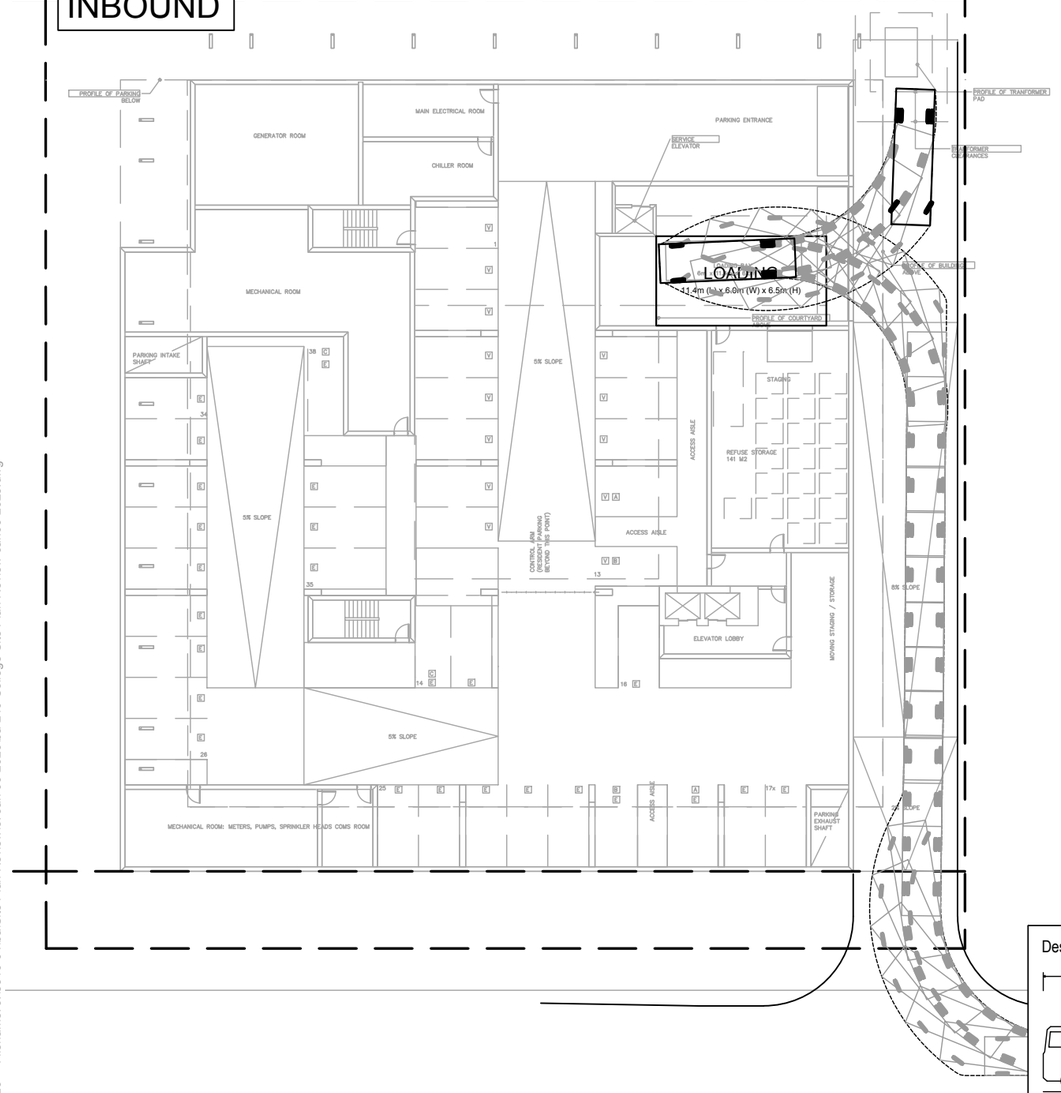
VEHICLE MANOEUVRING DIAGRAM
SINGLE UNIT TRUCK

Project:	210-222 College Ave E
Project No.	8310-04
Date:	January 8, 2026
Revised:	--

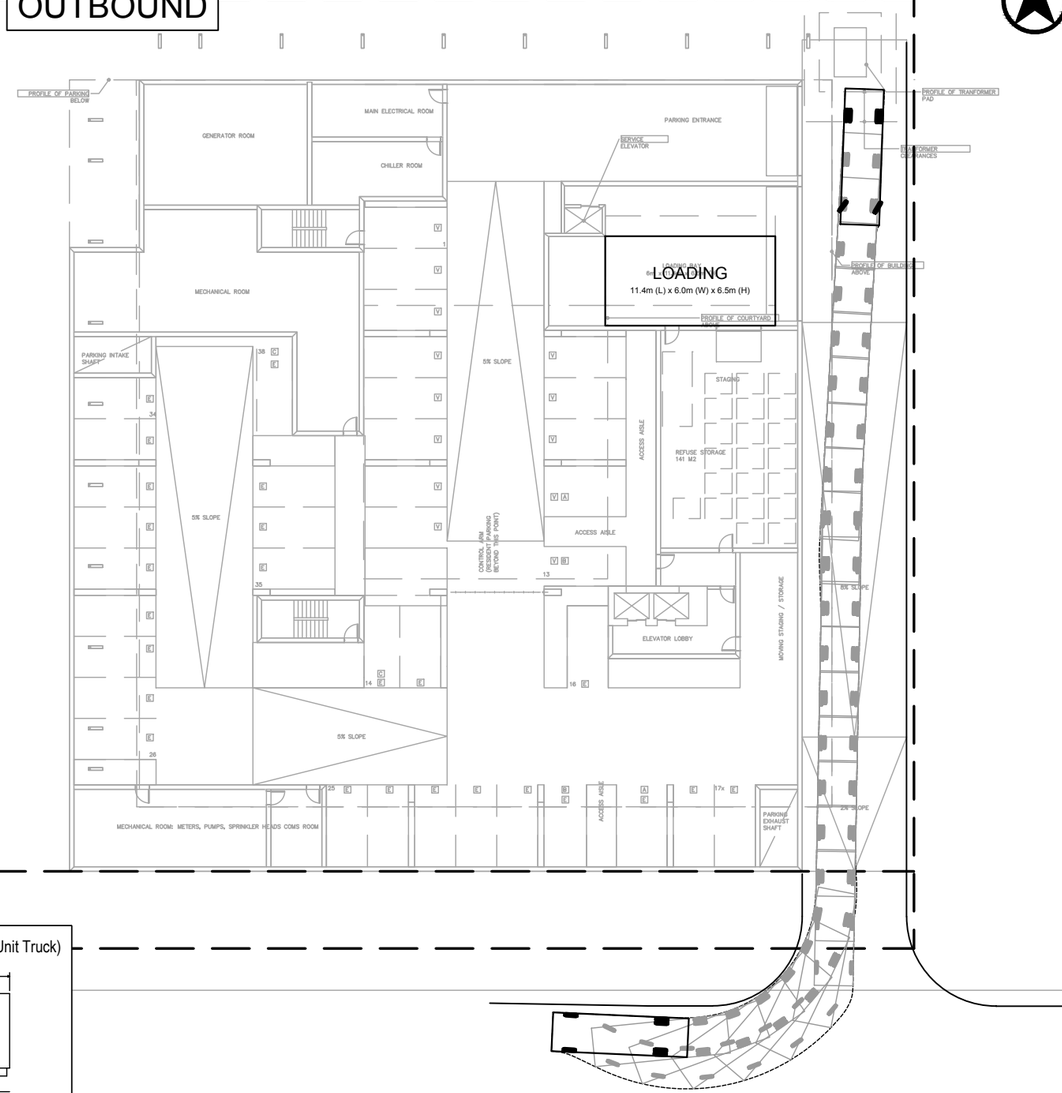
Scale 1:400 (0 2 4 6 8 10 20m)

Drawing No. VMD-03

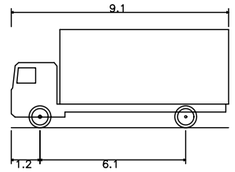
INBOUND



OUTBOUND



Design Vehicle - TAC SU (Single Unit Truck)



Overall Length	9.10m
Overall Width	2.60m
Overall Body Height	4.11m
Outside Turning Radius	13.40m
Inside Turning Radius	8.60m

Date Plotted: January 8, 2026 Filename: J:\8310-04\ba\Site Plan Review\5. Jan 06-2026\ba-210 College-Site Plan Review-Jan06-2025.dwg

BA Group

210-222 COLLEGE AVENUE EAST

VEHICLE MANOEUVRING DIAGRAM
SINGLE UNIT TRUCK
TRANSFORMER VEHICLE PROXY

Project:	210-222 College Ave E
Project No.	8310-04
Date:	January 8, 2026
Revised:	--

Scale 1:400 (0 2 4 6 8 10 20m)

Drawing No. VMD-04

Appendix C:
TTS Mode Share Queries

AM		
Sat Dec 20 2025 17:22:26 GMT-0500 (Eastern Standard Time)		
Frequency Distribution Query Form - Trip - 2016	2022	
Field: Primary travel mode of trip - mode_prime		
Filters:		
Start time of trip - start_time In 700-1200		
and		
Planning district of origin - pd_orig In 70		
and		
Trip purpose - trip_purp In 2		
and		
2006 GTA zone of destination - gta06_dest In 8056	8057	
Table: Trip 2016		
Row:	Count:	Expanded:
Transit excluding GO rail	93	2435
Cycle	9	203
Auto driver	25	648
Auto passenger	9	262
Walk	23	516
Total:	159	4064
Table: Trip 2022		
Row:	Count:	Expanded:
Transit excluding GO rail	26	1249
Cycle	6	246
Auto driver	14	1060
Auto passenger	5	184
Walk	12	354
Total:	63	3093

PM		
Sat Dec 20 2025 17:16:28 GMT-0500 (Eastern Standard Time)		
Frequency Distribution Query Form - Trip - 2016	2022	
Field: Primary travel mode of trip - mode_prime		
Filters:		
Start time of trip - start_time In 1200-2000		
and		
Planning district of destination - pd_dest In 70		
and		
Trip purpose - trip_purp In 2		
and		
2006 GTA zone of origin - gta06_orig In 8056	8057	
Table: Trip 2016		
Row:	Count:	Expanded:
Transit excluding GO rail	89	2443
Cycle	9	203
Auto driver	19	478
Auto passenger	6	173
School bus	1	25
Walk	34	700
Total:	158	4022
Table: Trip 2022		
Row:	Count:	Expanded:
Transit excluding GO rail	23	986
Cycle	5	239
Auto driver	12	841
Auto passenger	3	157
Walk	14	504
Total:	57	2727

Appendix D:
Terms-of-Reference and City of Guelph Correspondence

November 7, 2025

City of Guelph Transportation Staff
Gwen.Zhang@guelph.ca

RE: 210 - 222 COLLEGE AVENUE EAST– TERMS OF REFERENCE & TRANSPORTATION SCOPE

Dear City of Guelph Transportation Staff,

BA Consulting Group has been retained by EM Guelph Developments Limited Partnership to provide transportation advisory services in relation to a proposed development at 210 – 222 College Avenue East (the "Site"). This letter provides a brief description of the terms of reference regarding the proposed scope of the Transportation Impact Study for the Site (the Site TIS) which will follow the City of Guelph's *Traffic Impact Study Guidelines*.

3.1 Description of the Proposed Development

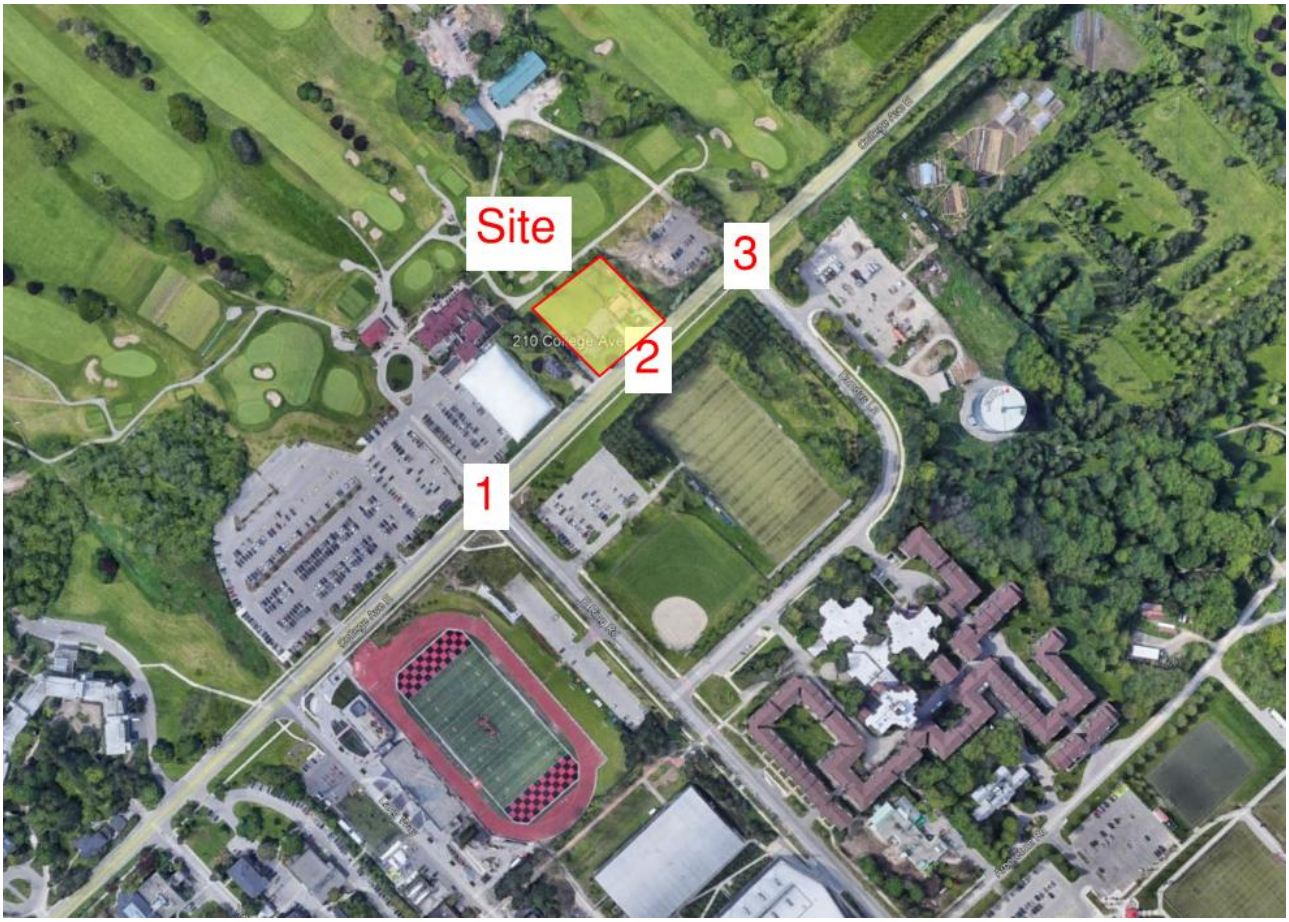
The current proposal contemplates a 100-200 unit residential building dedicated to student housing. The unit count is subject to revision during the OPA and ZBA application process. The Site TIS will provide a more detailed description of the proposed development in accordance with the bullet points provided under Section 3.1 of the Guelph TIS Guidelines.

3.2 Study Area

The proposed study area for the Site TIS is provided below and illustrated in **Exhibit 1.** These intersections are to be confirmed with the City of Guelph Transportation Staff,

1. College Avenue East / East Ring Road
2. College Avenue East / Site Driveway
3. College Avenue East / Dundas Lane

Exhibit 1: Proposed Study Area Intersections



Additional contextual information relevant to the study area will be provided as part of the Site TIS, in accordance with Section 3.2 of the Guelph TIS Guidelines.

3.3 Horizon Years and Peak Periods

3.3.1 Horizon Years

The following horizon years will be utilized as part of the traffic analysis contained in the Site TIS:

- Existing conditions (2025)
- Anticipated build-out year (2030)
- 5 years after build-out (2035)

3.3.2 Peak Periods

The following peak periods will be considered as part of the Site TIS:

- Weekday AM Peak Hour
- Weekday PM Peak Hour

3.4 Existing Traffic Analysis

3.4.1 Traffic Counts

Existing traffic data has been collected as part of the preliminary data collection exercise for the Site TIS. Turning movement counts have been undertaken at the study area intersections during the following periods and times:

- AM Peak Period Weekday Counts: 7:00 am – 9:00 am
- PM Peak Period Weekday Counts: 4:00 pm – 6:00 pm

3.4.2 Data Balancing

Balancing of the existing traffic volumes during the peak AM and PM periods will be reviewed as part of the Site TIS. Volumes will be rounded to the nearest 5 vehicles per hour.

3.4.3 Active Transportation and Transit

Area pedestrian and cyclist data at study area intersections will be collected as part of the existing traffic data collection process.

Existing active transportation and transit conditions within the study area will be described as part of the Site TIS.

3.4.4 Capacity Analysis for Existing Traffic

Existing traffic conditions within the study area will be assessed and presented within the Site TIS.

3.5 Background Traffic Analysis

3.5.1 Background Growth

Corridor growth along College Avenue East will be determined through consultation with City of Guelph Transportation Staff.

3.5.2 Other Area Developments

There are no current development projects within the vicinity of the Site. City of Guelph Transportation Staff is to confirm if there are area background developments that need to be considered as part of the Site TIS.

3.5.3 Active Transportation and Transit Improvements

Future planned active transportation and transit improvements will be described in the Site TIS and considered in its analysis, as appropriate.

As identified in the *City of Guelph Transportation Master Plan* (2022) (Guelph TMP), dedicated bicycle lanes are contemplated along College Avenue East between the Hanlon Expressway and Victoria Road South. This upgrade is planned to take place between 2022 and 2031. The portion of College Avenue East between Gordon Street and Dundas Lane is scheduled to be completed in 2027 in parallel with upgrading the water and wastewater infrastructure.

3.5.4 Capacity Analysis for Background Traffic

The assessment of background traffic conditions for the identified horizon years will be consistent with the capacity analysis methodology described in Section 3.8.1 of the Guelph TIS Guidelines.

3.6 Estimate of Travel Demand

3.6.1 Trip Generation

Site trip generation will be forecast for vehicle, transit, pedestrian, and cycling trips. Key resources used to forecast travel demand will include proxy site information with similar transportation context and land use to the proposed development.

3.6.2 Trip Distribution

Trip distribution assumptions will be supported by the use of the most recently available TTS data, existing observed travel patterns, and output from the City's travel demand forecasting model.

3.6.3 Trip Assignment

Trip assignments will be undertaken in accordance with Section 3.6.3 of the Guelph TIS Guidelines.

3.7 Future Total Traffic Analysis

3.7.1 Capacity Analysis for Future Total Traffic

The assessment of future total traffic conditions for the identified horizon years will be consistent with the capacity analysis methodology described in Section 3.8.1 of the Guelph TIS Guidelines.

3.8 Traffic Operation Evaluation

3.8.1 Capacity Analysis Methodology

Capacity analysis at intersections within the study area will be conducted using the latest Synchro capacity analysis software and utilize Highway Capacity Manual (HCM) methodologies. Signal timing plans for the East Ring Road / College Avenue East signalized intersection will be obtained from the City of Guelph and will be utilized in this analysis.

Synchro input parameters will be consistent with those outlined in Section 3.8.1 of the Guelph TIS Guidelines.

Capacity analysis results will be presented in a tabular format in accordance with the specifications outlined in Section 3.8.1 of the Guelph TIS Guidelines.

3.8.2 Intersections with Capacity or Level of Service Deficiencies

Signalized and unsignalized intersections within the study area will be identified in the Site TIS in accordance with Section 3.8.2 of the Guelph TIS Guidelines.

3.8.3 Safety Analysis

Given the current development programme, the existing study area is not considered to be collision prone. **City to confirm whether the existing study area is considered collision-prone for the purpose of scoping the Site TIS. If so, collision data to be requested.**

3.9 Mitigation Measures

3.9.1 Traffic Signal Warrant

Traffic signal warrant analyses will be undertaken to determine if study area unsignalized intersections qualify for signalization under all proposed traffic scenarios.

3.9.2 Exclusive Turning Lane Warrant

Exclusive turning lane warrant analyses will be undertaken to determine if study area intersections qualify for exclusive turning lanes under all proposed traffic scenarios.

3.9.3 Transportation Demand Management Strategies

Transportation Demand Management (TDM) strategies will be presented within the Site TIS in consideration the potential measures presented in Section 3.9.3 of the Guelph TIS Guidelines.

3.9.4 Traffic Calming Measures

Where appropriate, traffic calming measures will be addressed within the Site TIS in consideration of the City's Traffic Calming Policy.

3.10 Access Management

3.10.1 Number and Location of Accesses

A single access on College Avenue East is currently contemplated for the Site. The design of the proposed access will be in accordance with the considerations provided in Section 3.10.1 of the Guelph TIS Guidelines.

3.10.2 Site Triangle and Site Distance

An assessment of site triangles and sight distance will be considered as part of the Site TIS, where appropriate.

3.10.3 Access Control

The proposed College Avenue East driveway will not have any potential for signalization. However, a traffic signal warrant analyses will be performed if the analysis indicates otherwise.

3.10.5 Access Geometrics

Access configuration will be designed in accordance with the considerations presented in Section 3.10.5 of the Guelph TIS Guidelines, where appropriate.

Vehicle manoeuvring diagrams will be provided as part of the Site TIS in accordance with Section 3.10.5 of the Guelph TIS Guidelines.

3.11 Internal Traffic Circulation

Transportation-related components of the Site plan will be reviewed in accordance with the considerations provided in Section 3.11 of the Guelph TIS Guidelines.

Transportation-related components of the Site plan will be described within the Site TIS, and vehicle manoeuvring diagrams will be provided as part of the Site TIS in accordance with Section 3.11 of the Guelph TIS Guidelines and the City's Waste Management Guidelines.

3.12 Findings and Recommendations

In accordance with the Guelph TIS Guidelines, findings from the transportation study will be included in the Site TIS, and recommendations for improvement will be provided, where appropriate and necessary.

3.13 Parking Justification Study

A parking justification study will be provided within the Site TIS, to be reviewed by City of Guelph Planning Staff.

3.14 Documentation and Reporting

Documentation and reporting for findings from the Site TIS will be presented in consideration of Section 3.14 of the Guelph TIS Guidelines.

We trust the above Terms of Reference is satisfactory. Please do not hesitate to reach out to us directly for any matters of clarification.

Sincerely,

BA Consulting Group Ltd.

Stephanie Hardes, P. Eng.
Senior Associate

Cc: Hendrik Rolleman, Transportation Analyst and Kyle Jong, Associate

Hendrik Rolleman

From: Kyle Cory Jong
Sent: November 19, 2025 3:26 PM
To: Hendrik Rolleman
Subject: FW: File Number - PRE25-012D - 210 College Avenue East

---

From: Gwen Zhang <Gwen.Zhang@guelph.ca>
Sent: November 19, 2025 12:37 PM
To: Kyle Cory Jong <jong@bagroup.com>
Cc: Stephanie A. Hardes <hardes@bagroup.com>; Jennifer Juste <Jennifer.Juste@guelph.ca>; Kate Berry <Kate.Berry@guelph.ca>
Subject: RE: File Number - PRE25-012D - 210 College Avenue East

Hi Kyle,

Thank you for sharing the TOR for our review. Our comments are offered below.

- Please specify the date of traffic data collection and confirm that the data were collected when schools were still open.
- An annual growth rate of 1.5% is recommended for College Avenue up to 2031 and 1% thereafter.
- Please include background traffic from the Guelph Innovation District for the 2035 horizon year, with preliminary estimates of 100 vehicles per hour (vph) during the AM peak and 125 vph during the PM peak, in each direction. These figures are intended for the purposes of this study only and are subject to change as planning for the Guelph Innovation District progresses.
- For safety analysis, please contact traffic@guelph.ca to obtain collision history data for the past five years in the study area.
- Trip generation analysis should include auto mode and non-auto modes, specifically pedestrian and cyclist trips. These estimates will help assess the need for signalization at unsignalized intersections within the study area.
- Traffic Geometric Plans must be submitted for fire trucks, waste collection vehicles, and delivery trucks.
- If underground parking is proposed, please provide a vertical profile by following guidelines outlined in City's Development Engineering Manual.

If you have any questions, please feel free to contact me.

Thanks,

Gwen Zhang, M.Sc., P.Eng. (she/her), Transportation Planning Engineer
Engineering and Transportation Services
T 519-822-1260 x 2638
E gwen.zhang@guelph.ca

Appendix E:
Turning Movement Counts

BA Group
1000 95 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1N6
CANADA

Turning Movement Count (2 . 210 COLLEGE AVE E (SITE DRIVEWAY) & COLLEGE AVE E)

Start Time	N Approach 210 COLLEGE AVE E (SITE DRIVEWAY)					E Approach COLLEGE AVE E					W Approach COLLEGE AVE E					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	UTurn E:E	Peds E:	Approach Total	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
2025-11-20 07:30:00	1	0	0	0	1	0	42	0	0	42	16	0	0	0	16	59	
2025-11-20 07:45:00	0	0	0	0	0	0	79	0	0	79	19	0	0	0	19	98	
2025-11-20 08:00:00	0	0	0	1	0	0	107	0	0	107	28	0	0	1	28	135	
2025-11-20 08:15:00	0	0	0	0	0	0	139	0	0	139	24	0	0	0	24	163	455
2025-11-20 08:30:00	0	0	0	0	0	0	88	0	1	88	40	0	0	0	40	128	524
2025-11-20 08:45:00	0	0	0	2	0	0	80	0	0	80	37	0	0	0	37	117	543
2025-11-20 09:00:00	0	0	0	0	0	0	69	0	1	69	20	0	0	0	20	89	497
2025-11-20 09:15:00	1	0	0	0	1	1	50	0	0	51	21	0	0	0	21	73	407
BREAK																	
2025-11-20 16:00:00	0	0	0	0	0	0	52	0	1	52	78	0	0	0	78	130	
2025-11-20 16:15:00	1	0	0	0	1	0	46	0	1	46	65	0	0	1	65	112	
2025-11-20 16:30:00	0	0	0	0	0	0	47	0	0	47	79	0	0	0	79	126	
2025-11-20 16:45:00	0	0	0	0	0	0	51	0	0	51	57	0	0	0	57	108	476
2025-11-20 17:00:00	0	0	0	0	0	0	59	0	0	59	60	0	0	0	60	119	465
2025-11-20 17:15:00	0	0	0	0	0	0	60	0	1	60	64	0	0	0	64	124	477
2025-11-20 17:30:00	0	0	0	0	0	0	49	0	0	49	52	0	0	0	52	101	452
2025-11-20 17:45:00	0	0	0	0	0	0	41	0	0	41	50	0	0	0	50	91	435
Grand Total	3	0	0	3	3	1	1059	0	5	1060	710	0	0	2	710	**1773**	-
Approach%	100%	0%	0%		-	0.1%	99.9%	0%		-	100%	0%	0%		-	**-**	-
Totals %	0.2%	0%	0%		0.2%	0.1%	59.7%	0%		59.8%	40%	0%	0%		40%	**-**	-
Heavy	0	0	0		-	0	4	0		-	7	0	0		-	**-**	-
Heavy %	0%	0%	0%		-	0%	0.4%	0%		-	1%	0%	0%		-	**-**	-
Bicycles	0	0	0		-	0	1	0		-	2	0	0		-	**-**	-
Bicycle %	0%	0%	0%		-	0%	0.1%	0%		-	0.3%	0%	0%		-	**-**	-

Peak Hour: 08:00 AM - 09:00 AM Weather: Few Clouds (-3 °C)

Start Time	N Approach 210 COLLEGE AVE E (SITE DRIVEWAY)					E Approach COLLEGE AVE E					W Approach COLLEGE AVE E					Int. Total (15 min)
	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	
2025-11-20 08:00:00	0	0	0	1	0	0	107	0	0	107	28	0	0	1	28	135
2025-11-20 08:15:00	0	0	0	0	0	0	139	0	0	139	24	0	0	0	24	163
2025-11-20 08:30:00	0	0	0	0	0	0	88	0	1	88	40	0	0	0	40	128
2025-11-20 08:45:00	0	0	0	2	0	0	80	0	0	80	37	0	0	0	37	117
Grand Total	0	0	0	3	0	0	414	0	1	414	129	0	0	1	129	**543**
Approach%	0%	0%	0%		-	0%	100%	0%		-	100%	0%	0%		-	**-**
Totals %	0%	0%	0%		0%	0%	76.2%	0%		76.2%	23.8%	0%	0%		23.8%	**-**
PHF	0	0	0		0	0	0.74	0		0.74	0.81	0	0		0.81	0.83
Heavy	0	0	0		0	0	2	0		2	2	0	0		2	4
Heavy %	0%	0%	0%		0%	0%	0.5%	0%		0.5%	1.6%	0%	0%		1.6%	0.7%
Lights	0	0	0		0	0	412	0		412	127	0	0		127	539
Lights %	0%	0%	0%		0%	0%	99.5%	0%		99.5%	98.4%	0%	0%		98.4%	99.3%
Single-Unit Trucks	0	0	0		0	0	2	0		2	2	0	0		2	4
Single-Unit Trucks %	0%	0%	0%		0%	0%	0.5%	0%		0.5%	1.6%	0%	0%		1.6%	0.7%
Buses	0	0	0		0	0	0	0		0	0	0	0		0	0
Buses %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	0%
Pedestrians	-	-	-	3	-	-	-	-	1	-	-	-	-	1	-	**-**
Pedestrians%	-	-	-	60%		-	-	-	20%		-	-	-	20%		**-**
Bicycles on Road	0	0	0		-	0	0	0		-	0	0	0		-	**-**
Bicycles on Road%	0%	0%	0%			0%	0%	0%			0%	0%	0%			**-**

Peak Hour: 04:30 PM - 05:30 PM Weather: Clear Sky (6 °C)

Start Time	N Approach 210 COLLEGE AVE E (SITE DRIVEWAY)					E Approach COLLEGE AVE E					W Approach COLLEGE AVE E					Int. Total (15 min)
	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	
2025-11-20 16:30:00	0	0	0	0	0	0	47	0	0	47	79	0	0	0	79	126
2025-11-20 16:45:00	0	0	0	0	0	0	51	0	0	51	57	0	0	0	57	108
2025-11-20 17:00:00	0	0	0	0	0	0	59	0	0	59	60	0	0	0	60	119
2025-11-20 17:15:00	0	0	0	0	0	0	60	0	1	60	64	0	0	0	64	124
Grand Total	0	0	0	0	0	0	217	0	1	217	260	0	0	0	260	**477**
Approach%	0%	0%	0%		-	0%	100%	0%		-	100%	0%	0%		-	**-**
Totals %	0%	0%	0%		0%	0%	45.5%	0%		45.5%	54.5%	0%	0%		54.5%	**-**
PHF	0	0	0		0	0	0.9	0		0.9	0.82	0	0		0.82	0.95
Heavy	0	0	0		0	0	0	0		0	1	0	0		1	1
Heavy %	0%	0%	0%		0%	0%	0%	0%		0%	0.4%	0%	0%		0.4%	0.2%
Lights	0	0	0		0	0	217	0		217	259	0	0		259	476
Lights %	0%	0%	0%		0%	0%	100%	0%		100%	99.6%	0%	0%		99.6%	99.8%
Single-Unit Trucks	0	0	0		0	0	0	0		0	0	0	0		0	0
Single-Unit Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	0%
Buses	0	0	0		0	0	0	0		0	1	0	0		1	1
Buses %	0%	0%	0%		0%	0%	0%	0%		0%	0.4%	0%	0%		0.4%	0.2%
Pedestrians	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	100%		-	-	-	0%		**-**
Bicycles on Road	0	0	0		-	0	1	0		-	2	0	0		-	**-**
Bicycles on Road%	0%	0%	0%			0%	100%	0%			100%	0%	0%			**-**

BA Group
1000 95 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1N6
CANADA

Peak Hour: 08:00 AM - 09:00 AM Weather: Few Clouds (-3 °C)

BA Group
1000 95 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1N6
CANADA

Peak Hour: 04:30 PM - 05:30 PM Weather: Clear Sky (6 °C)

Spectrum

Turning Movement Count
Location Name: DUNDAS LN & COLLEGE AVE E
Date: Thu, Nov 20, 2025 Deployment Lead: Rey Fernandez

BA Group
1000 95 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1N6
CANADA

Turning Movement Count (3 . DUNDAS LN & COLLEGE AVE E)

Start Time	N Approach NORTH PARKING						E Approach COLLEGE AVE E						S Approach DUNDAS LN						W Approach COLLEGE AVE E						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
2025-11-20 07:30:00	0	0	0	0	0	0	0	42	2	0	0	44	0	0	0	0	0	0	2	14	0	0	0	16	60	
2025-11-20 07:45:00	0	0	0	0	0	0	1	76	4	0	0	81	0	0	2	0	0	2	2	17	0	0	0	19	102	
2025-11-20 08:00:00	0	0	0	0	0	0	1	107	5	0	0	113	0	0	0	0	0	0	1	27	0	0	0	28	141	
2025-11-20 08:15:00	0	0	1	0	0	1	0	139	6	0	0	145	0	0	0	0	0	0	1	23	0	0	0	24	170	473
2025-11-20 08:30:00	1	0	0	0	0	1	1	88	2	0	0	91	2	0	0	0	1	2	0	39	0	0	0	39	133	546
2025-11-20 08:45:00	0	0	0	0	2	0	0	79	4	0	0	83	2	0	1	0	1	3	1	37	0	0	0	38	124	568
2025-11-20 09:00:00	0	0	0	0	0	0	0	68	3	0	0	71	1	0	0	0	1	1	1	17	0	0	0	18	90	517
2025-11-20 09:15:00	0	0	0	0	0	0	0	51	2	0	0	53	1	0	1	0	0	2	2	20	0	0	0	22	77	424
BREAK																										
2025-11-20 16:00:00	0	0	0	0	0	0	0	51	2	0	0	53	3	0	1	0	1	4	1	75	0	0	0	76	133	
2025-11-20 16:15:00	0	0	0	0	0	0	0	45	2	0	0	47	4	0	1	0	1	5	1	63	0	0	0	64	116	
2025-11-20 16:30:00	0	0	0	0	0	0	0	45	0	0	0	45	2	0	1	0	0	3	1	79	0	0	0	80	128	
2025-11-20 16:45:00	0	0	0	0	0	0	0	48	3	0	0	51	4	0	3	0	0	7	0	58	0	0	0	58	116	493
2025-11-20 17:00:00	0	0	0	0	0	0	0	57	1	0	0	58	3	0	1	0	3	4	2	57	0	0	0	59	121	481
2025-11-20 17:15:00	0	0	0	0	0	0	0	60	0	0	0	60	0	0	1	0	0	1	1	60	0	0	0	61	122	487
2025-11-20 17:30:00	0	0	0	0	0	0	0	45	1	0	0	46	0	0	2	0	1	2	0	55	0	0	0	55	103	462
2025-11-20 17:45:00	0	0	0	0	0	0	0	40	1	0	0	41	2	0	3	0	0	5	3	45	0	0	0	48	94	440
Grand Total	1	0	1	0	2	2	3	1041	38	0	0	1082	24	0	17	0	9	41	19	686	0	0	0	705	**1830**	-
Approach%	50%	0%	50%	0%		-	0.3%	96.2%	3.5%	0%		-	58.5%	0%	41.5%	0%		-	2.7%	97.3%	0%	0%		-	-	-
Totals %	0.1%	0%	0.1%	0%		0.1%	0.2%	56.9%	2.1%	0%		59.1%	1.3%	0%	0.9%	0%		2.2%	1%	37.5%	0%	0%		38.5%	-	-
Heavy	0	0	0	0		-	0	5	0	0		-	0	0	0	0		-	0	7	0	0		-	-	-
Heavy %	0%	0%	0%	0%		-	0%	0.5%	0%	0%		-	0%	0%	0%	0%		-	0%	1%	0%	0%		-	-	-
Bicycles	0	0	0	0		-	0	0	0	0		-	0	0	0	0		-	0	2	0	0		-	-	-
Bicycle %	0%	0%	0%	0%		-	0%	0%	0%	0%		-	0%	0%	0%	0%		-	0%	0.3%	0%	0%		-	-	-

BA Group
1000 95 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1N6
CANADA

Peak Hour: 08:00 AM - 09:00 AM Weather: Few Clouds (-3 °C)

Start Time	N Approach NORTH PARKING						E Approach COLLEGE AVE E						S Approach DUNDAS LN						W Approach COLLEGE AVE E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
2025-11-20 08:00:00	0	0	0	0	0	0	1	107	5	0	0	113	0	0	0	0	0	0	1	27	0	0	0	28	141
2025-11-20 08:15:00	0	0	1	0	0	1	0	139	6	0	0	145	0	0	0	0	0	0	1	23	0	0	0	24	170
2025-11-20 08:30:00	1	0	0	0	0	1	1	88	2	0	0	91	2	0	0	0	1	2	0	39	0	0	0	39	133
2025-11-20 08:45:00	0	0	0	0	2	0	0	79	4	0	0	83	2	0	1	0	1	3	1	37	0	0	0	38	124
Grand Total	1	0	1	0	2	2	2	413	17	0	0	432	4	0	1	0	2	5	3	126	0	0	0	129	**568**
Approach%	50%	0%	50%	0%		-	0.5%	95.6%	3.9%	0%		-	80%	0%	20%	0%		-	2.3%	97.7%	0%	0%		-	**-**
Totals %	0.2%	0%	0.2%	0%		0.4%	0.4%	72.7%	3%	0%		76.1%	0.7%	0%	0.2%	0%		0.9%	0.5%	22.2%	0%	0%		22.7%	**-**
PHF	0.25	0	0.25	0		0.5	0.5	0.74	0.71	0		0.74	0.5	0	0.25	0		0.42	0.75	0.81	0	0		0.83	0.84
Heavy	0	0	0	0		0	0	3	0	0		3	0	0	0	0		0	0	2	0	0		2	5
Heavy %	0%	0%	0%	0%		0%	0%	0.7%	0%	0%		0.7%	0%	0%	0%	0%		0%	0%	1.6%	0%	0%		1.6%	0.9%
Lights	1	0	1	0		2	2	410	17	0		429	4	0	1	0		5	3	124	0	0		127	563
Lights %	100%	0%	100%	0%		100%	100%	99.3%	100%	0%		99.3%	100%	0%	100%	0%		100%	100%	98.4%	0%	0%		98.4%	99.1%
Single-Unit Trucks	0	0	0	0		0	0	3	0	0		3	0	0	0	0		0	0	2	0	0		2	5
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	0.7%	0%	0%		0.7%	0%	0%	0%	0%		0%	0%	1.6%	0%	0%		1.6%	0.9%
Buses	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Buses %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%
Pedestrians	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	50%		-	-	-	-	0%		-	-	-	-	50%		-	-	-	-	0%		**-**
Bicycles on Road	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%			**-**

Spectrum

Turning Movement Count
Location Name: DUNDAS LN & COLLEGE AVE E
Date: Thu, Nov 20, 2025 Deployment Lead: Rey Fernandez

BA Group
1000 95 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1N6
CANADA

Peak Hour: 04:00 PM - 05:00 PM **Weather: Clear Sky (6 °C)**

Start Time	N Approach NORTH PARKING						E Approach COLLEGE AVE E						S Approach DUNDAS LN						W Approach COLLEGE AVE E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
2025-11-20 16:00:00	0	0	0	0	0	0	0	51	2	0	0	53	3	0	1	0	1	4	1	75	0	0	0	76	133
2025-11-20 16:15:00	0	0	0	0	0	0	0	45	2	0	0	47	4	0	1	0	1	5	1	63	0	0	0	64	116
2025-11-20 16:30:00	0	0	0	0	0	0	0	45	0	0	0	45	2	0	1	0	0	3	1	79	0	0	0	80	128
2025-11-20 16:45:00	0	0	0	0	0	0	0	48	3	0	0	51	4	0	3	0	0	7	0	58	0	0	0	58	116
Grand Total	0	0	0	0	0	0	0	189	7	0	0	196	13	0	6	0	2	19	3	275	0	0	0	278	**493**
Approach%	0%	0%	0%	0%		-	0%	96.4%	3.6%	0%		-	68.4%	0%	31.6%	0%		-	1.1%	98.9%	0%	0%		-	**-**
Totals %	0%	0%	0%	0%		0%	0%	38.3%	1.4%	0%		39.8%	2.6%	0%	1.2%	0%		3.9%	0.6%	55.8%	0%	0%		56.4%	**-**
PHF	0	0	0	0		0	0	0.93	0.58	0		0.92	0.81	0	0.5	0		0.68	0.75	0.87	0	0		0.87	0.93
Heavy	0	0	0	0		0	0	1	0	0		1	0	0	0	0		0	0	1	0	0		1	2
Heavy %	0%	0%	0%	0%		0%	0%	0.5%	0%	0%		0.5%	0%	0%	0%	0%		0%	0%	0.4%	0%	0%		0.4%	0.4%
Lights	0	0	0	0		0	0	188	7	0		195	13	0	6	0		19	3	274	0	0		277	491
Lights %	0%	0%	0%	0%		0%	0%	99.5%	100%	0%		99.5%	100%	0%	100%	0%		100%	100%	99.6%	0%	0%		99.6%	99.6%
Single-Unit Trucks	0	0	0	0		0	0	1	0	0		1	0	0	0	0		0	0	1	0	0		1	2
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	0.5%	0%	0%		0.5%	0%	0%	0%	0%		0%	0%	0.4%	0%	0%		0.4%	0.4%
Buses	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Buses %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	100%		-	-	-	-	0%		**-**
Bicycles on Road	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%			**-**

Peak Hour: 08:00 AM - 09:00 AM **Weather: Few Clouds (-3 °C)**

Peak Hour: 04:00 PM - 05:00 PM **Weather: Clear Sky (6 °C)**

Spectrum

Turning Movement Count
Location Name: EAST RING RD & COLLEGE AVE E
Date: Thu, Nov 20, 2025 Deployment Lead: Rey Fernandez

BA Group
1000 95 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1N6
CANADA

Turning Movement Count (1 . EAST RING RD & COLLEGE AVE E)

Start Time	N Approach EAST RING RD						E Approach COLLEGE AVE E						S Approach EAST RING RD						W Approach COLLEGE AVE E						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
2025-11-20 07:30:00	1	0	0	0	0	1	2	32	8	0	0	42	4	0	5	0	0	9	3	12	3	0	1	18	70	
2025-11-20 07:45:00	0	0	0	0	0	0	2	56	18	0	0	76	5	2	8	0	0	15	8	14	0	0	0	22	113	
2025-11-20 08:00:00	1	0	0	0	1	1	1	64	43	0	2	108	10	1	15	0	2	26	8	18	1	0	0	27	162	
2025-11-20 08:15:00	0	0	0	0	0	0	1	85	47	0	0	133	7	0	17	0	2	24	15	17	0	0	0	32	189	534
2025-11-20 08:30:00	0	1	0	0	0	1	0	55	40	0	0	95	18	1	14	0	0	33	8	21	1	0	1	30	159	623
2025-11-20 08:45:00	1	0	1	0	2	2	1	64	16	0	0	81	14	0	11	0	0	25	20	23	1	0	0	44	152	662
2025-11-20 09:00:00	0	0	0	0	1	0	0	43	21	0	0	64	6	1	15	0	0	22	10	14	2	0	1	26	112	612
2025-11-20 09:15:00	1	0	0	0	0	1	0	54	13	0	0	67	4	1	17	0	0	22	10	16	1	0	1	27	117	540
BREAK																										
2025-11-20 16:00:00	3	0	1	0	0	4	0	40	10	0	0	50	28	1	31	0	1	60	18	49	3	0	1	70	184	
2025-11-20 16:15:00	2	2	2	0	0	6	0	34	15	0	0	49	20	3	26	0	0	49	14	43	4	0	0	61	165	
2025-11-20 16:30:00	1	0	4	0	1	5	3	29	16	0	0	48	36	1	29	0	0	66	22	40	1	0	1	63	182	
2025-11-20 16:45:00	1	0	1	0	0	2	9	28	14	0	0	51	24	3	37	0	0	64	17	31	2	0	0	50	167	698
2025-11-20 17:00:00	0	0	0	0	2	0	5	38	11	0	2	54	29	6	40	0	1	75	19	32	5	0	1	56	185	699
2025-11-20 17:15:00	3	0	1	0	0	4	3	46	16	0	0	65	28	2	48	0	2	78	20	33	6	0	1	59	206	740
2025-11-20 17:30:00	4	1	1	0	0	6	3	31	14	0	0	48	24	4	32	0	0	60	14	28	6	0	0	48	162	720
2025-11-20 17:45:00	3	3	1	0	0	7	0	28	14	0	0	42	23	2	24	0	0	49	15	26	1	0	5	42	140	693
Grand Total	21	7	12	0	7	40	30	727	316	0	4	1073	280	28	369	0	8	677	221	417	37	0	13	675	**2465**	-
Approach%	52.5%	17.5%	30%	0%		-	2.8%	67.8%	29.5%	0%		-	41.4%	4.1%	54.5%	0%		-	32.7%	61.8%	5.5%	0%		-	-	-
Totals %	0.9%	0.3%	0.5%	0%		1.6%	1.2%	29.5%	12.8%	0%		43.5%	11.4%	1.1%	15%	0%		27.5%	9%	16.9%	1.5%	0%		27.4%	-	-
Heavy	0	0	0	0		-	0	3	1	0		-	0	0	4	0		-	2	8	0	0		-	-	-
Heavy %	0%	0%	0%	0%		-	0%	0.4%	0.3%	0%		-	0%	0%	1.1%	0%		-	0.9%	1.9%	0%	0%		-	-	-
Bicycles	0	0	0	0		-	0	1	0	0		-	0	0	0	0		-	0	1	0	0		-	-	-
Bicycle %	0%	0%	0%	0%		-	0%	0.1%	0%	0%		-	0%	0%	0%	0%		-	0%	0.2%	0%	0%		-	-	-

Peak Hour: 08:00 AM - 09:00 AM Weather: Few Clouds (-3 °C)

Start Time	N Approach EAST RING RD						E Approach COLLEGE AVE E						S Approach EAST RING RD						W Approach COLLEGE AVE E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
2025-11-20 08:00:00	1	0	0	0	1	1	1	64	43	0	2	108	10	1	15	0	2	26	8	18	1	0	0	27	162
2025-11-20 08:15:00	0	0	0	0	0	0	1	85	47	0	0	133	7	0	17	0	2	24	15	17	0	0	0	32	189
2025-11-20 08:30:00	0	1	0	0	0	1	0	55	40	0	0	95	18	1	14	0	0	33	8	21	1	0	1	30	159
2025-11-20 08:45:00	1	0	1	0	2	2	1	64	16	0	0	81	14	0	11	0	0	25	20	23	1	0	0	44	152
Grand Total	2	1	1	0	3	4	3	268	146	0	2	417	49	2	57	0	4	108	51	79	3	0	1	133	**662**
Approach%	50%	25%	25%	0%		-	0.7%	64.3%	35%	0%		-	45.4%	1.9%	52.8%	0%		-	38.3%	59.4%	2.3%	0%		-	**-**
Totals %	0.3%	0.2%	0.2%	0%		0.6%	0.5%	40.5%	22.1%	0%		63%	7.4%	0.3%	8.6%	0%		16.3%	7.7%	11.9%	0.5%	0%		20.1%	**-**
PHF	0.5	0.25	0.25	0		0.5	0.75	0.79	0.78	0		0.78	0.68	0.5	0.84	0		0.82	0.64	0.86	0.75	0		0.76	0.88
Heavy	0	0	0	0		0	0	1	1	0		2	0	0	1	0		1	1	2	0	0		3	6
Heavy %	0%	0%	0%	0%		0%	0%	0.4%	0.7%	0%		0.5%	0%	0%	1.8%	0%		0.9%	2%	2.5%	0%	0%		2.3%	0.9%
Lights	2	1	1	0		4	3	267	145	0		415	49	2	56	0		107	50	77	3	0		130	656
Lights %	100%	100%	100%	0%		100%	100%	99.6%	99.3%	0%		99.5%	100%	100%	98.2%	0%		99.1%	98%	97.5%	100%	0%		97.7%	99.1%
Single-Unit Trucks	0	0	0	0		0	0	1	1	0		2	0	0	1	0		1	1	2	0	0		3	6
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	0.4%	0.7%	0%		0.5%	0%	0%	1.8%	0%		0.9%	2%	2.5%	0%	0%		2.3%	0.9%
Buses	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Buses %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%
Pedestrians	-	-	-	-	3	-	-	-	-	-	2	-	-	-	-	-	4	-	-	-	-	-	1	-	**-**
Pedestrians%	-	-	-	-	30%		-	-	-	-	20%		-	-	-	-	40%		-	-	-	-	10%		**-**
Bicycles on Road	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%			**-**

Spectrum

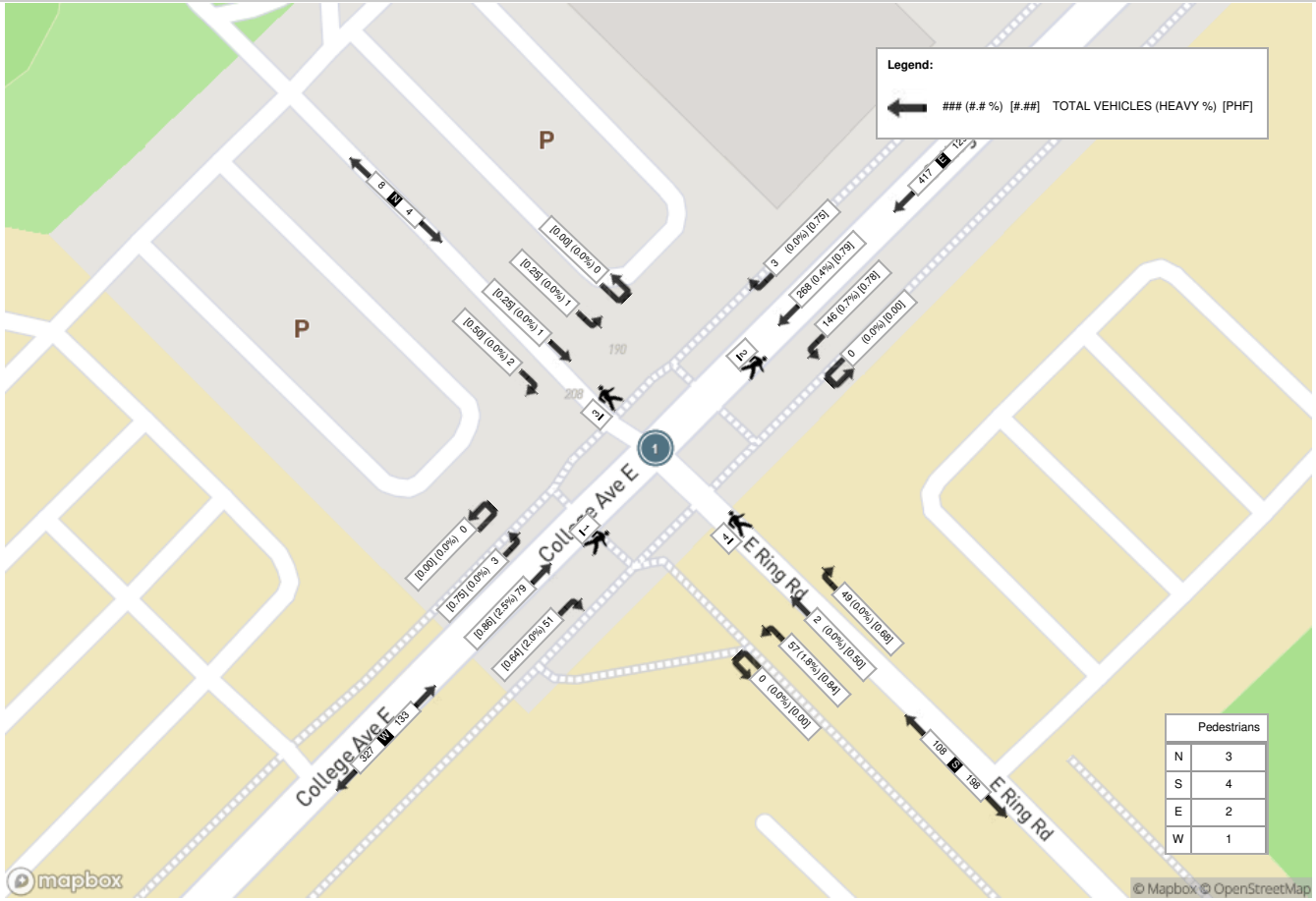
Turning Movement Count
Location Name: EAST RING RD & COLLEGE AVE E
Date: Thu, Nov 20, 2025 Deployment Lead: Rey Fernandez

BA Group
1000 95 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1N6
CANADA

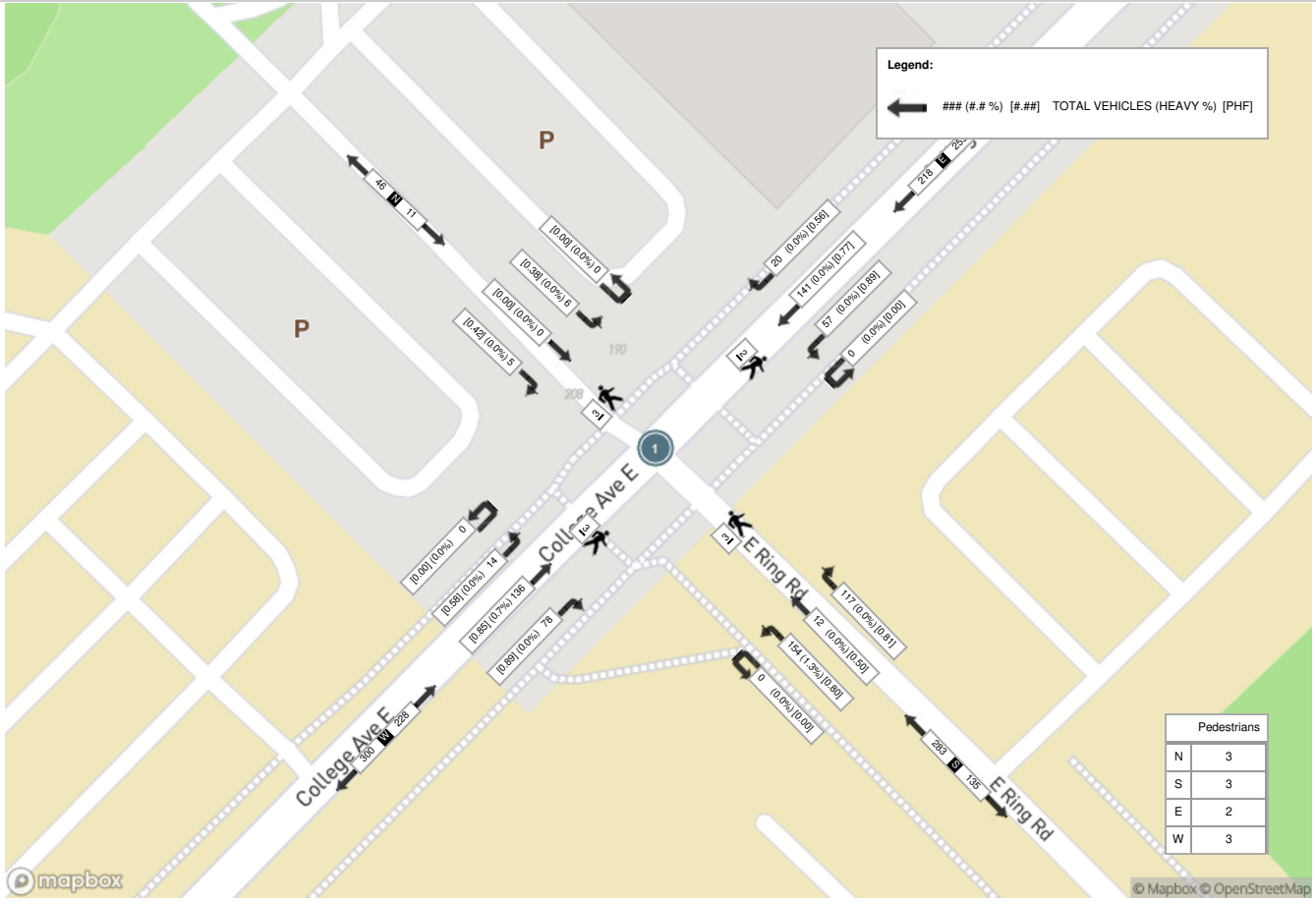
Peak Hour: 04:30 PM - 05:30 PM Weather: Clear Sky (6 °C)

Start Time	N Approach EAST RING RD						E Approach COLLEGE AVE E						S Approach EAST RING RD						W Approach COLLEGE AVE E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
2025-11-20 16:30:00	1	0	4	0	1	5	3	29	16	0	0	48	36	1	29	0	0	66	22	40	1	0	1	63	182
2025-11-20 16:45:00	1	0	1	0	0	2	9	28	14	0	0	51	24	3	37	0	0	64	17	31	2	0	0	50	167
2025-11-20 17:00:00	0	0	0	0	2	0	5	38	11	0	2	54	29	6	40	0	1	75	19	32	5	0	1	56	185
2025-11-20 17:15:00	3	0	1	0	0	4	3	46	16	0	0	65	28	2	48	0	2	78	20	33	6	0	1	59	206
Grand Total	5	0	6	0	3	11	20	141	57	0	2	218	117	12	154	0	3	283	78	136	14	0	3	228	**740**
Approach%	45.5%	0%	54.5%	0%		-	9.2%	64.7%	26.1%	0%		-	41.3%	4.2%	54.4%	0%		-	34.2%	59.6%	6.1%	0%		-	**-**
Totals %	0.7%	0%	0.8%	0%		1.5%	2.7%	19.1%	7.7%	0%		29.5%	15.8%	1.6%	20.8%	0%		38.2%	10.5%	18.4%	1.9%	0%		30.8%	**-**
PHF	0.42	0	0.38	0		0.55	0.56	0.77	0.89	0		0.84	0.81	0.5	0.8	0		0.91	0.89	0.85	0.58	0		0.9	0.9
Heavy	0	0	0	0		0	0	0	0	0		0	0	0	2	0		2	0	1	0	0		1	3
Heavy %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	1.3%	0%		0.7%	0%	0.7%	0%	0%		0.4%	0.4%
Lights	5	0	6	0		11	20	141	57	0		218	117	12	152	0		281	78	135	14	0		227	737
Lights %	100%	0%	100%	0%		100%	100%	100%	100%	0%		100%	100%	100%	98.7%	0%		99.3%	100%	99.3%	100%	0%		99.6%	99.6%
Single-Unit Trucks	0	0	0	0		0	0	0	0	0		0	0	0	2	0		2	0	0	0	0		0	2
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	1.3%	0%		0.7%	0%	0%	0%	0%		0%	0.3%
Buses	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	1	0	0		1	1
Buses %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0.7%	0%	0%		0.4%	0.1%
Pedestrians	-	-	-	-	3	-	-	-	-	-	2	-	-	-	-	-	3	-	-	-	-	-	3	-	**-**
Pedestrians%	-	-	-	-	27.3%		-	-	-	-	18.2%		-	-	-	-	27.3%		-	-	-	-	27.3%		**-**
Bicycles on Road	0	0	0	0		-	0	1	0	0		-	0	0	0	0		-	0	1	0	0		-	**-**
Bicycles on Road%	0%	0%	0%	0%			0%	100%	0%	0%			0%	0%	0%	0%			0%	100%	0%	0%			**-**

Peak Hour: 08:00 AM - 09:00 AM **Weather: Few Clouds (-3 °C)**



Peak Hour: 04:30 PM - 05:30 PM **Weather: Clear Sky (6 °C)**



Appendix F:
TTS Traffic Distribution Queries

AM TTS Queries							
Tue Dec 16 2025 17:51:27 GMT-0500 (Eastern Standard Time) - Run Time: 3359ms							
Cross Tabulation Query Form - Trip - 2022							
Row: Planning district of destination - pd_dest							
Column: 2006 GTA zone of origin - gta06_orig							
RowG:							
ColG:(8056-8060	8103-8106	8065	8066	8084	8083	8095	8097)
TblG:							
Filters:							
Start time of trip - start_time In 600-959							
and							
Primary travel mode of trip - mode_prime In d	m	u	t				
and							
Trip Purpose of Origin - purp_orig In H							
and							
2006 GTA zone of origin - gta06_orig In 8056-8060	8103-8106	8065	8066	8084	8083	8095	8097
Trip 2022							
Table:							
	1						
PD 9 of Toronto	1						
Brampton	2						
Mississauga	1						
Milton	2						
Oakville	1						
Glanbrook	1						
Hamilton	1						
Waterloo	4						
Kitchener	2						
Cambridge	1						
Wilmot	1						
Guelph	45						
Puslinch	2						
Guelph/Eramosa	1						
Centre Wellington	1						
External	1						
Sum	67						

Tue Dec 16 2025 17:54:59 GMT-0500 (Eastern Standard Time) - Run Time: 3137ms							
Cross Tabulation Query Form - Trip - 2022							
Row: 2006 GTA zone of destination - gta06_dest							
Column: 2006 GTA zone of origin - gta06_orig							
RowG:							
ColG:(8056-8060	8103-8106	8065	8066	8084	8083	8095	8097)
TblG:							
Filters:							
Start time of trip - start_time In 600-959							
and							
Primary travel mode of trip - mode_prime In d	m	u	t				
and							
Trip Purpose of Origin - purp_orig In H							
and							
2006 GTA zone of origin - gta06_orig In 8056-8060	8103-8106	8065	8066	8084	8083	8095	8097
and							
Planning district of destination - pd_dest In 70							
Trip 2022							
Table:							
	1						
8001	1						
8009	1						
8014	2						
8029	1						
8032	2						
8039	1						
8053	1						
8056	1						
8057	1						
8065	1						
8066	3						
8077	1						
8079	1						
8080	2						
8082	2						
8085	1						
8086	1						
8094	1						
8096	1						
8111	1						
8114	1						
8115	1						
8118	3						
8119	1						
8120	1						
8121	1						
8142	2						
8157	1						
8169	1						
8176	2						
8186	1						
8189	1						
8194	1						
8197	2						
	45						

PM TTS Queries							
Tue Dec 16 2025 17:56:56 GMT-0500 (Eastern Standard Time) - Run Time: 3152ms							
Cross Tabulation Query Form - Trip - 2022							
Row: Planning district of origin - pd_orig							
Column: 2006 GTA zone of destination - gta06_dest							
RowG:							
ColG:(8056-8060	8103-8106	8065	8066	8084	8083	8095	8097)
TblG:							
Filters:							
Start time of trip - start_time In 1600-1959							
and							
Primary travel mode of trip - mode_prime In d	m	u	t				
and							
Trip Purpose of Destination - purp_dest In H							
and							
2006 GTA zone of destination - gta06_dest In 8056-8060	8103-8106	8065	8066	8084	8083	8095	8097
Trip 2022							
Table:							
	1						
Vaughan	1						
Caledon	1						
Brampton	1						
Mississauga	1						
Milton	2						
Oakville	1						
Hamilton	1						
Waterloo	6						
Kitchener	2						
Wilmot	1						
Guelph	54						
Guelph/Eramosa	2						
External	1						
Sum	74						

Tue Dec 16 2025 17:57:46 GMT-0500 (Eastern Standard Time) - Run Time: 2895ms							
Cross Tabulation Query Form - Trip - 2022							
Row: 2006 GTA zone of origin - gta06_orig							
Column: 2006 GTA zone of destination - gta06_dest							
RowG:							
ColG:(8056-8060	8103-8106	8065	8066	8084	8083	8095	8097)
TblG:							
Filters:							
Start time of trip - start_time In 1600-1959							
and							
Primary travel mode of trip - mode_prime In d	m	u	t				
and							
Trip Purpose of Destination - purp_dest In H							
and							
2006 GTA zone of destination - gta06_dest In 8056-8060	8103-8106	8065	8066	8084	8083	8095	8097
and							
Planning district of origin - pd_orig In 70							
Trip 2022							
Table:							
	1						
8025	1						
8032	1						
8039	1						
8040	1						
8046	1						
8053	1						
8055	1						
8059	4						
8066	4						
8075	1						
8077	1						
8080	1						
8082	1						
8092	1						
8094	3						
8095	4						
8102	1						
8105	1						
8115	1						
8116	1						
8117	1						
8118	1						
8121	2						
8125	1						
8128	1						
8129	1						
8142	1						
8149	1						
8150	1						
8151	1						
8157	1						
8169	1						
8176	1						
8177	1						
8186	2						
8188	1						
8194	1						
8196	1						
8197	2						
8202	1						
Sum	54						

Appendix G:
Signal Timing Plans

CITY OF GUELPH

Traffic Signal Timing Parameters

Database Date	N/A		Prepared Date:	Tuesday December 02, 2025
Database Rev	N/A		Completed By:	M.M.
Timing Card / Field rev	N/A		Checked By:	

Location:	College Avenue at East Ring Road						TIME PERIOD (sec.) (Green+Amber+All Red)		
Phase #	Direction	Vehicle Minimum (sec.)	Pedestrian Minimum (sec.)		Amber (sec.)	All Red (sec.)	AM MAX	OFF MAX	PM MAX
			WALK	FDWALK					
1	N/A								
2	Eastbound (College Avenue)	10.0	17.0	14.0	4.0	2.0		31.0	
3	N/A								
4	Northbound (East Ring Road)	9.0	7.0	10.0	4.0	2.0		17.0	
5	N/A								
6	Westbound (College Avenue)	10.0	17.0	14.0	4.0	2.0		31.0	
7	N/A								
8	Southbound (East Ring Road)	9.0	7.0	10.0	4.0	2.0		17.0	

System Control	No
Local Control	Yes
Semi-Actuated Mode	Yes

TIME (M-F)	PEAK	CYCLE LENGTH (sec.)	OFFSET (sec.)
00:00-24:00	Free	Various	N/A

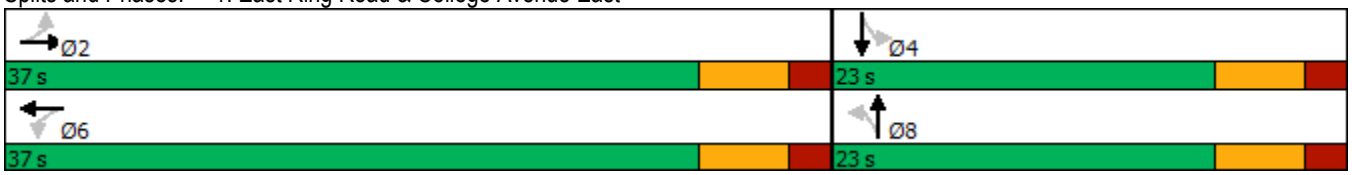
Note: P+P = Protected Permissive Phase
Prot. = Fully Protected Phase

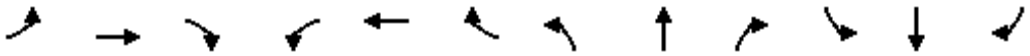
Appendix H:
Synchro Analysis Sheets

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	Ø4
Lane Configurations							
Traffic Volume (vph)	5	80	145	270	55	0	
Future Volume (vph)	5	80	145	270	55	0	
Lane Group Flow (vph)	6	148	165	313	63	57	
Turn Type	Perm	NA	Perm	NA	Perm	NA	
Protected Phases		2		6		8	4
Permitted Phases	2		6		8		
Detector Phase	2	2	6	6	8	8	
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	9.0	9.0	9.0
Minimum Split (s)	37.0	37.0	37.0	37.0	23.0	23.0	23.0
Total Split (s)	37.0	37.0	37.0	37.0	23.0	23.0	23.0
Total Split (%)	61.7%	61.7%	61.7%	61.7%	38.3%	38.3%	38%
Yellow Time (s)	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
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	Min	Min	Min	Min	None	None	None
v/c Ratio	0.01	0.13	0.21	0.26	0.16	0.05	
Control Delay	6.4	4.9	7.6	7.1	11.2	0.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	6.4	4.9	7.6	7.1	11.2	0.1	
Queue Length 50th (m)	0.2	3.2	6.4	12.4	2.9	0.0	
Queue Length 95th (m)	1.4	9.3	14.5	23.8	8.8	0.0	
Internal Link Dist (m)		302.2		213.2		159.3	
Turn Bay Length (m)	40.0		50.0		90.0		
Base Capacity (vph)	1016	1644	1154	1760	744	1308	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.01	0.09	0.14	0.18	0.08	0.04	

Intersection Summary
Cycle Length: 60
Actuated Cycle Length: 33.1
Natural Cycle: 60
Control Type: Semi Act-Uncoord

Splits and Phases: 1: East Ring Road & College Avenue East





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	80	50	145	270	5	55	0	50	0	0	0
Future Volume (vph)	5	80	50	145	270	5	55	0	50	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.4	3.5	3.6	3.6	4.5	3.6	3.6	3.4	3.6
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0				
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00				
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.98				
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00				
Frt	1.00	0.94		1.00	1.00		1.00	0.85				
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00				
Satd. Flow (prot)	1803	1747		1762	1873		1785	1737				
Flt Permitted	0.57	1.00		0.66	1.00		0.77	1.00				
Satd. Flow (perm)	1082	1747		1229	1873		1446	1737				
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	6	91	57	165	307	6	62	0	57	0	0	0
RTOR Reduction (vph)	0	28	0	0	1	0	0	49	0	0	0	0
Lane Group Flow (vph)	6	120	0	165	312	0	63	8	0	0	0	0
Confl. Peds. (#/hr)	3		4	4		3	1		2	2		1
Heavy Vehicles (%)	0%	2%	1%	0%	0%	0%	1%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	18.4	18.4		18.4	18.4		5.2	5.2				
Effective Green, g (s)	18.4	18.4		18.4	18.4		5.2	5.2				
Actuated g/C Ratio	0.52	0.52		0.52	0.52		0.15	0.15				
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0				
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0				
Lane Grp Cap (vph)	559	902		635	968		211	253				
v/s Ratio Prot		0.07			c0.17			0.00				
v/s Ratio Perm	0.01			0.13			c0.04					
v/c Ratio	0.01	0.13		0.26	0.32		0.30	0.03				
Uniform Delay, d1	4.2	4.5		4.8	5.0		13.6	13.0				
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00				
Incremental Delay, d2	0.0	0.1		0.2	0.2		0.8	0.1				
Delay (s)	4.2	4.5		5.0	5.2		14.4	13.1				
Level of Service	A	A		A	A		B	B				
Approach Delay (s)		4.5			5.1			13.8			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM 2000 Control Delay	6.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	35.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	48.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	125	5	15	415	0	5
Future Volume (Veh/h)	125	5	15	415	0	5
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	149	6	18	494	0	6
Pedestrians					2	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						2
Median type	None			None		
Median storage veh)						
Upstream signal (m)	237					
pX, platoon unblocked						
vC, conflicting volume			157		684	154
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			157		684	154
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	99
cM capacity (veh/h)			1433		411	896

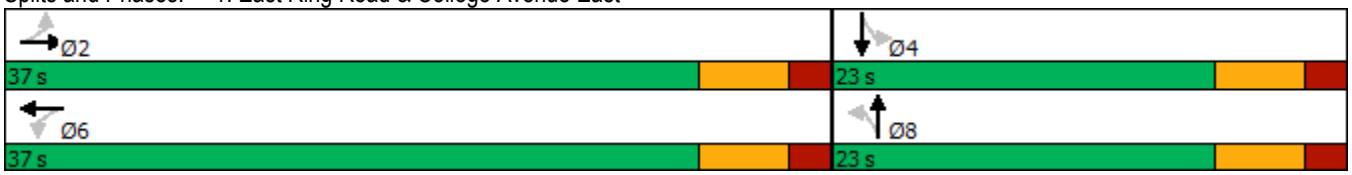
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	155	512	6
Volume Left	0	18	0
Volume Right	6	0	6
cSH	1700	1433	448
Volume to Capacity	0.09	0.01	0.01
Queue Length 95th (m)	0.0	0.3	0.3
Control Delay (s)	0.0	0.4	13.1
Lane LOS		A	B
Approach Delay (s)	0.0	0.4	13.1
Approach LOS			B

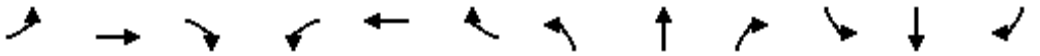
Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	36.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	15	135	55	140	155	10	5	0
Future Volume (vph)	15	135	55	140	155	10	5	0
Lane Group Flow (vph)	17	239	61	178	172	139	6	6
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	2	2	6	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	9.0	9.0	9.0	9.0
Minimum Split (s)	37.0	37.0	37.0	37.0	23.0	23.0	23.0	23.0
Total Split (s)	37.0	37.0	37.0	37.0	23.0	23.0	23.0	23.0
Total Split (%)	61.7%	61.7%	61.7%	61.7%	38.3%	38.3%	38.3%	38.3%
Yellow Time (s)	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
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	Min	Min	Min	Min	None	None	None	None
v/c Ratio	0.03	0.28	0.12	0.21	0.39	0.22	0.02	0.01
Control Delay	8.6	7.5	9.4	8.8	12.1	3.6	8.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.6	7.5	9.4	8.8	12.1	3.6	8.0	0.0
Queue Length 50th (m)	0.6	6.1	2.2	5.9	7.0	0.4	0.2	0.0
Queue Length 95th (m)	3.4	19.9	8.6	17.8	18.6	7.5	1.7	0.0
Internal Link Dist (m)		302.2		213.2		159.3		48.7
Turn Bay Length (m)	40.0		50.0		90.0		15.0	
Base Capacity (vph)	1166	1698	1078	1753	737	982	661	1153
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	0.01	0.14	0.06	0.10	0.23	0.14	0.01	0.01

Intersection Summary
Cycle Length: 60
Actuated Cycle Length: 32.8
Natural Cycle: 60
Control Type: Semi Act-Uncoord

Splits and Phases: 1: East Ring Road & College Avenue East





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	135	80	55	140	20	155	10	115	5	0	5
Future Volume (vph)	15	135	80	55	140	20	155	10	115	5	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.4	3.5	3.6	3.6	4.5	3.6	3.6	3.4	3.6
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.94		1.00	0.98		1.00	0.86		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)	1803	1779		1763	1839		1782	1765		1802	1543	
Flt Permitted	0.64	1.00		0.61	1.00		0.75	1.00		0.67	1.00	
Satd. Flow (perm)	1224	1779		1132	1839		1414	1765		1268	1543	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	17	150	89	61	156	22	172	11	128	6	0	6
RTOR Reduction (vph)	0	44	0	0	11	0	0	97	0	0	5	0
Lane Group Flow (vph)	17	195	0	61	167	0	172	42	0	6	1	0
Confl. Peds. (#/hr)	3		3	3		3	3		2	2		3
Confl. Bikes (#/hr)			1			1						
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	13.7	13.7		13.7	13.7		8.2	8.2		8.2	8.2	
Effective Green, g (s)	13.7	13.7		13.7	13.7		8.2	8.2		8.2	8.2	
Actuated g/C Ratio	0.40	0.40		0.40	0.40		0.24	0.24		0.24	0.24	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	494	718		457	743		342	426		306	373	
v/s Ratio Prot		c0.11			0.09			0.02			0.00	
v/s Ratio Perm	0.01			0.05			c0.12			0.00		
v/c Ratio	0.03	0.27		0.13	0.23		0.50	0.10		0.02	0.00	
Uniform Delay, d1	6.1	6.8		6.4	6.6		11.1	10.0		9.8	9.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.2		0.1	0.2		1.2	0.1		0.0	0.0	
Delay (s)	6.1	7.0		6.5	6.8		12.3	10.1		9.8	9.8	
Level of Service	A	A		A	A		B	B		A	A	
Approach Delay (s)		6.9			6.7			11.3			9.8	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM 2000 Control Delay	8.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	33.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	275	5	5	190	5	15
Future Volume (Veh/h)	275	5	5	190	5	15
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	296	5	5	204	5	16
Pedestrians					2	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						2
Median type	None			None		
Median storage veh)						
Upstream signal (m)	237					
pX, platoon unblocked						
vC, conflicting volume			303		514	300
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			303		514	300
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	98
cM capacity (veh/h)			1267		521	743

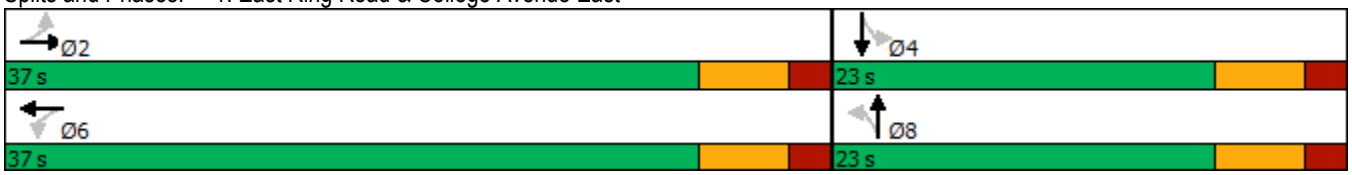
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	301	209	21
Volume Left	0	5	5
Volume Right	5	0	16
cSH	1700	1267	975
Volume to Capacity	0.18	0.00	0.02
Queue Length 95th (m)	0.0	0.1	0.5
Control Delay (s)	0.0	0.2	10.4
Lane LOS		A	B
Approach Delay (s)	0.0	0.2	10.4
Approach LOS			B

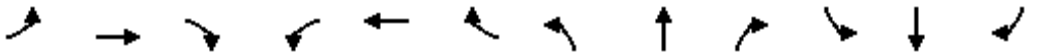
Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	24.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	Ø4
Lane Configurations							
Traffic Volume (vph)	5	85	145	290	55	0	
Future Volume (vph)	5	85	145	290	55	0	
Lane Group Flow (vph)	6	154	165	336	63	57	
Turn Type	Perm	NA	Perm	NA	Perm	NA	
Protected Phases		2		6		8	4
Permitted Phases	2		6		8		
Detector Phase	2	2	6	6	8	8	
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	9.0	9.0	9.0
Minimum Split (s)	37.0	37.0	37.0	37.0	23.0	23.0	23.0
Total Split (s)	37.0	37.0	37.0	37.0	23.0	23.0	23.0
Total Split (%)	61.7%	61.7%	61.7%	61.7%	38.3%	38.3%	38%
Yellow Time (s)	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
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	Min	Min	Min	Min	None	None	None
v/c Ratio	0.01	0.14	0.21	0.28	0.16	0.05	
Control Delay	6.4	4.9	7.5	7.1	11.4	0.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	6.4	4.9	7.5	7.1	11.4	0.1	
Queue Length 50th (m)	0.2	3.4	6.4	13.5	3.0	0.0	
Queue Length 95th (m)	1.4	9.8	14.7	25.9	9.1	0.0	
Internal Link Dist (m)		302.2		213.2		159.3	
Turn Bay Length (m)	40.0		50.0		90.0		
Base Capacity (vph)	985	1632	1136	1743	737	1298	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.01	0.09	0.15	0.19	0.09	0.04	

Intersection Summary
Cycle Length: 60
Actuated Cycle Length: 33.5
Natural Cycle: 60
Control Type: Semi Act-Uncoord

Splits and Phases: 1: East Ring Road & College Avenue East





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	85	50	145	290	5	55	0	50	0	0	0
Future Volume (vph)	5	85	50	145	290	5	55	0	50	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.4	3.5	3.6	3.6	4.5	3.6	3.6	3.4	3.6
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0				
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00				
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.98				
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00				
Frt	1.00	0.94		1.00	1.00		1.00	0.85				
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00				
Satd. Flow (prot)	1803	1751		1762	1873		1785	1737				
Flt Permitted	0.56	1.00		0.66	1.00		0.77	1.00				
Satd. Flow (perm)	1060	1751		1222	1873		1446	1737				
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	6	97	57	165	330	6	62	0	57	0	0	0
RTOR Reduction (vph)	0	27	0	0	1	0	0	49	0	0	0	0
Lane Group Flow (vph)	6	127	0	165	335	0	63	8	0	0	0	0
Confl. Peds. (#/hr)	3		4	4		3	1		2	2		1
Heavy Vehicles (%)	0%	2%	1%	0%	0%	0%	1%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	18.8	18.8		18.8	18.8		5.2	5.2				
Effective Green, g (s)	18.8	18.8		18.8	18.8		5.2	5.2				
Actuated g/C Ratio	0.52	0.52		0.52	0.52		0.14	0.14				
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0				
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0				
Lane Grp Cap (vph)	553	914		638	978		208	250				
v/s Ratio Prot		0.07			c0.18			0.00				
v/s Ratio Perm	0.01			0.13			c0.04					
v/c Ratio	0.01	0.14		0.26	0.34		0.30	0.03				
Uniform Delay, d1	4.1	4.4		4.8	5.0		13.8	13.2				
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00				
Incremental Delay, d2	0.0	0.1		0.2	0.2		0.8	0.1				
Delay (s)	4.1	4.5		5.0	5.2		14.6	13.3				
Level of Service	A	A		A	A		B	B				
Approach Delay (s)		4.5			5.1			14.0			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM 2000 Control Delay	6.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	36.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	49.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	135	5	15	445	0	5
Future Volume (Veh/h)	135	5	15	445	0	5
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	161	6	18	530	0	6
Pedestrians					2	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						2
Median type	None			None		
Median storage veh)						
Upstream signal (m)	237					
pX, platoon unblocked						
vC, conflicting volume			169		732	166
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			169		732	166
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	99
cM capacity (veh/h)			1418		386	882

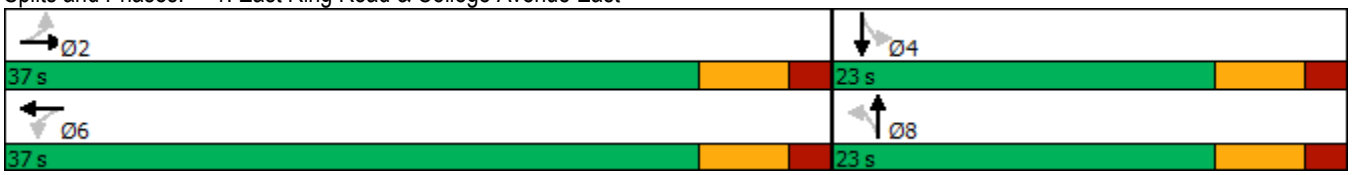
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	167	548	6
Volume Left	0	18	0
Volume Right	6	0	6
cSH	1700	1418	441
Volume to Capacity	0.10	0.01	0.01
Queue Length 95th (m)	0.0	0.3	0.3
Control Delay (s)	0.0	0.4	13.3
Lane LOS		A	B
Approach Delay (s)	0.0	0.4	13.3
Approach LOS			B

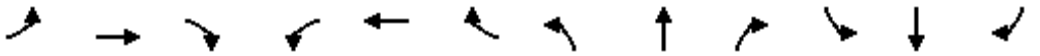
Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	38.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	15	145	55	150	155	10	5	0
Future Volume (vph)	15	145	55	150	155	10	5	0
Lane Group Flow (vph)	17	250	61	189	172	139	6	6
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	2	2	6	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	9.0	9.0	9.0	9.0
Minimum Split (s)	37.0	37.0	37.0	37.0	23.0	23.0	23.0	23.0
Total Split (s)	37.0	37.0	37.0	37.0	23.0	23.0	23.0	23.0
Total Split (%)	61.7%	61.7%	61.7%	61.7%	38.3%	38.3%	38.3%	38.3%
Yellow Time (s)	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
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	Min	Min	Min	Min	None	None	None	None
v/c Ratio	0.03	0.29	0.12	0.22	0.40	0.22	0.02	0.01
Control Delay	8.5	7.8	9.4	8.9	12.2	3.7	8.2	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.5	7.8	9.4	8.9	12.2	3.7	8.2	0.0
Queue Length 50th (m)	0.6	6.8	2.2	6.4	7.0	0.4	0.2	0.0
Queue Length 95th (m)	3.5	21.3	8.6	19.2	19.0	7.7	1.8	0.0
Internal Link Dist (m)		302.2		213.2		159.3		48.7
Turn Bay Length (m)	40.0		50.0		90.0		15.0	
Base Capacity (vph)	1150	1697	1063	1750	734	979	659	1142
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	0.01	0.15	0.06	0.11	0.23	0.14	0.01	0.01

Intersection Summary
Cycle Length: 60
Actuated Cycle Length: 32.9
Natural Cycle: 60
Control Type: Semi Act-Uncoord

Splits and Phases: 1: East Ring Road & College Avenue East





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	145	80	55	150	20	155	10	115	5	0	5
Future Volume (vph)	15	145	80	55	150	20	155	10	115	5	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.4	3.5	3.6	3.6	4.5	3.6	3.6	3.4	3.6
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	0.98		1.00	0.86		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)	1803	1784		1763	1841		1782	1765		1802	1543	
Flt Permitted	0.64	1.00		0.60	1.00		0.75	1.00		0.67	1.00	
Satd. Flow (perm)	1212	1784		1121	1841		1414	1765		1268	1543	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	17	161	89	61	167	22	172	11	128	6	0	6
RTOR Reduction (vph)	0	41	0	0	10	0	0	97	0	0	5	0
Lane Group Flow (vph)	17	209	0	61	179	0	172	42	0	6	1	0
Confl. Peds. (#/hr)	3		3	3		3	3		2	2		3
Confl. Bikes (#/hr)			1			1						
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	13.8	13.8		13.8	13.8		8.2	8.2		8.2	8.2	
Effective Green, g (s)	13.8	13.8		13.8	13.8		8.2	8.2		8.2	8.2	
Actuated g/C Ratio	0.41	0.41		0.41	0.41		0.24	0.24		0.24	0.24	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	491	724		454	747		341	425		305	372	
v/s Ratio Prot		c0.12			0.10			0.02			0.00	
v/s Ratio Perm	0.01			0.05			c0.12			0.00		
v/c Ratio	0.03	0.29		0.13	0.24		0.50	0.10		0.02	0.00	
Uniform Delay, d1	6.1	6.8		6.3	6.6		11.1	10.0		9.8	9.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.2		0.1	0.2		1.2	0.1		0.0	0.0	
Delay (s)	6.1	7.0		6.5	6.8		12.3	10.1		9.9	9.8	
Level of Service	A	A		A	A		B	B		A	A	
Approach Delay (s)		7.0			6.7			11.3			9.8	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM 2000 Control Delay	8.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	34.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	295	5	5	205	5	15
Future Volume (Veh/h)	295	5	5	205	5	15
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	317	5	5	220	5	16
Pedestrians					2	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						2
Median type	None			None		
Median storage veh)						
Upstream signal (m)	237					
pX, platoon unblocked						
vC, conflicting volume			324		552	322
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			324		552	322
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	98
cM capacity (veh/h)			1245		496	723

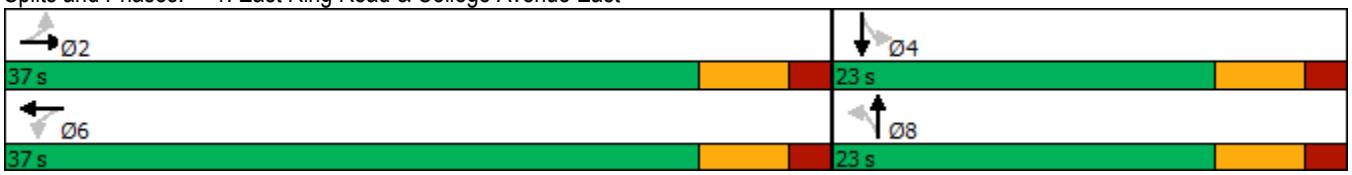
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	322	225	21
Volume Left	0	5	5
Volume Right	5	0	16
cSH	1700	1245	949
Volume to Capacity	0.19	0.00	0.02
Queue Length 95th (m)	0.0	0.1	0.5
Control Delay (s)	0.0	0.2	10.6
Lane LOS		A	B
Approach Delay (s)	0.0	0.2	10.6
Approach LOS			B

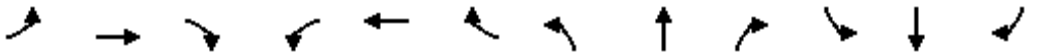
Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	25.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	Ø4
Lane Configurations							
Traffic Volume (vph)	5	190	145	405	55	0	
Future Volume (vph)	5	190	145	405	55	0	
Lane Group Flow (vph)	6	273	165	466	63	57	
Turn Type	Perm	NA	Perm	NA	Perm	NA	
Protected Phases		2		6		8	4
Permitted Phases	2		6		8		
Detector Phase	2	2	6	6	8	8	
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	9.0	9.0	9.0
Minimum Split (s)	37.0	37.0	37.0	37.0	23.0	23.0	23.0
Total Split (s)	37.0	37.0	37.0	37.0	23.0	23.0	23.0
Total Split (%)	61.7%	61.7%	61.7%	61.7%	38.3%	38.3%	38%
Yellow Time (s)	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
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	Min	Min	Min	Min	None	None	None
v/c Ratio	0.01	0.22	0.22	0.37	0.17	0.06	
Control Delay	5.8	5.7	7.1	7.2	13.6	0.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	5.8	5.7	7.1	7.2	13.6	0.1	
Queue Length 50th (m)	0.2	9.3	6.5	20.6	3.4	0.0	
Queue Length 95th (m)	1.4	19.7	15.6	38.9	11.0	0.0	
Internal Link Dist (m)		302.2		213.2		159.3	
Turn Bay Length (m)	40.0		50.0		90.0		
Base Capacity (vph)	811	1560	946	1620	697	1151	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.01	0.17	0.17	0.29	0.09	0.05	

Intersection Summary
Cycle Length: 60
Actuated Cycle Length: 36.4
Natural Cycle: 60
Control Type: Semi Act-Uncoord

Splits and Phases: 1: East Ring Road & College Avenue East





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	190	50	145	405	5	55	0	50	0	0	0
Future Volume (vph)	5	190	50	145	405	5	55	0	50	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.4	3.5	3.6	3.6	4.5	3.6	3.6	3.4	3.6
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0				
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00				
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98				
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00				
Frt	1.00	0.97		1.00	1.00		1.00	0.85				
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00				
Satd. Flow (prot)	1803	1800		1762	1875		1785	1737				
Flt Permitted	0.50	1.00		0.59	1.00		0.78	1.00				
Satd. Flow (perm)	940	1800		1097	1875		1474	1737				
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	6	216	57	165	460	6	62	0	57	0	0	0
RTOR Reduction (vph)	0	15	0	0	1	0	0	50	0	0	0	0
Lane Group Flow (vph)	6	258	0	165	465	0	63	7	0	0	0	0
Confl. Peds. (#/hr)	3		4	4		3	1		2	2		1
Heavy Vehicles (%)	0%	2%	1%	0%	0%	0%	1%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	21.8	21.8		21.8	21.8		5.1	5.1				
Effective Green, g (s)	21.8	21.8		21.8	21.8		5.1	5.1				
Actuated g/C Ratio	0.56	0.56		0.56	0.56		0.13	0.13				
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0				
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0				
Lane Grp Cap (vph)	526	1008		614	1050		193	227				
v/s Ratio Prot		0.14			c0.25			0.00				
v/s Ratio Perm	0.01			0.15			c0.04					
v/c Ratio	0.01	0.26		0.27	0.44		0.33	0.03				
Uniform Delay, d1	3.8	4.4		4.4	5.0		15.3	14.7				
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00				
Incremental Delay, d2	0.0	0.1		0.2	0.3		1.0	0.1				
Delay (s)	3.8	4.5		4.7	5.3		16.3	14.8				
Level of Service	A	A		A	A		B	B				
Approach Delay (s)		4.5			5.1			15.6			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM 2000 Control Delay	6.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	38.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	240	5	15	570	0	5
Future Volume (Veh/h)	240	5	15	570	0	5
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	286	6	18	679	0	6
Pedestrians					2	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						2
Median type	None			None		
Median storage veh)						
Upstream signal (m)	237					
pX, platoon unblocked						
vC, conflicting volume			294		1006	291
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			294		1006	291
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	99
cM capacity (veh/h)			1277		265	752

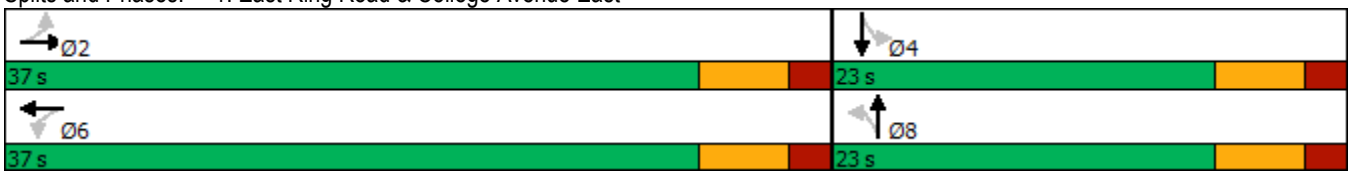
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	292	697	6
Volume Left	0	18	0
Volume Right	6	0	6
cSH	1700	1277	376
Volume to Capacity	0.17	0.01	0.02
Queue Length 95th (m)	0.0	0.3	0.4
Control Delay (s)	0.0	0.4	14.7
Lane LOS		A	B
Approach Delay (s)	0.0	0.4	14.7
Approach LOS			B

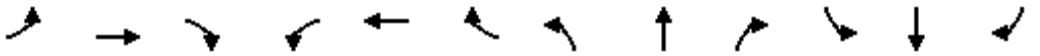
Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	45.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	15	275	55	285	155	10	5	0
Future Volume (vph)	15	275	55	285	155	10	5	0
Lane Group Flow (vph)	17	395	61	339	172	139	6	6
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	2	2	6	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	9.0	9.0	9.0	9.0
Minimum Split (s)	37.0	37.0	37.0	37.0	23.0	23.0	23.0	23.0
Total Split (s)	37.0	37.0	37.0	37.0	23.0	23.0	23.0	23.0
Total Split (%)	61.7%	61.7%	61.7%	61.7%	38.3%	38.3%	38.3%	38.3%
Yellow Time (s)	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
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	Min	Min	Min	Min	None	None	None	None
v/c Ratio	0.03	0.43	0.12	0.36	0.41	0.23	0.02	0.01
Control Delay	8.0	9.8	9.0	9.8	14.6	4.5	10.4	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.0	9.8	9.0	9.8	14.6	4.5	10.4	0.0
Queue Length 50th (m)	0.6	15.2	2.2	13.7	7.9	0.5	0.3	0.0
Queue Length 95th (m)	3.6	41.3	9.0	36.5	24.7	9.5	2.3	0.0
Internal Link Dist (m)		302.2		213.2		159.3		48.7
Turn Bay Length (m)	40.0		50.0		90.0		15.0	
Base Capacity (vph)	926	1605	860	1629	678	914	608	993
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	0.02	0.25	0.07	0.21	0.25	0.15	0.01	0.01

Intersection Summary
Cycle Length: 60
Actuated Cycle Length: 36.4
Natural Cycle: 60
Control Type: Semi Act-Uncoord

Splits and Phases: 1: East Ring Road & College Avenue East





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	275	80	55	285	20	155	10	115	5	0	5
Future Volume (vph)	15	275	80	55	285	20	155	10	115	5	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.4	3.5	3.6	3.6	4.5	3.6	3.6	3.4	3.6
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.98		1.00	0.98	
Flpb, 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	0.99		1.00	0.86		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)	1803	1826		1763	1858		1781	1765		1802	1542	
Flt Permitted	0.56	1.00		0.53	1.00		0.75	1.00		0.67	1.00	
Satd. Flow (perm)	1057	1826		982	1858		1413	1765		1267	1542	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	17	306	89	61	317	22	172	11	128	6	0	6
RTOR Reduction (vph)	0	20	0	0	5	0	0	98	0	0	5	0
Lane Group Flow (vph)	17	375	0	61	334	0	172	41	0	6	1	0
Confl. Peds. (#/hr)	3		3	3		3	3		2	2		3
Confl. Bikes (#/hr)			1			1						
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	16.8	16.8		16.8	16.8		8.7	8.7		8.7	8.7	
Effective Green, g (s)	16.8	16.8		16.8	16.8		8.7	8.7		8.7	8.7	
Actuated g/C Ratio	0.45	0.45		0.45	0.45		0.23	0.23		0.23	0.23	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	473	818		439	832		327	409		293	357	
v/s Ratio Prot		c0.21			0.18			0.02			0.00	
v/s Ratio Perm	0.02			0.06			c0.12			0.00		
v/c Ratio	0.04	0.46		0.14	0.40		0.53	0.10		0.02	0.00	
Uniform Delay, d1	5.8	7.2		6.1	7.0		12.6	11.3		11.1	11.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.4		0.1	0.3		1.5	0.1		0.0	0.0	
Delay (s)	5.8	7.6		6.2	7.3		14.1	11.4		11.1	11.1	
Level of Service	A	A		A	A		B	B		B	B	
Approach Delay (s)		7.5			7.1			12.9			11.1	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	8.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	37.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	58.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	435	5	5	340	5	15
Future Volume (Veh/h)	435	5	5	340	5	15
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	468	5	5	366	5	16
Pedestrians					2	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						2
Median type	None			None		
Median storage veh)						
Upstream signal (m)	237					
pX, platoon unblocked			0.99		0.99	0.99
vC, conflicting volume			475		848	472
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			469		845	466
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		98	97
cM capacity (veh/h)			1095		332	596

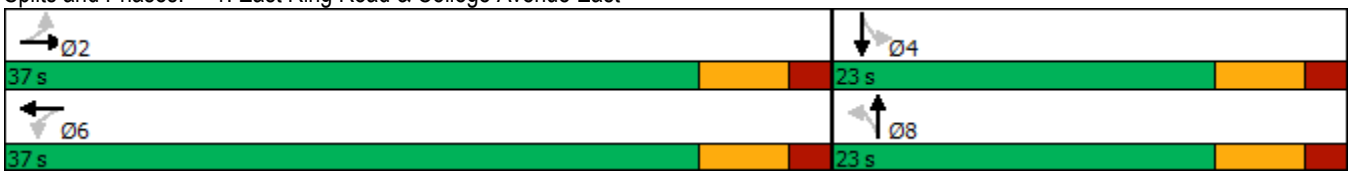
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	473	371	21
Volume Left	0	5	5
Volume Right	5	0	16
cSH	1700	1095	782
Volume to Capacity	0.28	0.00	0.03
Queue Length 95th (m)	0.0	0.1	0.7
Control Delay (s)	0.0	0.2	12.4
Lane LOS		A	B
Approach Delay (s)	0.0	0.2	12.4
Approach LOS			B

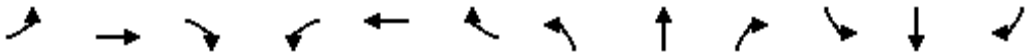
Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	33.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	Ø4
Lane Configurations							
Traffic Volume (vph)	5	90	145	295	55	0	
Future Volume (vph)	5	90	145	295	55	0	
Lane Group Flow (vph)	6	159	165	341	63	57	
Turn Type	Perm	NA	Perm	NA	Perm	NA	
Protected Phases		2		6		8	4
Permitted Phases	2		6		8		
Detector Phase	2	2	6	6	8	8	
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	9.0	9.0	9.0
Minimum Split (s)	37.0	37.0	37.0	37.0	23.0	23.0	23.0
Total Split (s)	37.0	37.0	37.0	37.0	23.0	23.0	23.0
Total Split (%)	61.7%	61.7%	61.7%	61.7%	38.3%	38.3%	38%
Yellow Time (s)	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
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	Min	Min	Min	Min	None	None	None
v/c Ratio	0.01	0.14	0.21	0.28	0.16	0.05	
Control Delay	6.4	4.9	7.5	7.1	11.5	0.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	6.4	4.9	7.5	7.1	11.5	0.1	
Queue Length 50th (m)	0.2	3.6	6.4	13.8	3.0	0.0	
Queue Length 95th (m)	1.4	10.1	14.7	26.3	9.2	0.0	
Internal Link Dist (m)		302.2		143.9		159.3	
Turn Bay Length (m)	40.0		50.0		90.0		
Base Capacity (vph)	981	1633	1129	1740	735	1291	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.01	0.10	0.15	0.20	0.09	0.04	

Intersection Summary
Cycle Length: 60
Actuated Cycle Length: 33.5
Natural Cycle: 60
Control Type: Semi Act-Uncoord

Splits and Phases: 1: East Ring Road & College Avenue East





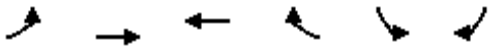
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	90	50	145	295	5	55	0	50	0	0	0
Future Volume (vph)	5	90	50	145	295	5	55	0	50	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.4	3.5	3.6	3.6	4.5	3.6	3.6	3.4	3.6
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0				
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00				
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.98				
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00				
Frt	1.00	0.95		1.00	1.00		1.00	0.85				
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00				
Satd. Flow (prot)	1803	1755		1762	1873		1785	1737				
Flt Permitted	0.56	1.00		0.66	1.00		0.77	1.00				
Satd. Flow (perm)	1055	1755		1217	1873		1446	1737				
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	6	102	57	165	335	6	62	0	57	0	0	0
RTOR Reduction (vph)	0	27	0	0	1	0	0	49	0	0	0	0
Lane Group Flow (vph)	6	132	0	165	340	0	63	8	0	0	0	0
Confl. Peds. (#/hr)	3		4	4		3	1		2	2		1
Heavy Vehicles (%)	0%	2%	1%	0%	0%	0%	1%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	18.9	18.9		18.9	18.9		5.2	5.2				
Effective Green, g (s)	18.9	18.9		18.9	18.9		5.2	5.2				
Actuated g/C Ratio	0.52	0.52		0.52	0.52		0.14	0.14				
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0				
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0				
Lane Grp Cap (vph)	552	918		637	980		208	250				
v/s Ratio Prot		0.08			c0.18			0.00				
v/s Ratio Perm	0.01			0.14			c0.04					
v/c Ratio	0.01	0.14		0.26	0.35		0.30	0.03				
Uniform Delay, d1	4.1	4.4		4.7	5.0		13.8	13.3				
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00				
Incremental Delay, d2	0.0	0.1		0.2	0.2		0.8	0.1				
Delay (s)	4.1	4.5		5.0	5.2		14.7	13.3				
Level of Service	A	A		A	A		B	B				
Approach Delay (s)		4.5			5.1			14.0			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM 2000 Control Delay	6.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	36.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	50.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	140	5	15	450	0	5
Future Volume (Veh/h)	140	5	15	450	0	5
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	167	6	18	536	0	6
Pedestrians					2	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						2
Median type	None			None		
Median storage veh)						
Upstream signal (m)	237					
pX, platoon unblocked						
vC, conflicting volume			175		744	172
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			175		744	172
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	99
cM capacity (veh/h)			1411		379	875

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	173	554	6
Volume Left	0	18	0
Volume Right	6	0	6
cSH	1700	1411	438
Volume to Capacity	0.10	0.01	0.01
Queue Length 95th (m)	0.0	0.3	0.3
Control Delay (s)	0.0	0.4	13.3
Lane LOS		A	B
Approach Delay (s)	0.0	0.4	13.3
Approach LOS			B

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	39.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	140	445	5	5	5
Future Volume (Veh/h)	5	140	445	5	5	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	6	169	536	6	6	6
Pedestrians		1	1		3	
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)		168				
pX, platoon unblocked						
vC, conflicting volume	545				724	543
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	545				724	543
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				98	99
cM capacity (veh/h)	1032				392	542

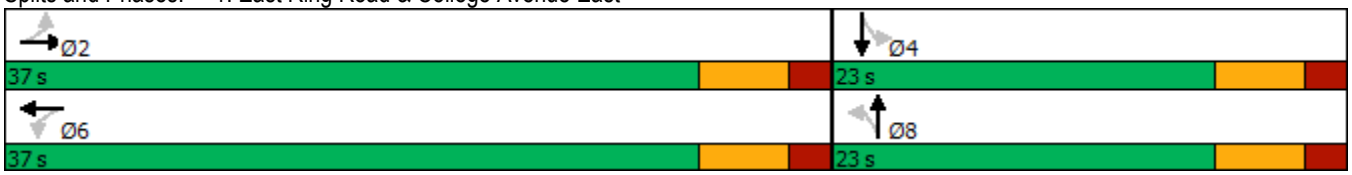
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	175	542	12
Volume Left	6	0	6
Volume Right	0	6	6
cSH	1032	1700	455
Volume to Capacity	0.01	0.32	0.03
Queue Length 95th (m)	0.1	0.0	0.6
Control Delay (s)	0.3	0.0	13.1
Lane LOS	A		B
Approach Delay (s)	0.3	0.0	13.1
Approach LOS			B

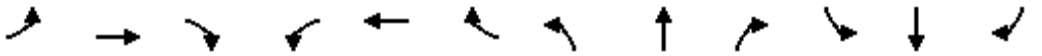
Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	34.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	15	155	55	160	155	10	5	0
Future Volume (vph)	15	155	55	160	155	10	5	0
Lane Group Flow (vph)	17	261	61	200	172	139	6	6
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	2	2	6	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	9.0	9.0	9.0	9.0
Minimum Split (s)	37.0	37.0	37.0	37.0	23.0	23.0	23.0	23.0
Total Split (s)	37.0	37.0	37.0	37.0	23.0	23.0	23.0	23.0
Total Split (%)	61.7%	61.7%	61.7%	61.7%	38.3%	38.3%	38.3%	38.3%
Yellow Time (s)	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
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	Min	Min	Min	Min	None	None	None	None
v/c Ratio	0.03	0.30	0.12	0.23	0.40	0.22	0.02	0.01
Control Delay	8.5	8.0	9.3	9.0	12.4	3.8	8.4	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.5	8.0	9.3	9.0	12.4	3.8	8.4	0.0
Queue Length 50th (m)	0.6	7.4	2.2	6.9	7.0	0.4	0.2	0.0
Queue Length 95th (m)	3.5	22.9	8.7	20.3	19.5	7.9	1.8	0.0
Internal Link Dist (m)		302.2		143.9		159.3		48.7
Turn Bay Length (m)	40.0		50.0		90.0		15.0	
Base Capacity (vph)	1131	1693	1047	1740	730	974	655	1130
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	0.02	0.15	0.06	0.11	0.24	0.14	0.01	0.01

Intersection Summary
Cycle Length: 60
Actuated Cycle Length: 33.1
Natural Cycle: 60
Control Type: Semi Act-Uncoord

Splits and Phases: 1: East Ring Road & College Avenue East





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	155	80	55	160	20	155	10	115	5	0	5
Future Volume (vph)	15	155	80	55	160	20	155	10	115	5	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.4	3.5	3.6	3.6	4.5	3.6	3.6	3.4	3.6
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	0.98		1.00	0.86		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)	1803	1789		1763	1843		1782	1765		1802	1543	
Flt Permitted	0.63	1.00		0.60	1.00		0.75	1.00		0.67	1.00	
Satd. Flow (perm)	1200	1789		1110	1843		1414	1765		1268	1543	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	17	172	89	61	178	22	172	11	128	6	0	6
RTOR Reduction (vph)	0	38	0	0	9	0	0	97	0	0	5	0
Lane Group Flow (vph)	17	223	0	61	191	0	172	42	0	6	1	0
Confl. Peds. (#/hr)	3		3	3		3	3		2	2		3
Confl. Bikes (#/hr)			1			1						
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	14.0	14.0		14.0	14.0		8.3	8.3		8.3	8.3	
Effective Green, g (s)	14.0	14.0		14.0	14.0		8.3	8.3		8.3	8.3	
Actuated g/C Ratio	0.41	0.41		0.41	0.41		0.24	0.24		0.24	0.24	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	489	730		453	752		342	427		306	373	
v/s Ratio Prot		c0.12			0.10			0.02			0.00	
v/s Ratio Perm	0.01			0.05			c0.12			0.00		
v/c Ratio	0.03	0.31		0.13	0.25		0.50	0.10		0.02	0.00	
Uniform Delay, d1	6.1	6.9		6.4	6.7		11.2	10.1		9.9	9.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.2		0.1	0.2		1.2	0.1		0.0	0.0	
Delay (s)	6.1	7.1		6.5	6.9		12.4	10.2		9.9	9.9	
Level of Service	A	A		A	A		B	B		A	A	
Approach Delay (s)		7.0			6.8			11.4			9.9	
Approach LOS		A			A			B			A	

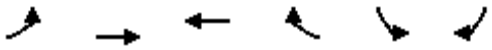
Intersection Summary			
HCM 2000 Control Delay	8.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	34.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	300	5	5	210	5	15
Future Volume (Veh/h)	300	5	5	210	5	15
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	323	5	5	226	5	16
Pedestrians					2	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						2
Median type	None			None		
Median storage veh)						
Upstream signal (m)	237					
pX, platoon unblocked						
vC, conflicting volume			330		564	328
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			330		564	328
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	98
cM capacity (veh/h)			1239		488	717

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	328	231	21
Volume Left	0	5	5
Volume Right	5	0	16
cSH	1700	1239	941
Volume to Capacity	0.19	0.00	0.02
Queue Length 95th (m)	0.0	0.1	0.5
Control Delay (s)	0.0	0.2	10.7
Lane LOS		A	B
Approach Delay (s)	0.0	0.2	10.7
Approach LOS			B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	26.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	280	230	5	5	10
Future Volume (Veh/h)	10	280	230	5	5	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	295	242	5	5	11
Pedestrians			1			
Lane Width (m)			3.6			
Walking Speed (m/s)			1.2			
Percent Blockage			0			
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		168				
pX, platoon unblocked						
vC, conflicting volume	247				562	244
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	247				562	244
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				99	99
cM capacity (veh/h)	1331				487	799

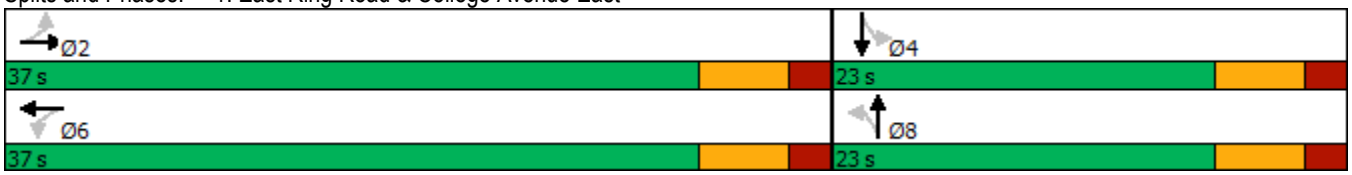
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	306	247	16
Volume Left	11	0	5
Volume Right	0	5	11
cSH	1331	1700	666
Volume to Capacity	0.01	0.15	0.02
Queue Length 95th (m)	0.2	0.0	0.6
Control Delay (s)	0.4	0.0	10.5
Lane LOS	A		B
Approach Delay (s)	0.4	0.0	10.5
Approach LOS			B

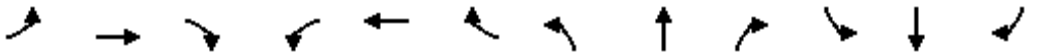
Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	32.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	Ø4
Lane Configurations							
Traffic Volume (vph)	5	195	145	410	55	0	
Future Volume (vph)	5	195	145	410	55	0	
Lane Group Flow (vph)	6	279	165	472	63	57	
Turn Type	Perm	NA	Perm	NA	Perm	NA	
Protected Phases		2		6		8	4
Permitted Phases	2		6		8		
Detector Phase	2	2	6	6	8	8	
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	9.0	9.0	9.0
Minimum Split (s)	37.0	37.0	37.0	37.0	23.0	23.0	23.0
Total Split (s)	37.0	37.0	37.0	37.0	23.0	23.0	23.0
Total Split (%)	61.7%	61.7%	61.7%	61.7%	38.3%	38.3%	38%
Yellow Time (s)	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
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	Min	Min	Min	Min	None	None	None
v/c Ratio	0.01	0.23	0.22	0.37	0.17	0.06	
Control Delay	5.8	5.7	7.1	7.2	13.7	0.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	5.8	5.7	7.1	7.2	13.7	0.1	
Queue Length 50th (m)	0.2	9.6	6.5	20.9	3.4	0.0	
Queue Length 95th (m)	1.4	20.2	15.6	39.5	11.1	0.0	
Internal Link Dist (m)		302.2		143.9		159.3	
Turn Bay Length (m)	40.0		50.0		90.0		
Base Capacity (vph)	803	1555	939	1616	695	1145	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.01	0.18	0.18	0.29	0.09	0.05	

Intersection Summary
Cycle Length: 60
Actuated Cycle Length: 36.5
Natural Cycle: 60
Control Type: Semi Act-Uncoord

Splits and Phases: 1: East Ring Road & College Avenue East





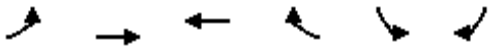
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	195	50	145	410	5	55	0	50	0	0	0
Future Volume (vph)	5	195	50	145	410	5	55	0	50	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.4	3.5	3.6	3.6	4.5	3.6	3.6	3.4	3.6
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0				
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00				
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98				
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00				
Frt	1.00	0.97		1.00	1.00		1.00	0.85				
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00				
Satd. Flow (prot)	1803	1801		1762	1875		1785	1737				
Flt Permitted	0.49	1.00		0.59	1.00		0.78	1.00				
Satd. Flow (perm)	932	1801		1091	1875		1474	1737				
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	6	222	57	165	466	6	62	0	57	0	0	0
RTOR Reduction (vph)	0	14	0	0	1	0	0	50	0	0	0	0
Lane Group Flow (vph)	6	265	0	165	471	0	63	7	0	0	0	0
Confl. Peds. (#/hr)	3		4	4		3	1		2	2		1
Heavy Vehicles (%)	0%	2%	1%	0%	0%	0%	1%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	22.0	22.0		22.0	22.0		5.1	5.1				
Effective Green, g (s)	22.0	22.0		22.0	22.0		5.1	5.1				
Actuated g/C Ratio	0.56	0.56		0.56	0.56		0.13	0.13				
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0				
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0				
Lane Grp Cap (vph)	524	1013		613	1054		192	226				
v/s Ratio Prot		0.15			c0.25			0.00				
v/s Ratio Perm	0.01			0.15			c0.04					
v/c Ratio	0.01	0.26		0.27	0.45		0.33	0.03				
Uniform Delay, d1	3.8	4.4		4.4	5.0		15.4	14.8				
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00				
Incremental Delay, d2	0.0	0.1		0.2	0.3		1.0	0.1				
Delay (s)	3.8	4.5		4.6	5.3		16.4	14.9				
Level of Service	A	A		A	A		B	B				
Approach Delay (s)		4.5			5.1			15.7			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM 2000 Control Delay	6.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	39.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	245	5	15	575	0	5
Future Volume (Veh/h)	245	5	15	575	0	5
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	292	6	18	685	0	6
Pedestrians					2	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						2
Median type	None			None		
Median storage veh)						
Upstream signal (m)	237					
pX, platoon unblocked						
vC, conflicting volume			300		1018	297
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			300		1018	297
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	99
cM capacity (veh/h)			1270		261	746

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	298	703	6
Volume Left	0	18	0
Volume Right	6	0	6
cSH	1700	1270	373
Volume to Capacity	0.18	0.01	0.02
Queue Length 95th (m)	0.0	0.3	0.4
Control Delay (s)	0.0	0.4	14.8
Lane LOS		A	B
Approach Delay (s)	0.0	0.4	14.8
Approach LOS			B

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	245	570	5	5	5
Future Volume (Veh/h)	5	245	570	5	5	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	6	295	687	6	6	6
Pedestrians		1	1		3	
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)		168				
pX, platoon unblocked						
vC, conflicting volume	696				1001	694
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	696				1001	694
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				98	99
cM capacity (veh/h)	907				269	445

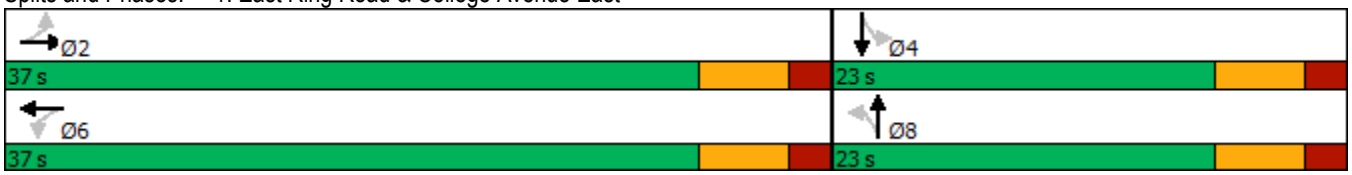
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	301	693	12
Volume Left	6	0	6
Volume Right	0	6	6
cSH	907	1700	335
Volume to Capacity	0.01	0.41	0.04
Queue Length 95th (m)	0.2	0.0	0.9
Control Delay (s)	0.2	0.0	16.1
Lane LOS	A		C
Approach Delay (s)	0.2	0.0	16.1
Approach LOS			C

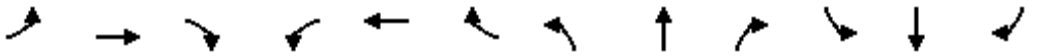
Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	40.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	15	285	55	295	155	10	5	0
Future Volume (vph)	15	285	55	295	155	10	5	0
Lane Group Flow (vph)	17	406	61	350	172	139	6	6
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	2	2	6	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	9.0	9.0	9.0	9.0
Minimum Split (s)	37.0	37.0	37.0	37.0	23.0	23.0	23.0	23.0
Total Split (s)	37.0	37.0	37.0	37.0	23.0	23.0	23.0	23.0
Total Split (%)	61.7%	61.7%	61.7%	61.7%	38.3%	38.3%	38.3%	38.3%
Yellow Time (s)	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
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	Min	Min	Min	Min	None	None	None	None
v/c Ratio	0.03	0.43	0.13	0.37	0.41	0.23	0.02	0.01
Control Delay	8.0	10.0	8.9	9.9	14.8	4.5	10.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.0	10.0	8.9	9.9	14.8	4.5	10.6	0.0
Queue Length 50th (m)	0.6	16.0	2.2	14.3	8.0	0.5	0.3	0.0
Queue Length 95th (m)	3.6	42.9	9.1	38.1	25.1	9.7	2.2	0.0
Internal Link Dist (m)		302.2		143.9		159.3		48.7
Turn Bay Length (m)	40.0		50.0		90.0		15.0	
Base Capacity (vph)	909	1595	844	1619	673	908	604	982
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	0.02	0.25	0.07	0.22	0.26	0.15	0.01	0.01

Intersection Summary
Cycle Length: 60
Actuated Cycle Length: 36.7
Natural Cycle: 60
Control Type: Semi Act-Uncoord

Splits and Phases: 1: East Ring Road & College Avenue East





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	285	80	55	295	20	155	10	115	5	0	5
Future Volume (vph)	15	285	80	55	295	20	155	10	115	5	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.6	3.6	3.6	3.4	3.5	3.6	3.6	4.5	3.6	3.6	3.4	3.6
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98		1.00	0.98	
Flpb, 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	0.99		1.00	0.86		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)	1803	1828		1763	1859		1781	1765		1802	1542	
Flt Permitted	0.55	1.00		0.52	1.00		0.75	1.00		0.67	1.00	
Satd. Flow (perm)	1046	1828		970	1859		1413	1765		1267	1542	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	17	317	89	61	328	22	172	11	128	6	0	6
RTOR Reduction (vph)	0	19	0	0	4	0	0	98	0	0	5	0
Lane Group Flow (vph)	17	387	0	61	346	0	172	41	0	6	1	0
Confl. Peds. (#/hr)	3		3	3		3	3		2	2		3
Confl. Bikes (#/hr)			1			1						
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	17.0	17.0		17.0	17.0		8.7	8.7		8.7	8.7	
Effective Green, g (s)	17.0	17.0		17.0	17.0		8.7	8.7		8.7	8.7	
Actuated g/C Ratio	0.45	0.45		0.45	0.45		0.23	0.23		0.23	0.23	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	471	824		437	838		326	407		292	355	
v/s Ratio Prot		c0.21			0.19			0.02			0.00	
v/s Ratio Perm	0.02			0.06			c0.12			0.00		
v/c Ratio	0.04	0.47		0.14	0.41		0.53	0.10		0.02	0.00	
Uniform Delay, d1	5.8	7.2		6.1	7.0		12.7	11.4		11.2	11.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.4		0.1	0.3		1.5	0.1		0.0	0.0	
Delay (s)	5.8	7.6		6.2	7.3		14.2	11.5		11.2	11.2	
Level of Service	A	A		A	A		B	B		B	B	
Approach Delay (s)		7.6			7.1			13.0			11.2	
Approach LOS		A			A			B			B	

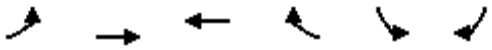
Intersection Summary			
HCM 2000 Control Delay	8.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	37.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	59.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	440	5	5	345	5	15
Future Volume (Veh/h)	440	5	5	345	5	15
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	473	5	5	371	5	16
Pedestrians					2	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						2
Median type	None			None		
Median storage veh)						
Upstream signal (m)	237					
pX, platoon unblocked						
vC, conflicting volume			480		858	478
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			480		858	478
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		98	97
cM capacity (veh/h)			1091		328	591

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	478	376	21
Volume Left	0	5	5
Volume Right	5	0	16
cSH	1700	1091	776
Volume to Capacity	0.28	0.00	0.03
Queue Length 95th (m)	0.0	0.1	0.7
Control Delay (s)	0.0	0.2	12.4
Lane LOS		A	B
Approach Delay (s)	0.0	0.2	12.4
Approach LOS			B

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	33.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	420	365	5	5	10
Future Volume (Veh/h)	10	420	365	5	5	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	442	384	5	5	11
Pedestrians			1			
Lane Width (m)			3.6			
Walking Speed (m/s)			1.2			
Percent Blockage			0			
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		168				
pX, platoon unblocked					0.95	
vC, conflicting volume	389				852	386
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	389				820	386
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				98	98
cM capacity (veh/h)	1181				328	666

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	453	389	16
Volume Left	11	0	5
Volume Right	0	5	11
cSH	1181	1700	504
Volume to Capacity	0.01	0.23	0.03
Queue Length 95th (m)	0.2	0.0	0.8
Control Delay (s)	0.3	0.0	12.4
Lane LOS	A		B
Approach Delay (s)	0.3	0.0	12.4
Approach LOS			B

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	40.1%	ICU Level of Service	A
Analysis Period (min)	15		