84-104 Plains Road East and 990 Glenwood Avenue | Transportation Impact Study

Mixed-Use Development
City of Burlington

Stantec

Prepared for:
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Executive Summary

Miura Development Group Inc. is planning to construct a mixed-use building comprising commercial and residential uses at the properties municipally known as 84-104 Plains Road East and 990 Glenwood Avenue, in the Aldershot neighbourhood of the City of Burlington. With respect to the City of Burlington Official Plan (2020), which largely continues to be under appeal, the property is designated within a Primary Growth Area on Schedule B-1 and within the Aldershot GO Major Transit Station Area (MTSA) Special Planning Area on Schedule G.

The building is proposed to include 253 condominium residential units with 1,045 m^2 of ground-floor commercial area and 291 parking spaces provided by an underground structure and a lot on the surface behind the building. Pedestrian access to the building will be provided on the north, east, and west frontage of the property; bicycle access and parking will also be available. Vehicular access to the underground parking structure is proposed via Birchwood Avenue and Glenwood Avenue with one two-way driveway on each of these roads.

The City of Burlington has requested that a Transportation Impact Study (TIS) be completed for the proposed development as part of the Official Plan Amendment (OPA) and Zoning By-law Amendment (ZBA) applications. The primary goal of this TIS is to demonstrate how the predicted transportation demands of the proposed development may affect the surrounding transportation network to future horizon year of 2029, and to address and mitigate these effects in a manner that is aligned with the objectives of the City of Burlington. The TIS also serves as a basis for the identification and evaluation of transportation-related improvements and measures to support the development.

The results of this study show that the impact of the proposed development to traffic operations on Plains Road East is not expected to result in any traffic operational concerns requiring mitigation. The location of the site provides a high degree of exposure to transit service and active transportation facilities in the area, increasing their attractiveness as an alternative to commuting with a vehicle and reducing the strain on the public road network.

As the population of the area surrounding the subject site increases, there is a growing need to suppress the demand for travel during peak hours, increase travel efficiency, and reduce strain on transportation infrastructure. The following transportation demand management strategies are proposed:

- **Unbundled parking**: parking spaces for residential units will be leased separately from residential units, providing residents the opportunity to opt out of having an assigned parking space.
- **Fee-based parking**: users of parking spaces on-site pay the cost of parking directly.
- **Bicycle parking areas**: organized structure for the short- and long-term parking of bicycles.
- **Transit schedules and route maps, trail maps, and cycling route maps**: these documents will be displayed in the lobby of the residential portion of the site.

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- **Transit and Active Transportation Advocacy Initiatives**: media posted within the site highlighting the benefits of carpooling and travelling with public transit or active transportation. These benefits include:
    - » Improved air quality,
    - » Reduced noise levels,
    - » Healthy lifestyles,
    - » Reduced/eliminated vehicle operation and maintenance costs, and
    - » Increased exposure to the community.

To evaluate the effectiveness of these TDM strategies, the City may consider the following monitoring actions to be undertaken in collaboration with the property owner, at a time post full occupancy of the subject development:

- **Resident Travel Surveys:** Conduct travel behavior surveys to understand resident transportation choices, gauge program effectiveness, and identify opportunities for improvement;
- **Parking Utilization Monitoring:** Track occupancy rates of residential and visitor parking to understand parking behaviours and assess parking demand in relation to the building's occupancy; and
- **TDM Performance Report:** Prepare a summary report documenting TDM measures in place, and resident and visitor participation rates, parking demand trends, and recommendations that may further enhance the effectiveness of implemented TDM measures (i.e., additional promotional or educational materials).

Sections 2.2 and 2.3 of this report describe the exposure of this site to transit service and active transportation facilities in the area. With access to those networks and using these TDM strategies, the proposed development will be able to provide site users with a positive transportation experience. The approach to parking management will balance the need for parking spaces while providing incentive to choose other modes of travel. These benefits will affect the surrounding community as well, improving its atmosphere and quality of life.

Considering the advantageous placement of this site within 800 m of Aldershot GO station, its proposed parking supply differs from that required by the applicable by-law regulations. The proposed parking rate and supply are shown in **Table 7.3**. For the residential units, a rate of 0.98 parking spaces per unit is proposed, resulting in 248 spaces provided for future residents of this site. Additionally, a shared rate of 0.17 spaces per unit is proposed for visitor and retail parking, resulting in 43 shared spaces to accommodate both uses. Depending on future residential parking demand as the building approaches occupancy, some of these shared spaces may be reallocated to residential use. This would result in an effective adjustment of the shared rate to 0.15 spaces per unit, which aligns with the minimum encouraged rate outlined in Burlington's Community Planning Permit By-law for MTSAs. The rates supply included in **Table 7.3** do not deviate from those suggested by the By-law (see **Table 7.2**); the long-term and short-term bicycle parking will be required to support the reduced parking rate for residents.

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Table E-1) Proposed Parking Rates and Supply

Land Use	Parking Rate	Units/Floor Area	Parking Spaces Proposed
Residential	Maximum 1.20 parking spaces per dwelling unit	253 units	248 resident spaces (max. 304 spaces required)
Shared Non-Residential (Retail)/Visitor Parking	Minimum 0.15 parking spaces per dwelling unit encouraged	253 units	43 spaces (min. 38 spaces)
Bicycle Parking	0.10 short-term bicycle spaces per dwelling unit 0.50 long-term bicycle spaces per dwelling unit	253 units	25 short-term resident bicycle spaces (min. 25 spaces required) 127 long-term resident bicycle spaces (min. 127 spaces required)
	0.20 short-term bicycle spaces per 100 m^2 retail GFA (min. 3 spaces) 0.10 long-term bicycle spaces per 100 m^2 retail GFA	1,045 m^2	3 short-term retail bicycle spaces (min. 3 spaces required) 1 long-term retail bicycle space (min. 1 space required)
Total			**291 vehicle parking spaces** **28 short-term bicycle spaces** **128 long-term bicycle spaces**

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1 Introduction

1.1 Development Description

Miura Development Group Inc. is planning to construct a mixed-use building comprising commercial and residential uses at the properties municipally known as 84-104 Plains Road East and 990 Glenwood Avenue, in the Aldershot neighbourhood of the City of Burlington. With respect to the City of Burlington Official Plan (2020), which largely continues to be under appeal, the property is designated within a Primary Growth Area on Schedule B-1 and within the Aldershot GO Major Transit Station Area (MTSA) Special Planning Area on Schedule G. With respect to the City of Burlington Zoning By-law 2020, the properties at 84-104 Plains Road East and 990 Glenwood Avenue are zoned Residential (RM1-346) and 92 Plains Road East is zoned Mixed-Use Corridor (MXG-498).

The building is proposed to include 253 condominium residential units with 1,045 m^2 of ground-floor commercial area and 291 parking spaces provided by an underground structure and a lot on the surface behind the building. Pedestrian access to the building will be provided on the north, east, and west frontage of the property; bicycle access and parking will also be available. Vehicular access to the underground parking structure is proposed via Birchwood Avenue and Glenwood Avenue with one two-way driveway on each of these roads. Justification for the proposed parking supply is provided in section 7 of this report. The development is expected to be completed in approximately 2029. A copy of the site plan is provided in **Appendix A**.

1.2 Study Scope

The City of Burlington has requested that a Transportation Impact Study (TIS), with the corresponding parking justification report and transportation demand management and implementation report, be completed for the proposed development as part of the Official Plan Amendment (OPA) and Zoning By-law Amendment (ZBA) applications. The primary goal of this TIS is to demonstrate how the predicted transportation demands of the proposed development may affect the surrounding transportation network, and to address and mitigate these effects in a manner that is aligned with the objectives of the City of Burlington. The TIS also serves as a basis for the identification and evaluation of transportation-related improvements and measures to support the development. As such, the study conforms to Halton Region's *Transportation Impact Study Guidelines (2015)*.

The scope of this TIS includes the following elements:

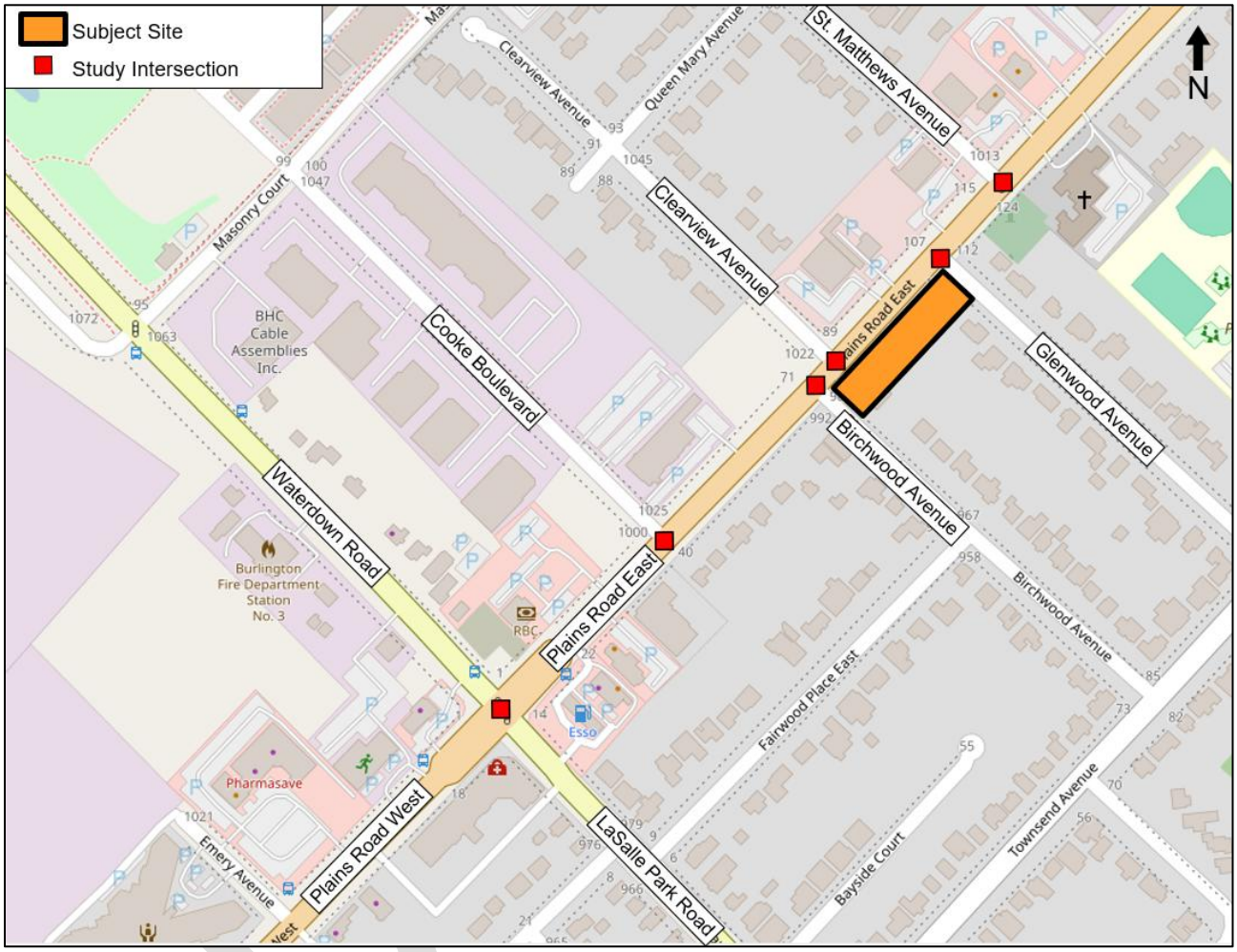
- Traffic operations assessment of the following study area intersections:
    - » Plains Road and Waterdown Road/LaSalle Park Road (signalized),
    - » Plains Road East and Cooke Boulevard (signalized),
    - » Plains Road East and Birchwood Avenue (unsignalized),
    - » Plains Road East and Clearview Avenue (unsignalized),

    - » Plains Road East and Glenwood Avenue (unsignalized), and
    - » Plains Road East and St. Matthews Avenue (signalized).
- Study horizons include:
    - » Existing Conditions 2024,
    - » Future Background Conditions 2029 (+5 years beyond the date of submission of this report, excluding traffic generated by the proposed development), and
    - » Future Total Conditions 2029 (+5 years beyond the date of submission of this report, including traffic generated by the proposed development).
- Peak hour analysis for the weekday AM and PM peak hours;
- Identify the opportunity for improvements in the transportation network and possible mitigation measures to maintain acceptable levels of service;
- Review of the proposed parking supply against the City's applicable parking requirements and justifications for differences from the applicable parking requirements (to be submitted as a separate report titled *Parking Justification Report*);
- Review of the proposed site access points from traffic operational and safety standpoints;
- Swept path analysis of both the waste/loading area and the parking structure entrance; and
- A description of the existing and proposed transportation demand management (TDM) measures and implementation strategy within the site and in the surrounding area.

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The site location and study intersections within the context of the surrounding area are shown in **Figure 1.1** below.

Figure 1.1) Site Location



2 Existing Transportation Environment

2.1 Roads and Traffic Control

The roadways under consideration in the study area are described below:

Plains Road East — As per Schedule O-1 of the City of Burlington Official Plan, Plains Road East is a multi purpose arterial roadway with an east/west alignment. It has a five-lane urban cross-section with a posted speed limit of 60 km/h. Within the study area, it has signalized intersections with Waterdown Road/LaSalle Park Road, Cooke Boulevard, and St. Matthews Avenue; there are also unsignalized intersections at Birchwood Avenue, Clearview Avenue, and Glenwood Avenue. Auxiliary left-turn lanes are present at all these intersections.

Waterdown Road — As per Schedule O-1 of the City of Burlington Official Plan, Waterdown Road is a multi purpose arterial roadway with a north/south alignment. It has a five-lane urban cross-section with a posted speed limit of 50 km/h. Within the study area, it has a signalized intersection with Plains Road East, with an auxiliary right-turn lane on the north approach and auxiliary left-turn lanes on all other approaches.

Cooke Boulevard — As per Schedule O-1 of the City of Burlington Official Plan, Cooke Boulevard is a local street with a north/south alignment. It has a two-lane urban cross-section and a speed limit of 50 km/h. Within the study area, it has a signalized intersection with Plains Road East.

Birchwood Avenue — As per Schedule O-1 of the City of Burlington Official Plan, Birchwood Avenue is a local street with a north/south alignment. It has a two-lane urban cross-section and a posted speed limit of 40 km/h. Within the study area, it has a stop-controlled intersection with Plains Road East.

Clearview Avenue — As per Schedule O-1 of the City of Burlington Official Plan, Clearview Avenue is a local street with a north/south alignment. It has a two-lane urban cross-section and a posted speed limit of 40 km/h. Within the study area, it has a stop-controlled intersection with Plains Road East.

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Glenwood Avenue — As per Schedule O-1 of the City of Burlington Official Plan, Glenwood Avenue is a local street with a north/south alignment. It has a two-lane urban cross-section and a posted speed limit of 40 km/h. Within the study area, it has a stop-controlled intersection with Plains Road East.

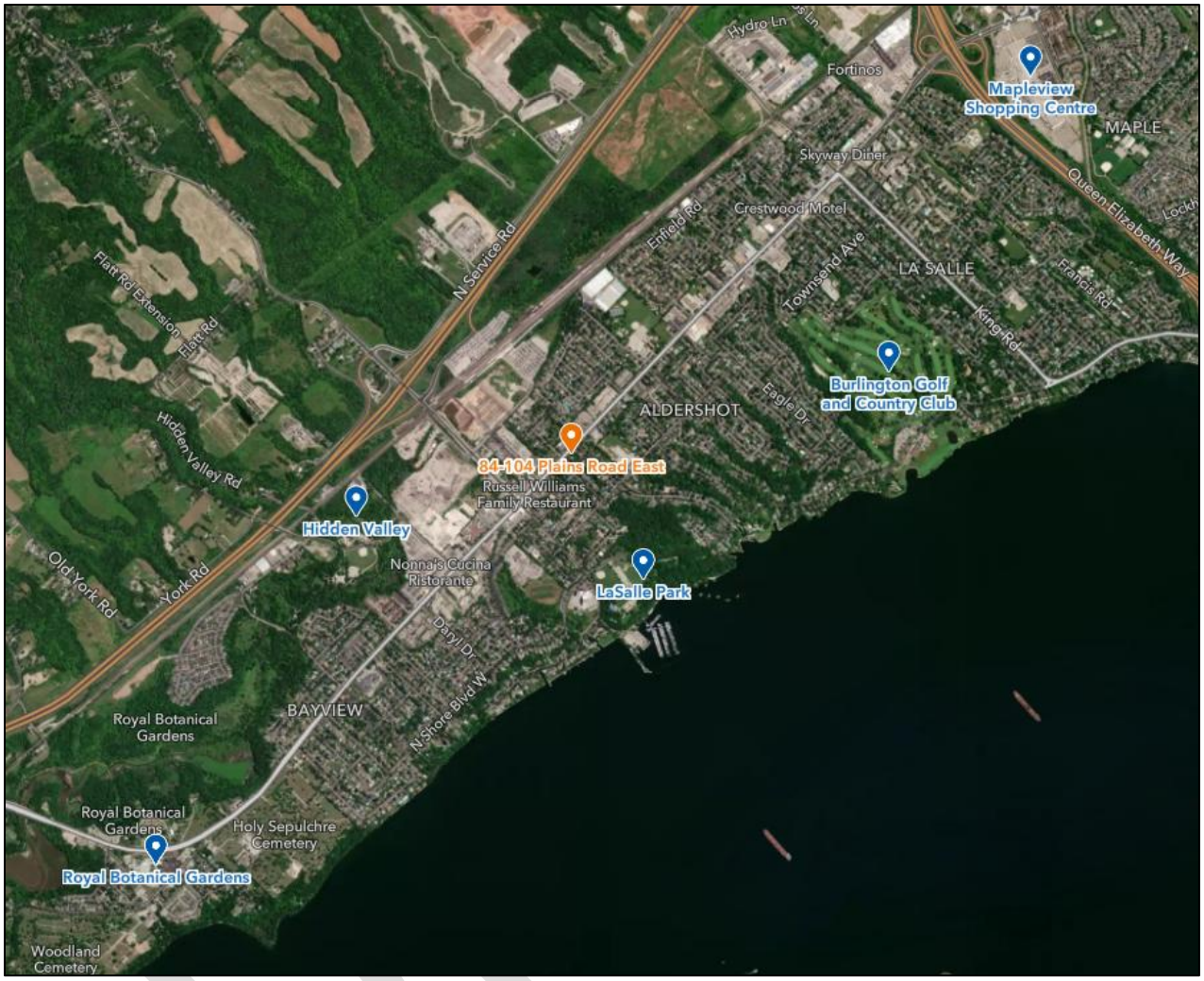
St. Matthews Avenue — As per Schedule O-1 of the City of Burlington Official Plan, St. Matthews Avenue is a local street with a north/south alignment. It has a two-lane urban cross-section and a posted speed limit of 40 km/h. Within the study area, it has a signalized intersection with Plains Road East.

2.2 Active Transportation

Though dedicated cycling facilities do not yet exist on this segment of Plains Road East, the site is well-exposed to the pedestrian and bicycle facilities on nearby Plains Road West. Sidewalks are featured on both sides of the road with a width of 1.5 m on the north side and south sides; these sidewalks are continuous within the site area and extend well beyond its boundaries, leading directly to two grocery stores, Mapleview Shopping Centre, and Burlington proper towards the east. Other areas in the vicinity of the site that are accessible by sidewalk include LaSalle Park to the south – a municipal park furnished with a playground, baseball diamonds, a wading pool, and a marina; the Hidden Valley to the north, which features similar amenities as LaSalle Park with a recreational trail (about 5.5 km long); and the Royal Botanical Gardens (RBG) to the west. RBG hosts a vast network of recreational trails, well-maintained gardens, and several facilities for educational programs and special events. See **Figure 2.1** below for a map of nearby destinations in a 4 km radius of the site.

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Figure 2.1) Nearby Destinations

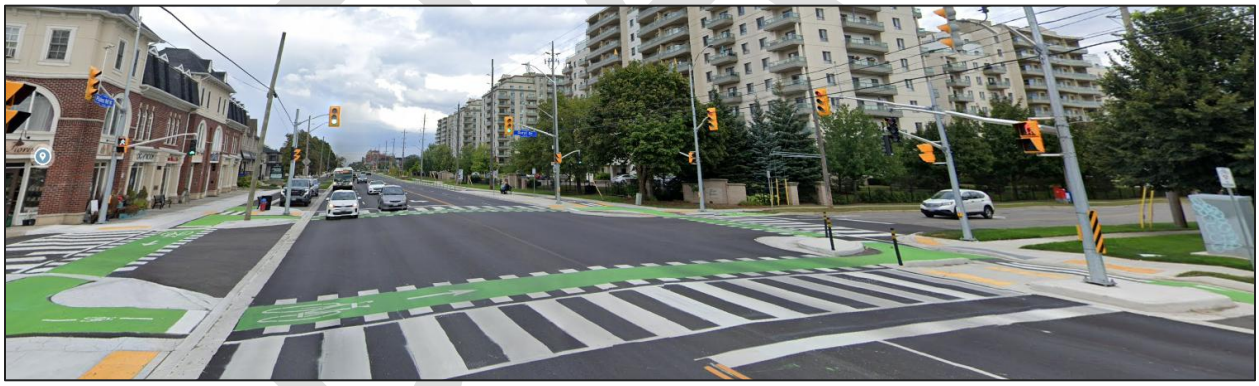


The bicycle facilities accessible to the site are new additions to the community. After reaching completion in the summer of 2023, the improvements in the nearby Plains Road West corridor include a westbound cycle track – a fully-separated, paved path with a wide grass boulevard providing a safety buffer from motorized traffic. In the eastbound direction, a bicycle lane has been installed and buffered from other vehicles with flexible bollards and protected crossing treatment at intersections. The improved crossing treatments allow cyclists to wait for their signal with protection from turning vehicles provided by concrete curbs and to traverse the intersection with more separation from other vehicle. Figure 2.2 and **Figure 2.3** below show the bicycle crossing treatments on Plains Road West at Howard Road and Daryl Drive, respectively. Also included in these improvements are bicycle signals, new pavement markings, and texture plates to alert pedestrians with impaired vision of the presence of the cycling facilities. Bicycle facilities east of Waterdown Road have not yet been installed.

Figure 2.2) Bicycle Crossing Treatment – Plains Road West and Howard Road



Figure 2.3) Bicycle Crossing Treatment – Plains Road West and Daryl Drive



2.3 Public Transit

Plains Road East is served by Burlington Transit route 1 Plains/Fairview, an all-day bus route that operates with a headway of 10 minutes during peak hours and 15 minutes during off-peak hours. This high-frequency route provides residents and workers in the area with fast and reliable public transit service. Along the route are several intersections with other arterial roads with transit service, presenting many opportunities to connect with other transit routes. In addition to this high-frequency local transit route, the subject site is situated approximately 800 m (about 11 minutes' walking distance based on a speed of 1.2 m/s) from Aldershot GO station which provides access to Burlington Transit routes 4 Central and 87 North Service, Hamilton Street Railway (HSR) local route 18 Waterdown Mountaineer into Waterdown (a nearby community north of Aldershot within the City of Hamilton), higher-order regional GO bus routes to Waterloo, Brantford, St. Catharines, and Hamilton, and GO train routes towards both Hamilton and Toronto, with extended service to Niagara Falls and Oshawa, respectively. This station also provides national routes towards and beyond Brantford and Toronto as well as international service to New York City from Via Rail and Amtrak, an American passenger railroad company, on the Maple Leaf route.

Further east in Burlington from Aldershot GO station and served by route 1 Plains/Fairview are Burlington GO station and Appleby GO station; these higher-order transit stations provide riders with additional access to regional train service provided by GO Transit. Appleby GO station is the western terminus of Oakville Transit route 14/14A Lakeshore West, giving passage to local transit in Oakville as well. Additionally, the western terminus of route 1 Plains/Fairview is situated in the downtown area of Hamilton. This area receives a high level of transit service from the HSR. **Figure 2.4** below shows the total area that can be reached by local and regional transit within 90 minutes of travel time according to timetables using the Jane feature of the Remix platform – a service that allows users to import the General Transit Feed Specification (GTFS) data from transit agencies. Local bus routes are shown in orange, regional bus routes are shown in green, and rail routes are shown in blue.

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Figure 2.4) Transit Network Analysis

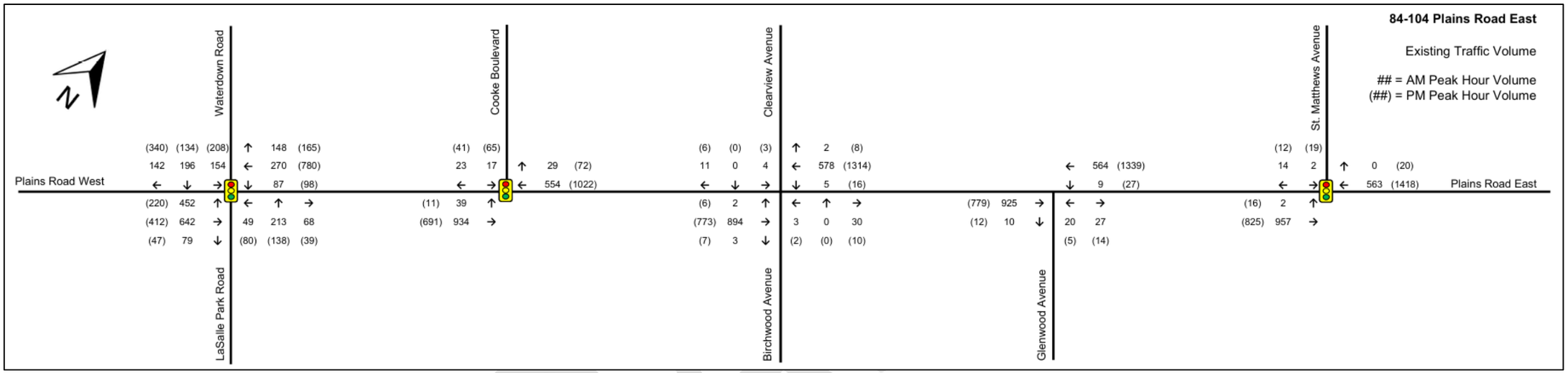


2.4 Existing Traffic Volume (2023)

Turning movement counts for the study area intersections were collected in 2023 and 2024; this data is included in **Appendix B**. The existing weekday AM and PM peak hour traffic volumes are shown in **Figure 2.5** below. Given existing traffic volumes were collected on difference days, balancing was applied to the volumes, where required, to correct for any imbalances between intersections not justifiable by the level of existing development (traffic generators) along those road segments. Any balancing adjustments took a conservative approach, with traffic volumes increased as necessary; however, some imbalances between intersections were not adjusted, where justifiable, given several notable traffic generators exist between intersections which would account for such imbalances.

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Figure 2.5) Existing Traffic Volume



3 Future Transportation Environment

3.1 Study Horizon Years

In accordance with Halton Region's *Transportation Impact Study Guidelines* (2015), the future horizon year for this study is five years after the submission of this report. Therefore, given this report will be submitted in 2024, the future horizon year used for analysis is 2029.

3.2 Planned Transportation Upgrades

There are several transportation improvements planned for the road network immediately surrounding the subject site. A list of the pre-approved capital projects within the study area as described by Table ES-1 in the City of Burlington's *Integrated Mobility Plan* (2023) is included below:

Table 3.1) IMP Capital Projects within Study Area (City of Burlington & Dillon Consulting, 2023)

Road Name	From	To	Project Type	Prioritization
Plains Road	Daryl Drive	Shadeland Avenue	Protected Bikes, Bus Rapid Transit (BRT) Dedicated Lanes	11.0 / 8
Howard Road	Lemonville Road	Plains Road	Local Bikeway, Sidewalks / Pedestrian Realm	10.0 / 14
Waterdown Road	Highway 403 eastbound Off-Ramp	Plains Road	Protected bikes, Sidewalks / Pedestrian Realm, Transit priority corridor	10.5 / 10

3.3 Future Background Traffic Volume (2029)

An annual background growth rate of 1% was applied to all turning movements on arterial roads in the study area to account for anticipated traffic growth between the 2024 base year and the 2029 future horizon year, which results in about 5% cumulative growth during this period. It is expected this 5% background growth assumption is conservative – especially given the mode split targets set by the City's *Integrated Mobility Plan* (2023) which seeks to significantly reduce dependency on single-occupant vehicles (SOVs) in favour of active transportation (walking or cycling) and public transit.

Other developments within the study area or along the Plains Road West corridor were screened for potential influence on the study area for this site that may not be captured by existing turning movement counts (TMCs). According to transportation impact studies submitted by Paradigm Transportation Solutions Ltd., three such developments at **40-70 Plains Road East, 53-71 Plains Road East, and 1085 Clearview Avenue** are expected to contribute to the background growth within the study area.

The impact to traffic at the intersection of Plains Road and Waterdown Road/LaSalle Park Road and some other minor intersections within the study area generated by these proposed developments was analyzed by these reports. The traffic generated by these developments is included as an additional layer of background traffic in this analysis.

The weekday AM and PM peak hour trips generated by the nearby development at 40-70 Plains Road East are shown in **Figure 3.1** and **Figure 3.2** below. The weekday AM and PM peak hour trips generated by the nearby development at 53-71 Plains Road East are shown in **Figure 3.3** and **Figure 3.4** below. The weekday AM and PM peak hour trips generated by the nearby development at 1085 Clearview Avenue are shown in **Figure 3.5** and **Figure 3.6** below.

Following these diagrams, the 2029 future background traffic volumes including both growth and additional trips generated by the site at 40-70 Plains Road East are shown in **Figure 3.7**.

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Figure 3.1) 40-70 Plains Road East – Phase 1 Site Trips (AM Peak Hour)

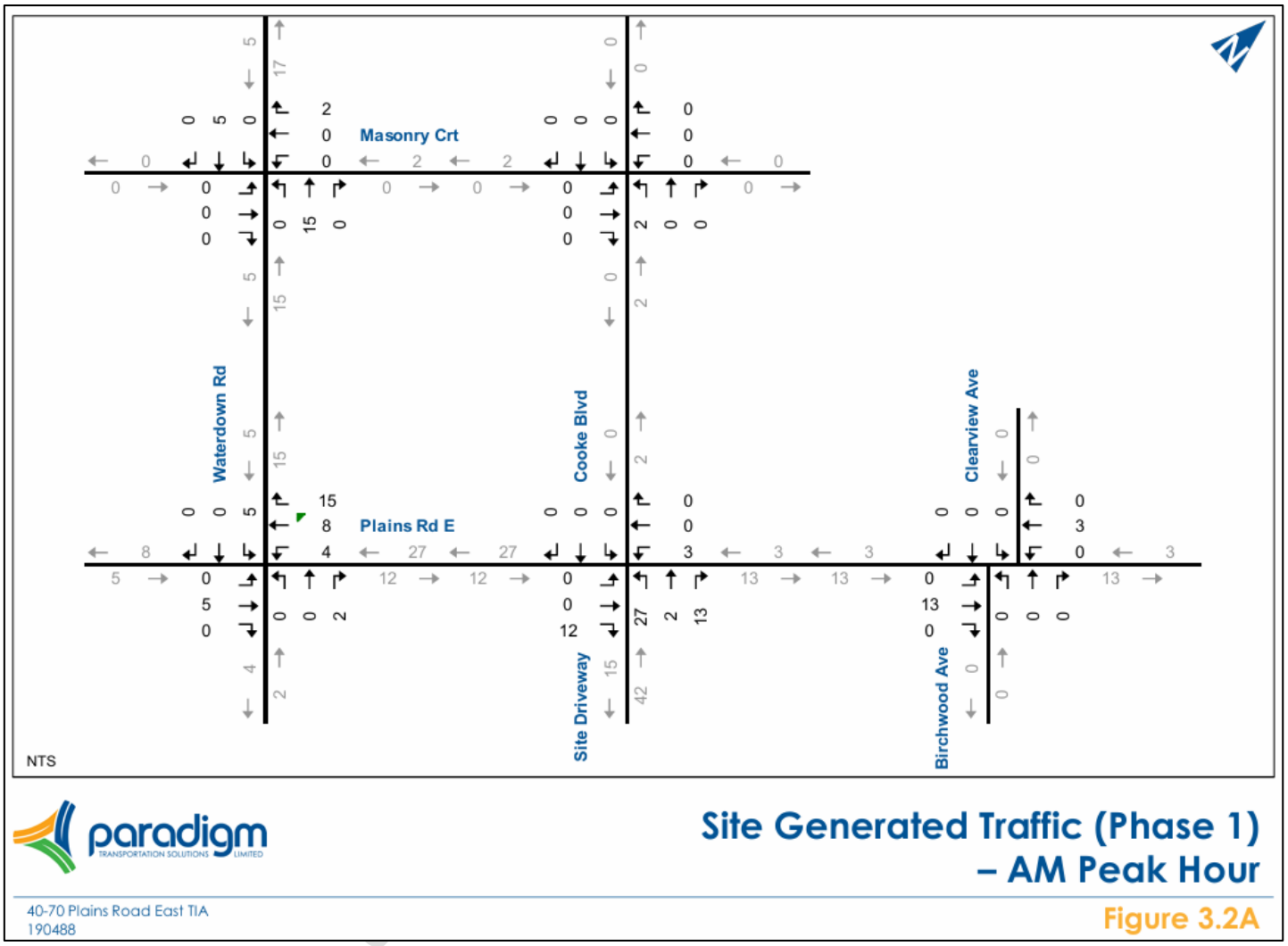


Figure 3.2) 40-70 Plains Road East – Phase 1 Site Trips (PM Peak Hour)

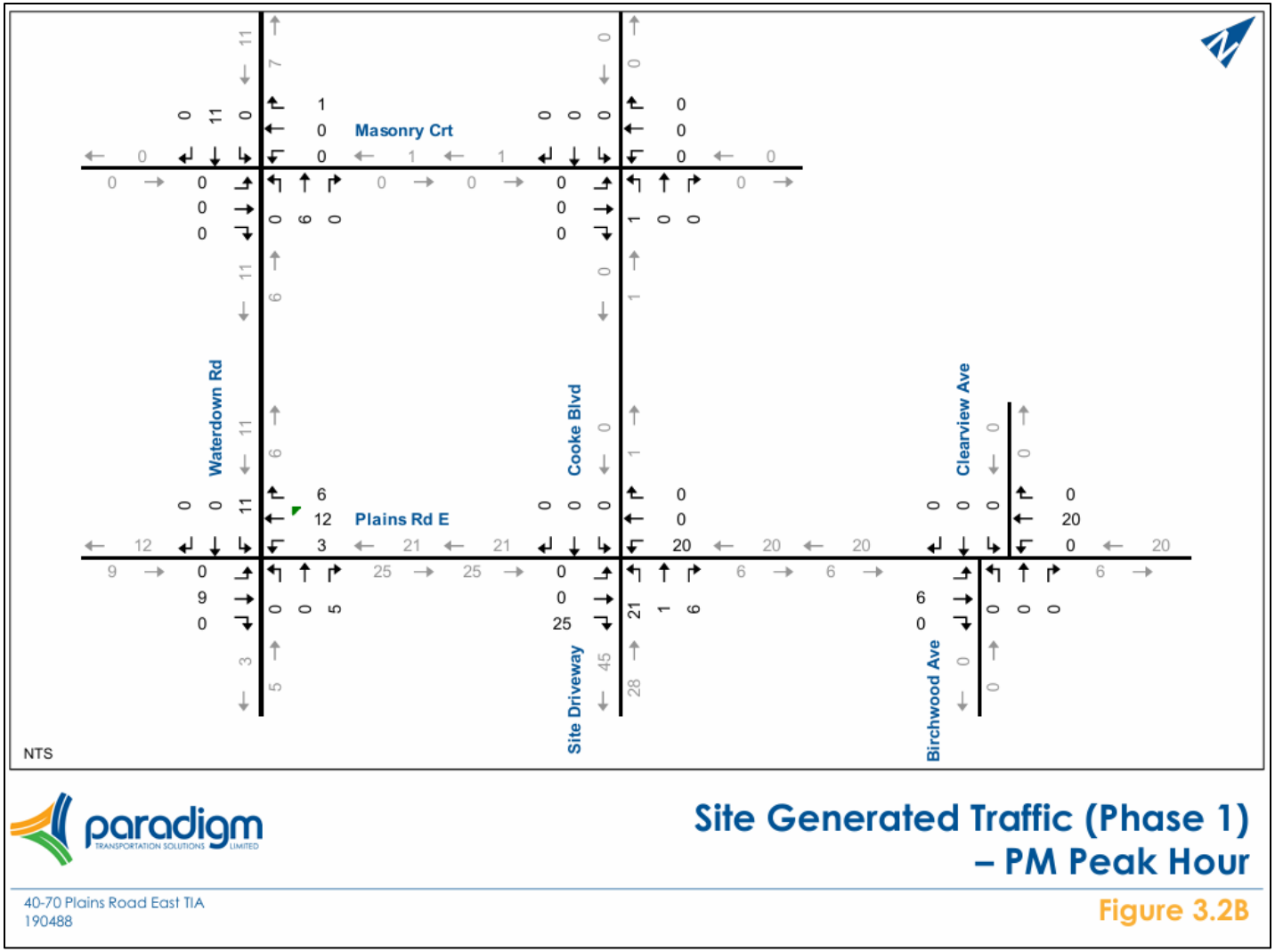


Figure 3.3) 53-71 Plains Road East – AM Peak Hour Site Trips

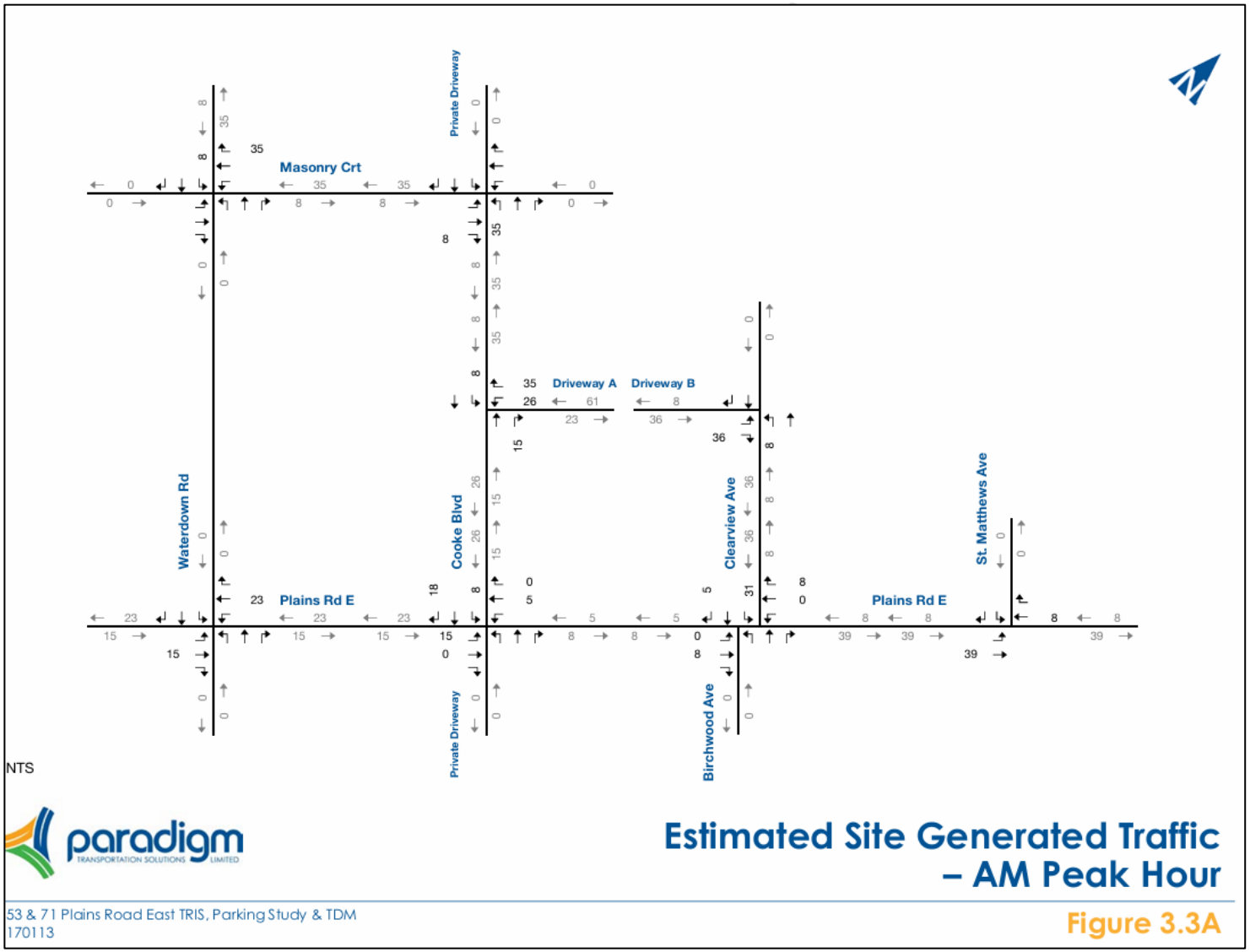


Figure 3.4) 53-71 Plains Road East – PM Peak Hour Site Trips

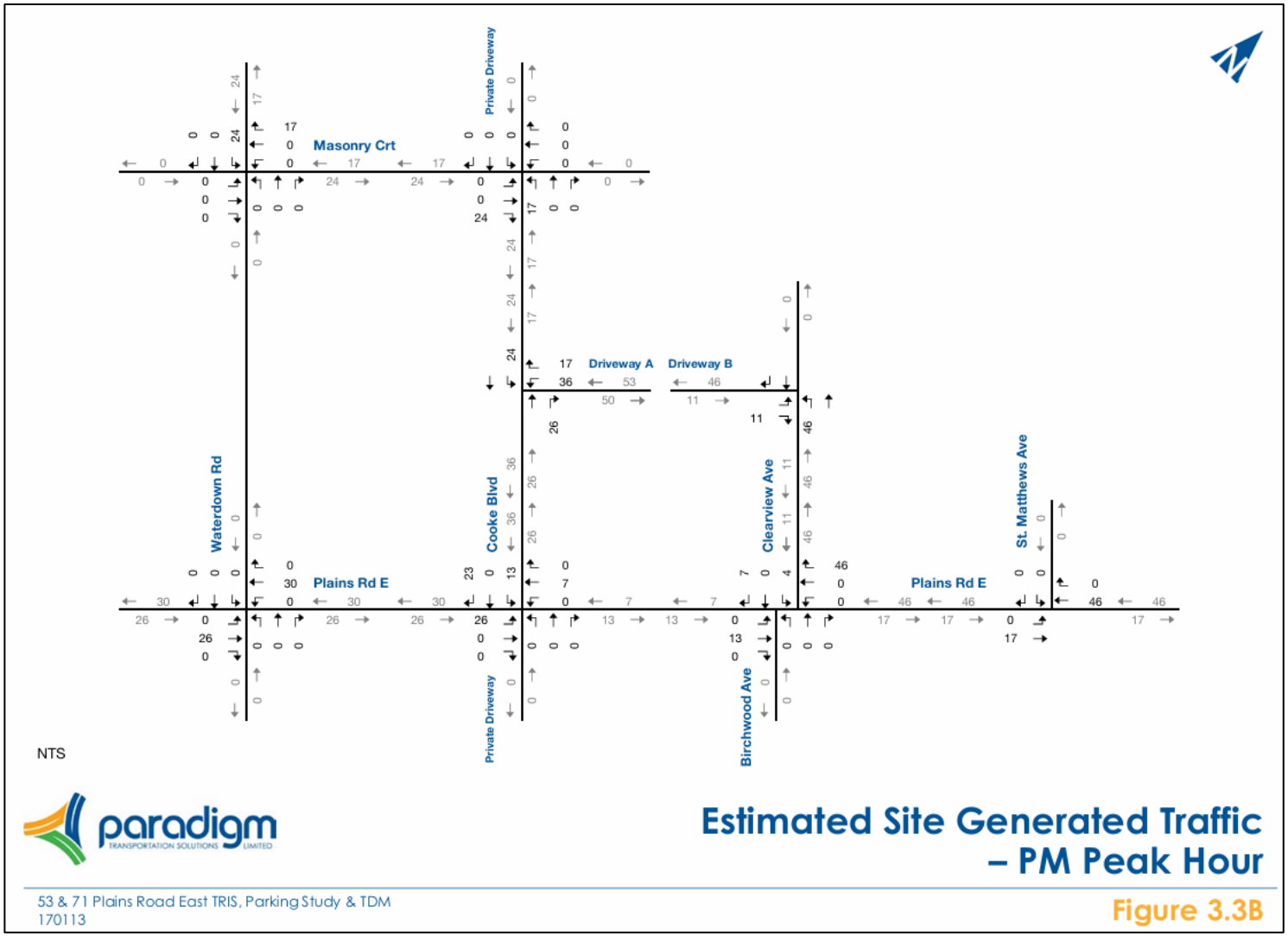


Figure 3.5) 1085 Clearview Avessnue – AM Peak Hour Site Trips

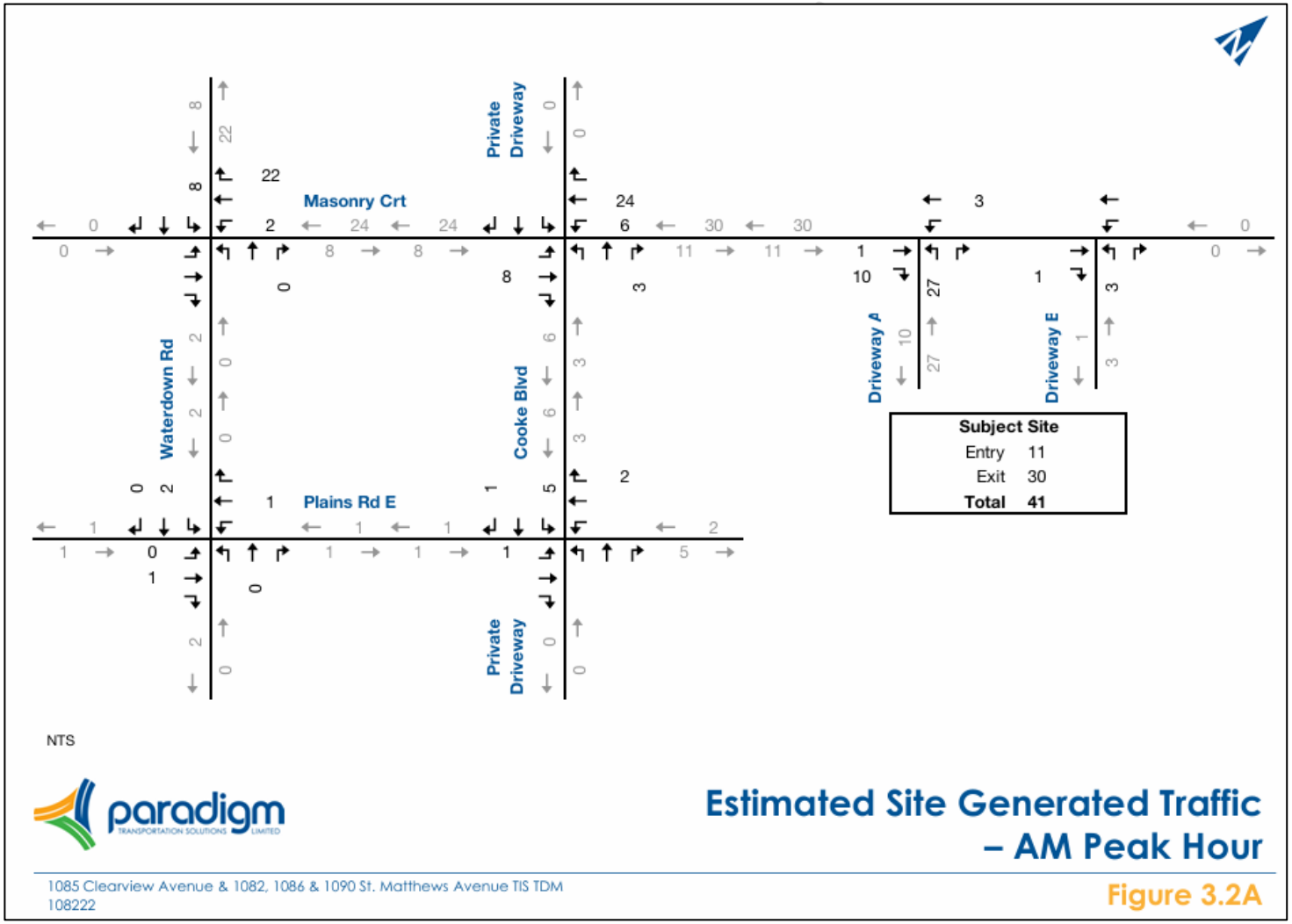


Figure 3.6) 1085 Clearview Avenue – PM Peak Hour Site Trips

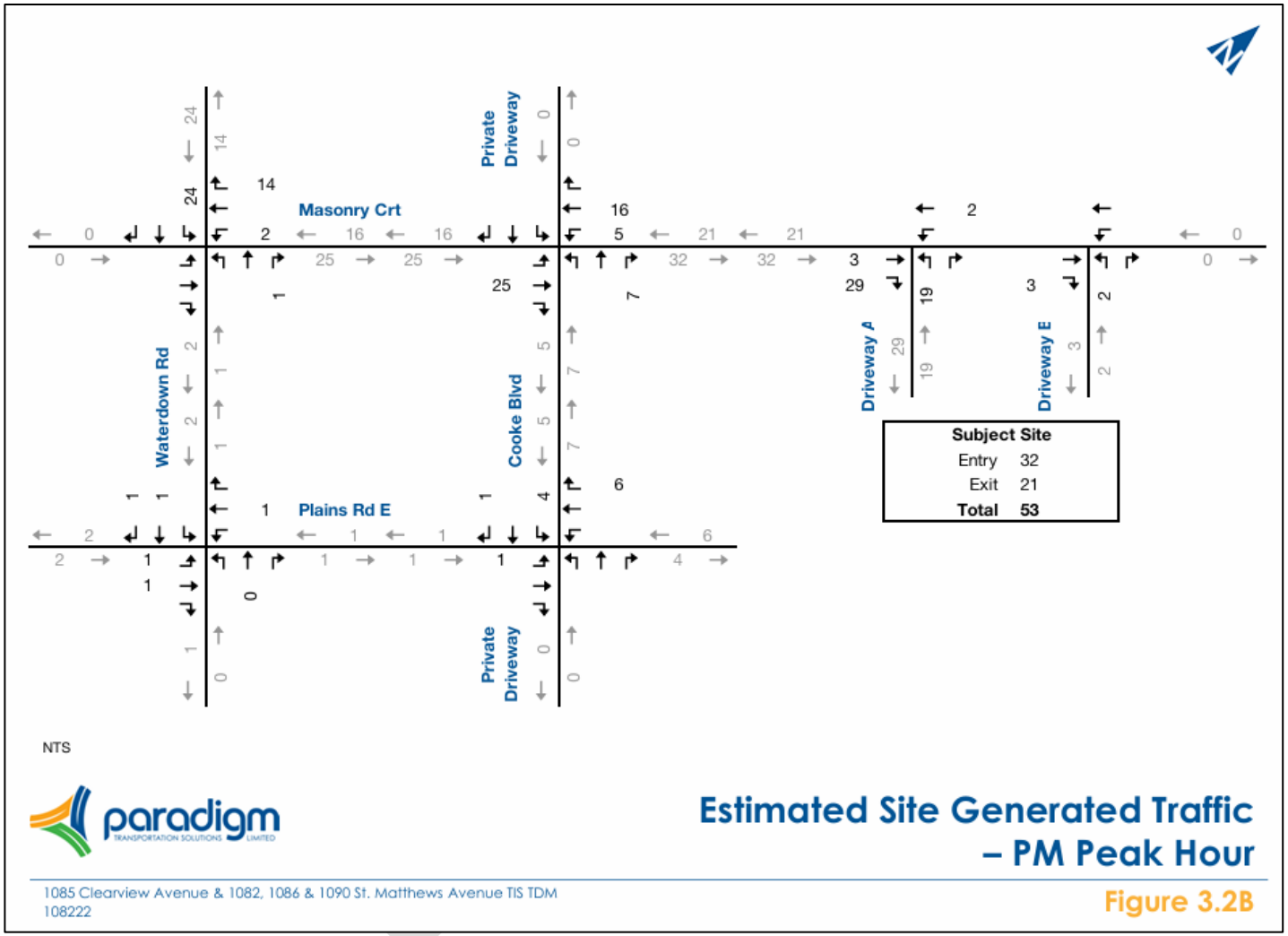
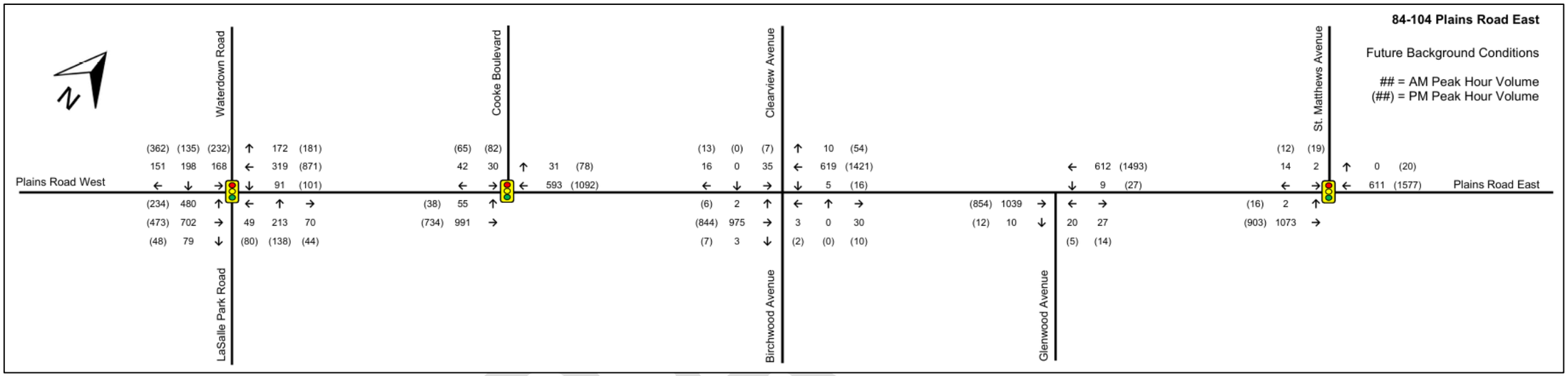


Figure 3.7) Future Background Traffic Volume (2029)



3.4 Site Traffic

3.4.1 Mode Split

The development is located within the Plains Road neighborhood, which is identified in the City of Burlington's Integrated Mobility Plan (IMP, 2023) as a predominantly residential area, the Plains Residential mode split values from the IMP have been applied to the trip generation analysis for this study. The IMP establishes neighborhood-specific mode split targets to guide future growth and travel behavior, and the Plains neighborhood targets are considered most appropriate for this site given its land use context and location. The mode split targets are presented in **Table 3.2**.

As per the City's direction, the proposed mode share targets identified in the IMP have been applied in this study. Although established for the 2051 horizon year, the City has requested that these targets be used to represent 2029 future build-out conditions to ensure development planning reflects long-term mobility objectives and remains consistent across new studies. It is also assumed that the entire 72% auto mode share represents drivers rather than auto passengers, providing a conservative (worst-case) scenario for site-generated trips.

Table 3.2: Mode Split Targets

Mode	2051 Future Modal Targets
Auto	72%
Transit	17%
Bicycle	5%
Walking	6%

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3.4.2 Trip Generation

The *Institute of Transportation Engineers (ITE) Trip Generation Manual (11th edition)* was used to forecast trip generation for this site. Land use code (LUC) 222 – Multifamily Housing was used for the estimation of residential trips into and out of the proposed development. For the commercial outlets included in the development, LUC 822 – Strip Retail Plaza was used to estimate trip generation. These two LUCs most accurately describe the properties and intended uses of the site, the former being residential units with greater than 10 floors of living space and the latter referring to commercial establishments with a total gross floor area (GFA) of less than 40,000 ft^2 (3,716 m^2). The data sheets containing the parameters used in the calculation of trip generation can be found in **Appendix C**.

Analysis of the internal capture rate for this site, which represents the quantity of trips that are entirely contained within the site (i.e. trips between multiple land uses on the same property), was also conducted. Using the method prescribed by the *ITE Trip Generation Manual (11th edition)*, the internal capture rate for this site is 0% for entering residential trips and exiting retail trips during the weekday AM peak hour. For exiting residential trips in the AM peak hour, the internal capture rate is 2%; the internal capture rate during the same time for entering retail trips is 5%. During the weekday PM peak hour, the rates of internal capture for the retail outlets are 10% and 25% of entering and exiting trips, respectively. The internal capture rates for the residential units are 16% and 13% of entering and exiting trips, respectively, during the same period. Using these rates, the remaining external trips used for the intersection capacity analysis were adjusted.

The internal capture estimation tool is included in **Appendix D**. Trip generation rates were calculated using the methodology and rates outlined in **Table 3.3**. The applied trip reductions, reflecting telecommuting and internal capture assumptions, are summarized in **Table 3.4**. The resulting person trip generation for the weekday AM and PM peak hours, including the corresponding modal splits, is presented in **Table 3.5**.

A recent study published in Sage Journals found that rates of telecommuting (working from home) within the Halton Region increased sharply during the pandemic of COVID-19 (Sweet & Scott, 2023)[1]. Telecommuting frequency diminished as the pandemic ended but remained significantly higher than before 2020 (Sweet & Scott, 2023)[1]. For residents of Halton Region, the ideal telecommuting rate is 34%. As this is an ideal rate and may vary from day to day, a more conservative reduction of 25% was applied to residential person trips for calculating trip generation.

[1]Sweet, M., & Scott, D. M. (2023, August 7). *What might working from home mean for the geography of work and commuting in the Greater Golden Horseshoe, Canada?* Retrieved from Sage Journals: Urban Studies, 61(3), 567-588: https://doi.org/10.1177/00420980231186499

Table 3.3) Trip Generation Rates

Land-Use	Land-Use Code	Dwelling Units	Peak Hours	Rate / Equation
Multifamily Housing (High-Rise)	222	253 units	AM	0.34
			PM	0.46
Strip Retail Plaza[1]	822	11,248 ft^2	AM	2.36
			PM	Ln(T) = 0.71 Ln(X) + 2.72

Table 3.4) Trip Reduction based on Internal Capture and Telecommuting

Land Use	Reduction	Value	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Multifamily Housing (High-Rise)	Base Trips	-	22	64	86	77	39	116
	Internal Capture	-	0%	2%	-	16%	13%	-
			0	-1	-1	-12	-5	-17
	Telecommuting	25%	-6	-16	-22	-16	-9	-25
	External Trips	**-**	**16**	**47**	**63**	**49**	**25**	**74**
trip Retail Plaza	Base Trips	-	16	11	27	43	42	85
	Internal Capture	-	5%	0%	-	10%	25%	-
			-1	0	-1	-4	-10	-14
	External Trips	**-**	**15**	**11**	**26**	**39**	**32**	**71**

[1] ITE recommends using average rates for land uses with fewer than 20 data points and fitted curve values for land uses with 20 or more data points. For this analysis, The fitted curve values were only applied for the PM peak hour for Land Use Code 822 which has more than 20 data points available in the ITE Trip Gen Manual.

Table 3.5) Site Trip Generation

Land Use	**Mode Split**	**Value**	**AM Peak Hour**			**PM Peak Hour**		
			In	Out	Total	In	Out	Total
Multifamily Housing (High-Rise) (LUC 222)	External Trips	100%	16	47	63	49	25	74
	Auto	**72%**	**11**	**34**	**45**	**36**	**18**	**54**
	Transit	17%	3	8	11	8	4	12
	Bicycle	5%	1	2	3	2	1	3
	Walking	6%	1	3	4	3	2	5
Strip Retail Plaza (LUC 822)	External Trips	100%	15	11	26	39	32	71
	Auto	**72%**	**10**	**7**	**17**	**28**	**23**	**51**
	Transit	17%	3	2	5	7	5	12
	Bicycle	5%	1	1	2	2	2	4
	Walking	6%	1	1	2	2	2	4
Site Total	**External Trips**	100%	31	58	89	88	57	145
	Auto	**72%**	**21**	**41**	**62**	**64**	**41**	**105**
	Transit	17%	6	10	16	15	9	24
	Bicycle	5%	2	3	5	4	3	7
	Walking	6%	2	4	6	5	4	9

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3.4.3 Trip Distribution and Assignment

Most of the trips generated by the proposed development during the weekday AM and PM peak hours will be commuter trips (home-based work trips). Data retrieved from the Transportation Tomorrow Survey (TTS) was reviewed to estimate the distribution of site-generated vehicle traffic to the external road network. Table **3.6** below outlines the trip distribution assumptions for these trips based on the results of the TTS data, which can be found in **Appendix E**. The commercial land uses on-site are expected to capture more residents in the area of the site and traffic passing by the subject lands. Since the data from TTS specifically describes home-based trips to work, more balanced trip distribution was used for trips to/from the retail outlets for this development.

Table 3.6) Site Trip Distribution

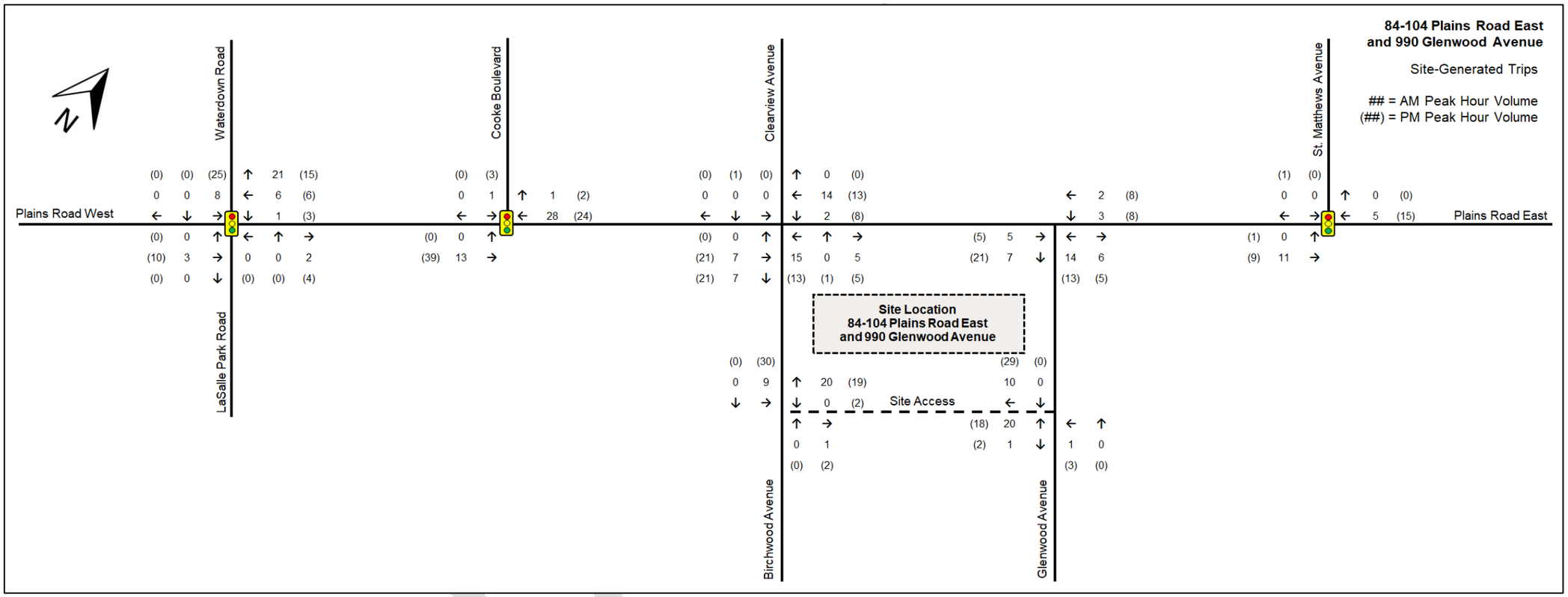
Land Use	Origin/Destination	Split
Multifamily Housing (High-Rise) (LUC 222)	Total	100%
	Waterdown Road | North	58%
	LaSalle Park Road | South	0%
	Plains Road East | East	29%
	Plains Road West | West	13%
	Cooke Boulevard | North	0%
	Clearview Avenue | North	0%
	Birchwood Avenue | South	0%
	Glenwood Avenue | South	0%
	St. Matthews Avenue | North	0%
Strip Retail Plaza (LUC 822)	Total	100%
	Waterdown Road | North	15%
	LaSalle Park Road | South	15%
	Plains Road East | East	15%
	Plains Road West | West	15%
	Cooke Boulevard | North	10%
	Clearview Avenue | North	5%
	Birchwood Avenue | South	10%
	Glenwood Avenue | South	10%
	St. Matthews Avenue | North	5%

Based on the distribution of site trips in Table 3.6 above, individual trips were assigned to a route entering or exiting the study area. This trip assignment allows any effects of site-generated traffic on the intersections within the study area to be analyzed. In some studies, the rate at which traffic that currently exists in the transportation network stops at a destination along their route before proceeding to a final destination (pass-by rate) is also analyzed. However, the number of auto driver trips generated by the commercial uses of the proposed development are not significant enough to have a meaningful impact on

the results of this analysis and are not included. **Figure 3.8** below portrays the assignment of trips for the proposed development.

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Figure 3.8) Site Trip Assignment

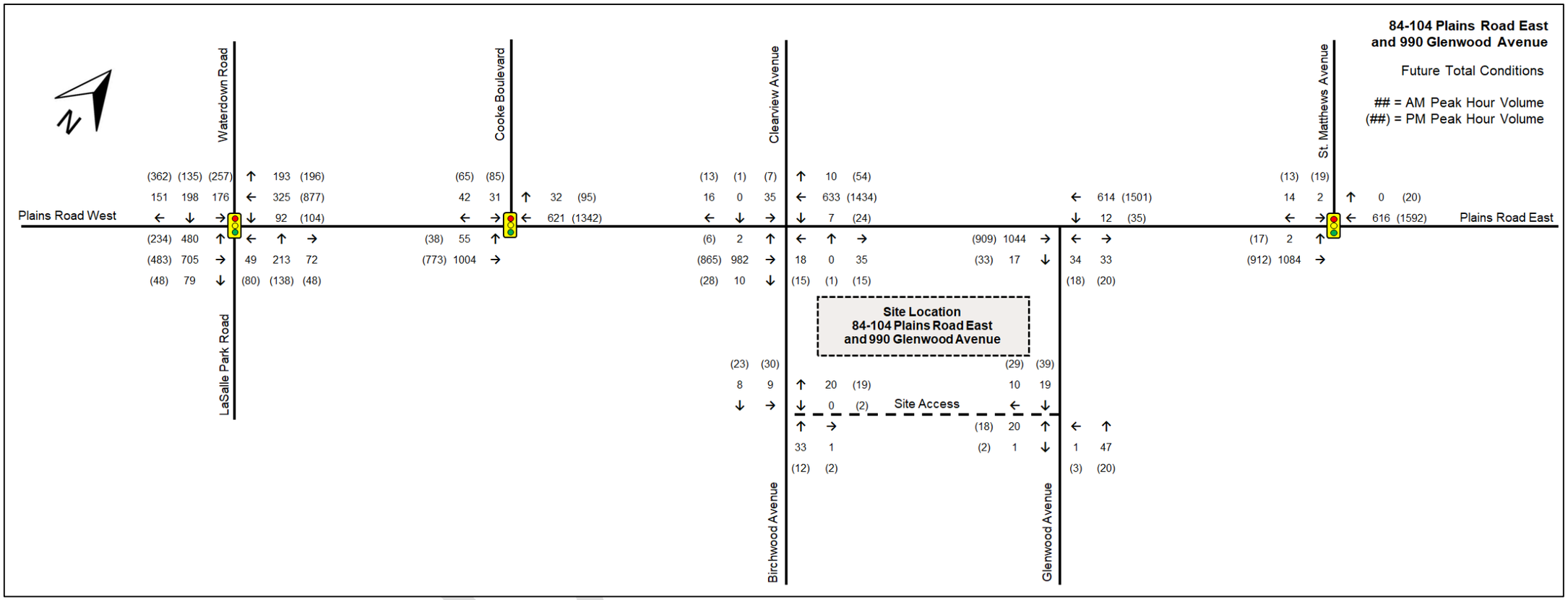


3.5 Future Total Traffic Volume (2029)

The future total scenario analyzes trips generated by the subject site and the future background conditions expected in 2029. This scenario is examined to determine any improvements that may be required as a direct result of the proposed development when compared with the results of that future background analysis. The weekday AM and PM peak hour future total traffic volumes for 2029 are shown in **Figure 3.9** below.

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Figure 3.9) Future Total Traffic Volume (2029)



4 Intersection Capacity Analysis

4.1 Analysis Methodology

The industry standard Synchro traffic modelling software was used to analyze the intersections identified in the study area. Current signal timings provided by City staff are included in **Appendix F**. The measures of effectiveness (MOEs) used to quantify the performance of each turning movement are defined below:

- Average vehicle **control delay** (seconds of delay per vehicle) is used to characterize **level of service** (LOS) and describes the variations in travel time; it is also a surrogate measure of driver discomfort and fuel consumption. See **Table 4.1** below that identifies the control delay thresholds for each LOS based on the Highway Capacity Manual (HCM).
- **Volume-to-capacity ratio** (v/c ratio) describes the degree to which the capacity of each lane group is used during the analysis period. Halton Region's *Transportation Impact Study Guidelines* (2015) indicate the following v/c ratios to be the threshold for mitigation strategies:
    - » Through movements and shared lane groups: 0.85
    - » Exclusive turning lane groups: 0.95
- The **queue length** for a given lane group is the linear extent to which vehicles occupy available storage length within their respective lane groups. A standard practice is to report **95th percentile queue length** – as this quantity describes a 'worst-case scenario' – and identify preferred storage length accordingly. The queue in any given lane will extend to the 95th percentile during only 5% of the peak hour; the remaining 95% of the peak hour will produce queues shorter than this value.

Table 4.1) Characteristics of Level of Service at Intersections

Level of Service	Signalized Intersections	Unsignalized Intersections
A	≤ 10 seconds	≤ 10 seconds
B	> 10 to 20 seconds	> 10 to 15 seconds
C	> 20 to 35 seconds	> 15 to 25 seconds
D	> 35 to 55 seconds	> 25 to 35 seconds
E	> 55 to 80 seconds	> 35 to 50 seconds
F	> 80 seconds	> 50 seconds

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4.2 Analysis Results

The following sections present the results of the capacity analysis for the study area intersections. Signal timing was optimized throughout the analysis as necessary without modifications to cycle length. The results of the Synchro models of each intersection include the v/c ratio, control delay, LOS, and 95th percentile queue length for each movement as traffic volume increases over time. These results showed no significant operational concerns under existing conditions, future background conditions, or future total conditions including site-generated traffic, that require physical capacity improvements (i.e., road widening), with signal optimization considered sufficient to maintain an acceptable level of service.

The intersection of Plains Road and Waterdown Road/LaSalle Park Road is reporting several movements expected to reach LOS E (delays of 55 to 80 seconds) by the ultimate horizon year, and v/c ratios ranging between 0.80-0.87 indicating movements beginning to near capacity, although not at-capacity. With notable changes planned for the Plains Road corridor by way of area growth and transit improvements, it is recommended the City continue to monitor traffic operations at this important intersection in the surrounding road network, to identify opportunities to optimize operations (i.e., signal timings and phasing) when required. Furthermore, as transit is improved across the corridor, a revaluation of the intersection's configuration may be required (i.e., transit lanes, transit priority signal operations, etc.).

The Synchro reports containing the results for existing conditions can be found in **Appendix G**. The Synchro reports containing the results for future background conditions can be found in **Appendix H**. The Synchro reports containing the results for future total conditions can be found in **Appendix I**.

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Table 4.2) Capacity Analysis: Plains Road and Waterdown Road/LaSalle Park Road

Scenario	Movement	Weekday AM Peak Hour			Weekday PM Peak Hour		
		v/c Ratio	LOS (Delay, s)	95th Percentile Queue Length (m)	v/c Ratio	LOS (Delay, s)	95th Percentile Queue Length (m)
2023 Existing Conditions	EB L	0.81	C (26)	107	0.69	C (24)	49
	EB TR	0.52	C (23)	91	0.30	B (19)	53
	WB L	0.29	C (20)	22	0.20	A (7)	5
	WB TR	0.45	C (28)	67	0.68	C (22)	94
	NB L	0.15	C (23)	16	0.27	C (27)	23
	NB TR	0.83	E (58)	94	0.72	E (57)	62
	SB L	0.63	D (35)	42	0.58	C (33)	55
	SB T	0.48	D (38)	64	0.33	D (37)	44
	SB R	0.32	A (7)	16	0.60	A (10)	32
2029 Future Background Conditions	EB L	0.89	D (36)	144	0.81	D (41)	76
	EB TR	0.56	C (24)	101	0.34	C (20)	62
	WB L	0.34	C (21)	23	0.22	A (7)	7
	WB TR	0.58	C (33)	79	0.79	C (26)	164
	NB L	0.15	C (23)	16	0.27	C (26)	23
	NB TR	0.83	E (58)	95	0.72	E (57)	63
	SB L	0.68	D (38)	46	0.64	C (34)	61
	SB T	0.48	D (38)	65	0.32	D (36)	44
	SB R	0.33	A (7)	16	0.63	B (12)	43
2029 Future Total Conditions Optimized	EB L	0.87	C (32)	133	0.83	D (47)	80
	EB TR	0.53	C (22)	97	0.36	C (21)	63
	WB L	0.41	B (19)	23	0.23	A (7)	7
	WB TR	0.56	C (30)	81	0.82	C (27)	170
	NB L	0.16	C (25)	17	0.26	C (26)	23
	NB TR	0.84	E (58)	96	0.74	E (57)	64
	SB L	0.88	E (66)	65	0.70	D (37)	68
	SB T	0.53	D (42)	67	0.31	D (36)	44
	SB R	0.36	A (7)	17	0.62	B (12)	43

EB	Eastbound traffic (west approach)	L	Left-turn lane group
WB	Westbound traffic (east approach)	T	Through lane group
NB	Northbound traffic (south approach)	R	Right-turn lane group
SB	Southbound traffic (north approach)		(Combinations of letters indicate shared lane groups)

Table 4.3) Capacity Analysis: Plains Road East and Cooke Boulevard

Scenario	Movement	Weekday AM Peak Hour			Weekday PM Peak Hour		
		v/c Ratio	LOS (Delay, s)	95th Percentile Queue Length (m)	v/c Ratio	LOS (Delay, s)	95th Percentile Queue Length (m)
2023 Existing Conditions	EB L	0.06	A (2)	3	0.04	A (3)	2
	EB T	0.35	A (3)	28	0.28	A (4)	38
	WB TR	0.24	A (6)	41	0.56	A (7)	76
	SB LR	0.49	B (20)	19	0.54	D (43)	35
2029 Future Background Conditions	EB L	0.09	A (2)	3	0.17	A (5)	5
	EB T	0.38	A (3)	30	0.31	A (4)	40
	WB TR	0.27	A (7)	44	0.64	A (9)	80
	SB LR	0.67	C (22)	28	0.66	D (48)	47
2029 Future Total Conditions Optimized	EB L	0.09	A (2)	4	0.18	A (5)	5
	EB T	0.38	A (3)	29	0.32	A (4)	42
	WB TR	0.28	A (7)	45	0.65	A (9)	83
	SB LR	0.67	C (22)	28	0.67	D (49)	49

EB	Eastbound traffic (west approach)	L	Left-turn lane group
WB	Westbound traffic (east approach)	T	Through lane group
NB	Northbound traffic (south approach)	R	Right-turn lane group
SB	Southbound traffic (north approach)		(Combinations of letters indicate shared lane groups)

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Table 4.4) Capacity Analysis: Plains Road East and Clearview Avenue/Birchwood Avenue

Scenario	Movement	Weekday AM Peak Hour			Weekday PM Peak Hour		
		v/c Ratio	LOS (Delay, s)	95th Percentile Queue Length (m)	v/c Ratio	LOS (Delay, s)	95th Percentile Queue Length (m)
2023 Existing Conditions	EB L	0.00	A (9)	0	0.01	B (12)	0
	EB TR	0.37	A (0)	0	0.31	A (0)	0
	WB L	0.01	A (10)	0	0.02	A (9)	1
	WB TR	0.24	A (0)	0	0.53	A (0)	0
	NB LTR	0.06	B (11)	1	0.02	B (12)	1
	SB LTR	0.03	B (12)	1	0.03	C (17)	1
2029 Future Background Conditions	EB L	0.00	A (9)	0	0.01	B (13)	0
	EB TR	0.40	A (0)	0	0.34	A (0)	0
	WB L	0.01	B (10)	0	0.02	A (10)	1
	WB TR	0.25	A (0)	0	0.57	A (0)	0
	NB LTR	0.06	B (12)	2	0.02	B (12)	1
	SB LTR	0.12	B (15)	3	0.07	C (19)	2
2029 Future Total Conditions Optimized	EB L	0.00	A (9)	0	0.01	B (13)	0
	EB TR	0.40	A (0)	0	0.35	A (0)	0
	WB L	0.01	B (10)	0	0.03	A (10)	1
	WB TR	0.26	A (0)	0	0.57	A (0)	0
	NB LTR	0.13	B (14)	3	0.08	B (16)	2
	SB LTR	0.13	B (15)	4	0.08	C (20)	2

EB	Eastbound traffic (west approach)	L	Left-turn lane group
WB	Westbound traffic (east approach)	T	Through lane group
NB	Northbound traffic (south approach)	R	Right-turn lane group
SB	Southbound traffic (north approach)		(Combinations of letters indicate shared lane groups)

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Table 4.5) Capacity Analysis: Plains Road East and Glenwood Avenue

Scenario	Movement	Weekday AM Peak Hour			Weekday PM Peak Hour		
		v/c Ratio	LOS (Delay, s)	95th Percentile Queue Length (m)	v/c Ratio	LOS (Delay, s)	95th Percentile Queue Length (m)
2023 Existing Conditions	EB TR	0.38	A (0)	0	0.33	A (0)	0
	WB L	0.01	B (10)	0	0.04	A (10)	1
	WB T	0.17	A (0)	0	0.40	A (0)	0
	NB LR	0.11	B (14)	3	0.04	B (12)	1
2029 Future Background Conditions	EB TR	0.42	A (0)	0	0.36	A (0)	0
	WB L	0.01	B (11)	0	0.04	B (10)	1
	WB T	0.19	A (0)	0	0.45	A (0)	0
	NB LR	0.12	B (15)	3	0.04	B (13)	1
2029 Future Total Conditions Optimized	EB TR	0.43	A (0)	0	0.36	A (0)	0
	WB L	0.02	B (11)	0	0.05	B (10)	1
	WB T	0.19	A (0)	0	0.45	A (0)	0
	NB LR	0.18	C (16)	5	0.09	B (15)	2

EB	Eastbound traffic (west approach)	L	Left-turn lane group
WB	Westbound traffic (east approach)	T	Through lane group
NB	Northbound traffic (south approach)	R	Right-turn lane group
SB	Southbound traffic (north approach)		(Combinations of letters indicate shared lane groups)

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Table 4.6) Capacity Analysis: Plains Road East and St. Matthews Avenue

Scenario	Movement	Weekday AM Peak Hour			Weekday PM Peak Hour		
		v/c Ratio	LOS (Delay, s)	95th Percentile Queue Length (m)	v/c Ratio	LOS (Delay, s)	95th Percentile Queue Length (m)
2023 Existing Conditions	EB L	0.00	A (1)	0	0.06	A (2)	2
	EB T	0.36	A (1)	8	0.27	A (1)	16
	WB TR	0.21	A (2)	31	0.48	A (4)	95
	SB L	0.01	D (41)	2	0.11	D (44)	10
	SB R	0.10	B (19)	6	0.07	B (20)	6
2029 Future Background Conditions	EB L	0.00	A (1)	0	0.07	A (2)	2
	EB T	0.40	A (1)	11	0.30	A (1)	19
	WB TR	0.23	A (2)	34	0.53	A (5)	114
	SB L	0.01	D (41)	2	0.11	D (44)	10
	SB R	0.10	B (19)	6	0.07	B (20)	6
2029 Future Total Conditions Optimized	EB L	0.00	A (1)	0	0.07	A (2)	2
	EB T	0.40	A (1)	12	0.30	A (1)	19
	WB TR	0.23	A (2)	34	0.53	A (5)	116
	SB L	0.01	D (41)	2	0.11	D (44)	10
	SB R	0.10	B (19)	6	0.10	B (20)	6

EB	Eastbound traffic (west approach)	L	Left-turn lane group
WB	Westbound traffic (east approach)	T	Through lane group
NB	Northbound traffic (south approach)	R	Right-turn lane group
SB	Southbound traffic (north approach)		(Combinations of letters indicate shared lane groups)

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5 Transportation Demand Management

As the population of the area surrounding the subject site increases, there is a growing need to suppress the demand for travel during peak hours, increase travel efficiency, and reduce strain on transportation infrastructure. The following transportation demand management strategies are proposed:

- **Unbundled parking**: parking spaces for residential units will be leased separately from residential units, providing residents the opportunity to opt out of having an assigned parking space.
- **Fee-based parking**: users of parking spaces on-site pay the cost of parking directly.
- **Bicycle parking areas**: organized structure for the short- and long-term parking of bicycles.
- **Transit schedules and route maps, trail maps, and cycling route maps**: these documents will be displayed in the lobby of the residential portion of the site.
- **Transit and Active Transportation Advocacy Initiatives**: media posted within the site highlighting the benefits of carpooling and travelling with public transit or active transportation. These benefits include:
    - » Improved air quality,
    - » Reduced noise levels,
    - » Healthy lifestyles,
    - » Reduced/eliminated vehicle operation and maintenance costs, and
    - » Increased exposure to the community.

To evaluate the effectiveness of these TDM strategies, the City may consider the following monitoring actions to be undertaken in collaboration with the property owner, at a time post full occupancy of the subject development:

- **Resident Travel Surveys:** Conduct travel behavior surveys to understand resident transportation choices, gauge program effectiveness, and identify opportunities for improvement;
- **Parking Utilization Monitoring:** Track occupancy rates of residential and visitor parking to understand parking behaviours and assess parking demand in relation to the building's occupancy; and
- **TDM Performance Report:** Prepare a summary report documenting TDM measures in place, and resident and visitor participation rates, parking demand trends, and recommendations that may further enhance the effectiveness of implemented TDM measures (i.e., additional promotional or educational materials).

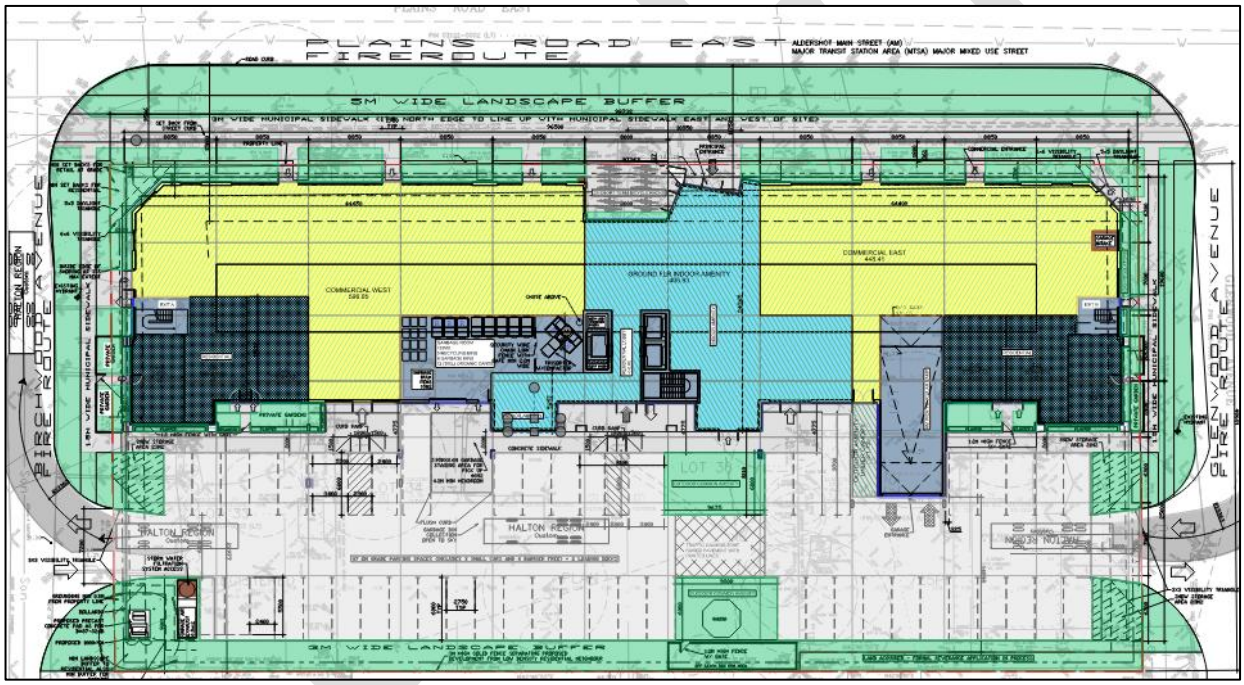
Sections 2.2 and 2.3 of this report describe the exposure of this site to transit service and active transportation facilities in the area. With access to those networks and using these TDM strategies, the proposed development will be able to provide site users with a positive transportation experience. The approach to parking management will balance the need for parking spaces while providing incentive to choose other modes of travel. These benefits will affect the surrounding community as well, improving its atmosphere and quality of life

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6 Site Access and Layout Review

Vehicular access to the site is proposed at two locations: one driveway on each of Birchwood Avenue and Glenwood Avenue on the west and east sides of the subject site, respectively. These driveways will be positioned about 35.5 m south of Plains Road East. This separation exceeds the suggested minimum spacing from the Transportation Association of Canada's (TAC) *Geometric Design Guide for Canadian Roads*, Chapter 8 – Access, Figure 8.9.2. These driveways will allow full movement to and from Birchwood Avenue and Glenwood Avenue, providing access to the surface parking lot, servicing area, and underground parking structure entrance on the site. Swept path analysis completed with AutoTURN resulted in no issues with traffic circulation or waste collection vehicles navigating the site with the layout provided in the site plan (see **Appendix J**). **Figure 6.1** below shows the configuration of the driveways for the proposed development as seen on the site plan.

Figure 6.1) Site Access Configuration



7 Parking Supply Justification

7.1 Minimum Required Parking Supply

The subject site is designated within a Primary Growth Area on Schedule B-1 and within the Aldershot GO Major Transit Station Area (MTSA) Special Planning Area on Schedule G. With respect to the City of Burlington Zoning By-law 2020, the properties at 84-104 Plains Road East and 990 Glenwood Avenue are zoned Residential (RM1-346) and 92 Plains Road East is zoned Mixed-Use Corridor (MXG-498). The proposed development at 84-104 Plains Road East and 990 Glenwood Avenue is planned to consist of 253 residential units with 1,045 m^2 of ground-floor commercial units. **Table 7.1** below describes the required number of parking spaces according to Zoning By-law 2020, Part 1 General Conditions and Provisions, Section 2.25 Off-Street Parking and Loading Requirements, Table 1.2.6 Off-Street Parking Standards.

Table 7.1) Minimum Parking Requirements

Land Use	Parking Rate	Units/Floor Area	Parking Spaces Required
Apartment Building within Primary Growth Area	1.25 spaces per unit inclusive of visitor parking.	253 units	316 resident spaces
Retail Store	3.5 spaces per 100m^2 gross floor area.	1,045 m^2	37 spaces
Bicycle Parking	N/A	N/A	N/A
Total			**353 vehicle parking spaces**

While these requirements are specific to primary growth areas, there is also a Community Planning Permit By-law which has been approved in principle by the City of Burlington Council that addresses the parking requirements for sites within a major transit station area (MTSA). Though this by-law is not yet in effect and its regulations are not in force for the subject site at the time of submitting this report, it is included in this study to illustrate the City's vision for MTSAs, including requirements for vehicular and bicycle parking.

The by-law proposes the removal of minimum requirements for vehicle parking spaces within the MTSAs, with the goal of encouraging the construction of transit-supportive uses in proximity to major transit stations. The objective for the development of these neighbourhoods is that future residents will use public transit and active transportation as their primary mode of transportation. The rates from tables 5.2 and 5.3 describing the vehicle and bicycle parking requirements of this by-law that are applicable to this site are summarized in **Table 7.2** below:

Table 7.2) Burlington MTSA Community Planning Permit By-Law Parking Requirements

Land Use	Parking Rate	Units/Floor Area	Parking Spaces Proposed
Residential	Maximum 1.20 parking spaces per dwelling unit	253 units	248 resident spaces (max. 304 spaces permitted)
Shared Non-Residential (Retail)/Visitor Parking	Minimum 0.15 parking spaces per dwelling unit encouraged	253 units	43 spaces (min. 38 spaces)
Bicycle Parking	0.10 short-term bicycle spaces per dwelling unit 0.50 long-term bicycle spaces per dwelling unit	253 units	25 short-term resident bicycle spaces (min. 25 spaces required) 127 long-term resident bicycle spaces (min. 127 spaces required)
	0.20 short-term bicycle spaces per 100 m^2 retail GFA (min. 3 spaces) 0.10 long-term bicycle spaces per 100 m^2 retail GFA	1,045 m^2	3 short-term retail bicycle spaces (min. 3 spaces required) 1 long-term retail bicycle space (min. 1 space required)
Total			**291 vehicle parking spaces** **28 short-term bicycle spaces** **128 long-term bicycle spaces**

DRAFT

7.2 Site Context

7.2.1 Access to Active Transportation

The subject site of this study has direct access to Plains Road East – a multipurpose arterial road. The pedestrian and cycling pathways in the nearby Plains Road West corridor are well-maintained and cleared of snow by the City during the winter. Furthermore, the site's central location within the Aldershot area places it in close proximity to nearby businesses and amenities. These factors increase the attractiveness of walking and cycling as a primary means of transportation. Active transportation has many benefits, some of which include the savings associated with not owning a vehicle, numerous health benefits, and reduced parking requirements at destinations.

As seen in the City's *Integrated Mobility Plan (2023)*, active transportation is expected to increase over time. Corridors that provide desirable active transportation facilities – such as those on Plains Road West – will likely experience a more rapid increase in pedestrian and cyclist volumes than the City as a whole due to the ease of access to these pathways. Therefore, the minimum parking supply requirements as stated in the applicable zoning by-law are believed to be generous for this site and it is likely that the required spaces will not be occupied. The space recovered by the reduced parking supply is better allocated to providing housing and retail stores to the community.

7.2.2 Access to Public Transit

Plains Road East is served by Burlington Transit route 1 Plains/Fairview, an all-day bus route that operates with a headway of 10 minutes during peak hours and 15 minutes during off-peak hours. This high-frequency route provides residents and workers in the area with fast and reliable public transit service. Along the route are several intersections with other arterial roads with transit service, presenting many opportunities to connect with other transit routes. In addition to this high-frequency local transit route, the subject site is situated approximately 800 m (11 minutes' walking distance based on a speed of 1.2 m/s) from Aldershot GO station which provides access to Burlington Transit routes 4 Central and 87 North Service, Hamilton Street Railway (HSR) local route 18 Waterdown Mountaineer into Waterdown (a nearby community north of Aldershot within the City of Hamilton), higher-order regional GO bus routes to Waterloo, Brantford, St. Catharines, and Hamilton, and GO train routes towards both Hamilton and Toronto, with extended service to Niagara Falls and Oshawa, respectively. This station also provides national routes towards and beyond Brantford and Toronto as well as international service to New York City from Via Rail and Amtrak, an American passenger railroad company, on the Maple Leaf route.

Also served by route 1 Plains/Fairview are Burlington GO station and Appleby GO station; these higher-order transit stations provide riders with access to regional train service provided by GO Transit and national train service provided by VIA Rail Canada. Appleby GO station is the western terminus of Oakville Transit route 14/14A Lakeshore West, giving passage to local transit in Oakville as well. Additionally, the western terminus of route 1 Plains/Fairview is situated in the downtown area of Hamilton. This area receives a high level of transit service from the HSR. **Figure 2.4** in section 2.3 shows the total area that can be reached by local and regional transit within 90 minutes of travel time according to timetables using the

Jane feature of the Remix platform – a service that allows users to import the General Transit Feed Specification (GTFS) data from transit agencies. Local bus routes are shown in orange, regional bus routes are shown in green, and rail routes are shown in blue.

7.2.3 Access to On-Street Parking

Many streets in the Aldershot community allow parking on one or both sides with no specific restrictions to duration or time of day. One exception to this is Plains Road East, which is an arterial road consistently supporting high volumes and does not provide on-street parking space. Neither Birchwood Avenue nor Glenwood Avenue have any specific parking regulations; as such, the city-wide parking regulations apply to on-street parking on these streets. The time limit for on-street parking in Burlington is five hours unless otherwise posted. In addition to the city-wide time limit, on-street parking is not permitted between 1:00 AM and 6:00 AM. In some cases, individuals may apply for exemptions to these regulations.

Field investigations were conducted on 26 November 2024 to assess the utilization of on-street parking on the streets immediately adjacent to the subject site. Observations were recorded during the period following the PM peak hour of traffic volume – the time after which most individuals will have already arrived at home from work. During this time, the utilization of on-street parking was observed to be zero as all vehicles in this neighbourhood were parked on driveways. Therefore, the nearby on-street parking areas have demonstrated capacity to support existing demand and potential future demand produced by the continuous growth of the City.

7.3 Low Risk of On-Site Parking Infiltration

The surface parking lot proposed for this site would be situated south of the proposed structure. This reduces its visibility from Plains Road East; the impeded visibility of parking spaces on site will reduce the probability of opportunistic parking – a kind of parking infiltration. Opportunistic parking occurs when a driver parks on a site that is not their intended destination. This phenomenon is exacerbated by the visibility of street-level parking lots, where empty parking spaces can easily be seen by a driver. The result of opportunistic parking is negative to users of the site, who are the intended occupants of these parking spaces.

Opportunistic parking can be incorrectly observed by parking occupancy studies and result in higher-than-necessary parking supply estimates. This can be further mitigated by the installation of gates that restrict access to the parking structure to site users either with transponders for residents and employees and a fee system for the retail parking areas or parking validation (i.e. waived parking fee for customers/visitors). This results in decreased infiltration of parking within the site, reducing the need for parking spaces.

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7.4 Proposed Parking Supply

The site at 84-104 Plains Road East and 990 Glenwood Avenue is surrounded by a comprehensive and continuous network of active transportation facilities that provide a safe and healthy alternative to personal vehicles. Supported by the extensive network of local and regional bus routes with the nearby Lakeshore West rail route, commuters in this area have a high degree of access to efficient means of travel that reduce the strain on roadways in the area. Benefits of this include relief of congestion, reduced load and maintenance on existing roads, and an improvement to the air quality and noise levels within the community. Furthermore, future policies such as the Community Planning Permit by-law encourage the development of transit-supportive housing within areas surrounding major transit stations. Future developments in these areas are intended to increase the utility of these transit stations and reduce the strain on other infrastructure caused by high traffic volumes by offering policy-supported facilities such as bicycle parking and reduced vehicle parking.

Considering the advantageous placement of this site within 800 m of Aldershot GO station, its proposed parking supply differs from that required by the applicable by-law regulations. The proposed parking rate and supply are shown in **Table 7.3** below. For the residential units, a rate of 0.98 parking spaces per unit is proposed, resulting in 248 spaces provided for future residents of this site. Additionally, a shared rate of 0.17 spaces per unit is proposed for visitor and retail parking, resulting in 43 shared spaces to accommodate both uses. Depending on future residential parking demand as the building approaches occupancy, some of these shared spaces may be reallocated to residential use. This would result in an effective adjustment of the shared rate to 0.15 spaces per unit, which aligns with the minimum encouraged rate outlined in Burlington's Community Planning Permit By-law for MTSAs. The rates supply included in **Table 7.3** do not deviate from those suggested by the By-law (see **Table 7.2**); the long-term and short-term bicycle parking will be required to support the reduced parking rate for residents.

DRAFT

Table 7.3) Proposed Parking Rates and Supply

Land Use	Parking Rate	Units/Floor Area	Parking Spaces Proposed
Mixed-use/Apartment Building	0.98 parking spaces per unit	253 units	248 resident spaces
Shared Retail/Visitor Parking	0.17 parking spaces per unit	253 units	43 shared retail/visitor spaces
Bicycle Parking	0.10 short-term bicycle spaces per dwelling unit (min. 2 spaces)	253 units	25 short-term resident bicycle spaces
	0.50 long-term bicycle spaces per dwelling unit (min. 2 spaces)		127 long-term resident bicycle spaces
	0.29 short-term bicycle spaces per 100 m^2 retail GFA (min. 3 spaces)	1,045 m^2	3 short-term retail bicycle spaces
	0.01 long-term bicycle spaces per 100 m^2 retail GFA (min. 2 spaces)		1 long-term retail bicycle spaces
Total			**291 vehicle parking spaces** **28 short-term bicycle spaces** **128 long-term bicycle spaces**

DRAFT

8 Conclusion

8.1 Summary of Findings

The results of this study show that the impact of the proposed development to traffic operations on Plains Road East is not expected to result in any traffic operational concerns requiring mitigation. The location of the site provides a high degree of exposure to transit service and active transportation facilities in the area, increasing their attractiveness as an alternative to commuting with a vehicle and reducing the strain on the public road network. The land uses of the site – providing residential units and ground-floor retail stores – are appropriate to the context of the neighbourhood, which hosts similar sites in its vicinity.

A summary of key findings of this study is included below:

- The subject lands have direct frontage onto Plains Road East, a multipurpose arterial road featuring a comprehensive network of bicycle facilities and pedestrian sidewalks.
- The site is estimated to generate approximately 48 two-way trips during the AM peak hour (18 inbound and 30 outbound) and approximately 78 two-way trips during the PM peak hour (48 inbound and 30 outbound).
- The transit route serving Plains Road East at this location operates at a frequency of 10 minutes during peak hours, providing reliable and efficient service to this area.
- The programmed capital projects to enhance transportation infrastructure in the area will provide bus rapid transit (BRT) service and further increase the attractiveness of cycling, thereby decreasing reliance on cars.
- The subject site is situated approximately 800 m (about 11 minutes' walking distance based on a speed of 1.2 m/s) from Aldershot GO station which provides access to Burlington Transit and Hamilton Street Railway (HSR) local transit service, higher-order regional GO bus and GO train service, national Via Rail train service, and international train service from Via Rail and Amtrak.
- The study intersections identified in this study operate below capacity with short delay to vehicles in existing conditions.
- Site-generated traffic volume will have a negligible impact on traffic operations at the study intersections and will not significantly increase delay, lengthen queues, or cause other operational issues in the 2029 future total scenario.
- Transportation demand management (TDM) measures will be used to encourage the use of public transit, walking, and cycling.
- A total of 291 vehicle parking spaces will be provided for residents, visitors, and users of the retail portion of the proposed development.
- A total of 28 short-term and 128 long-term bicycle parking spaces will be provided for residents, visitors, and users of the retail portion of the proposed development.
- The geometry and layout of the proposed site driveways provide sufficient access to the site and do not produce undesired effects to traffic operations on Plains Road East, Birchwood Avenue, or Glenwood Avenue.

DRAFT

8.2 Recommendations

8.2.1 Transportation Improvements

It is recommended that the City consider monitoring traffic operations at the signalized intersections in the Aldershot area as numerous developments are built out over the next several years and traffic patterns consequently change. To improve the efficiency of the signalized intersections, signal timings should be optimized on a recurring basis to respond to these changes in traffic. Such recurring optimizations are likely already occurring as part of the City's ongoing traffic monitoring and signal management programs.

There are no geometric of traffic operational improvements recommended at the study intersections in response to the subject development.

It is also recommended the City continue with the planned introduction of BRT on Plains Road East, as this transit enhancement will assist existing and future developments (such as this site) with reducing auto-usage and thus decreasing the traffic operational impacts of these developments on the surrounding road network. Given the context of Plains Road East in the local road network, this corridor is an ideal candidate for BRT infrastructure.

To further improve the connectivity of the site and the immersion of the Aldershot MTSA in a diverse range of commuting options, the City's continued enhancement and expansion of cycling and pedestrian facilities is also recommended. The improvements listed in section 3.2 are vital to the continued evolution of transportation in Burlington towards healthier, active modes. In addition to the capital projects and existing infrastructure, a city-wide bicycle sharing program could also be considered by the City. This program could increase the accessibility of the City's cycling infrastructure to non-residents and those who travel less frequently and are unwilling to invest in a personal bicycle. Storage racks for shared bicycles could be placed strategically at locations along protected bikeways, such as the subject site.

8.2.2 Transportation Demand Management (TDM) Strategies

The following TDM strategies are recommended:

- Unbundled parking
- Fee-based parking
- Bicycle parking areas
- Transit schedules and route maps, trail maps, and cycling route map
- Transit and Active Transportation Advocacy Initiatives

It is also recommended that measures such as resident travel surveys, parking utilization monitoring, and annual TDM performance reports be implemented to support the effective delivery, monitoring, and evaluation of the TDM strategies.

DRAFT

8.2.3 Parking Provision

The following parking supply is recommended:

Land Use	Parking Rate	Units/Floor Area	Parking Spaces Proposed
Mixed-use/Apartment Building	0.98 parking spaces per unit	253 units	248 resident spaces
Shared Retail/Visitor Parking	0.17 parking spaces per unit	253 units	43 shared retail/visitor spaces
Bicycle Parking	0.10 short-term bicycle spaces per dwelling unit (min. 2 spaces) 0.50 long-term bicycle spaces per dwelling unit (min. 2 spaces)	253 units	25 short-term resident bicycle spaces 127 long-term resident bicycle spaces
	0.29 short-term bicycle spaces per 100 m^2 retail GFA (min. 3 spaces) 0.01 long-term bicycle spaces per 100 m^2 retail GFA (min. 2 spaces)	1,045 m^2	3 short-term retail bicycle spaces 1 long-term retail bicycle spaces
Total			**291 vehicle parking spaces** **28 short-term bicycle spaces** **128 long-term bicycle spaces**

DRAFT

Appendices

Appendix A Site Plan

PLAINS ROAD EAST

PLAINS ROAD EAST
FIRE ROUTE

ALDERSHOT MAIN STREET (AM)
MAJOR TRANSIT STATION AREA (MTSA) MAJOR MIXED USE STREET

5M WIDE LANDSCAPE BUFFER

3M WIDE MUNICIPAL SIDEWALK (ITS NORTH EDGE TO LINE UP WITH MUNICIPAL SIDEWALK EAST AND WEST OF SITE)

SET BACK FROM STREET CURB

PROPERTY LINE

MIN SET BACKS FOR RETAIL AT GRADE

MIN SET BACKS FOR RESIDENTIAL

5x5 DAYLIGHT TRIANGLE

6x6 VISIBILITY TRIANGLE

INSIDE EDGE OF SHORING AT ITS MAX EXTENT

EXISTING HYDRANT

1.5M WIDE MUNICIPAL SIDEWALK

COMMERCIAL WEST
596.05

COMMERCIAL EAST
448.41

GROUND FLR INDOOR AMENITY
406.93

PRINCIPAL ENTRANCE

COMMERCIAL ENTRANCE

28 SHORT TERM BICYCLE RACKS

GARAGE INTAKE

GAS REGULATORS

EXIT A

EXIT B

CHUTE ABOVE

GARBAGE ROOM
132M2
5 RECYCLING BINS
6 GARBAGE BINS
12 (360L) ORGANIC CARTS

GARBAGE BULK ITEMS 10M2

SECURITY WIRE CHAIN LINK FENCE WITH GATE MIN 2.2M WIDE

TRISORTER W/COMPACTOR

MECH AND SPRINKLER ROOMS

RESIDENTIAL LOBBY
109

INDOOR AMENITY

B/O RAMP
98.48

98.70
RAMP DN TO P1 @6%

6M WIDE VEHICULAR RAMP

100.37
RAMP DN TO P1 @7.5%

RESIDENTIAL

G-06
2BDRM
65

G-05
1BDRM+DEN
65

G-04
1BDRM+DEN
51

G-03
1BDRM+DEN
50

G-02
1BDRM+DEN
50

G-01
2BDRM
42

PRIVATE GARDEN

PRIVATE GARDENS

PLANTER

1.2 HIGH FENCE WITH GATE

1.2M HIGH FENCE W/ GATE

SNOW STORAGE AREA 23M2

SNOW STORAGE AREA 21M2

CURB RAMP

CONCRETE SIDEWALK

5.95MX8.6M GARBAGE STAGING AREA FOR PICK UP
46M2
4.2M MIN HEADROOM

OUTDOOR COMMON AMENITY

OUTDOOR AMENITY UNDER CANOPY
21.72

FLUSH CURB
GARBAGE BIN COLLECTION OPEN TO SKY

TRAFFIC CALMING ZONE RAISED PAVEMENT WITH PAINTED LINES

GARAGE ENTRANCE

47 ON GRADE PARKING SPACES (INCLUDES 3 SMALL CARS AND 4 BARRIER FREE) + 2 LOADING DOCKS

STORM WATER FILTRATION SYSTEM ACCESS

GARAGE AIR EXHAUST 6.8M2

3X3 VISIBILITY TRIANGLE

GROUNDING MIN 0.3M FROM PROPERTY LINE

BOLLARDS

PROPOSED PRECAST CONCRETE PAD AS PER BH37-324B

PROPOSED 1000kVA

3M WIDE LANDSCAPE BUFFER
3M HIGH SOLID FENCE SEPARATING PROPOSED DEVELOPMENT FROM LOW DENSITY RESIDENTIAL NEIGHBOUR

1.2M HIGH FENCE W/ GATE
OFF LEASH DOG RUN AREA

LAND ACQUIRED - FORMAL SEVERANCE APPLICATION IN PROCESS

MIN LANDSCAPE BUFFER TO RESIDENTIAL ALSO
MIN BUFFER FOR PARKING

E/O SHORING STRUCTURE - MIN 0.5M CLEAR OF GROUNDING

3 YARD GARBAGE BIN
2.03Mx1.12Mx1.22M

3 YARD RECYCLABLE CONTAINERS
BIN 2.03Mx1.12Mx1.22M

3 YARD RECYCLABLE PAPERS
BIN 2.03Mx1.12Mx1.22M

2 YARD ORGANICS BIN
2.03Mx1.02Mx0.92M

PARKING
UNDERGROUND GARAGE:
244 (INCLUDES 4 BARRIER FREE + 24 SMALL CARS)
ON GRADE:
47 (INCLUDES 4 BARRIER FREE + 3 SMALL CARS)
2 LOADING DOCKS
TOTAL PARKING: 291 CARS (INCLUDES 8 BARRIER FREE)
PARKING:
RETAIL/VISITOR - 43
RESIDENTIAL - 248

BICYCLES STORAGE:
28 ON GRADE SHORT TERM RACKS;
111 UNDERGROUND LONG TERM STORAGE;
7 UNDERGROUND LONG TERM STORAGE FOR LARGE BICYCLES
TOTAL LONG TERM BICYCLE STORAGE: 118
TOTAL BICYCLE STORAGE: 146

NOTES RE GARBAGE COLLECTION
- COMMERCIAL UNITS WILL RECEIVE CART COLLECTION ALONG PLAINS ROAD EAST
- GARBAGE TRUCK PROCEEDS IN CONTINUOUS FORWARD MOTION
- UNDERGROUND PARKING STRUCTURE TO SUPPORT MIN35 TONNES LOAD

AMENITIES (INDOORS AND OUTDOORS)		
CATEGORY	NAME	AREAS AMENITY (M2)
INDOOR COMMON	GROUND FLR INDOOR AMENITY	406.93
	P2 INDOOR AMENITY	142.51
	P1 INDOOR AMENITY	142.51
		691.95
OUTDOOR COMMON	LAND ACQUIRED SEVERANCE APPLICATION IN PROGRESS	60.25
	OUTDOOR OPEN AIR AMENITY	659.91
	OUTDOOR AMENITY UNDER CANOPY	21.72
	6TH FLR OUTDOOR	37.37
	7TH FLOOR OUTDOOR	19.05
	8TH FLR OUTDOOR	19.05
		817.34
PRIVATE BALCONY/TERRACE	2ND FLOOR	181.63
	3RD FLOOR	201.86
	4TH FLOOR	204.65
	5TH FLOOR	204.64
	6TH FLOOR	476.30
	7TH FLOOR	101.67
	8TH FLOOR	202.41
	9TH FLOOR	101.26
	10TH FLOOR	548.83
	11TH FLOOR	88.90
		2312.15
PRIVATE GROUND LEVEL PATIOS	OUTDOOR RESIDENTIAL PATIOS	80.01
		80.01
	15.42M2/UNIT	3901.45

FAR AS DEFINED IN ZONING BY-LAW 2020: "THE MATHEMATICAL RELATIONSHIP BETWEEN BUILDING FLOOR AREA AND LOT AREA DETERMINED BY DIVIDING THE GROSS BUILDING FLOOR AREA OF ALL BUILDINGS ON A LOT BY THE NET AREA OF THAT LOT."

GROSS BUILDING FLOOR AREA IS DEFINED IN ZONING BY-LAW 2020 AS FOLLOWS : "THE TOTAL AREA OF THE FLOOR MEASURED TO THE OUTSIDE OF ALL OUTSIDE WALLS, INCLUDING A BASEMENT OR CELLAR BUT EXCLUDING AREAS USED FOR PARKING OF MOTOR VEHICLES OR AREAS ABOVE AN ATRIUM."

ZONING BY-LAW 2020: "THE SUM OF THE AREAS OF EACH FLOOR OF A BUILDING BUT SHALL INCLUDE A BASEMENT OR CELLAR WHEN USED FOR COMMERCIAL PURPOSE MEASUREMENT SHALL BE FROM THE EXTERIOR FACE OF OUTSIDE WALLS, OR FROM THE CENTRE LINE OF PARTITION AND COMMON WALLS. GROSS FLOOR AREA SHALL NOT INCLUDE FLOOR SPACE DEVOTED TO VEHICLE PARKING, STORAGE, AIR HANDLING EQUIPMENT, ENCLOSED MALL AND HALLWAYS, EXCLUDING KIOSK, STAIRWAYS, ELEVATORS AND ASSOCIATED EQUIPMENT, WASHROOMS, FOYERS, LOBBIES, BUT NOT WAITING AREAS/ROOMS"

BUILDING AREAS AS PER ZONING BY-LAW 2020			
NAME	AREA FAR CALC M2	AREAS GFA CALC M2	
P3	90.00	0.00	
P2	681.00	0.00	
P1	721.00	0.00	
1ST FLOOR	2099.00	1757.00	
2ND FLOOR	2305.00	2065.00	
3RD FLOOR	2299.00	2055.00	
4TH FLOOR	2305.00	2065.00	
5TH FLOOR	2305.00	2065.00	
6TH FLOOR	1927.00	1681.00	
7TH FLOOR	1927.00	1681.00	
8TH FLOOR	1817.00	1571.00	
9TH FLOOR	1789.00	1541.00	
10TH FLOOR	1282.00	1043.00	
11TH FLOOR	1284.00	1044.00	
MECHANICAL PENTHOUSE	636.00	0.00	
	23467	18568	
	FAR=4.88		

BUILDING HEIGHT FROM GRADE:
T/O ROOF DECK OVER 11TH FLOOR - 35400
T/O ROOF DECK OVER MECHANICAL PENTHOUSE - 39400

GROUND FLOOR

6 EXTERIOR INDEPENDENTLY ACCESSED APARTMENTS

SITE AREAS STATISTIC							
AREA LOT	AREA BUILDING	COVERAGE	AREA DRIVEWAY	AREA WALKWAY	AREA LANDSCAPE	LANDSCAPE %	LANDSCAPE+ WALKWAY%
4807.65	2123.00	44.16%	1491.05	409.01	784.97	16.33%	24.83%

GROUND FLOOR GROSS AREAS STATISTIC				
NAME	AREA BUILDING	AREAS RESIDENTIAL	AREAS COMMERCIAL	AREAS SERVICE
1ST FLOOR	2098.99	730.61	1045.01	15.32

1 SITE PLAN
1=150

CLIENT:

MIURA GROUP
931 Southcote Road
Ancaster, ON L9G 3L1

DRAWING NORTH | GEOGRAFIC NORTH

KOZLOWSKI ARCHITECT
416-778-7092

REVISED/ISSUED
ISSUED FOR SPA 2025 05 09
ISSUED FOR SPA 2025 01 21
ISSUED FOR OCT 30 PUBLIC CONSULTATION MEETING 2024 10 21
ISSUED FOR PRE-CONSULTATION MEETING 2023 12 05
THE DESIGN AND CONTRACT DOCUMENTS ARE THE COPYRIGHT PROPERTY OF THE ARCHITECT AND MAY NOT BE REPRODUCED ALTERED OR REUSED WITHOUT THE ARCHITECT'S WRITTEN PERMISSION. THE GENERAL CONTRACTOR SHALL REPORT ALL ERRORS AND OMISSIONS TO THE ARCHITECT.

ONTARIO ASSOCIATION OF ARCHITECTS
OCT. 03, 2024
RADEK KOZLOWSKI
LICENCE
6810

84-104 PLAINS ROAD EAST
ALDERSHOT
BURLINGTON

SITE PLAN

DESIGNED	RK
PROJ. NUMBER	2302
DATE	APRIL 23
SCALE	AS SHOWN

A1

Appendix B Traffic Data

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 7:45:00
To: 8:45:00

Municipality: Burlington
Site #: 2419500001
Intersection: Plains Rd E & Birchwood Ave
TFR File #: 1
Count date: 23-Oct-24

Weather conditions:

Person counted:
Person prepared:
Person checked:

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

Major Road: Plains Rd E runs W/E

North Leg Total: 19
North Entering: 15
North Peds: 11
Peds Cross: ⋈

Heavys	0	0	0	0
Trucks	0	0	0	0
Cars	11	0	4	15
Totals	11	0	4	

Heavys	0
Trucks	0
Cars	4
Totals	4

East Leg Total: 1513
East Entering: 585
East Peds: 1
Peds Cross: ⧗

Clearview Ave

Heavys	Trucks	Cars	Totals
18	10	564	592

Cars	Trucks	Heavys	Totals
2	0	0	2
550	10	18	578
5	0	0	5
557	10	18	

Plains Rd E

N
W E
S

Heavys	Trucks	Cars	Totals
0	0	2	2
29	6	859	894
0	0	3	3
29	6	864	

Plains Rd E

Cars	Trucks	Heavys	Totals
893	6	29	928

Birchwood Ave

Peds Cross: ⧗
West Peds: 1
West Entering: 899
West Leg Total: 1491

Cars	8
Trucks	0
Heavys	0
Totals	8

Cars	3	0	30	33
Trucks	0	0	0	0
Heavys	0	0	0	0
Totals	3	0	30	

Peds Cross: ⋈
South Peds: 10
South Entering: 33
South Leg Total: 41

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 18:00:00

One Hour Peak
From: 16:15:00
To: 17:15:00

Municipality: Burlington
Site #: 2419500001
Intersection: Plains Rd E & Birchwood Ave
TFR File #: 1
Count date: 23-Oct-24

Weather conditions:

Person counted:
Person prepared:
Person checked:

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

Major Road: Plains Rd E runs W/E

North Leg Total: 23
North Entering: 9
North Peds: 10
Peds Cross: ⋈

Heavys	0	0	0	0
Trucks	0	0	0	0
Cars	6	0	3	9
Totals	6	0	3	

Heavys	0
Trucks	0
Cars	14
Totals	14

East Leg Total: 2124
East Entering: 1338
East Peds: 0
Peds Cross: ⧖

Clearview Ave

Heavys	Trucks	Cars	Totals
15	12	1295	1322

Cars	Trucks	Heavys	Totals
8	0	0	8
1288	12	14	1314
16	0	0	16
1312	12	14	

Plains Rd E

N
W E
S

Heavys	Trucks	Cars	Totals
0	0	6	6
9	4	760	773
0	0	7	7
9	4	773	

Plains Rd E

Cars	Trucks	Heavys	Totals
773	4	9	786

Birchwood Ave

Peds Cross: ⧖
West Peds: 0
West Entering: 786
West Leg Total: 2108

Cars	23
Trucks	0
Heavys	0
Totals	23

Cars	1	0	10	11
Trucks	0	0	0	0
Heavys	1	0	0	1
Totals	2	0	10	

Peds Cross: ⋈
South Peds: 11
South Entering: 12
South Leg Total: 35

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Total Count Diagram

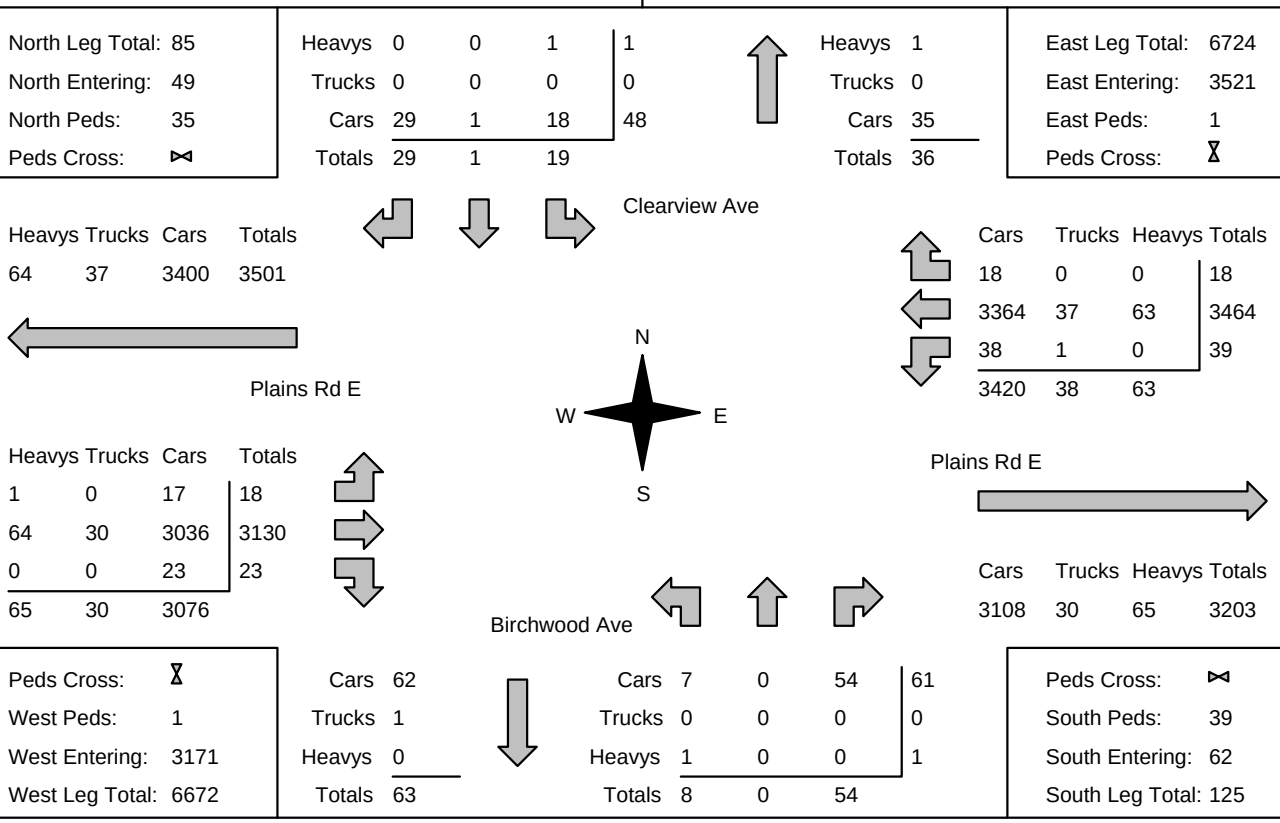
Municipality: Burlington
Site #: 2419500001
Intersection: Plains Rd E & Birchwood Ave
TFR File #: 1
Count date: 23-Oct-24

Weather conditions:

Person counted:
Person prepared:
Person checked:

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

Major Road: Plains Rd E runs W/E



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Traffic Count Summary

Intersection: Plains Rd E & Birchwood Ave | **Count Date:** 23-Oct-24 | **Municipality:** Burlington

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*6*	*0*	*6*	*12*	*7*
9:00:00	*3*	*0*	*9*	*12*	*7*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*8*	*1*	*7*	*16*	*9*
18:00:00	*2*	*0*	*7*	*9*	*12*
Totals:	19	1	29	49	35

North/South Total Approaches: 111

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*2*	*0*	*6*	*8*	*8*
9:00:00	*4*	*0*	*30*	*34*	*8*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*1*	*0*	*9*	*10*	*13*
18:00:00	*1*	*0*	*9*	*10*	*10*
S Totals:	8	0	54	62	39

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*6*	*433*	*4*	*443*	*1*
9:00:00	*4*	*543*	*1*	*548*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*18*	*1249*	*8*	*1275*	*0*
18:00:00	*11*	*1239*	*5*	*1255*	*0*
Totals:	39	3464	18	3521	1

East/West Total Approaches: 6692

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*4*	*703*	*0*	*707*	*1*
9:00:00	*2*	*928*	*6*	*936*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*5*	*749*	*9*	*763*	*0*
18:00:00	*7*	*750*	*8*	*765*	*0*
W Totals:	18	3130	23	3171	1

Calculated Values for Traffic Crossing Major Street

Hours Ending:	*7:00*	*8:00*	*9:00*	*16:00*	*17:00*	*18:00*	*0:00*	*0:00*
Crossing Values:	*0*	*10*	*7*	*0*	*10*	*3*	*0*	*0*

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 23-Oct-24 Site #: 2419500001

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Heavys - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
7:45:00	3	3	0	0	4	3	0	0	0	0	0	0	1	0	0	0	0	0	2	2
8:00:00	5	2	0	0	6	2	0	0	0	0	0	0	1	0	0	0	0	0	7	5
8:15:00	6	1	0	0	10	4	0	0	0	0	0	0	1	0	0	0	0	0	10	3
8:30:00	7	1	0	0	14	4	0	0	0	0	0	0	1	0	0	0	0	0	12	2
8:45:00	7	0	0	0	15	1	0	0	0	0	0	0	1	0	0	0	0	0	13	1
9:00:00	8	1	0	0	15	0	0	0	0	0	0	0	1	0	0	0	0	0	14	1
9:15:00	8	0	0	0	15	0	0	0	0	0	0	0	1	0	0	0	0	0	14	0
16:00:00	8	0	0	0	15	0	0	0	0	0	0	0	1	0	0	0	0	0	14	0
16:15:00	14	6	1	1	18	3	0	0	0	0	0	0	1	0	0	0	0	0	15	1
16:30:00	14	0	1	0	18	0	0	0	0	0	0	0	1	0	0	0	0	0	19	4
16:45:00	14	0	1	0	20	2	0	0	0	0	0	0	1	0	0	0	0	0	23	4
17:00:00	16	2	1	0	22	2	0	0	0	0	0	0	1	0	0	0	0	0	23	0
17:15:00	17	1	1	0	24	2	0	0	0	0	0	0	1	0	0	0	0	0	25	2
17:30:00	18	1	1	0	27	3	0	0	0	0	0	0	1	0	0	0	0	0	26	1
17:45:00	18	0	1	0	27	0	0	0	0	0	0	0	1	0	0	0	0	0	28	2
18:00:00	18	0	1	0	29	2	0	0	0	0	0	0	1	0	0	0	0	0	35	7
18:15:00	18	0	1	0	29	0	0	0	0	0	0	0	1	0	0	0	0	0	35	0
18:15:15	18	0	1	0	29	0	0	0	0	0	0	0	1	0	0	0	0	0	35	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 23-Oct-24 Site #: 2419500001

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Heavys - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	1	1	75	75	1	1	0	0	1	1	0	0	0	0	5	5	0	0	0	0
7:30:00	1	0	169	94	2	1	0	0	2	1	0	0	0	0	8	3	0	0	0	0
7:45:00	2	1	269	100	3	1	1	1	5	3	0	0	0	0	12	4	0	0	0	0
8:00:00	5	3	403	134	4	1	1	0	10	5	0	0	0	0	20	8	0	0	1	1
8:15:00	6	1	538	135	4	0	1	0	12	2	0	0	0	0	24	4	0	0	1	0
8:30:00	6	0	668	130	5	1	1	0	13	1	0	0	0	0	28	4	0	0	1	0
8:45:00	7	1	819	151	5	0	1	0	15	2	0	0	0	0	30	2	0	0	1	0
9:00:00	9	2	922	103	5	0	1	0	17	2	0	0	0	0	37	7	0	0	1	0
9:15:00	9	0	922	0	5	0	1	0	17	0	0	0	0	0	37	0	0	0	1	0
16:00:00	9	0	922	0	5	0	1	0	17	0	0	0	0	0	37	0	0	0	1	0
16:15:00	14	5	1185	263	6	1	1	0	20	3	0	0	0	0	40	3	0	0	1	0
16:30:00	21	7	1515	330	8	2	1	0	23	3	0	0	0	0	43	3	0	0	1	0
16:45:00	25	4	1825	310	9	1	1	0	25	2	0	0	0	0	48	5	0	0	1	0
17:00:00	27	2	2144	319	13	4	1	0	29	4	0	0	0	0	52	4	0	0	1	0
17:15:00	30	3	2473	329	14	1	1	0	32	3	0	0	0	0	54	2	0	0	1	0
17:30:00	31	1	2774	301	14	0	1	0	34	2	0	0	0	0	57	3	0	0	1	0
17:45:00	36	5	3084	310	17	3	1	0	36	2	0	0	0	0	60	3	0	0	1	0
18:00:00	38	2	3364	280	18	1	1	0	37	1	0	0	0	0	63	3	0	0	1	0
18:15:00	38	0	3364	0	18	0	1	0	37	0	0	0	0	0	63	0	0	0	1	0
18:15:15	38	0	3364	0	18	0	1	0	37	0	0	0	0	0	63	0	0	0	1	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 23-Oct-24 Site #: 2419500001

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Heavys - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	2
7:30:00	0	0	0	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0
7:45:00	2	2	0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	3	1
8:00:00	2	0	0	0	6	2	0	0	0	0	0	0	0	0	0	0	0	0	8	5
8:15:00	4	2	0	0	23	17	0	0	0	0	0	0	0	0	0	0	0	0	10	2
8:30:00	4	0	0	0	30	7	0	0	0	0	0	0	0	0	0	0	0	0	12	2
8:45:00	5	1	0	0	34	4	0	0	0	0	0	0	0	0	0	0	0	0	13	1
9:00:00	6	1	0	0	36	2	0	0	0	0	0	0	0	0	0	0	0	0	16	3
9:15:00	6	0	0	0	36	0	0	0	0	0	0	0	0	0	0	0	0	0	16	0
16:00:00	6	0	0	0	36	0	0	0	0	0	0	0	0	0	0	0	0	0	16	0
16:15:00	6	0	0	0	36	0	0	0	0	0	0	0	0	0	0	0	0	0	21	5
16:30:00	6	0	0	0	38	2	0	0	0	0	0	0	0	0	0	0	0	0	24	3
16:45:00	6	0	0	0	40	2	0	0	0	0	0	0	1	1	0	0	0	0	25	1
17:00:00	6	0	0	0	45	5	0	0	0	0	0	0	1	0	0	0	0	0	29	4
17:15:00	7	1	0	0	46	1	0	0	0	0	0	0	1	0	0	0	0	0	32	3
17:30:00	7	0	0	0	52	6	0	0	0	0	0	0	1	0	0	0	0	0	34	2
17:45:00	7	0	0	0	53	1	0	0	0	0	0	0	1	0	0	0	0	0	36	2
18:00:00	7	0	0	0	54	1	0	0	0	0	0	0	1	0	0	0	0	0	39	3
18:15:00	7	0	0	0	54	0	0	0	0	0	0	0	1	0	0	0	0	0	39	0
18:15:15	7	0	0	0	54	0	0	0	0	0	0	0	1	0	0	0	0	0	39	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 23-Oct-24 Site #: 2419500001

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	139	139	0	0	0	0	3	3	0	0	1	1	2	2	0	0	0	0
7:30:00	1	1	288	149	0	0	0	0	6	3	0	0	1	0	6	4	0	0	0	0
7:45:00	3	2	482	194	0	0	0	0	10	4	0	0	1	0	10	4	0	0	0	0
8:00:00	3	0	673	191	0	0	0	0	12	2	0	0	1	0	18	8	0	0	1	1
8:15:00	5	2	881	208	0	0	0	0	15	3	0	0	1	0	25	7	0	0	1	0
8:30:00	5	0	1118	237	2	2	0	0	16	1	0	0	1	0	34	9	0	0	1	0
8:45:00	5	0	1341	223	3	1	0	0	16	0	0	0	1	0	39	5	0	0	1	0
9:00:00	5	0	1560	219	6	3	0	0	23	7	0	0	1	0	48	9	0	0	1	0
9:15:00	5	0	1560	0	6	0	0	0	23	0	0	0	1	0	48	0	0	0	1	0
16:00:00	5	0	1560	0	6	0	0	0	23	0	0	0	1	0	48	0	0	0	1	0
16:15:00	6	1	1730	170	10	4	0	0	25	2	0	0	1	0	51	3	0	0	1	0
16:30:00	8	2	1906	176	12	2	0	0	25	0	0	0	1	0	53	2	0	0	1	0
16:45:00	10	2	2092	186	13	1	0	0	27	2	0	0	1	0	56	3	0	0	1	0
17:00:00	10	0	2294	202	15	2	0	0	27	0	0	0	1	0	59	3	0	0	1	0
17:15:00	12	2	2490	196	17	2	0	0	29	2	0	0	1	0	60	1	0	0	1	0
17:30:00	12	0	2691	201	18	1	0	0	30	1	0	0	1	0	63	3	0	0	1	0
17:45:00	15	3	2855	164	21	3	0	0	30	0	0	0	1	0	63	0	0	0	1	0
18:00:00	17	2	3036	181	23	2	0	0	30	0	0	0	1	0	64	1	0	0	1	0
18:15:00	17	0	3036	0	23	0	0	0	30	0	0	0	1	0	64	0	0	0	1	0
18:15:15	17	0	3036	0	23	0	0	0	30	0	0	0	1	0	64	0	0	0	1	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 7:45:00
To: 8:45:00

Municipality: Burlington
Site #: 2419500002
Intersection: Plains Rd E & Glenwood Ave
TFR File #: 1
Count date: 23-Oct-24

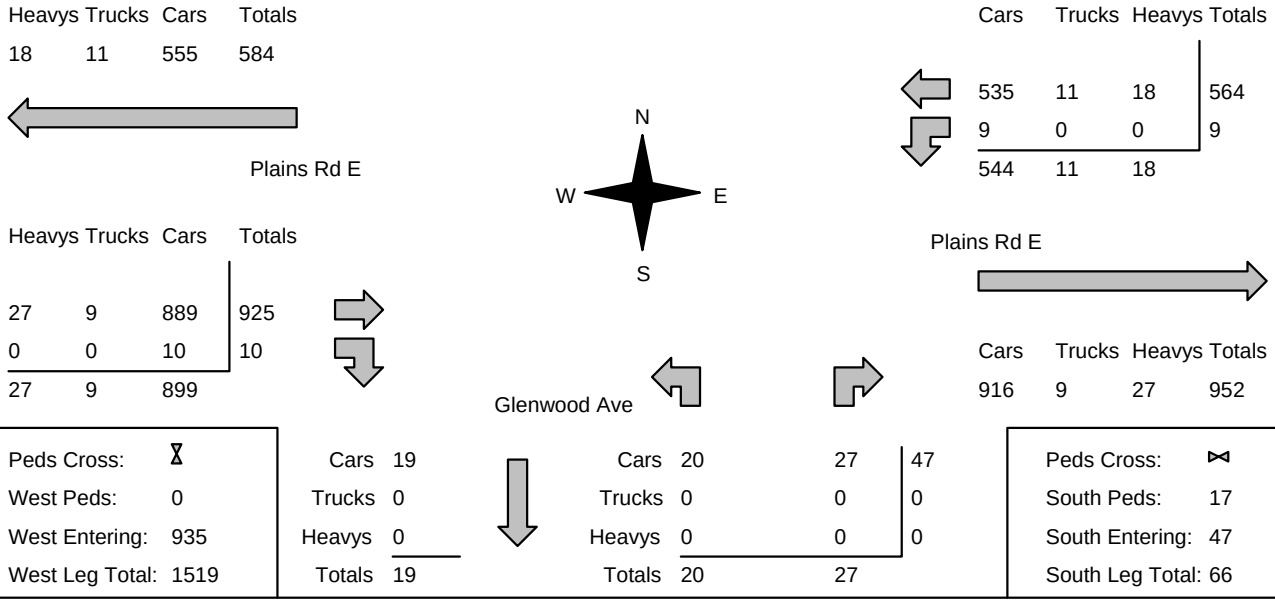
Weather conditions:

Person counted:
Person prepared:
Person checked:

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

Major Road: Plains Rd E runs W/E

East Leg Total: 1525
East Entering: 573
East Peds: 0
Peds Cross: ⧖



Peds Cross: ⧖
West Peds: 0
West Entering: 935
West Leg Total: 1519

Cars 19
Trucks 0
Heavys 0
Totals 19

Cars 20 27 47
Trucks 0 0 0
Heavys 0 0 0
Totals 20 27

Peds Cross: ⋈
South Peds: 17
South Entering: 47
South Leg Total: 66

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 18:00:00

One Hour Peak
From: 16:15:00
To: 17:15:00

Municipality: Burlington
Site #: 2419500002
Intersection: Plains Rd E & Glenwood Ave
TFR File #: 1
Count date: 23-Oct-24

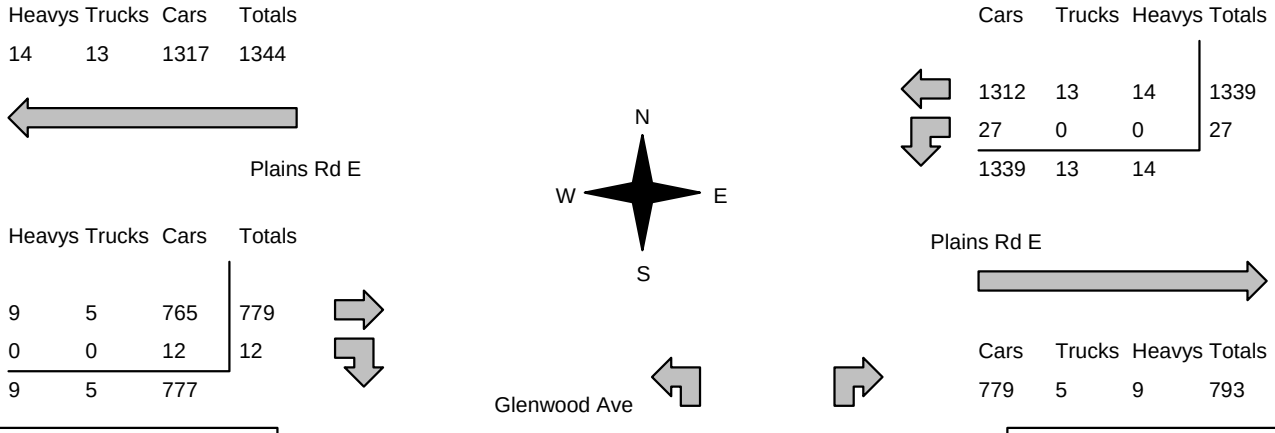
Weather conditions:

Person counted:
Person prepared:
Person checked:

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

Major Road: Plains Rd E runs W/E

East Leg Total: 2159
East Entering: 1366
East Peds: 0
Peds Cross: ⧖



Peds Cross: ⧖
West Peds: 0
West Entering: 791
West Leg Total: 2135

Cars 39
Trucks 0
Heavys 0
Totals 39

Cars 5 14 19
Trucks 0 0 0
Heavys 0 0 0
Totals 5 14

Peds Cross: ⋈
South Peds: 14
South Entering: 19
South Leg Total: 58

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Total Count Diagram

Municipality: Burlington
Site #: 2419500002
Intersection: Plains Rd E & Glenwood Ave
TFR File #: 1
Count date: 23-Oct-24

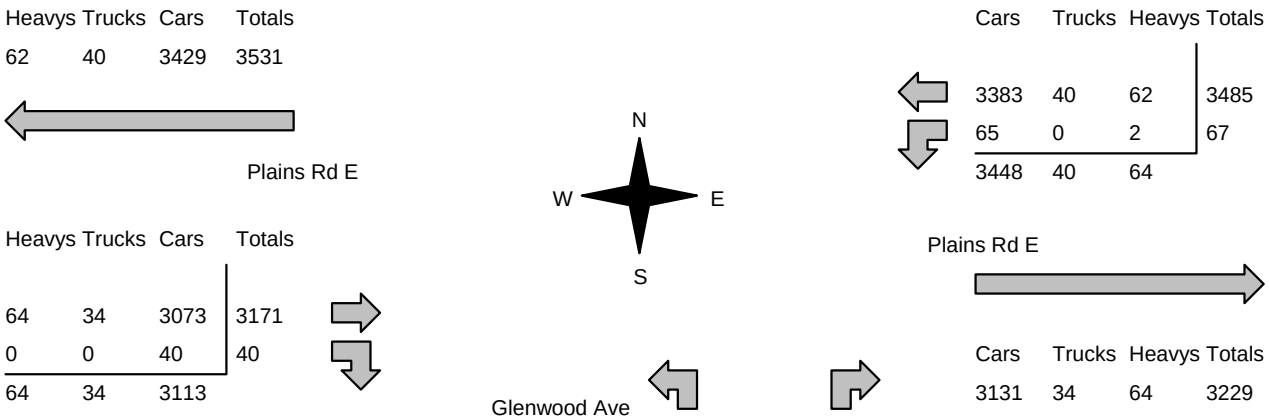
Weather conditions:

Person counted:
Person prepared:
Person checked:

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

Major Road: Plains Rd E runs W/E

East Leg Total: 6781
East Entering: 3552
East Peds: 0
Peds Cross: ⧖



Peds Cross: ⧖
West Peds: 0
West Entering: 3211
West Leg Total: 6742

Cars 105
Trucks 0
Heavys 2
Totals 107

Cars 46 58 104
Trucks 0 0 0
Heavys 0 0 0
Totals 46 58

Peds Cross: ⋈
South Peds: 44
South Entering: 104
South Leg Total: 211

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Traffic Count Summary

Intersection: Plains Rd E & Glenwood Ave | **Count Date:** 23-Oct-24 | **Municipality:** Burlington

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*0*	*0*	*0*	*0*	*0*
9:00:00	*0*	*0*	*0*	*0*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*0*	*0*	*0*	*0*	*0*
18:00:00	*0*	*0*	*0*	*0*	*0*
Totals:	0	0	0	0	0

North/South Total Approaches: 104

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*19*	*0*	*11*	*30*	*6*
9:00:00	*13*	*0*	*24*	*37*	*15*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*6*	*0*	*12*	*18*	*14*
18:00:00	*8*	*0*	*11*	*19*	*9*
S Totals:	46	0	58	104	44

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*10*	*423*	*0*	*433*	*0*
9:00:00	*6*	*533*	*0*	*539*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*26*	*1275*	*0*	*1301*	*0*
18:00:00	*25*	*1254*	*0*	*1279*	*0*
Totals:	67	3485	0	3552	0

East/West Total Approaches: 6763

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	*0*	*0*	*0*	*0*	*0*
8:00:00	*0*	*709*	*11*	*720*	*0*
9:00:00	*0*	*958*	*9*	*967*	*0*
16:00:00	*0*	*0*	*0*	*0*	*0*
17:00:00	*0*	*754*	*10*	*764*	*0*
18:00:00	*0*	*750*	*10*	*760*	*0*
W Totals:	0	3171	40	3211	0

Calculated Values for Traffic Crossing Major Street

Hours Ending:	*7:00*	*8:00*	*9:00*	*16:00*	*17:00*	*18:00*	*0:00*	*0:00*
Crossing Values:	*0*	*19*	*13*	*0*	*6*	*8*	*0*	*0*

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 23-Oct-24 Site #: 2419500002

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Heavys - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 23-Oct-24 Site #: 2419500002

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Heavys - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	2	2	73	73	0	0	0	0	1	1	0	0	0	0	5	5	0	0	0	0
7:30:00	3	1	166	93	0	0	0	0	2	1	0	0	0	0	7	2	0	0	0	0
7:45:00	5	2	262	96	0	0	0	0	6	4	0	0	1	1	11	4	0	0	0	0
8:00:00	9	4	393	131	0	0	0	0	11	5	0	0	1	0	19	8	0	0	0	0
8:15:00	10	1	525	132	0	0	0	0	13	2	0	0	1	0	23	4	0	0	0	0
8:30:00	11	1	647	122	0	0	0	0	15	2	0	0	1	0	27	4	0	0	0	0
8:45:00	14	3	797	150	0	0	0	0	17	2	0	0	1	0	29	2	0	0	0	0
9:00:00	15	1	901	104	0	0	0	0	19	2	0	0	1	0	36	7	0	0	0	0
9:15:00	15	0	901	0	0	0	0	0	19	0	0	0	1	0	36	0	0	0	0	0
16:00:00	15	0	901	0	0	0	0	0	19	0	0	0	1	0	36	0	0	0	0	0
16:15:00	20	5	1166	265	0	0	0	0	22	3	0	0	2	1	39	3	0	0	0	0
16:30:00	27	7	1512	346	0	0	0	0	25	3	0	0	2	0	42	3	0	0	0	0
16:45:00	34	7	1831	319	0	0	0	0	27	2	0	0	2	0	47	5	0	0	0	0
17:00:00	40	6	2148	317	0	0	0	0	32	5	0	0	2	0	51	4	0	0	0	0
17:15:00	47	7	2478	330	0	0	0	0	35	3	0	0	2	0	53	2	0	0	0	0
17:30:00	55	8	2782	304	0	0	0	0	37	2	0	0	2	0	56	3	0	0	0	0
17:45:00	61	6	3099	317	0	0	0	0	39	2	0	0	2	0	59	3	0	0	0	0
18:00:00	65	4	3383	284	0	0	0	0	40	1	0	0	2	0	62	3	0	0	0	0
18:15:00	65	0	3383	0	0	0	0	0	40	0	0	0	2	0	62	0	0	0	0	0
18:15:15	65	0	3383	0	0	0	0	0	40	0	0	0	2	0	62	0	0	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 23-Oct-24 Site #: 2419500002

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Heavys - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	4	4	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1
7:30:00	6	2	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0
7:45:00	12	6	0	0	7	5	0	0	0	0	0	0	0	0	0	0	0	0	1	0
8:00:00	19	7	0	0	11	4	0	0	0	0	0	0	0	0	0	0	0	0	6	5
8:15:00	22	3	0	0	19	8	0	0	0	0	0	0	0	0	0	0	0	0	10	4
8:30:00	29	7	0	0	30	11	0	0	0	0	0	0	0	0	0	0	0	0	16	6
8:45:00	32	3	0	0	34	4	0	0	0	0	0	0	0	0	0	0	0	0	18	2
9:00:00	32	0	0	0	35	1	0	0	0	0	0	0	0	0	0	0	0	0	21	3
9:15:00	32	0	0	0	35	0	0	0	0	0	0	0	0	0	0	0	0	0	21	0
16:00:00	32	0	0	0	35	0	0	0	0	0	0	0	0	0	0	0	0	0	21	0
16:15:00	36	4	0	0	36	1	0	0	0	0	0	0	0	0	0	0	0	0	25	4
16:30:00	36	0	0	0	38	2	0	0	0	0	0	0	0	0	0	0	0	0	29	4
16:45:00	36	0	0	0	44	6	0	0	0	0	0	0	0	0	0	0	0	0	31	2
17:00:00	38	2	0	0	47	3	0	0	0	0	0	0	0	0	0	0	0	0	35	4
17:15:00	41	3	0	0	50	3	0	0	0	0	0	0	0	0	0	0	0	0	39	4
17:30:00	42	1	0	0	53	3	0	0	0	0	0	0	0	0	0	0	0	0	39	0
17:45:00	44	2	0	0	56	3	0	0	0	0	0	0	0	0	0	0	0	0	41	2
18:00:00	46	2	0	0	58	2	0	0	0	0	0	0	0	0	0	0	0	0	44	3
18:15:00	46	0	0	0	58	0	0	0	0	0	0	0	0	0	0	0	0	0	44	0
18:15:15	46	0	0	0	58	0	0	0	0	0	0	0	0	0	0	0	0	0	44	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 23-Oct-24 Site #: 2419500002

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	142	142	0	0	0	0	4	4	0	0	0	0	1	1	0	0	0	0
7:30:00	0	0	293	151	2	2	0	0	7	3	0	0	0	0	6	5	0	0	0	0
7:45:00	0	0	490	197	6	4	0	0	11	4	0	0	0	0	10	4	0	0	0	0
8:00:00	0	0	677	187	11	5	0	0	14	3	0	0	0	0	18	8	0	0	0	0
8:15:00	0	0	906	229	14	3	0	0	18	4	0	0	0	0	24	6	0	0	0	0
8:30:00	0	0	1150	244	16	2	0	0	19	1	0	0	0	0	33	9	0	0	0	0
8:45:00	0	0	1379	229	16	0	0	0	20	1	0	0	0	0	37	4	0	0	0	0
9:00:00	0	0	1593	214	20	4	0	0	26	6	0	0	0	0	48	11	0	0	0	0
9:15:00	0	0	1593	0	20	0	0	0	26	0	0	0	0	0	48	0	0	0	0	0
16:00:00	0	0	1593	0	20	0	0	0	26	0	0	0	0	0	48	0	0	0	0	0
16:15:00	0	0	1764	171	22	2	0	0	28	2	0	0	0	0	51	3	0	0	0	0
16:30:00	0	0	1939	175	23	1	0	0	28	0	0	0	0	0	53	2	0	0	0	0
16:45:00	0	0	2127	188	26	3	0	0	31	3	0	0	0	0	56	3	0	0	0	0
17:00:00	0	0	2331	204	30	4	0	0	31	0	0	0	0	0	59	3	0	0	0	0
17:15:00	0	0	2529	198	34	4	0	0	33	2	0	0	0	0	60	1	0	0	0	0
17:30:00	0	0	2733	204	35	1	0	0	34	1	0	0	0	0	63	3	0	0	0	0
17:45:00	0	0	2897	164	40	5	0	0	34	0	0	0	0	0	63	0	0	0	0	0
18:00:00	0	0	3073	176	40	0	0	0	34	0	0	0	0	0	64	1	0	0	0	0
18:15:00	0	0	3073	0	40	0	0	0	34	0	0	0	0	0	64	0	0	0	0	0
18:15:15	0	0	3073	0	40	0	0	0	34	0	0	0	0	0	64	0	0	0	0	0

201468-PLAINS RD @ WATERDOWN RD

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 7:30:00
To: 8:30:00

Municipality: Burlington
Site #: 2014680000
Intersection: PLAINSE RD & WATERDOWN RD
TFR File #: 2
Count date: 5-Jun-2024

Weather conditions:
Partly Cloudy/Dry

Person(s) who counted:
Pyramid Traffic Inc

**** Signalized Intersection ****

Major Road: PLAINSE RD runs W/E

North Leg Total: 1305
North Entering: 492
North Peds: 14
Peds Cross: ⋈

Cyclists	0	1	0	1
Trucks	12	11	11	34
Cars	130	184	143	457
Totals	142	196	154	

Cyclists	1
Trucks	31
Cars	781
Totals	813

East Leg Total: 1369
East Entering: 505
East Peds: 34
Peds Cross: ⧖

WATERDOWN RD

Cyclists	Trucks	Cars	Totals
0	37	424	461

Cars	Trucks	Cyclists	Totals
140	8	0	148
248	22	0	270
81	6	0	87
469	36	0	

PLAINS RD W

N
W E
S

PLAINS RD E

Cyclists	Trucks	Cars	Totals
1	15	436	452
3	38	601	642
1	5	73	79
5	58	1110	

Cars	Trucks	Cyclists	Totals
808	53	3	864

LASALLE PARK RD

Peds Cross: ⧖
West Peds: 10
West Entering: 1173
West Leg Total: 1634

Cars	338
Trucks	22
Cyclists	2
Totals	362

Cars	46	205	64	315
Trucks	3	8	4	15
Cyclists	0	0	0	0
Totals	49	213	68	

Peds Cross: ⋈
South Peds: 0
South Entering: 330
South Leg Total: 692

Comments

201468-PLAINS RD @ WATERDOWN RD

Mid-day Peak Diagram

Specified Period
From: 11:00:00
To: 14:00:00

One Hour Peak
From: 11:00:00
To: 12:00:00

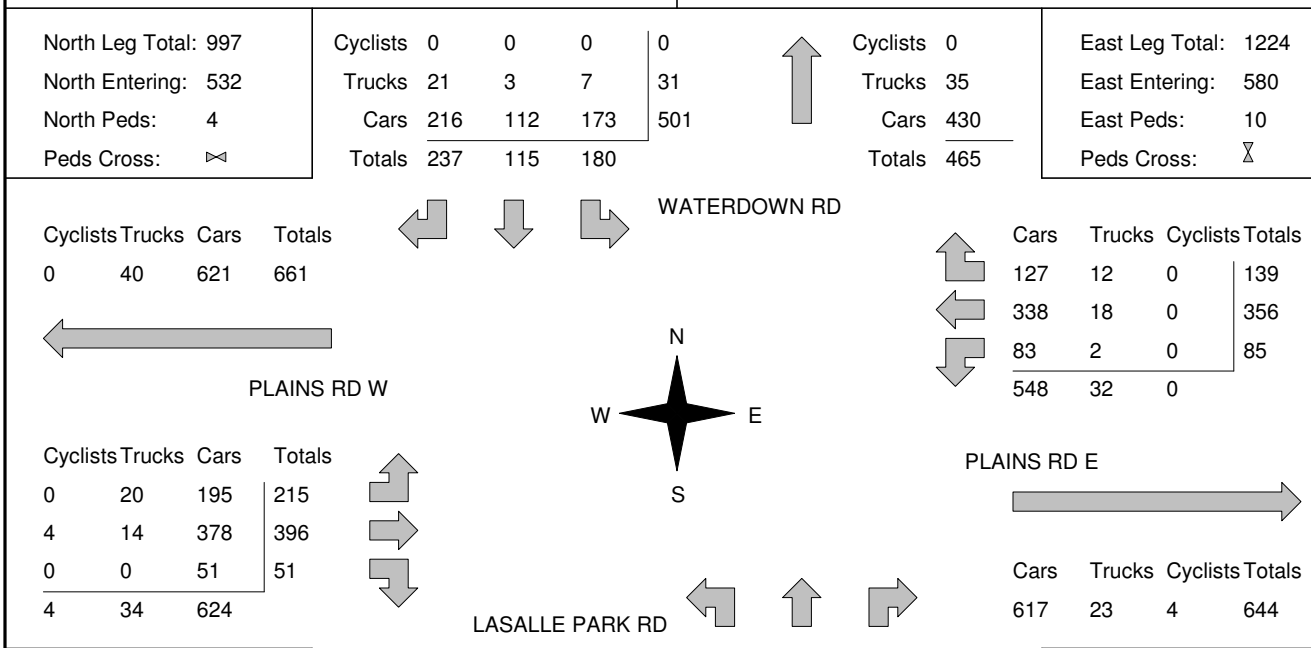
Municipality: Burlington
Site #: 2014680000
Intersection: PLAINSE RD & WATERDOWN RD
TFR File #: 2
Count date: 5-Jun-2024

Weather conditions:
Partly Cloudy/Dry

Person(s) who counted:
Pyramid Traffic Inc

**** Signalized Intersection ****

Major Road: PLAINSE RD runs W/E



Comments

201468-PLAINS RD @ WATERDOWN RD

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 18:00:00

One Hour Peak
From: 16:30:00
To: 17:30:00

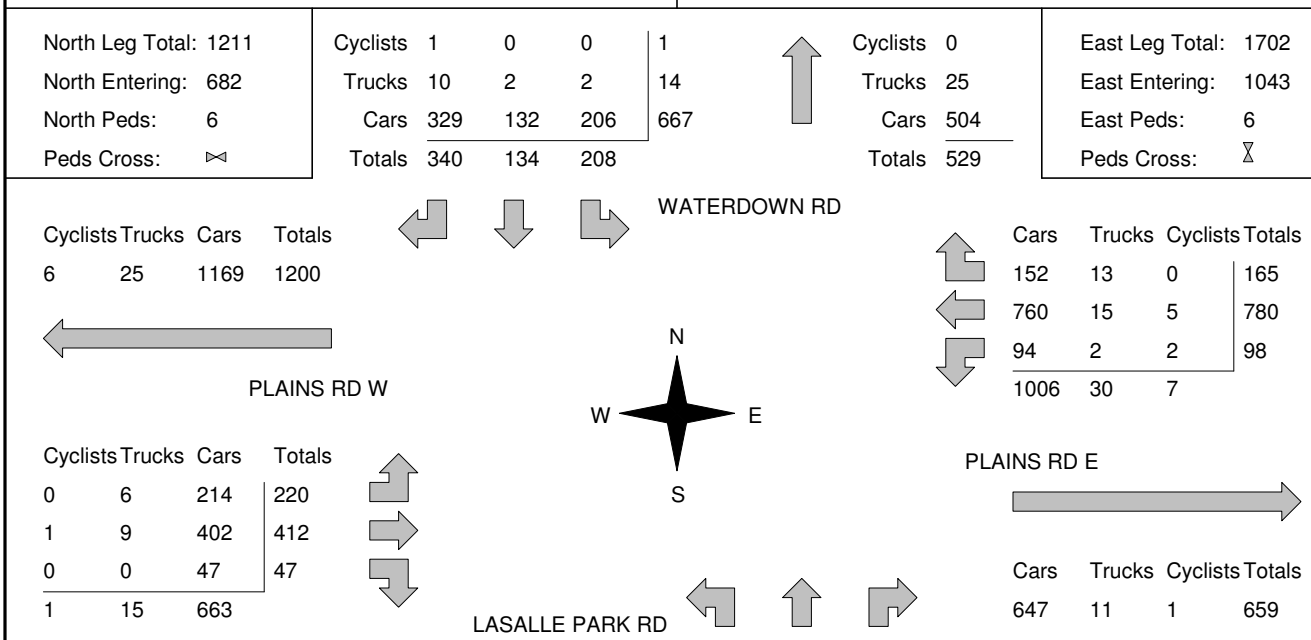
Municipality: Burlington
Site #: 2014680000
Intersection: PLAINSE RD & WATERDOWN RD
TFR File #: 2
Count date: 5-Jun-2024

Weather conditions:
Partly Cloudy/Dry

Person(s) who counted:
Pyramid Traffic Inc

**** Signalized Intersection ****

Major Road: PLAINSE RD runs W/E



Comments

201468-PLAINS RD @ WATERDOWN RD

Total Count Diagram

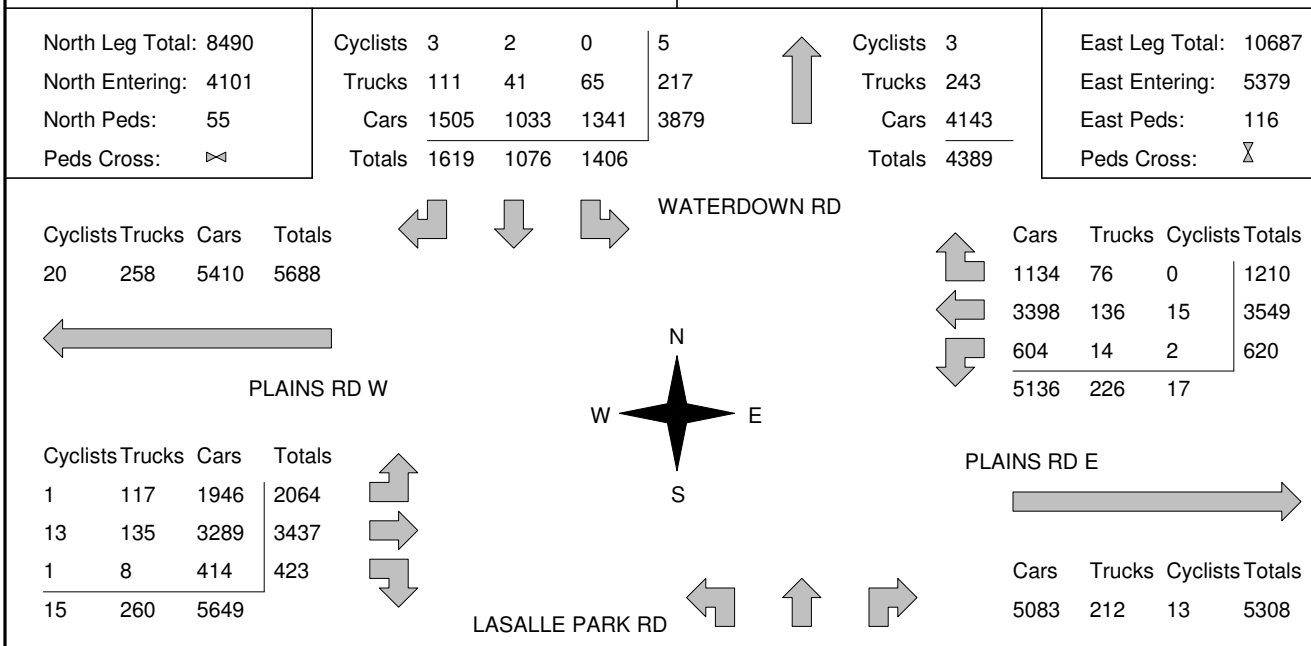
Municipality: Burlington
Site #: 2014680000
Intersection: PLAINSE RD & WATERDOWN RD
TFR File #: 2
Count date: 5-Jun-2024

Weather conditions:
Partly Cloudy/Dry

Person(s) who counted:
Pyramid Traffic Inc

**** Signalized Intersection ****

Major Road: PLAINSE RD runs W/E



Comments

201468-PLAINS RD @ WATERDOWN RD
Traffic Count Summary

Intersection: PLAINSE RD & WATERDOWN RD | **Count Date:** 5-Jun-2024 | **Municipality:** Burlington

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	North/South Total Approaches
7:00:00	0	0	0	0	0	0
8:00:00	96	137	116	349	13	564
9:00:00	180	181	177	538	5	863
11:00:00	0	0	0	0	0	0
12:00:00	180	115	237	532	4	779
13:00:00	176	122	170	468	7	676
14:00:00	172	118	147	437	4	718
15:00:00	0	0	0	0	0	0
16:00:00	178	141	207	526	7	828
17:00:00	155	121	253	529	10	832
18:00:00	269	141	312	722	5	941
Totals:	1406	1076	1619	4101	55	6201

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	0	0	0	0
8:00:00	28	140	47	215	5
9:00:00	67	201	57	325	5
11:00:00	0	0	0	0	0
12:00:00	68	111	68	247	15
13:00:00	56	101	51	208	3
14:00:00	52	130	99	281	1
15:00:00	0	0	0	0	0
16:00:00	84	160	58	302	5
17:00:00	98	159	46	303	0
18:00:00	67	113	39	219	1
Totals:	520	1115	465	2100	35

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	East/West Total Approaches
7:00:00	0	0	0	0	0	0
8:00:00	47	226	119	392	25	1558
9:00:00	78	285	161	524	26	1542
11:00:00	0	0	0	0	0	0
12:00:00	85	356	139	580	10	1242
13:00:00	90	410	139	639	21	1243
14:00:00	89	363	153	605	6	1185
15:00:00	0	0	0	0	0	0
16:00:00	72	509	165	746	9	1383
17:00:00	80	675	179	934	14	1619
18:00:00	79	725	155	959	5	1531
Totals:	620	3549	1210	5379	116	11303

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	0	0	0	0
8:00:00	441	650	75	1166	9
9:00:00	406	546	66	1018	5
11:00:00	0	0	0	0	0
12:00:00	215	396	51	662	26
13:00:00	199	362	43	604	7
14:00:00	203	328	49	580	11
15:00:00	0	0	0	0	0
16:00:00	190	394	53	637	9
17:00:00	214	422	49	685	4
18:00:00	196	339	37	572	8
Totals:	2064	3437	423	5924	79

Calculated Values for Traffic Crossing Major Street

Hours Ending:	8:00	9:00	12:00	13:00	14:00	16:00	17:00	18:00
Crossing Values:	298	479	399	382	371	440	430	490

201469-PLAINS RD E @ ST MATTHEWS AVE

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 7:45:00
To: 8:45:00

Municipality: Burlington
Site #: 2014690000
Intersection: PLAINS RD E & ST MATTHEWS A\
TFR File #: 6
Count date: 14-Nov-2023

Weather conditions:
Cloudy/Dry

Person(s) who counted:
Jules

**** Signalized Intersection ****

Major Road: PLAINS RD E runs W/E

North Leg Total: 18
North Entering: 16
North Peds: 3
Peds Cross: ⋈

Cyclists	1	0	1
Trucks	0	0	0
Cars	13	2	15
Totals	14	2	

Cyclists	0
Trucks	0
Cars	2
Totals	2

East Leg Total: 1522
East Entering: 563
East Peds: 3
Peds Cross: ⧖

ST MATTHEWS AVE

Cyclists	Trucks	Cars	Totals
6	38	533	577

PLAINS RD E

Cyclists	Trucks	Cars	Totals
0	0	2	2
3	53	901	957
3	53	903	

N
W E
S

Cars	Trucks	Cyclists	Totals
0	0	0	0
520	38	5	563
520	38	5	

PLAINS RD E

Cars	Trucks	Cyclists	Totals
903	53	3	959

Peds Cross: ⧖
West Peds: 3
West Entering: 959
West Leg Total: 1536

Comments

201469-PLAINS RD E @ ST MATTHEWS AVE

Mid-day Peak Diagram

Specified Period
From: 11:00:00
To: 13:30:00

One Hour Peak
From: 12:00:00
To: 13:00:00

Municipality: Burlington
Site #: 2014690000
Intersection: PLAINS RD E & ST MATTHEWS A\
TFR File #: 6
Count date: 14-Nov-2023

Weather conditions:
Cloudy/Dry

Person(s) who counted:
Jules

**** Signalized Intersection ****

Major Road: PLAINS RD E runs W/E

North Leg Total: 46
North Entering: 26
North Peds: 10
Peds Cross: ⋈

Cyclists	0	0	0
Trucks	1	1	2
Cars	10	14	24
Totals	11	15	

Cyclists	0
Trucks	2
Cars	18
Totals	20

East Leg Total: 1460
East Entering: 702
East Peds: 2
Peds Cross: ⧖

ST MATTHEWS AVE

Cyclists	Trucks	Cars	Totals
1	31	672	704

Cars	Trucks	Cyclists	Totals
8	1	0	9
662	30	1	693
670	31	1	

PLAINS RD E

N
W E
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Cyclists	Trucks	Cars	Totals
0	1	10	11
2	33	708	743
2	34	718	

PLAINS RD E

Cars	Trucks	Cyclists	Totals
722	34	2	758

Peds Cross: ⧖
West Peds: 0
West Entering: 754
West Leg Total: 1458

Comments

201469-PLAINS RD E @ ST MATTHEWS AVE

Afternoon Peak Diagram

Specified Period
From: 14:30:00
To: 18:00:00

One Hour Peak
From: 16:45:00
To: 17:45:00

Municipality: Burlington
Site #: 2014690000
Intersection: PLAINS RD E & ST MATTHEWS A\
TFR File #: 6
Count date: 14-Nov-2023

Weather conditions:
Cloudy/Dry

Person(s) who counted:
Jules

**** Signalized Intersection ****

Major Road: PLAINS RD E runs W/E

North Leg Total: 67
North Entering: 31
North Peds: 7
Peds Cross: ⋈

Cyclists	0	0	0
Trucks	0	0	0
Cars	12	19	31
Totals	12	19	

Cyclists	0
Trucks	1
Cars	35
Totals	36

East Leg Total: 2282
East Entering: 1438
East Peds: 5
Peds Cross: ⧖

ST MATTHEWS AVE

Cyclists	Trucks	Cars	Totals
2	32	1396	1430

PLAINS RD E

Cyclists	Trucks	Cars	Totals
0	0	16	16
0	12	813	825
0	12	829	

Cars	Trucks	Cyclists	Totals
19	1	0	20
1384	32	2	1418
1403	33	2	

N
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PLAINS RD E

Cars	Trucks	Cyclists	Totals
832	12	0	844

Peds Cross: ⧖
West Peds: 6
West Entering: 841
West Leg Total: 2271

Comments

201469-PLAINS RD E @ ST MATTHEWS AVE

Total Count Diagram

Municipality: Burlington
Site #: 2014690000
Intersection: PLAINS RD E & ST MATTHEWS A\
TFR File #: 6
Count date: 14-Nov-2023

Weather conditions:
Cloudy/Dry

Person(s) who counted:
Jules

**** Signalized Intersection ****

Major Road: PLAINS RD E runs W/E

North Leg Total: 374
North Entering: 204
North Peds: 80
Peds Cross: ⋈

Cyclists	2	0	2
Trucks	9	5	14
Cars	87	101	188
Totals	98	106	

Cyclists	1
Trucks	11
Cars	158
Totals	170

East Leg Total: 13000
East Entering: 6721
East Peds: 70
Peds Cross: ⧖

ST MATTHEWS AVE

Cyclists	Trucks	Cars	Totals
18	295	6419	6732

PLAINS RD E

Cyclists	Trucks	Cars	Totals
1	6	76	83
21	266	5886	6173
22	272	5962	

Cars	Trucks	Cyclists	Totals
82	5	0	87
6332	286	16	6634
6414	291	16	

PLAINS RD E

Cars	Trucks	Cyclists	Totals
5987	271	21	6279

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Peds Cross: ⧖
West Peds: 38
West Entering: 6256
West Leg Total: 12988

Comments

201469-PLAINS RD E @ ST MATTHEWS AVE
Traffic Count Summary

Intersection: PLAINS RD E & ST MATTHEWS A | **Count Date:** 14-Nov-2023 | **Municipality:** Burlington

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	North/South Total Approaches
7:00:00	0	0	0	0	0	0
8:00:00	3	0	11	14	3	14
9:00:00	4	0	12	16	4	16
11:00:00	0	0	0	0	0	0
12:00:00	12	0	12	24	25	24
13:00:00	15	0	11	26	10	26
15:00:00	13	0	13	26	11	26
16:00:00	26	0	7	33	6	33
17:00:00	16	0	17	33	14	33
18:00:00	17	0	15	32	7	32
Totals:	106	0	98	204	80	204

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	0	0	0	0
8:00:00	0	0	0	0	0
9:00:00	0	0	0	0	0
11:00:00	0	0	0	0	0
12:00:00	0	0	0	0	0
13:00:00	0	0	0	0	0
15:00:00	0	0	0	0	0
16:00:00	0	0	0	0	0
17:00:00	0	0	0	0	0
18:00:00	0	0	0	0	0
Totals:	0	0	0	0	0

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	East/West Total Approaches
7:00:00	0	0	0	0	0	0
8:00:00	0	461	1	462	2	1319
9:00:00	0	536	0	536	1	1420
11:00:00	0	0	0	0	0	0
12:00:00	0	642	9	651	18	1374
13:00:00	0	693	9	702	2	1456
15:00:00	0	767	18	785	4	1536
16:00:00	0	887	15	902	37	1618
17:00:00	0	1244	20	1264	2	1996
18:00:00	0	1404	15	1419	4	2258
Totals:	0	6634	87	6721	70	12977

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	0	0	0	0
8:00:00	3	854	0	857	4
9:00:00	5	879	0	884	2
11:00:00	0	0	0	0	0
12:00:00	15	708	0	723	10
13:00:00	11	743	0	754	0
15:00:00	11	740	0	751	9
16:00:00	11	705	0	716	2
17:00:00	14	718	0	732	3
18:00:00	13	826	0	839	8
Totals:	83	6173	0	6256	38

Calculated Values for Traffic Crossing Major Street

Hours Ending:	8:00	9:00	12:00	13:00	15:00	16:00	17:00	18:00
Crossing Values:	9	7	40	17	26	65	21	29

201788-PLAINS RD E @ COOKE BLVD

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 7:45:00
To: 8:45:00

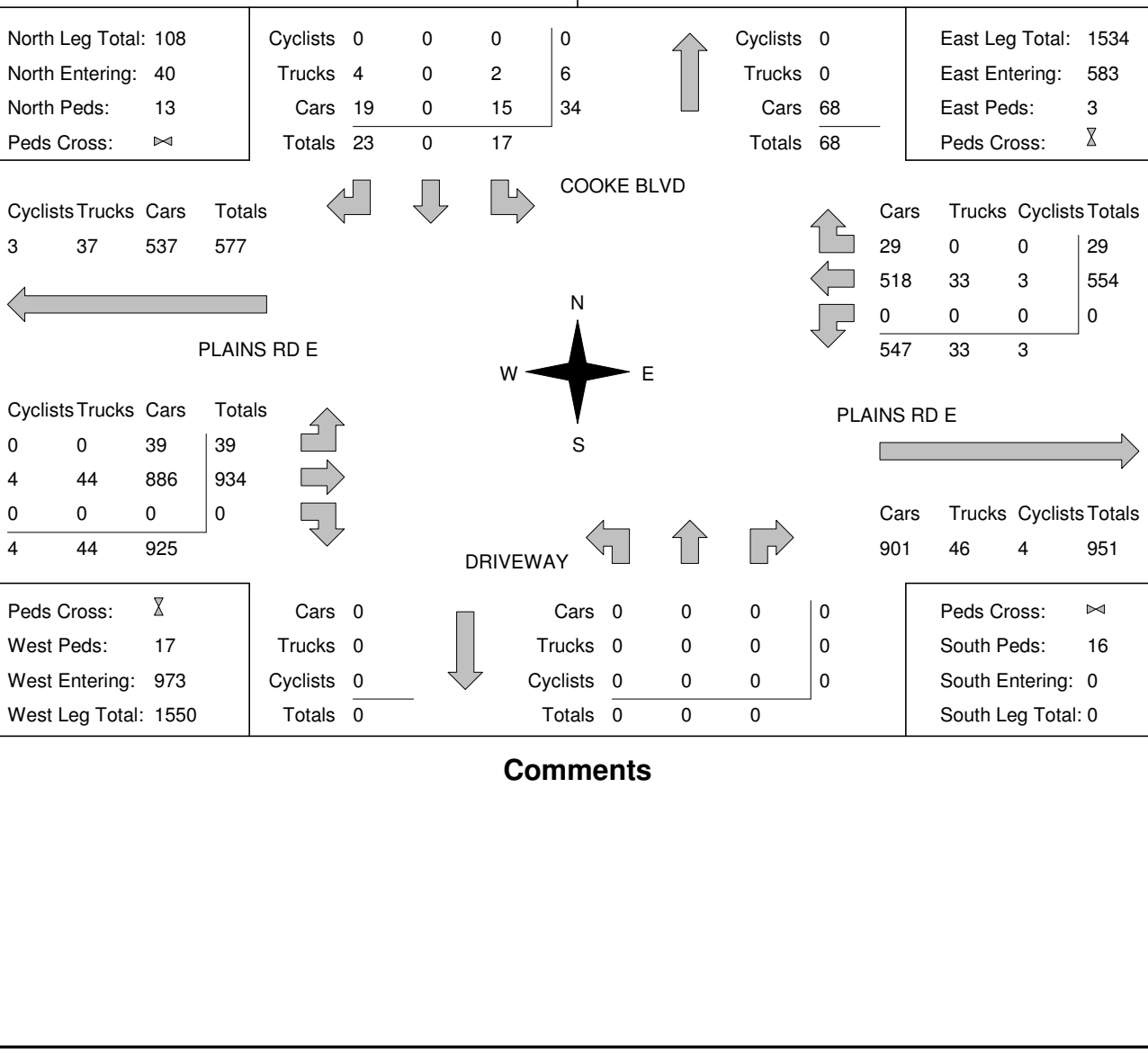
Municipality: Burlington
Site #: 2017880000
Intersection: PLAINS RD E & COOKE BLVD
TFR File #: 5
Count date: 7-Nov-2023

Weather conditions:
Cloudy/Dry

Person(s) who counted:
Ted

**** Signalized Intersection ****

Major Road: PLAINS RD E runs W/E



Comments

201788-PLAINS RD E @ COOKE BLVD

Mid-day Peak Diagram

Specified Period
From: 11:00:00
To: 13:30:00

One Hour Peak
From: 12:15:00
To: 13:15:00

Municipality: Burlington
Site #: 2017880000
Intersection: PLAINS RD E & COOKE BLVD
TFR File #: 5
Count date: 7-Nov-2023

Weather conditions:
Cloudy/Dry

Person(s) who counted:
Ted

**** Signalized Intersection ****

Major Road: PLAINS RD E runs W/E

North Leg Total: 112
North Entering: 54
North Peds: 9
Peds Cross: ⋈

Cyclists	0	0	0	0
Trucks	5	0	0	5
Cars	29	0	20	49
Totals	34	0	20	

Cyclists	0
Trucks	1
Cars	57
Totals	58

East Leg Total: 1450
East Entering: 716
East Peds: 0
Peds Cross: ⧖

COOKE BLVD

Cyclists	Trucks	Cars	Totals
1	33	680	714

Cars	Trucks	Cyclists	Totals
36	0	0	36
651	28	1	680
0	0	0	0
687	28	1	

PLAINS RD E

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Cyclists	Trucks	Cars	Totals
0	1	21	22
0	31	683	714
0	0	0	0
0	32	704	

PLAINS RD E

Cars	Trucks	Cyclists	Totals
703	31	0	734

DRIVEWAY

Peds Cross: ⧖
West Peds: 1
West Entering: 736
West Leg Total: 1450

Cars	0
Trucks	0
Cyclists	0
Totals	0

Cars	0	0	0	0
Trucks	0	0	0	0
Cyclists	0	0	0	0
Totals	0	0	0	

Peds Cross: ⋈
South Peds: 8
South Entering: 0
South Leg Total: 0

Comments

201788-PLAINS RD E @ COOKE BLVD

Afternoon Peak Diagram

Specified Period
From: 14:30:00
To: 18:00:00

One Hour Peak
From: 16:45:00
To: 17:45:00

Municipality: Burlington
Site #: 2017880000
Intersection: PLAINS RD E & COOKE BLVD
TFR File #: 5
Count date: 7-Nov-2023

Weather conditions:
Cloudy/Dry

Person(s) who counted:
Ted

**** Signalized Intersection ****

Major Road: PLAINS RD E runs W/E

North Leg Total: 189
North Entering: 106
North Peds: 11
Peds Cross: ⋈

Cyclists	0	0	0	0
Trucks	2	0	0	2
Cars	39	0	65	104
Totals	41	0	65	

Cyclists	0
Trucks	1
Cars	82
Totals	83

East Leg Total: 1850
East Entering: 1094
East Peds: 6
Peds Cross: ⧖

COOKE BLVD

Cyclists	Trucks	Cars	Totals
2	23	1038	1063

Cars	Trucks	Cyclists	Totals
71	1	0	72
999	21	2	1022
0	0	0	0
1070	22	2	

PLAINS RD E

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Cyclists	Trucks	Cars	Totals
0	0	11	11
0	11	680	691
0	0	0	0
0	11	691	

PLAINS RD E

Cars	Trucks	Cyclists	Totals
745	11	0	756

DRIVEWAY

Peds Cross: ⧖
West Peds: 3
West Entering: 702
West Leg Total: 1765

Cars	0
Trucks	0
Cyclists	0
Totals	0

Cars	0	0	0	0
Trucks	0	0	0	0
Cyclists	0	0	0	0
Totals	0	0	0	

Peds Cross: ⋈
South Peds: 2
South Entering: 0
South Leg Total: 0

Comments

201788-PLAINS RD E @ COOKE BLVD

Total Count Diagram

Municipality: Burlington
Site #: 2017880000
Intersection: PLAINS RD E & COOKE BLVD
TFR File #: 5
Count date: 7-Nov-2023

Weather conditions:
Cloudy/Dry

Person(s) who counted:
Ted

**** Signalized Intersection ****

Major Road: PLAINS RD E runs W/E

North Leg Total: 965
North Entering: 437
North Peds: 118
Peds Cross: ⋈

Cyclists	1	0	0	1
Trucks	21	0	8	29
Cars	205	2	200	407
Totals	227	2	208	

Cyclists	0
Trucks	14
Cars	514
Totals	528

East Leg Total: 12068
East Entering: 6098
East Peds: 22
Peds Cross: ⧖

COOKE BLVD

Cyclists	Trucks	Cars	Totals
11	256	5710	5977

Cars	Trucks	Cyclists	Totals
335	11	0	346
5505	235	10	5750
2	0	0	2
5842	246	10	

PLAINS RD E

N
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Cyclists	Trucks	Cars	Totals
0	3	179	182
8	214	5539	5761
0	0	0	0
8	217	5718	

PLAINS RD E

Cars	Trucks	Cyclists	Totals
5740	222	8	5970

DRIVEWAY

Peds Cross: ⧖
West Peds: 63
West Entering: 5943
West Leg Total: 11920

Cars	4
Trucks	0
Cyclists	0
Totals	4

Cars	0	0	1	1
Trucks	0	0	0	0
Cyclists	0	0	0	0
Totals	0	0	1	

Peds Cross: ⋈
South Peds: 117
South Entering: 1
South Leg Total: 5

Comments

201788-PLAINS RD E @ COOKE BLVD
Traffic Count Summary

Intersection: PLAINS RD E & COOKE BLVD | **Count Date:** 7-Nov-2023 | **Municipality:** Burlington

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	North/South Total Approaches
7:00:00	0	0	0	0	0	0
8:00:00	18	0	31	49	12	49
9:00:00	14	0	26	40	12	40
11:00:00	0	0	0	0	0	0
12:00:00	23	0	13	36	21	36
13:00:00	15	0	33	48	11	48
15:00:00	22	0	23	45	36	45
16:00:00	22	0	17	39	5	40
17:00:00	33	0	32	65	9	65
18:00:00	61	2	52	115	12	115
Totals:	208	2	227	437	118	438

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	0	0	0	0
8:00:00	0	0	0	0	17
9:00:00	0	0	0	0	15
11:00:00	0	0	0	0	0
12:00:00	0	0	0	0	38
13:00:00	0	0	0	0	7
15:00:00	0	0	0	0	16
16:00:00	0	0	1	1	17
17:00:00	0	0	0	0	5
18:00:00	0	0	0	0	2
Totals:	0	0	1	1	117

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	East/West Total Approaches
7:00:00	0	0	0	0	0	0
8:00:00	0	403	38	441	4	1294
9:00:00	0	541	29	570	3	1522
11:00:00	0	0	0	0	0	0
12:00:00	0	644	19	663	3	1389
13:00:00	0	653	35	688	0	1427
15:00:00	1	738	42	781	5	1481
16:00:00	0	808	49	857	1	1507
17:00:00	1	987	56	1044	1	1695
18:00:00	0	976	78	1054	5	1726
Totals:	2	5750	346	6098	22	12041

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	0	0	0	0
8:00:00	65	788	0	853	12
9:00:00	31	921	0	952	8
11:00:00	0	0	0	0	0
12:00:00	11	715	0	726	11
13:00:00	23	716	0	739	2
15:00:00	12	688	0	700	21
16:00:00	15	635	0	650	2
17:00:00	10	641	0	651	5
18:00:00	15	657	0	672	2
Totals:	182	5761	0	5943	63

Calculated Values for Traffic Crossing Major Street

Hours Ending:	8:00	9:00	12:00	13:00	15:00	16:00	17:00	18:00
Crossing Values:	34	25	37	17	48	25	39	70

Appendix C ITE Trip Generation Datasheets

Land Use: 222
Multifamily Housing (High-Rise)

Description

High-rise multifamily housing includes apartments, townhouses, and condominiums. Each building has more than 10 floors of living space. Access to individual dwelling units is through an outside building entrance, a lobby, elevators, and a set of hallways.

Multifamily housing (low-rise) (Land Use 220), multifamily housing (mid-rise) (Land Use 221), off-campus student apartment (high-rise) (Land Use 227), and high-rise residential with ground-floor commercial (Land Use 232) are related land uses.

Land Use Subcategory

Data are presented for two subcategories for this land use: (1) not close to rail transit and (2) close to rail transit. A site is considered close to rail transit if the walking distance between the residential site entrance and the closest rail transit station entrance is ½ mile or less.

Additional Data

For the 12 sites for which both the number of residents and the number of occupied dwelling units were available, there were an average of 1.6 residents per occupied dwelling unit.

For the 26 sites for which the numbers of both total dwelling units and occupied dwelling units were available, an average of 98 percent of the total dwelling units were occupied.

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (https://www.ite.org/technical-resources/topics/trip-and-parking-generation/).

For the 12 sites for which data were provided for both occupied dwelling units and residents, there was an average of 1.6 residents per occupied dwelling unit.

For the 26 sites for which data were provided for both occupied dwelling units and total dwelling units, an average of 98 percent of the units were occupied.

It is expected that the number of bedrooms and number of residents are likely correlated to the trips generated by a residential site. To assist in future analysis, trip generation studies of all multifamily housing should attempt to obtain information on occupancy rate and on the mix of residential unit sizes (i.e., number of units by number of bedrooms at the site complex).

The sites were surveyed in the 1980s, the 2000s, and the 2010s in California, District of Columbia, Maryland, New Jersey, New York, Ontario (CAN), Oregon, Pennsylvania, and Virginia.

Source Numbers

105, 168, 169, 237, 321, 356, 818, 862, 901, 910, 949, 963, 964, 966, 967, 1056, 1057, 1076, 1077

Multifamily Housing (High-Rise)
Not Close to Rail Transit (222)

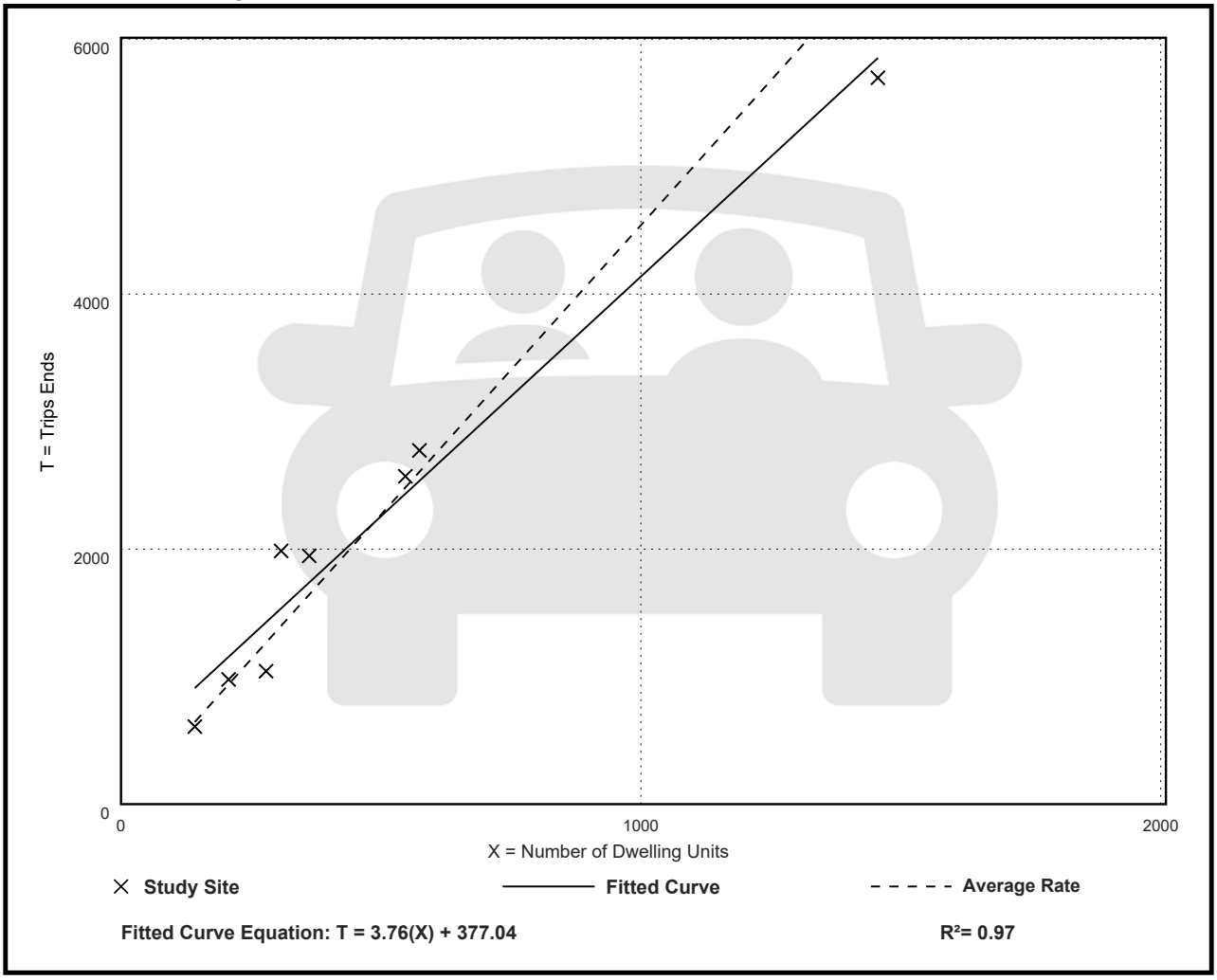
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 8
Avg. Num. of Dwelling Units: 484
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
4.54	3.74 - 6.45	0.81

Data Plot and Equation



Fitted Curve Equation: T = 3.76(X) + 377.04

R^2= 0.97

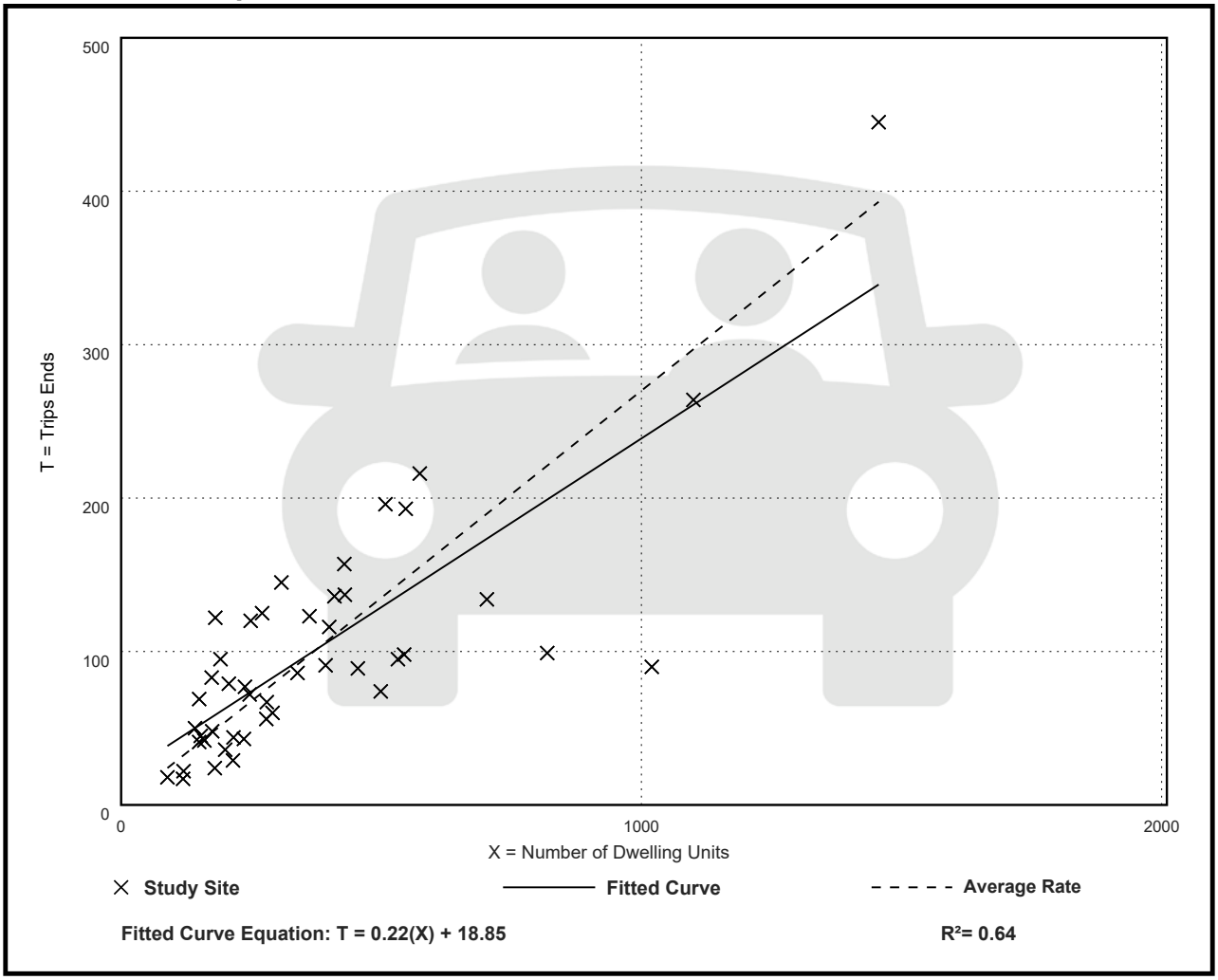
Multifamily Housing (High-Rise)
Not Close to Rail Transit (222)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
Number of Studies: 45
Avg. Num. of Dwelling Units: 372
Directional Distribution: 34% entering, 66% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.27	0.09 - 0.67	0.11

Data Plot and Equation



Fitted Curve Equation: T = 0.22(X) + 18.85

R^2= 0.64

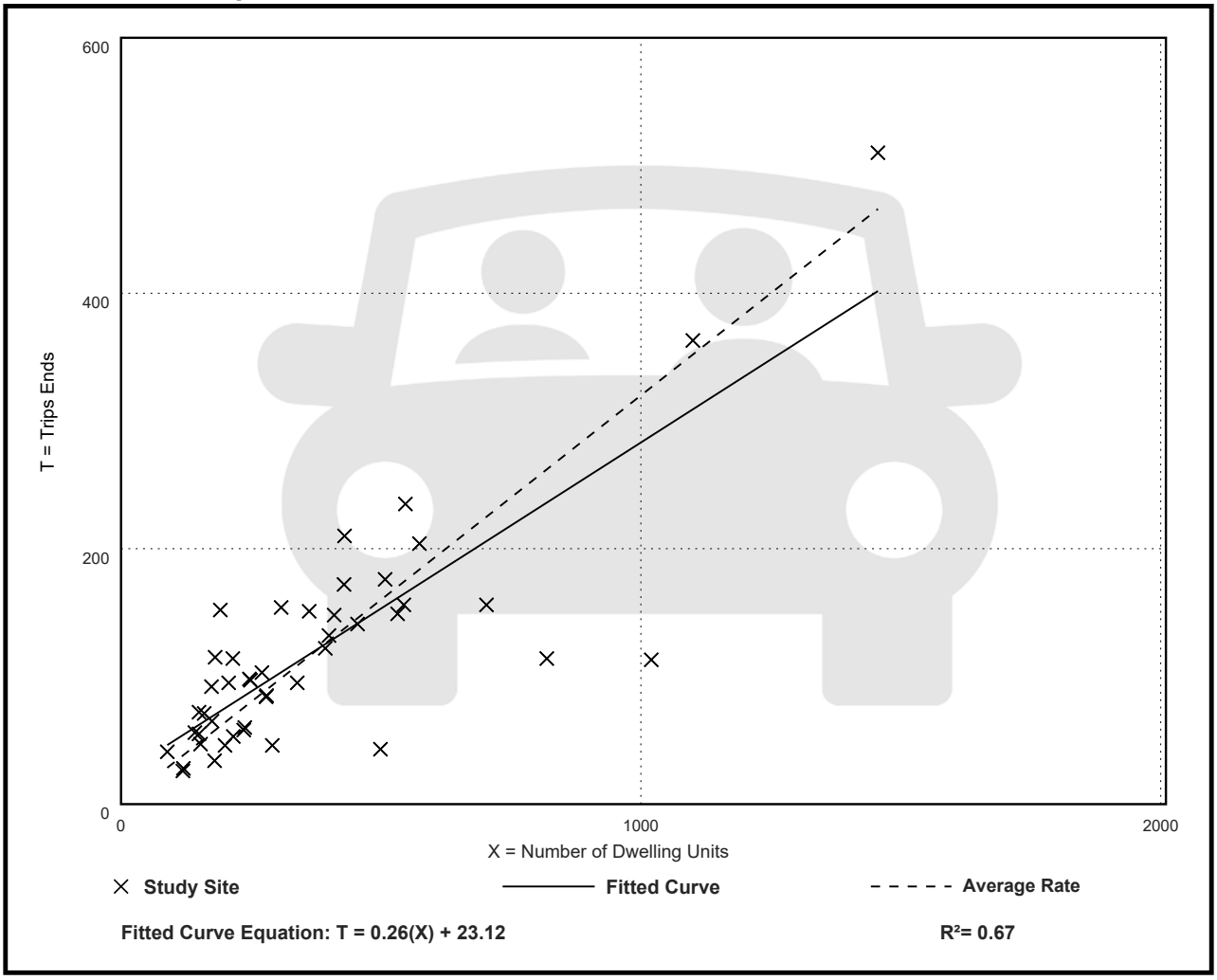
Multifamily Housing (High-Rise)
Not Close to Rail Transit (222)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
Number of Studies: 45
Avg. Num. of Dwelling Units: 372
Directional Distribution: 56% entering, 44% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.32	0.09 - 0.80	0.13

Data Plot and Equation



Fitted Curve Equation: T = 0.26(X) + 23.12

R^2= 0.67

Multifamily Housing (High-Rise)
Not Close to Rail Transit (222)

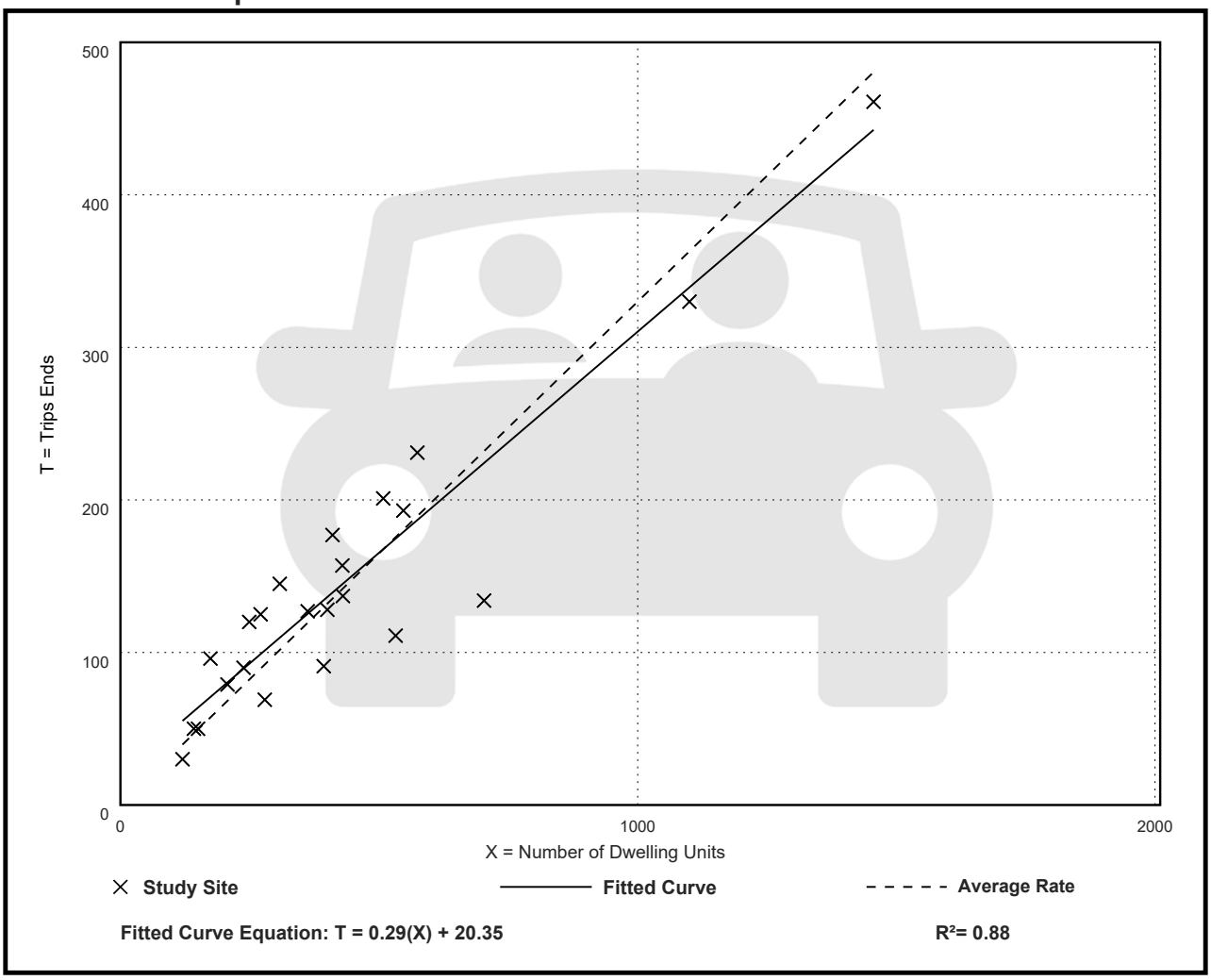
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
AM Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 23
Avg. Num. of Dwelling Units: 434
Directional Distribution: 22% entering, 78% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.33	0.19 - 0.55	0.08

Data Plot and Equation



Fitted Curve Equation: T = 0.29(X) + 20.35

R^2= 0.88

Multifamily Housing (High-Rise)
Not Close to Rail Transit (222)

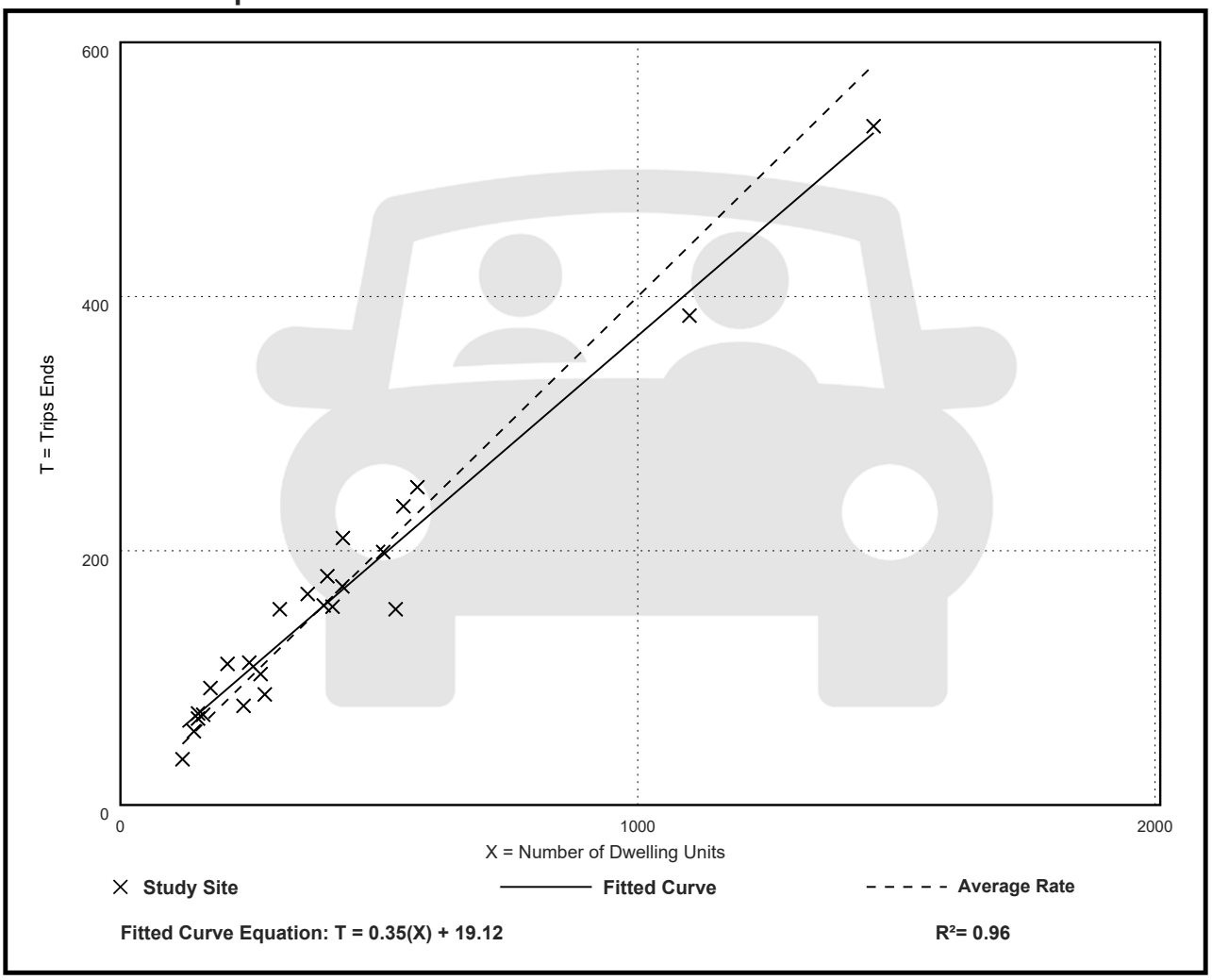
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
PM Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 24
Avg. Num. of Dwelling Units: 400
Directional Distribution: 62% entering, 38% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.40	0.29 - 0.54	0.06

Data Plot and Equation



Fitted Curve Equation: T = 0.35(X) + 19.12

R^2= 0.96

Multifamily Housing (High-Rise)
Not Close to Rail Transit (222)

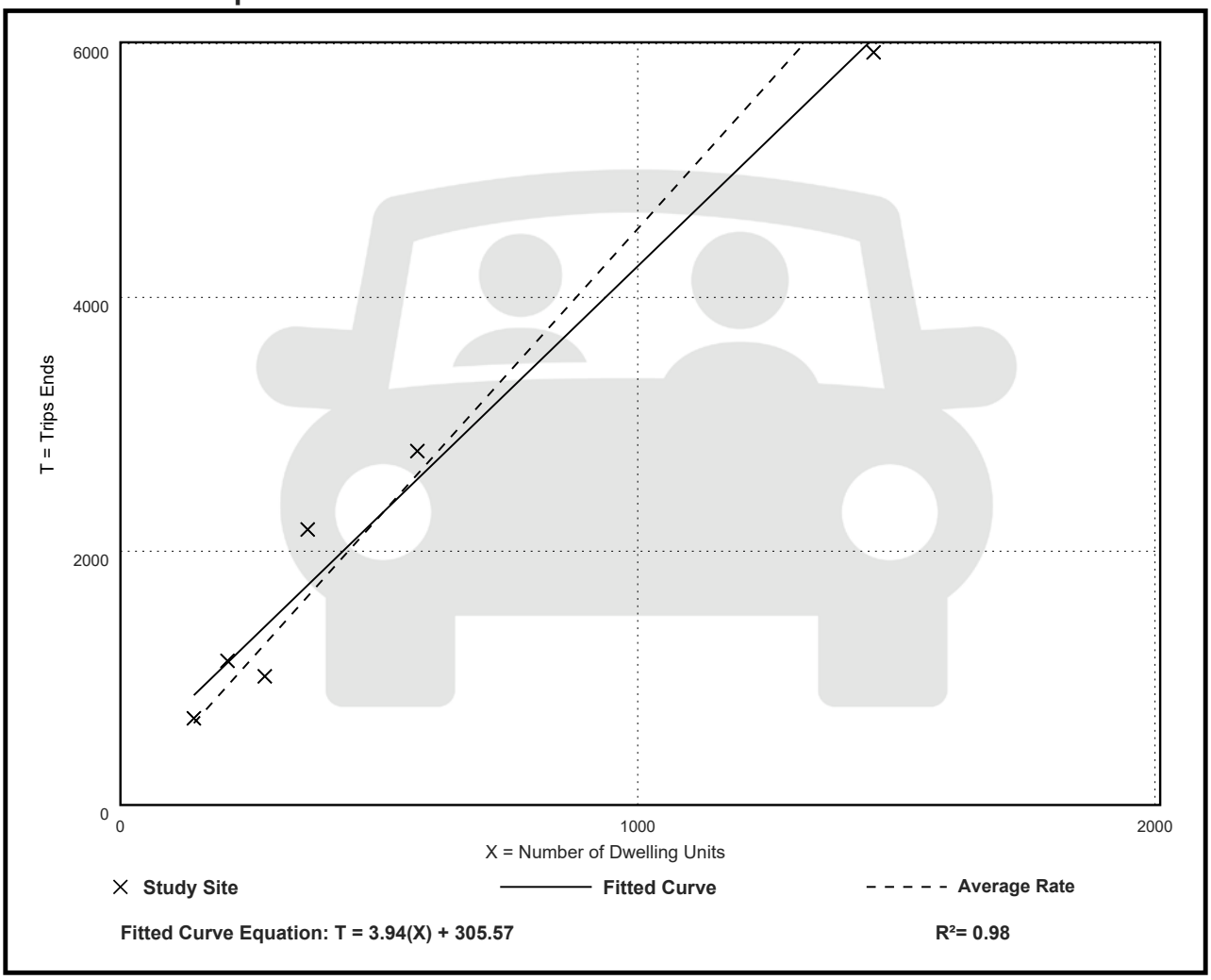
Vehicle Trip Ends vs: Dwelling Units
On a: Saturday

Setting/Location: General Urban/Suburban
Number of Studies: 6
Avg. Num. of Dwelling Units: 503
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
4.54	3.63 - 6.00	0.79

Data Plot and Equation



Fitted Curve Equation: T = 3.94(X) + 305.57

R^2= 0.98

Multifamily Housing (High-Rise)
Not Close to Rail Transit (222)

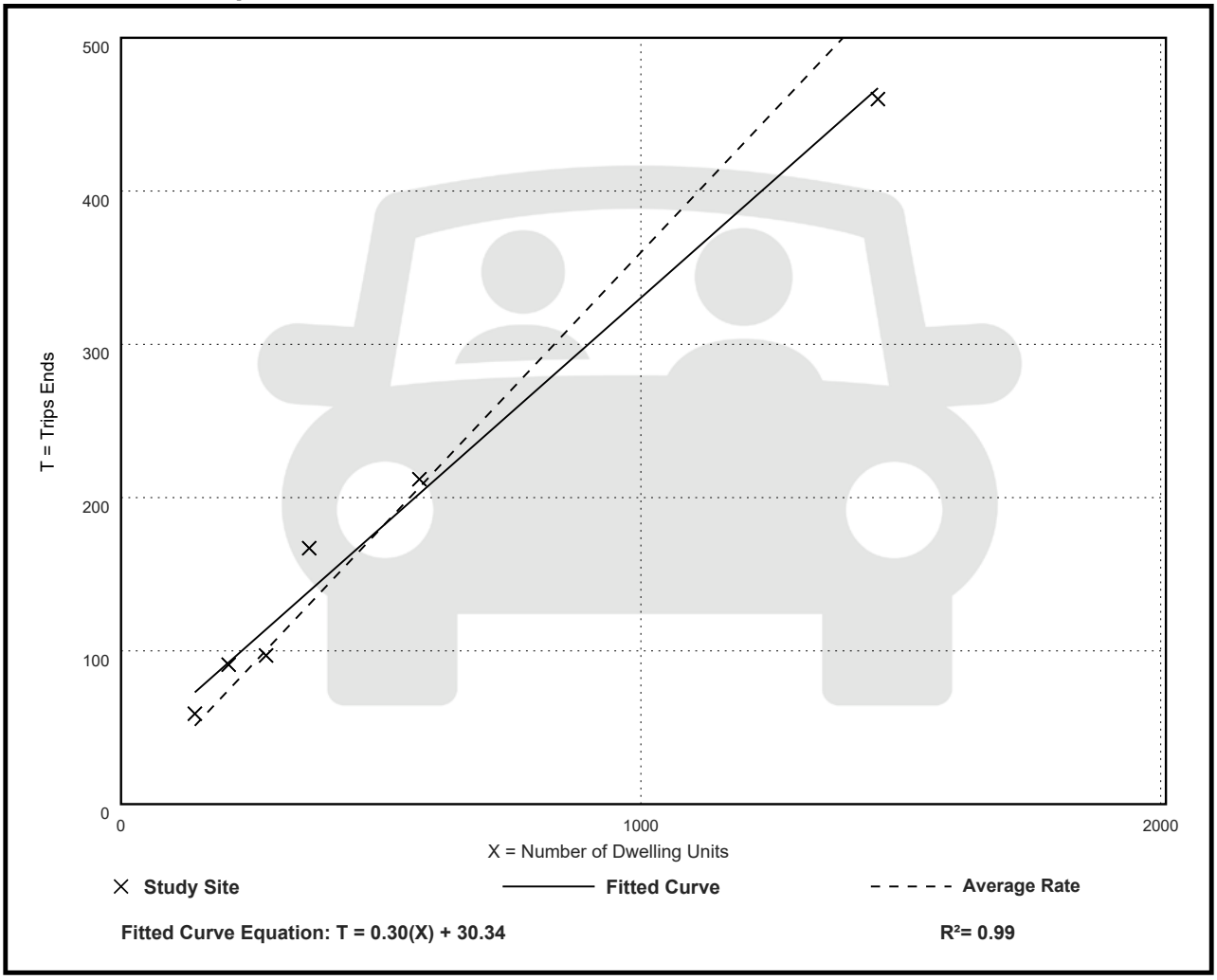
Vehicle Trip Ends vs: Dwelling Units
On a: Saturday, Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 6
Avg. Num. of Dwelling Units: 503
Directional Distribution: 57% entering, 43% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.36	0.32 - 0.46	0.06

Data Plot and Equation



Fitted Curve Equation: T = 0.30(X) + 30.34

R^2= 0.99

Multifamily Housing (High-Rise)
Not Close to Rail Transit (222)

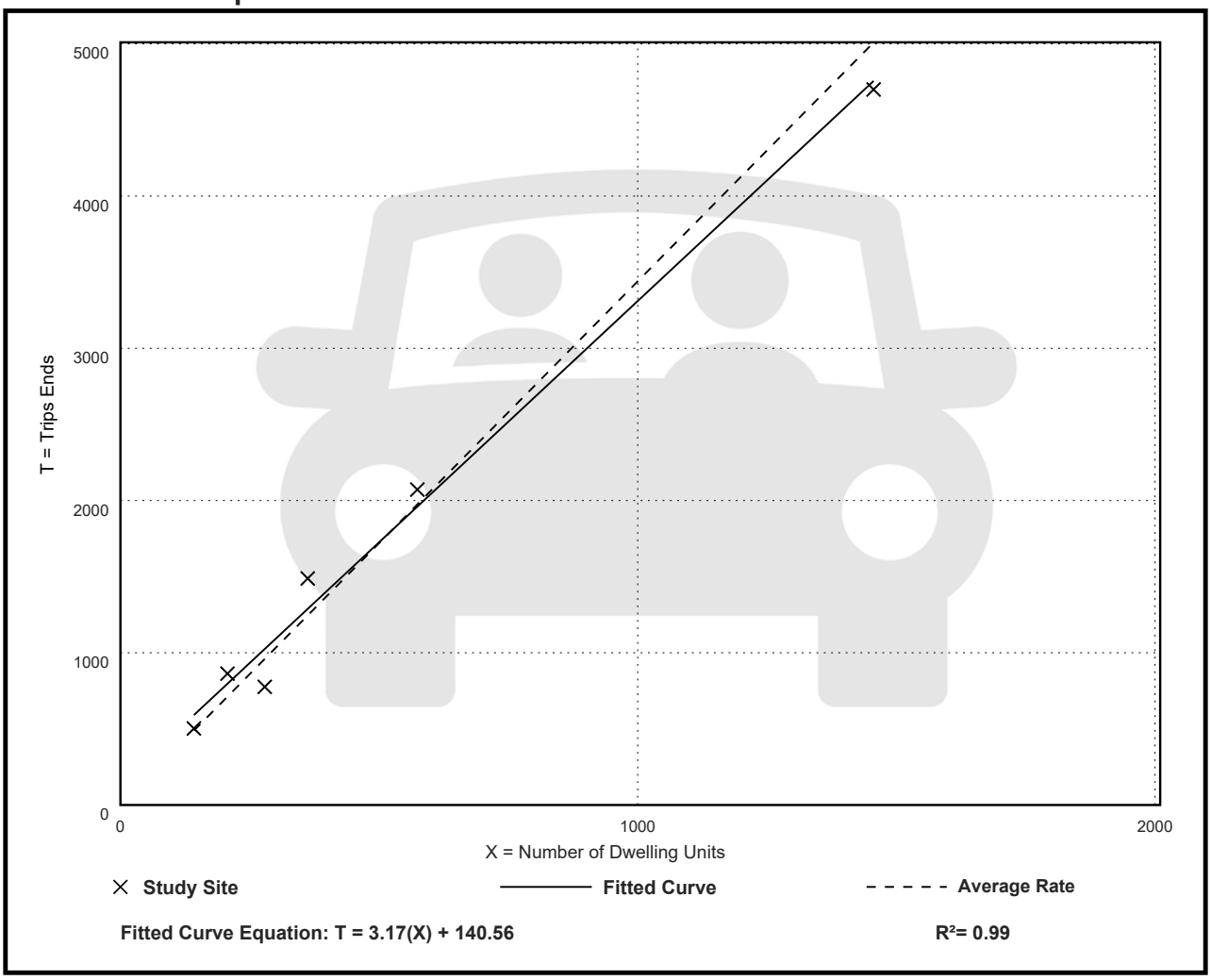
Vehicle Trip Ends vs: Dwelling Units
On a: Sunday

Setting/Location: General Urban/Suburban
Number of Studies: 6
Avg. Num. of Dwelling Units: 503
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
3.44	2.78 - 4.17	0.44

Data Plot and Equation



Fitted Curve Equation: T = 3.17(X) + 140.56

R^2= 0.99

Multifamily Housing (High-Rise)
Not Close to Rail Transit (222)

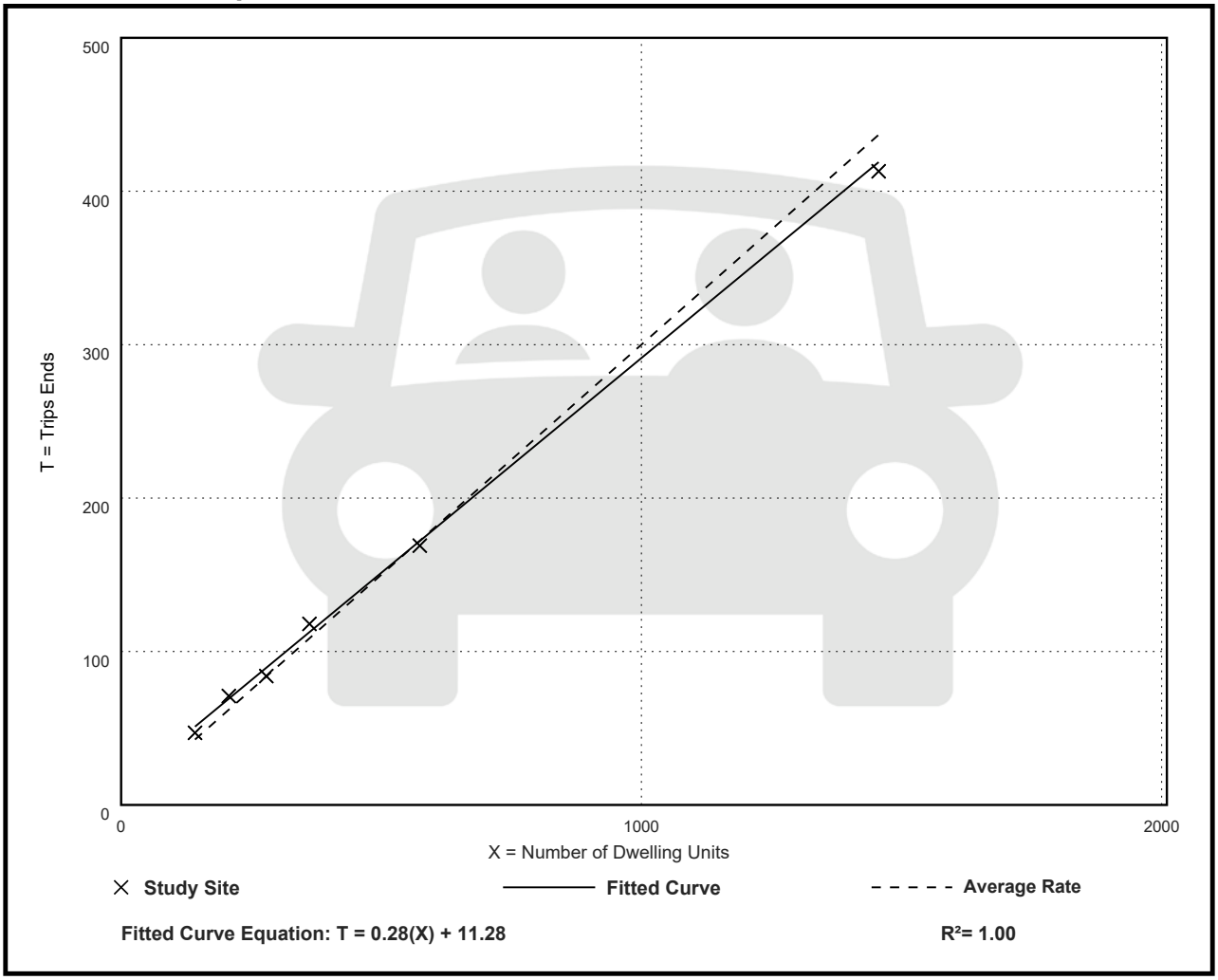
Vehicle Trip Ends vs: Dwelling Units
On a: Sunday, Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 6
Avg. Num. of Dwelling Units: 503
Directional Distribution: 53% entering, 47% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.30	0.28 - 0.34	0.02

Data Plot and Equation



Fitted Curve Equation: T = 0.28(X) + 11.28

R^2= 1.00

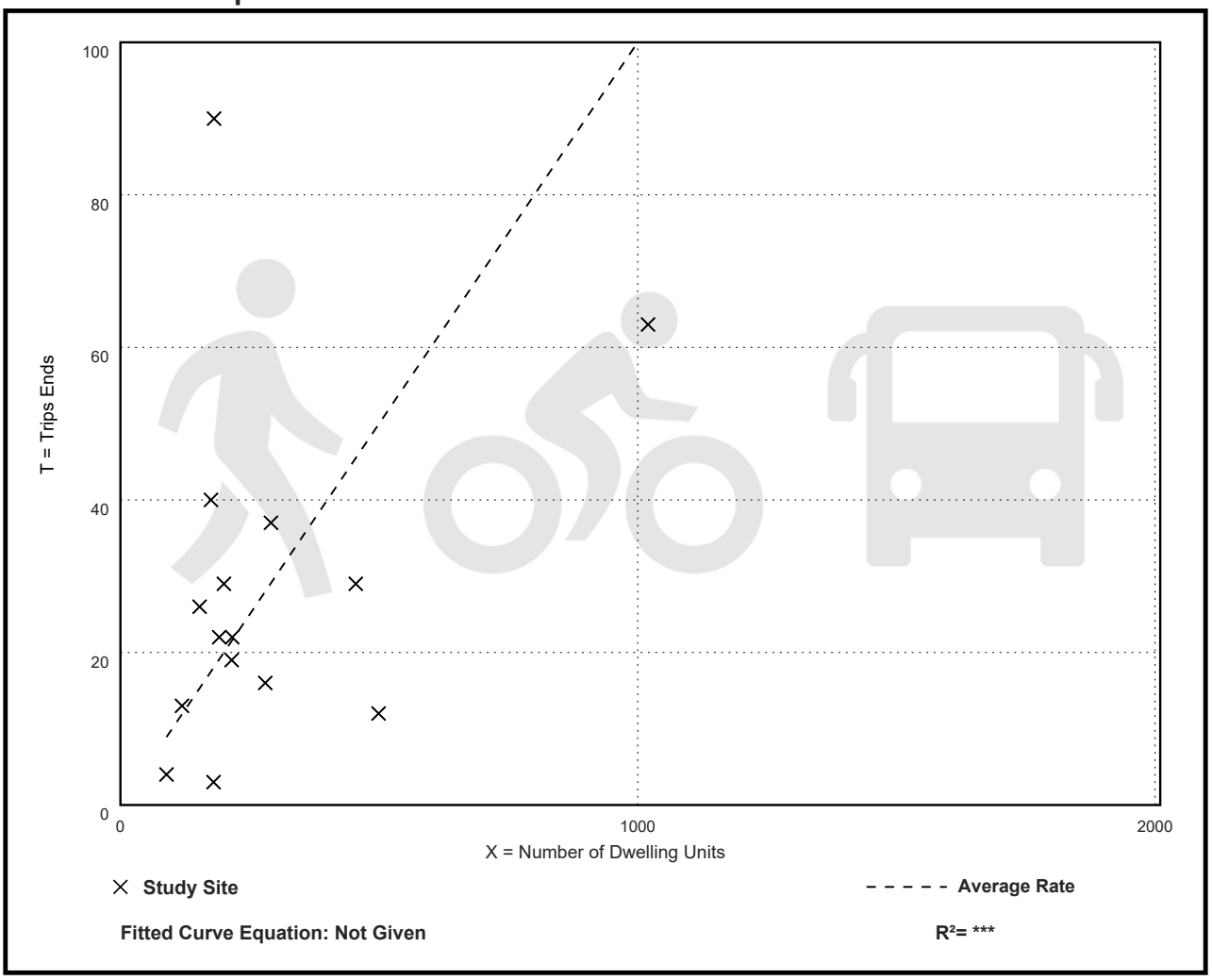
Multifamily Housing (High-Rise)
Not Close to Rail Transit (222)

Walk+Bike+Transit Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
Number of Studies: 15
Avg. Num. of Dwelling Units: 284
Directional Distribution: 79% entering, 21% exiting

Walk+Bike+Transit Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.10	0.02 - 0.50	0.10

Data Plot and Equation



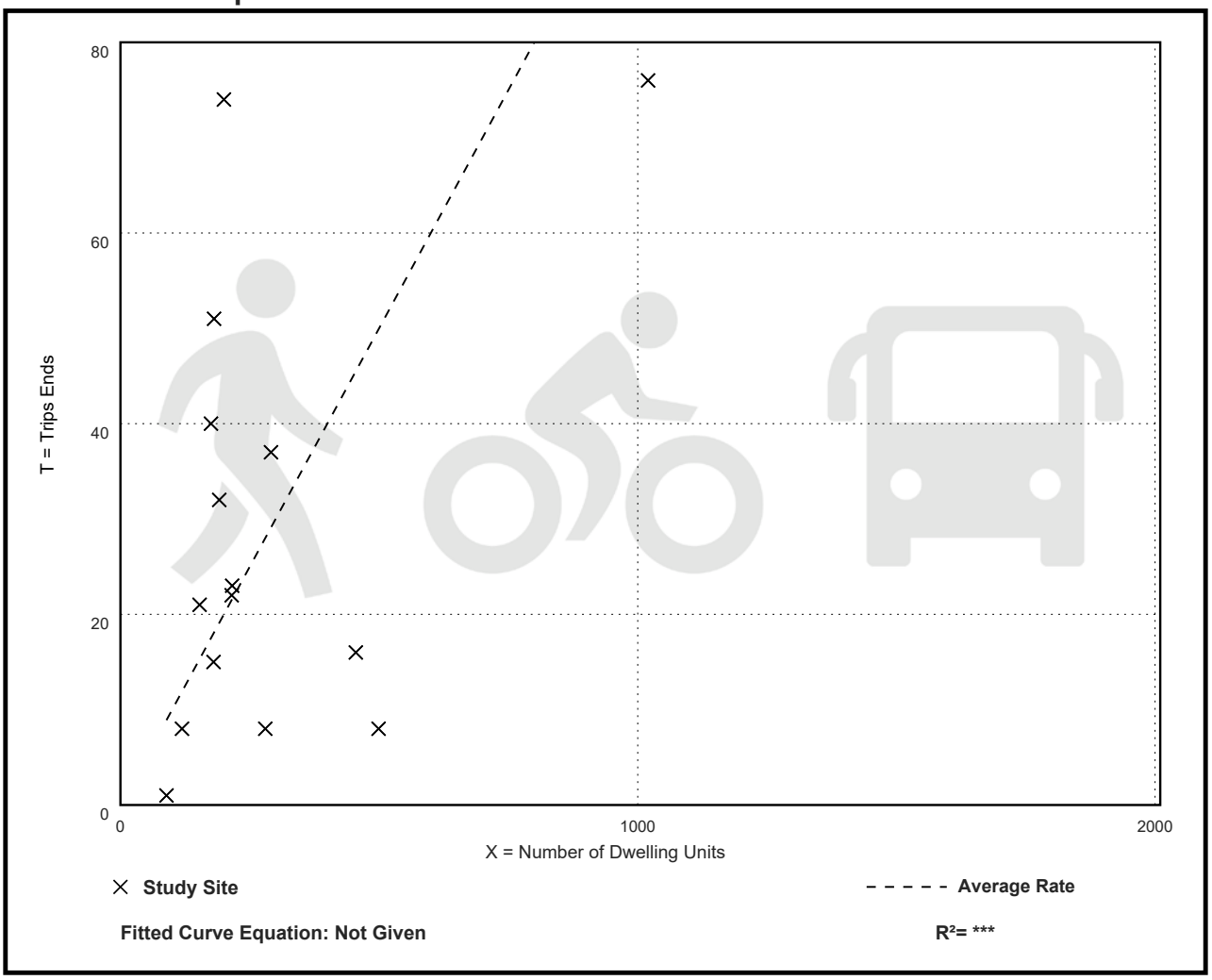
Multifamily Housing (High-Rise)
Not Close to Rail Transit (222)

Walk+Bike+Transit Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
Number of Studies: 15
Avg. Num. of Dwelling Units: 284
Directional Distribution: 47% entering, 53% exiting

Walk+Bike+Transit Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.10	0.01 - 0.37	0.09

Data Plot and Equation



Multifamily Housing (High-Rise) Close to Rail Transit (222)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

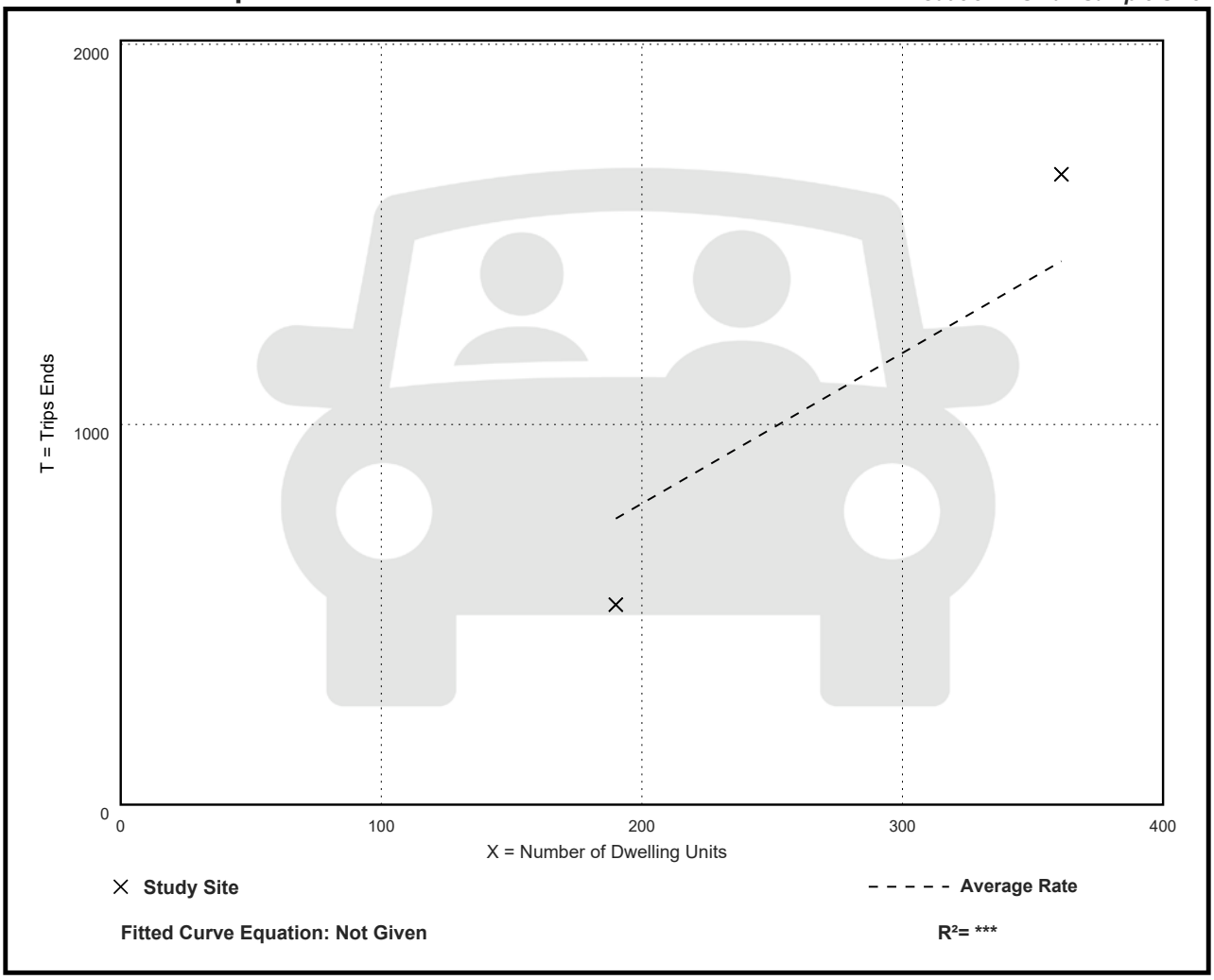
Setting/Location: General Urban/Suburban
Number of Studies: 2
Avg. Num. of Dwelling Units: 276
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
3.96	2.77 - 4.59	***

Data Plot and Equation

Caution – Small Sample Size



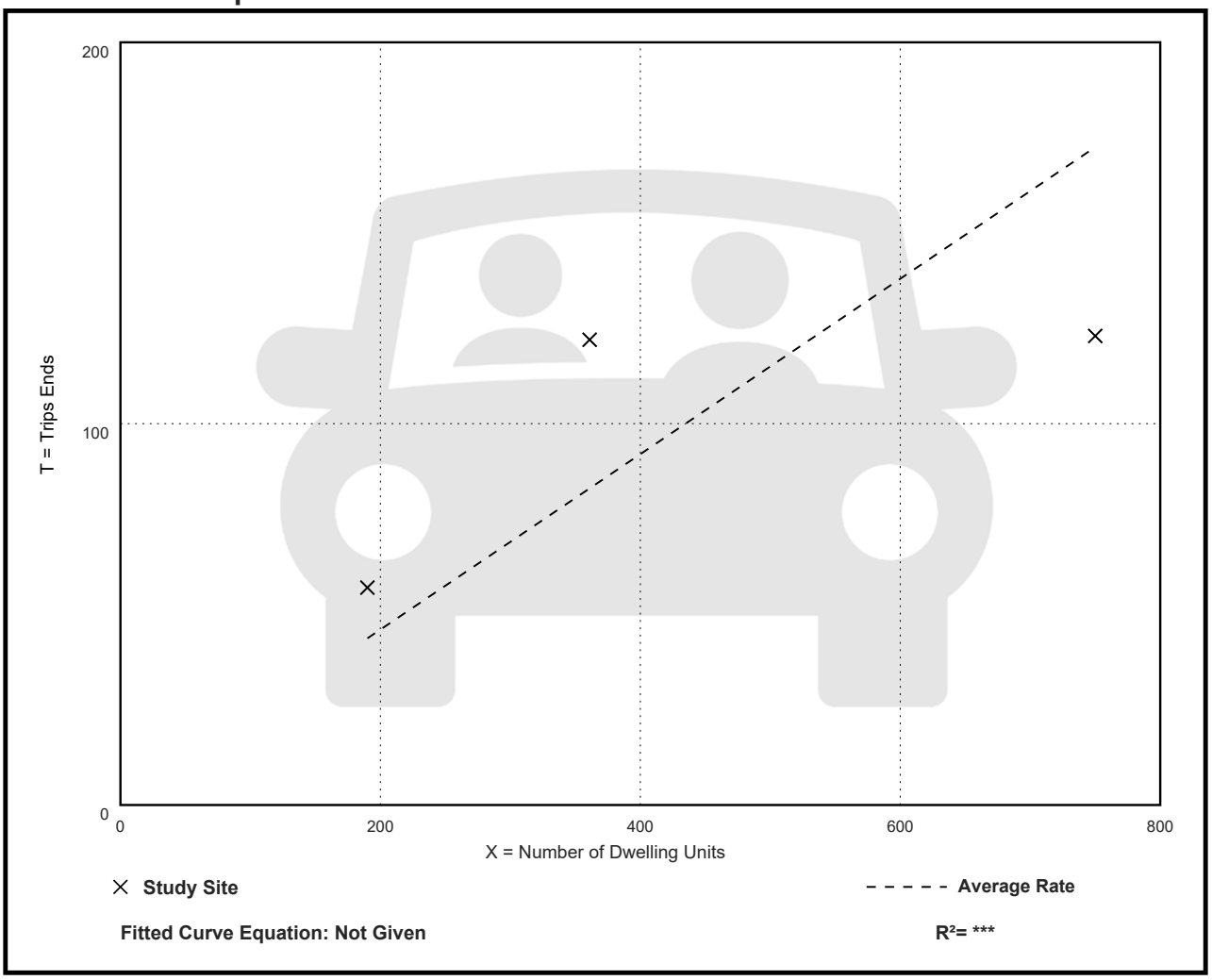
Multifamily Housing (High-Rise)
Close to Rail Transit (222)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
Number of Studies: 3
Avg. Num. of Dwelling Units: 434
Directional Distribution: 33% entering, 67% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.23	0.16 - 0.34	0.10

Data Plot and Equation



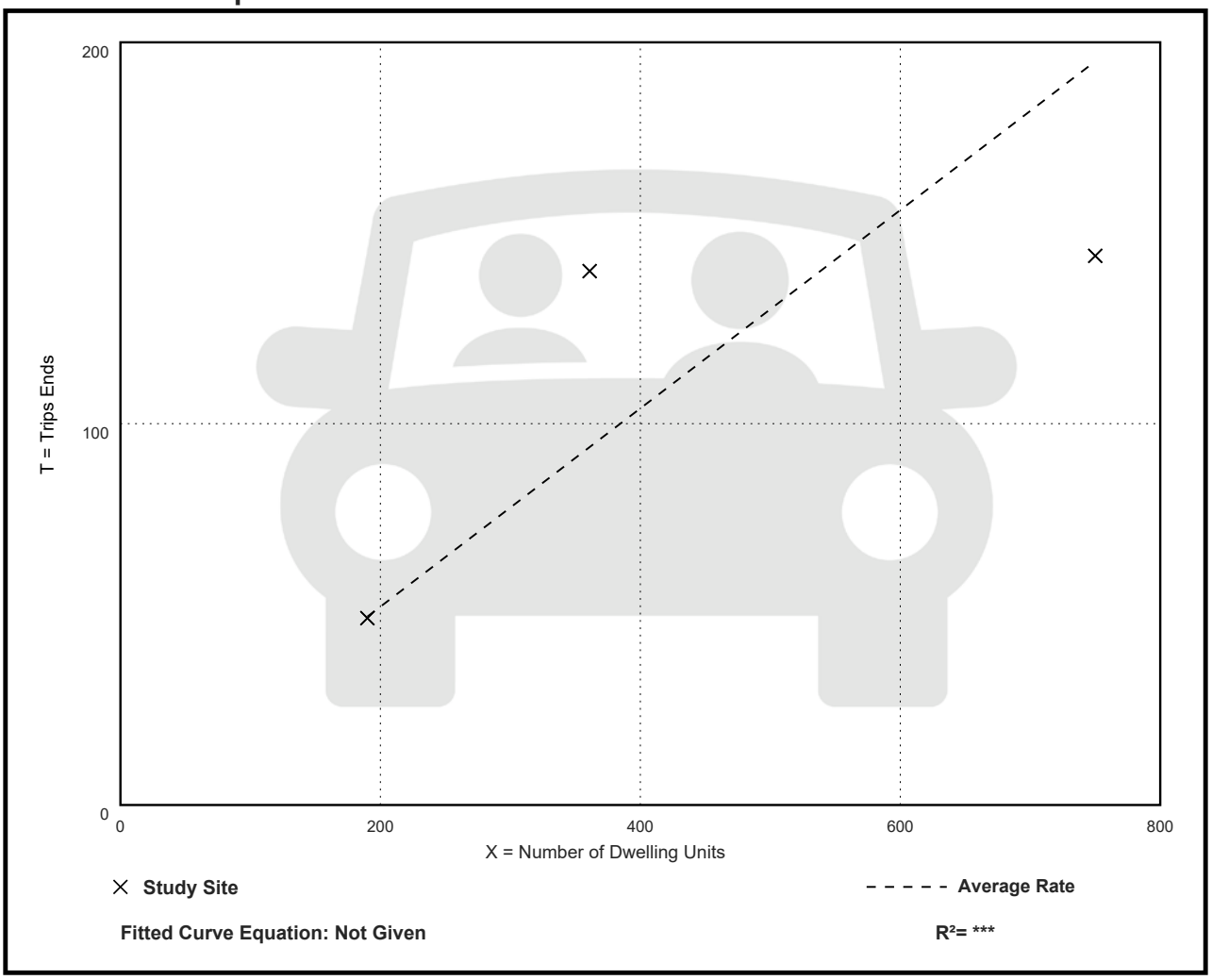
Multifamily Housing (High-Rise) Close to Rail Transit (222)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
Number of Studies: 3
Avg. Num. of Dwelling Units: 434
Directional Distribution: 57% entering, 43% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.26	0.19 - 0.39	0.10

Data Plot and Equation



Multifamily Housing (High-Rise)
Close to Rail Transit (222)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
AM Peak Hour of Generator

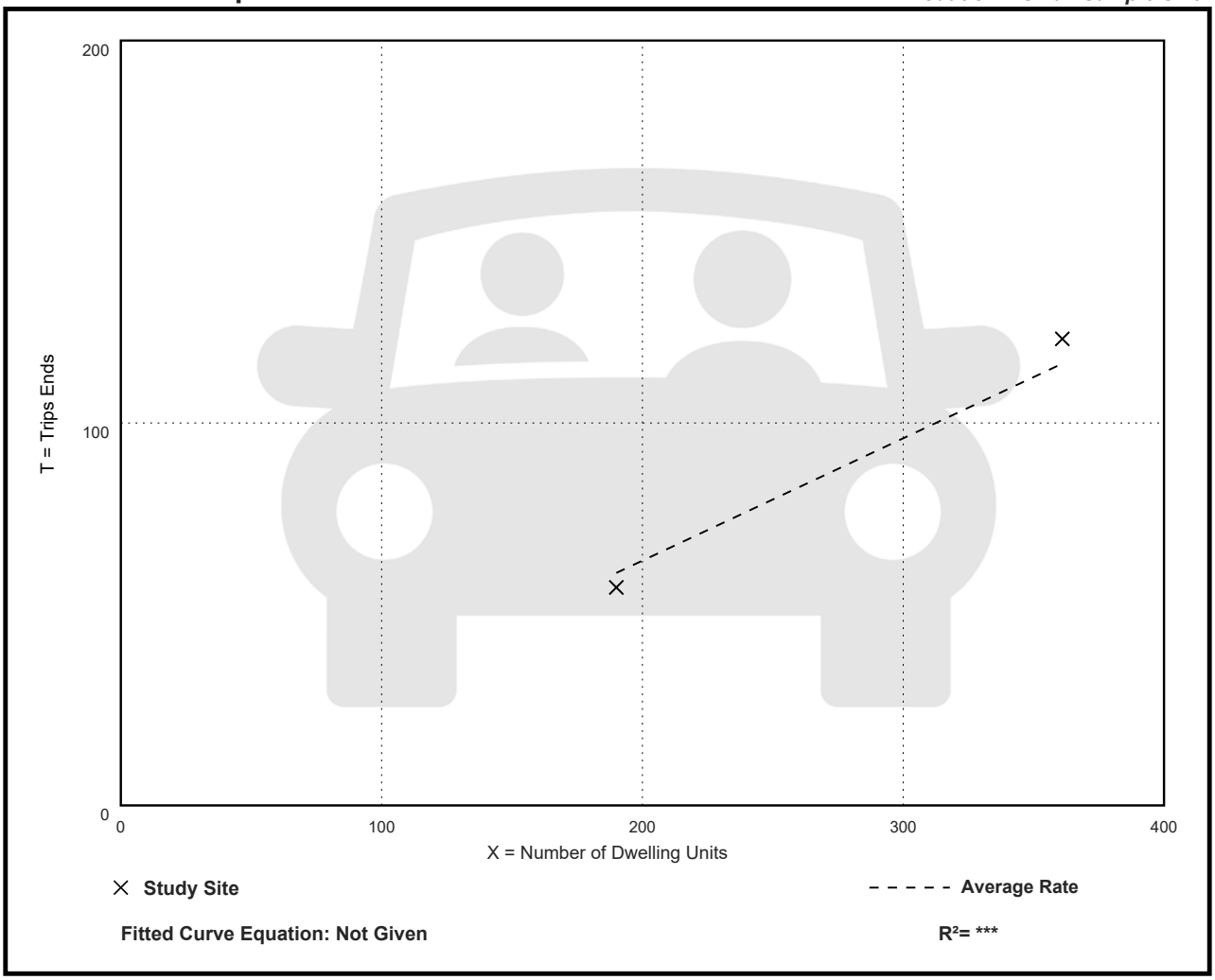
Setting/Location: General Urban/Suburban
Number of Studies: 2
Avg. Num. of Dwelling Units: 276
Directional Distribution: 12% entering, 88% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.32	0.30 - 0.34	***

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Not Given

R^2= ***

Multifamily Housing (High-Rise) Close to Rail Transit (222)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
PM Peak Hour of Generator

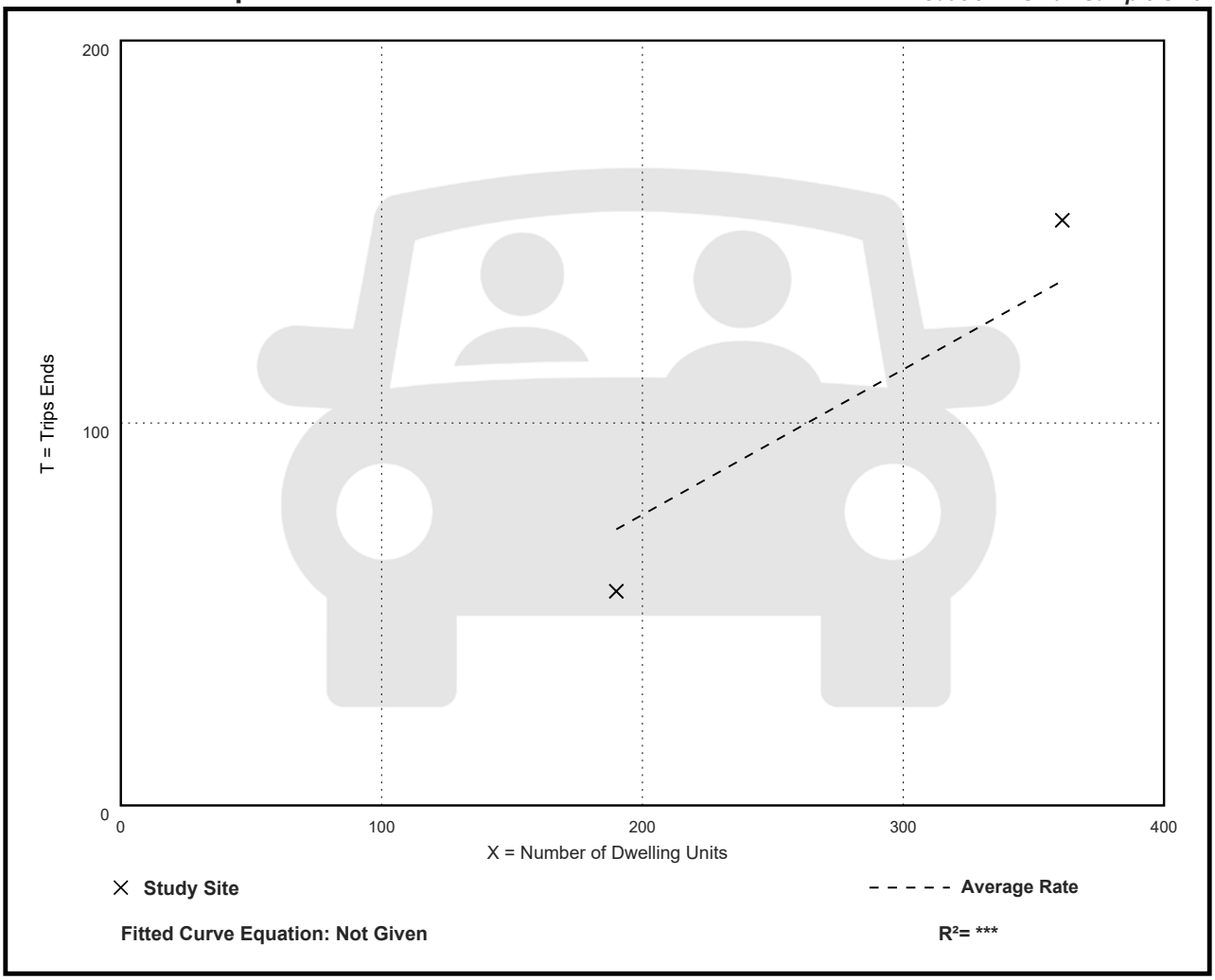
Setting/Location: General Urban/Suburban
Number of Studies: 2
Avg. Num. of Dwelling Units: 276
Directional Distribution: 65% entering, 35% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.38	0.29 - 0.42	***

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Not Given

R^2= ***

Multifamily Housing (High-Rise)
Close to Rail Transit (222)

Vehicle Trip Ends vs: Dwelling Units
On a: Saturday

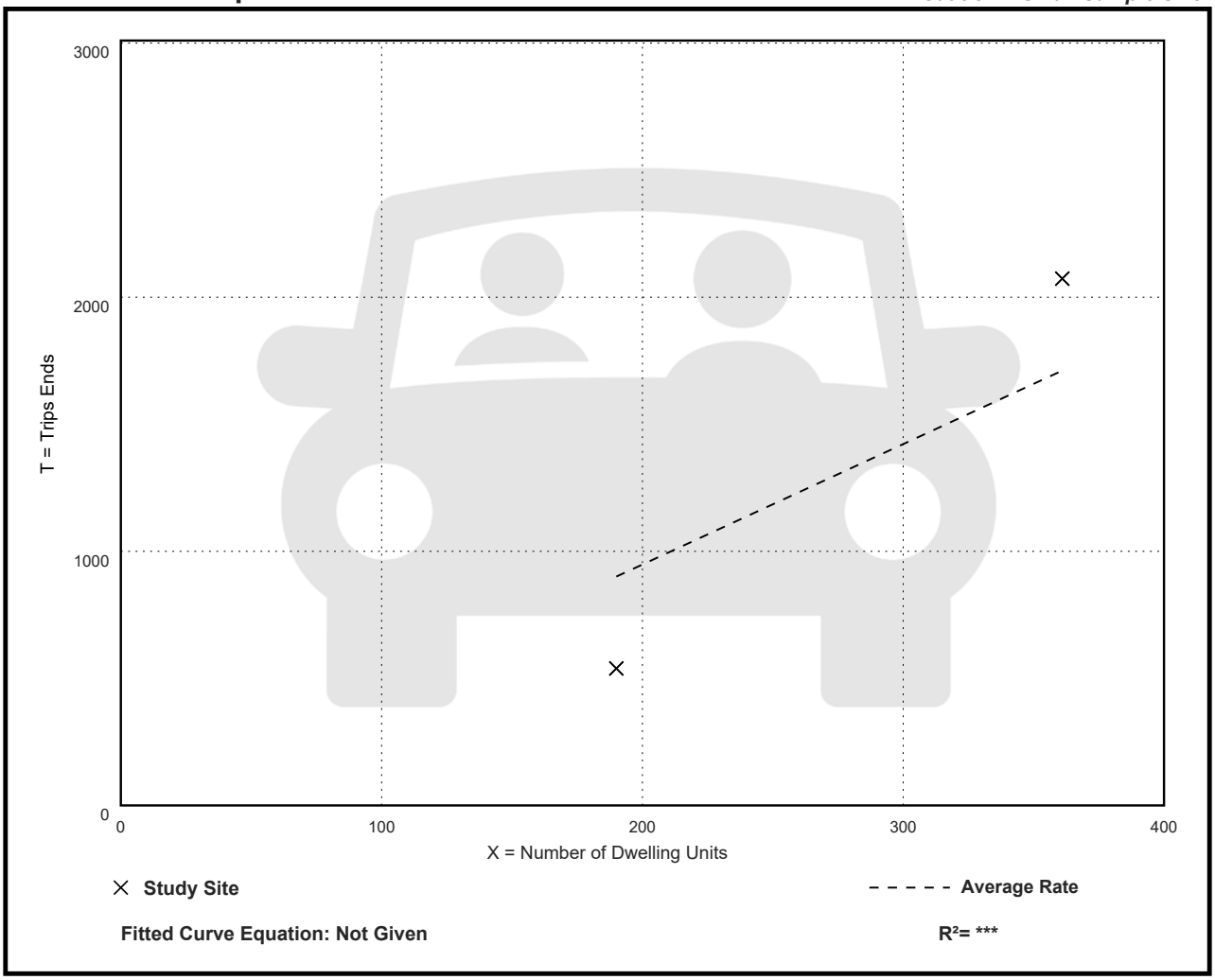
Setting/Location: General Urban/Suburban
Number of Studies: 2
Avg. Num. of Dwelling Units: 276
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
4.74	2.84 - 5.74	***

Data Plot and Equation

Caution – Small Sample Size



Multifamily Housing (High-Rise) Close to Rail Transit (222)

Vehicle Trip Ends vs: Dwelling Units
On a: Saturday, Peak Hour of Generator

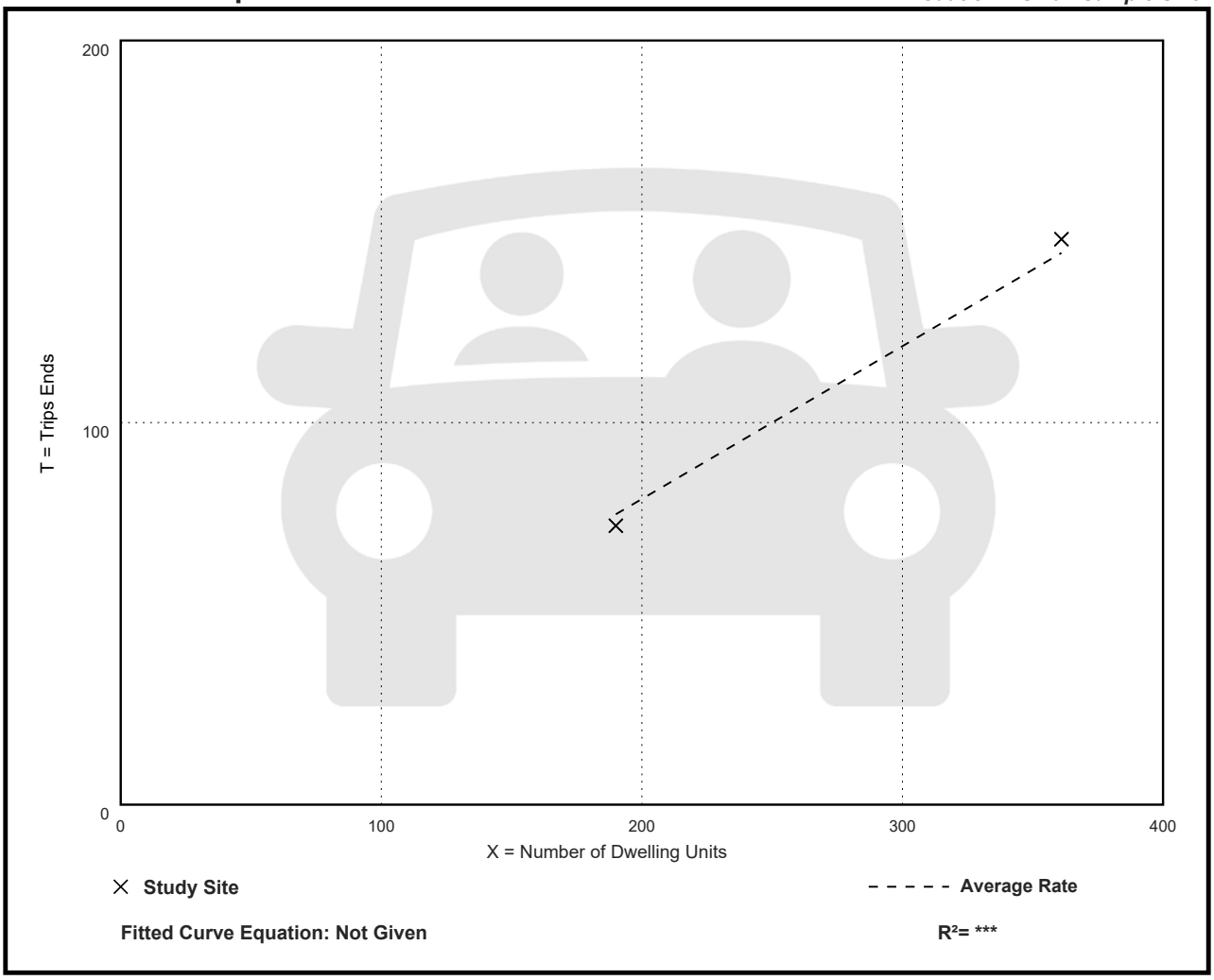
Setting/Location: General Urban/Suburban
Number of Studies: 2
Avg. Num. of Dwelling Units: 276
Directional Distribution: 49% entering, 51% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.40	0.38 - 0.41	***

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Not Given

R^2= ***

Multifamily Housing (High-Rise)
Close to Rail Transit (222)

Vehicle Trip Ends vs: Dwelling Units
On a: Sunday

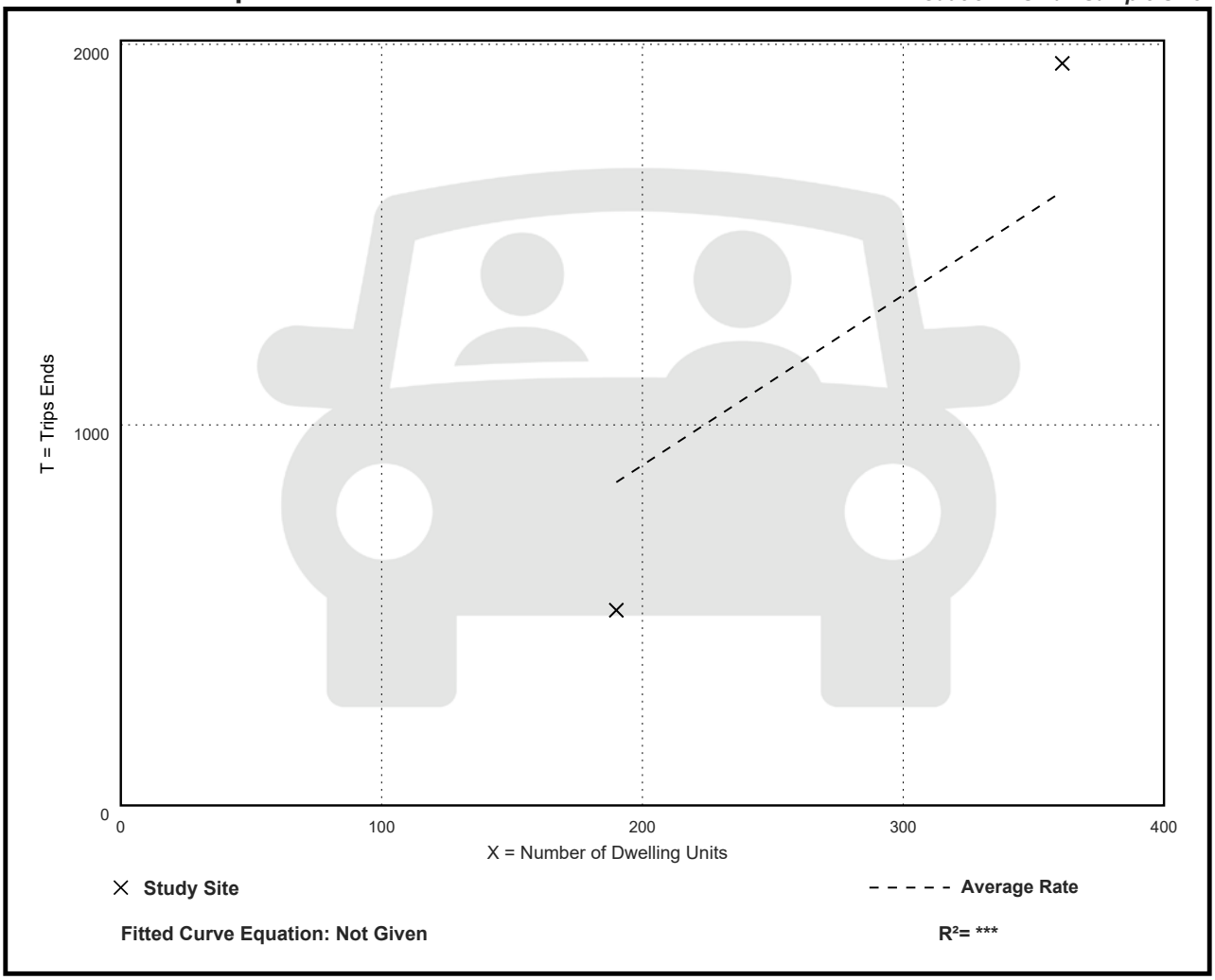
Setting/Location: General Urban/Suburban
Number of Studies: 2
Avg. Num. of Dwelling Units: 276
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
4.47	2.70 - 5.40	***

Data Plot and Equation

Caution – Small Sample Size



Multifamily Housing (High-Rise) Close to Rail Transit (222)

Vehicle Trip Ends vs: Dwelling Units
On a: Sunday, Peak Hour of Generator

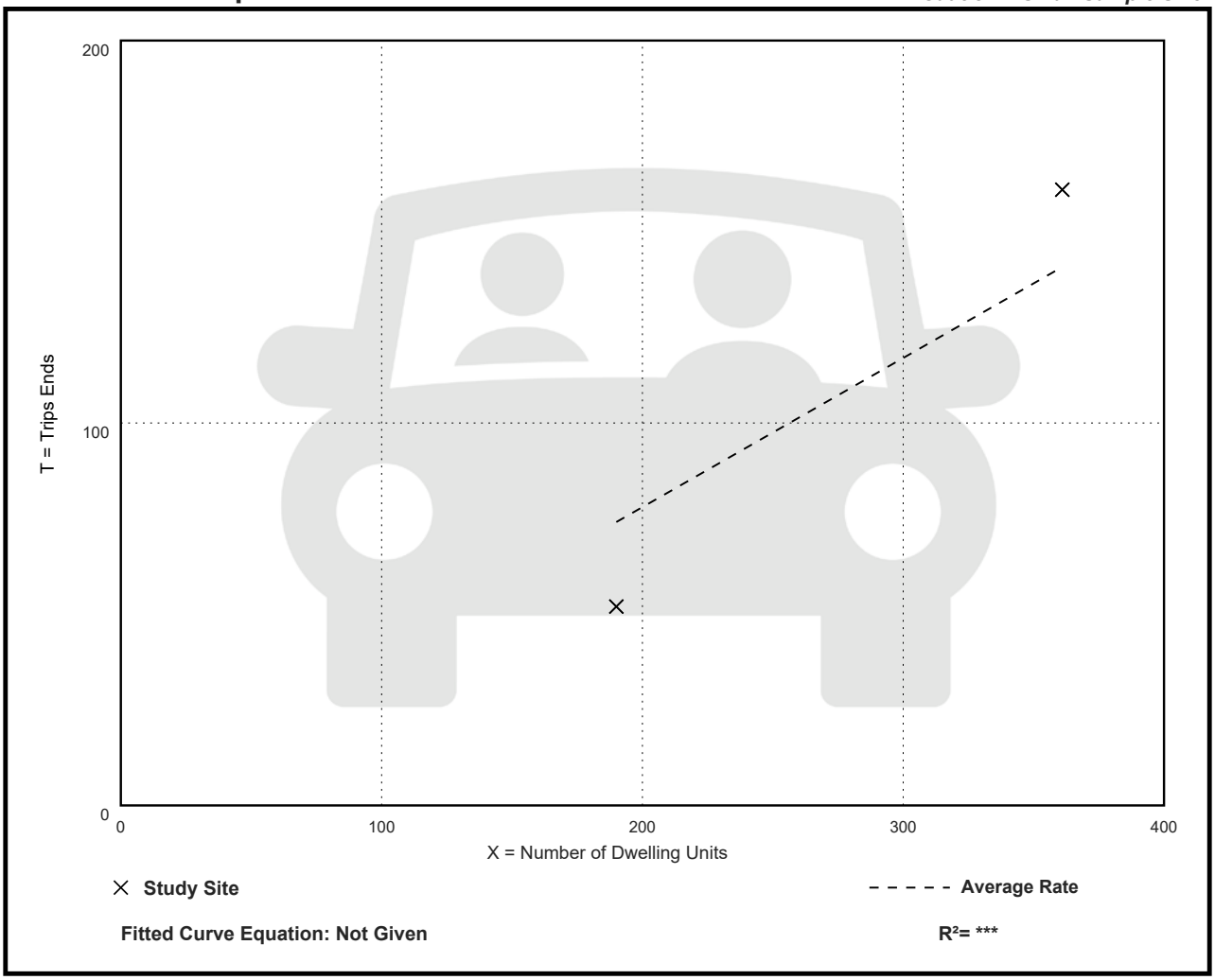
Setting/Location: General Urban/Suburban
Number of Studies: 2
Avg. Num. of Dwelling Units: 276
Directional Distribution: 47% entering, 53% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.39	0.27 - 0.45	***

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Not Given

R^2= ***

Multifamily Housing (High-Rise)
Close to Rail Transit (222)

Vehicle Trip Ends vs: Residents
On a: Weekday

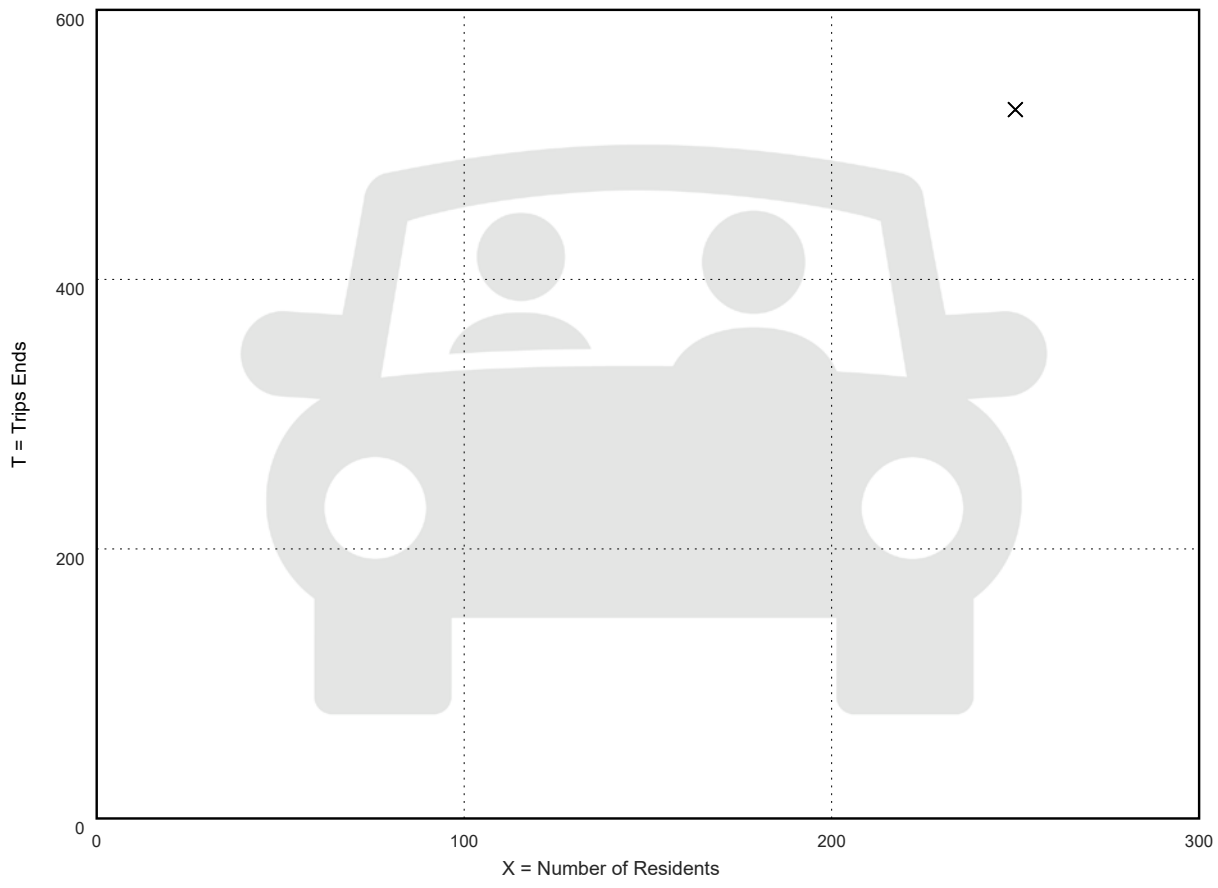
Setting/Location: General Urban/Suburban
Number of Studies: 1
Avg. Num. of Residents: 250
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Resident

Average Rate	Range of Rates	Standard Deviation
2.10	2.10 - 2.10	***

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Not Given

R^2= *

Multifamily Housing (High-Rise)
Close to Rail Transit (222)

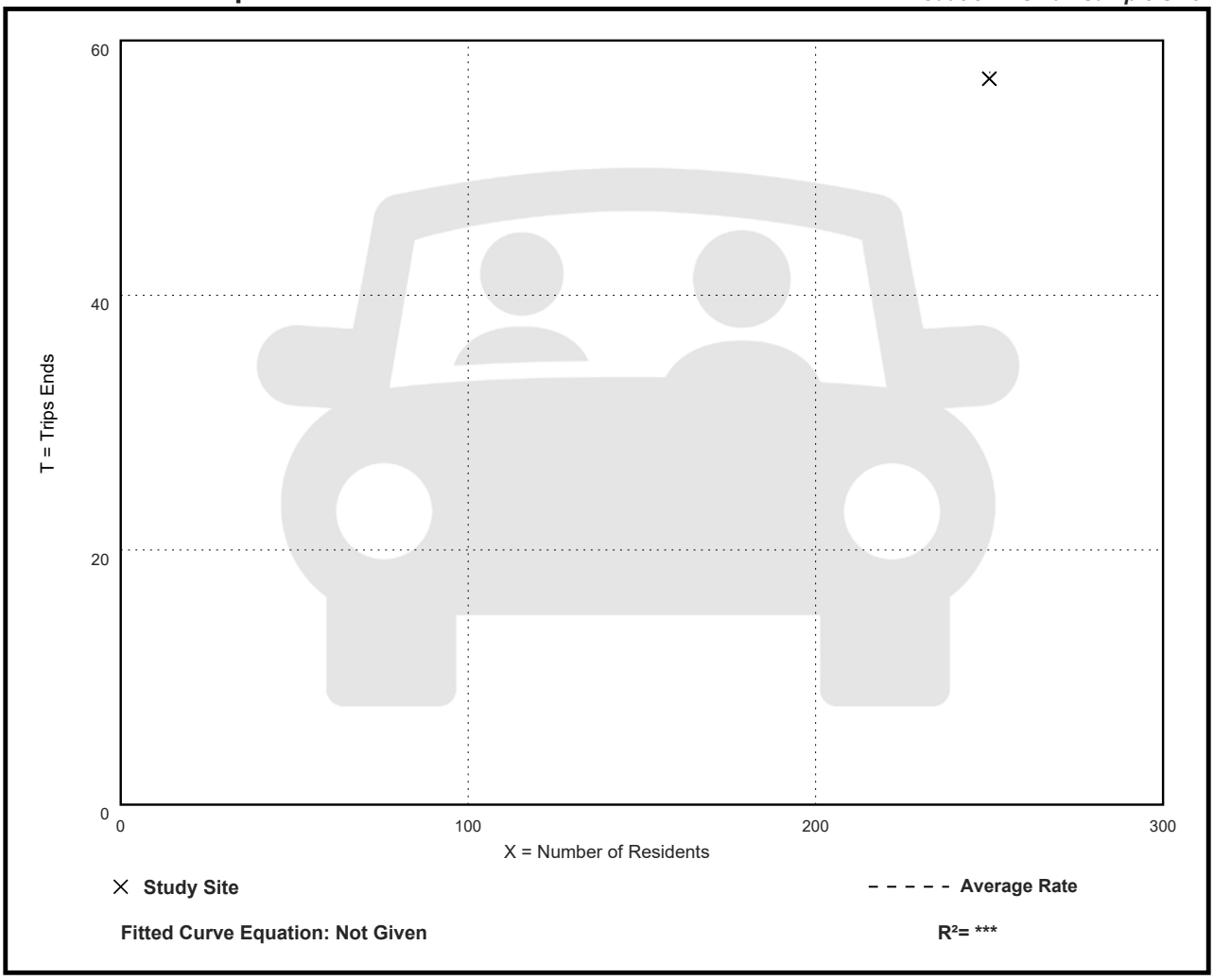
Vehicle Trip Ends vs: **Residents**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 1
Avg. Num. of Residents: 250
Directional Distribution: 5% entering, 95% exiting

Vehicle Trip Generation per Resident

Average Rate	Range of Rates	Standard Deviation
0.23	0.23 - 0.23	***

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Not Given

R^2= ***

Multifamily Housing (High-Rise)
Close to Rail Transit (222)

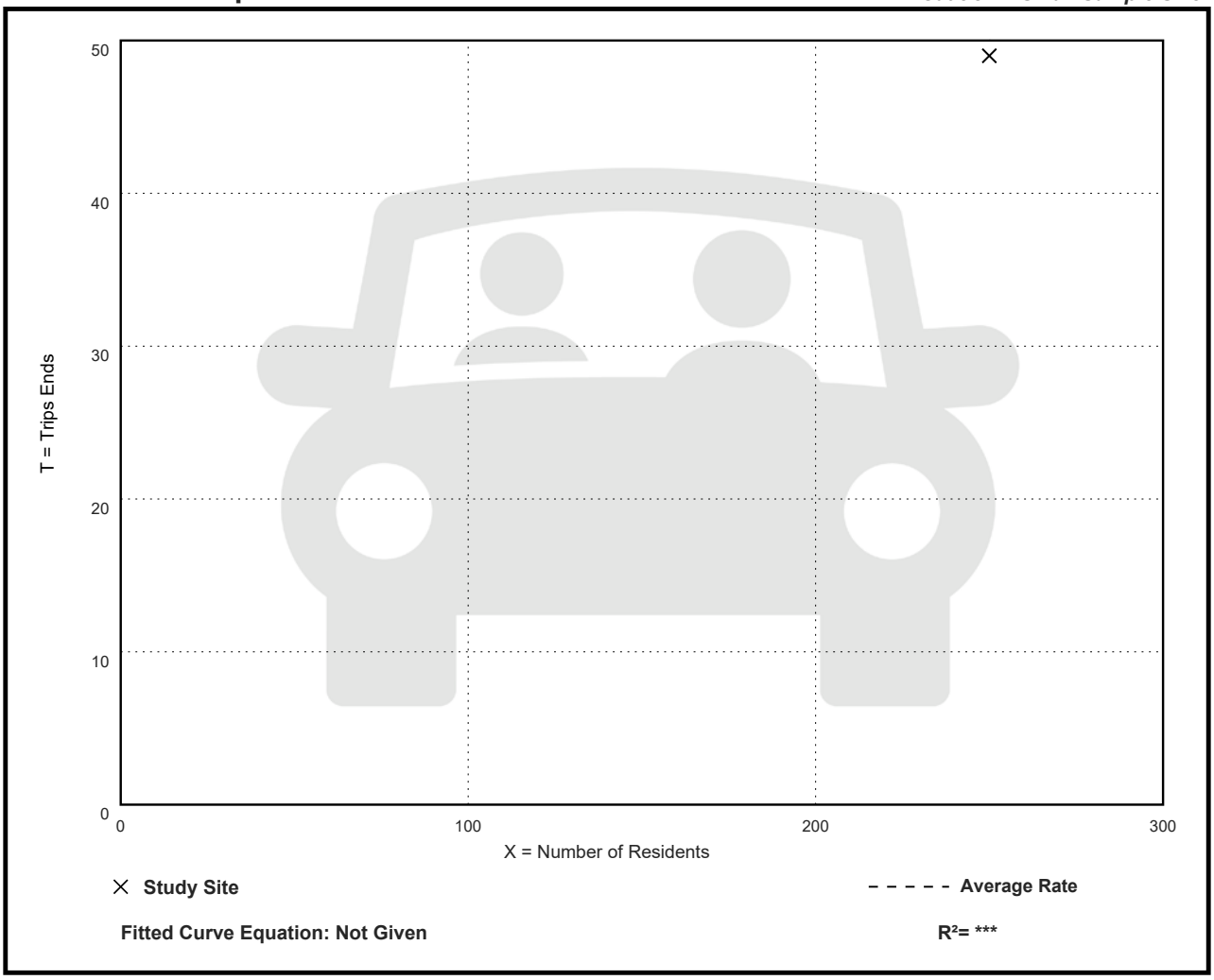
Vehicle Trip Ends vs: Residents
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
Number of Studies: 1
Avg. Num. of Residents: 250
Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Resident

Average Rate	Range of Rates	Standard Deviation
0.20	0.20 - 0.20	***

Data Plot and Equation

Caution – Small Sample Size



Multifamily Housing (High-Rise)
Close to Rail Transit (222)

Vehicle Trip Ends vs: Residents
On a: Weekday,
AM Peak Hour of Generator

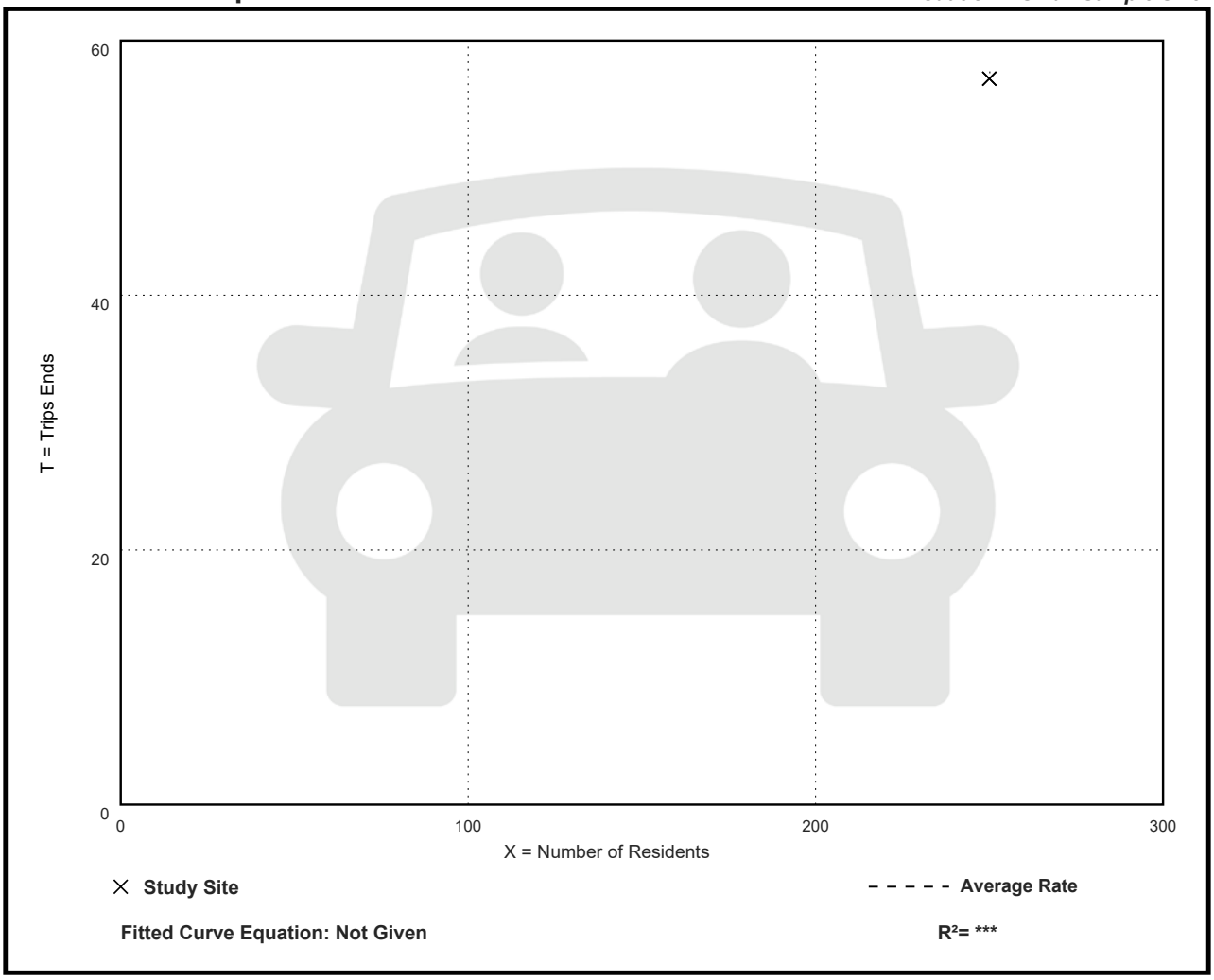
Setting/Location: General Urban/Suburban
Number of Studies: 1
Avg. Num. of Residents: 250
Directional Distribution: 5% entering, 95% exiting

Vehicle Trip Generation per Resident

Average Rate	Range of Rates	Standard Deviation
0.23	0.23 - 0.23	***

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Not Given

R^2= *

Multifamily Housing (High-Rise)
Close to Rail Transit (222)

Vehicle Trip Ends vs: Residents
On a: Weekday,
PM Peak Hour of Generator

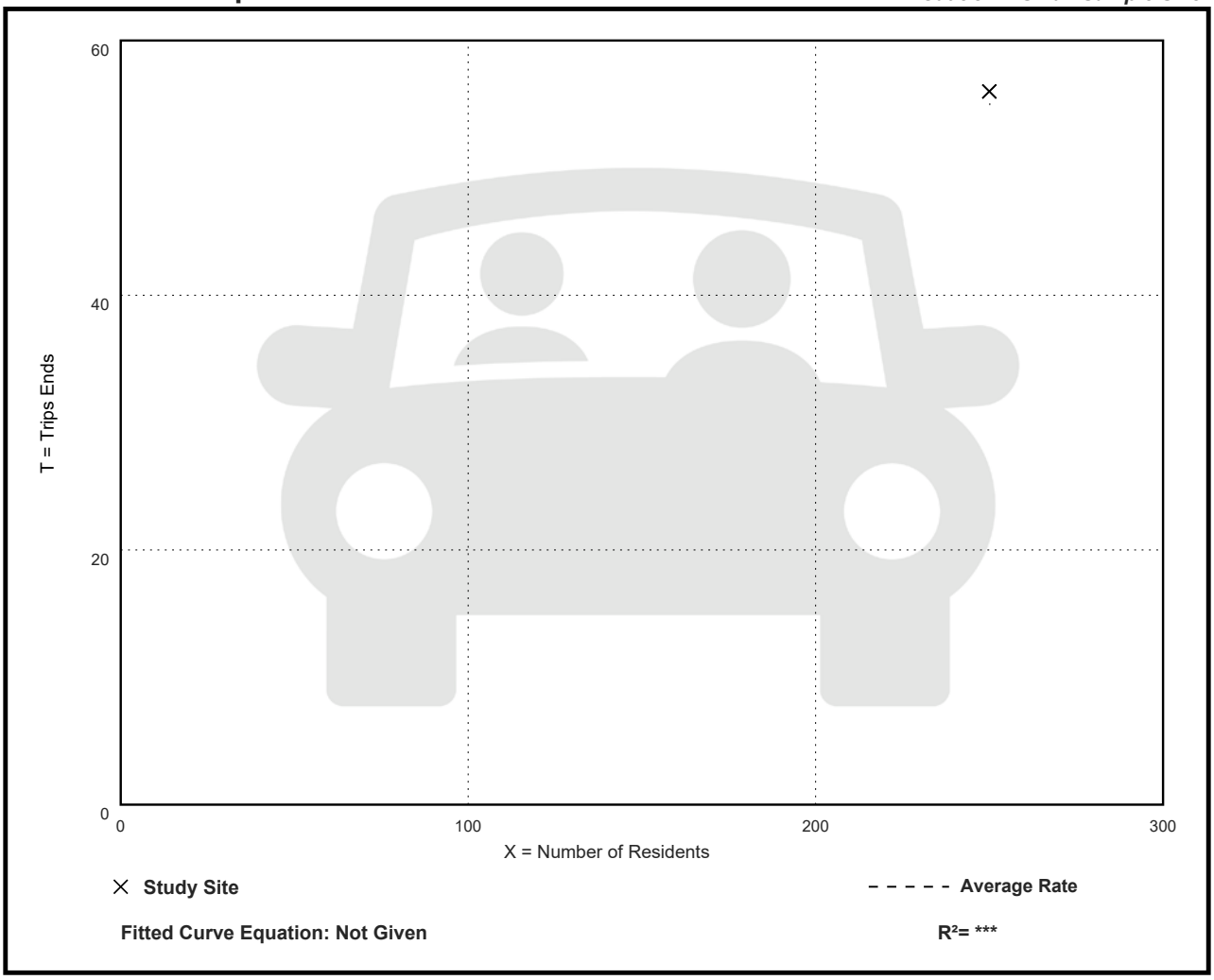
Setting/Location: General Urban/Suburban
Number of Studies: 1
Avg. Num. of Residents: 250
Directional Distribution: 66% entering, 34% exiting

Vehicle Trip Generation per Resident

Average Rate	Range of Rates	Standard Deviation
0.22	0.22 - 0.22	***

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Not Given

R^2= ***

Multifamily Housing (High-Rise)
Close to Rail Transit (222)

Vehicle Trip Ends vs: Residents
On a: Saturday

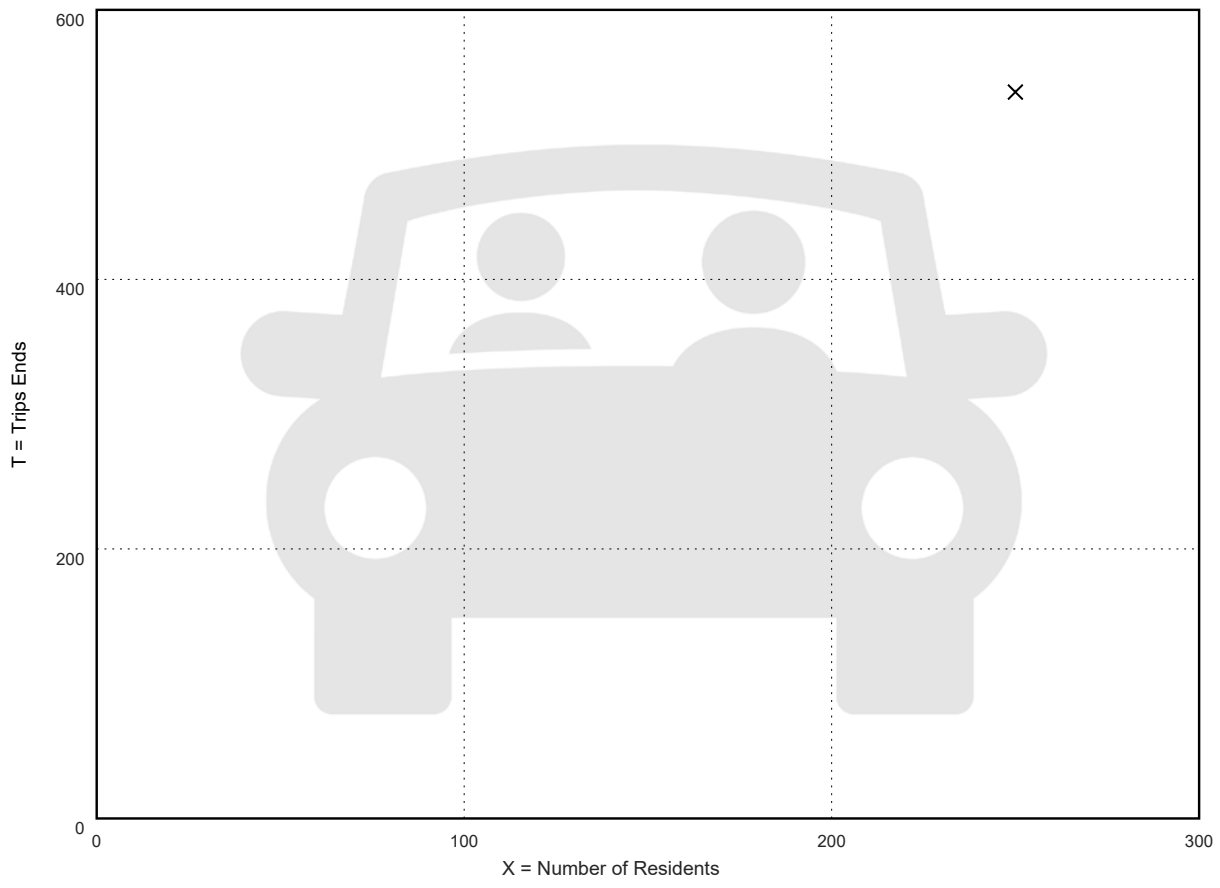
Setting/Location: General Urban/Suburban
Number of Studies: 1
Avg. Num. of Residents: 250
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Resident

Average Rate	Range of Rates	Standard Deviation
2.16	2.16 - 2.16	***

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Not Given

R^2= *

Multifamily Housing (High-Rise)
Close to Rail Transit (222)

Vehicle Trip Ends vs: Residents
On a: Saturday, Peak Hour of Generator

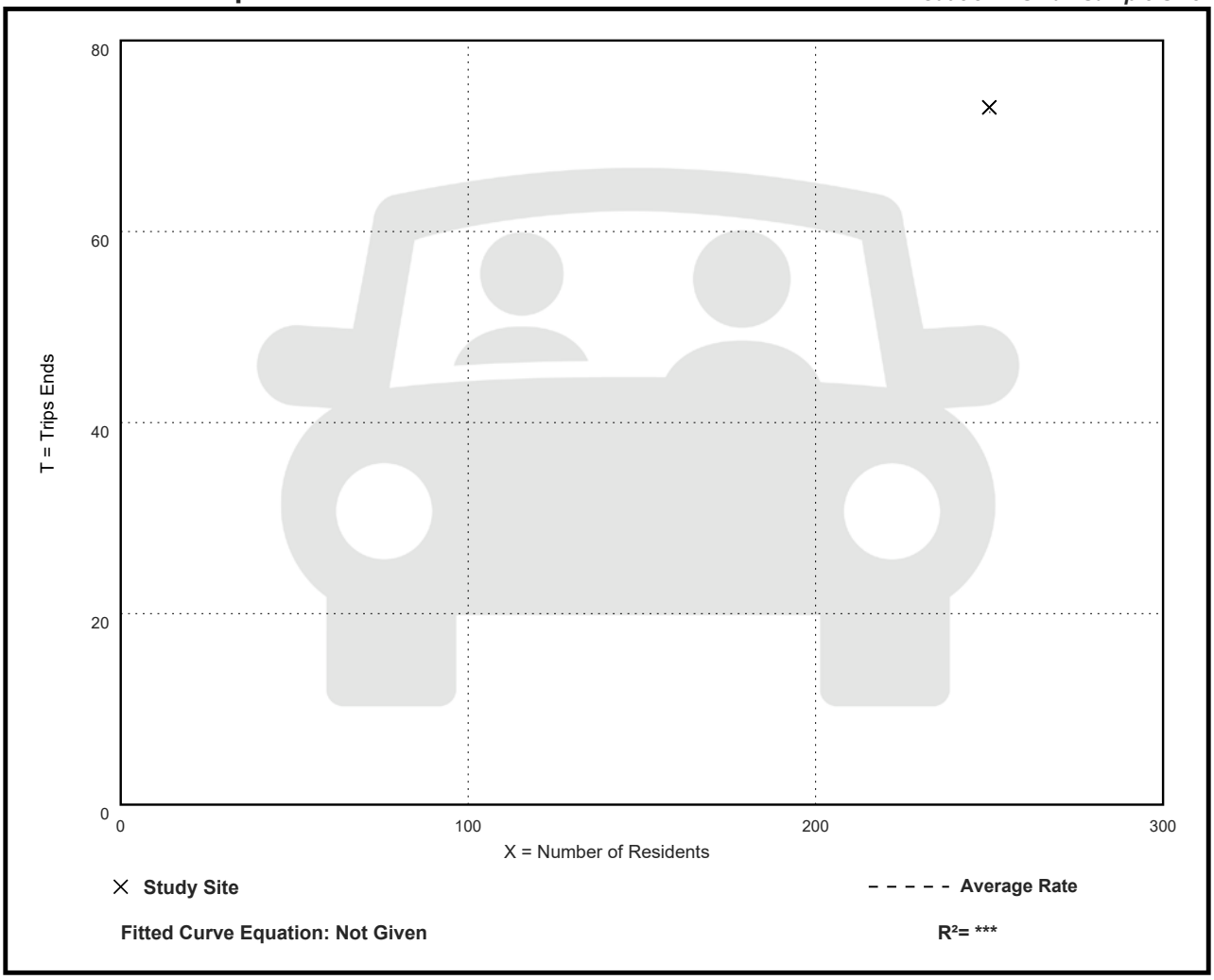
Setting/Location: General Urban/Suburban
Number of Studies: 1
Avg. Num. of Residents: 250
Directional Distribution: 34% entering, 66% exiting

Vehicle Trip Generation per Resident

Average Rate	Range of Rates	Standard Deviation
0.29	0.29 - 0.29	***

Data Plot and Equation

Caution – Small Sample Size



Multifamily Housing (High-Rise)
Close to Rail Transit (222)

Vehicle Trip Ends vs: Residents
On a: Sunday

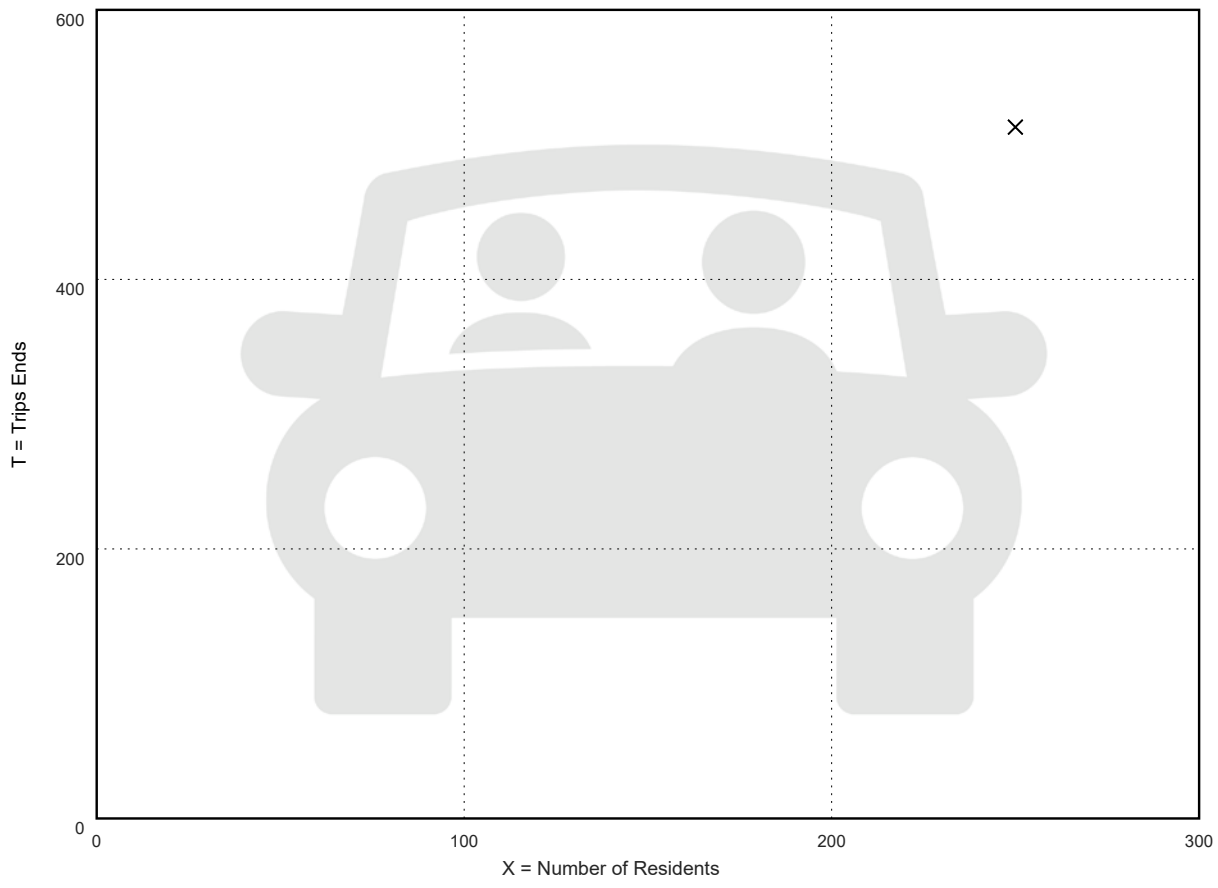
Setting/Location: General Urban/Suburban
Number of Studies: 1
Avg. Num. of Residents: 250
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Resident

Average Rate	Range of Rates	Standard Deviation
2.05	2.05 - 2.05	***

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Not Given

R^2= *

Multifamily Housing (High-Rise)
Close to Rail Transit (222)

Vehicle Trip Ends vs: Residents
On a: Sunday, Peak Hour of Generator

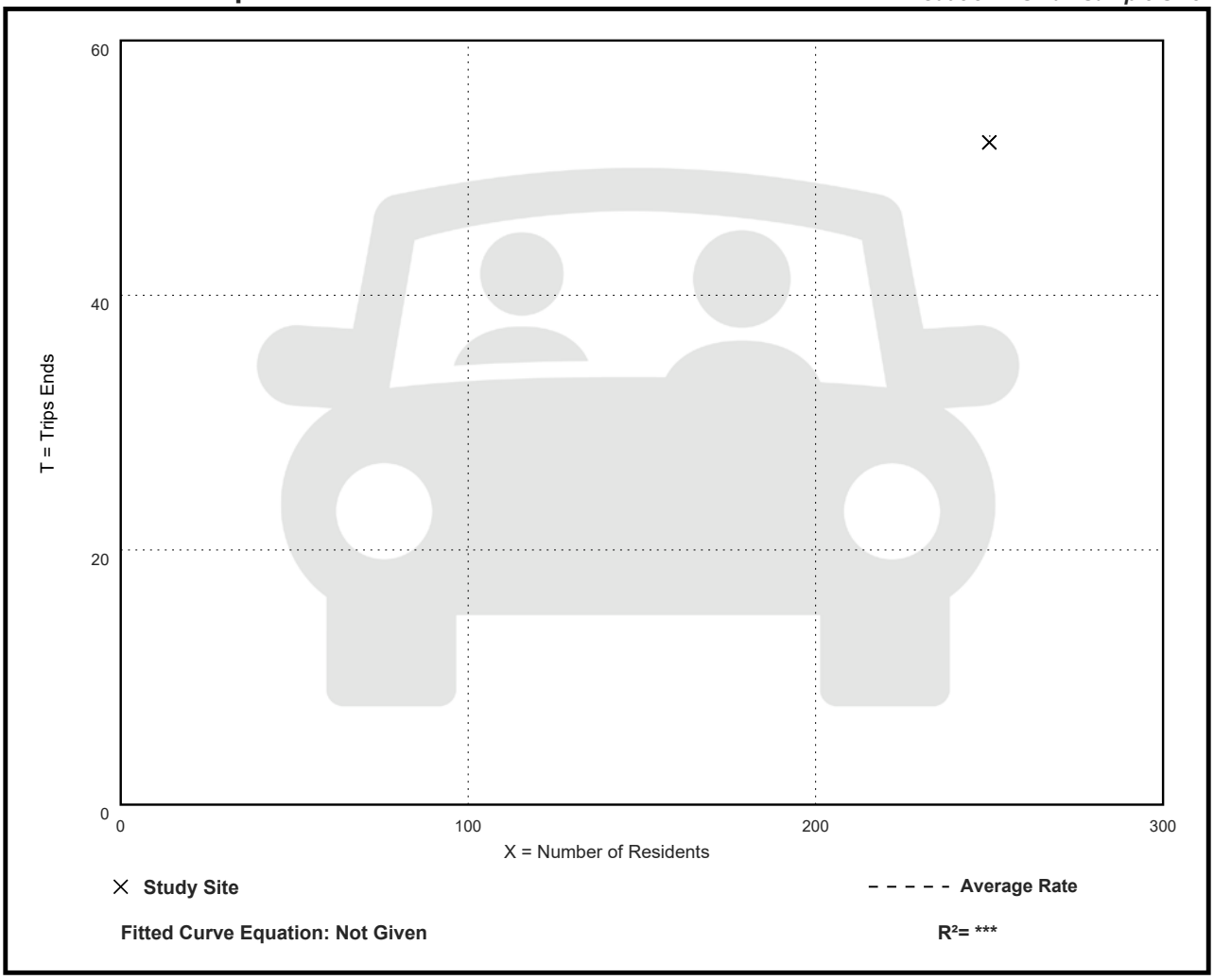
Setting/Location: General Urban/Suburban
Number of Studies: 1
Avg. Num. of Residents: 250
Directional Distribution: 58% entering, 42% exiting

Vehicle Trip Generation per Resident

Average Rate	Range of Rates	Standard Deviation
0.21	0.21 - 0.21	***

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Not Given

R^2= ***

Multifamily Housing (High-Rise) Close to Rail Transit (222)

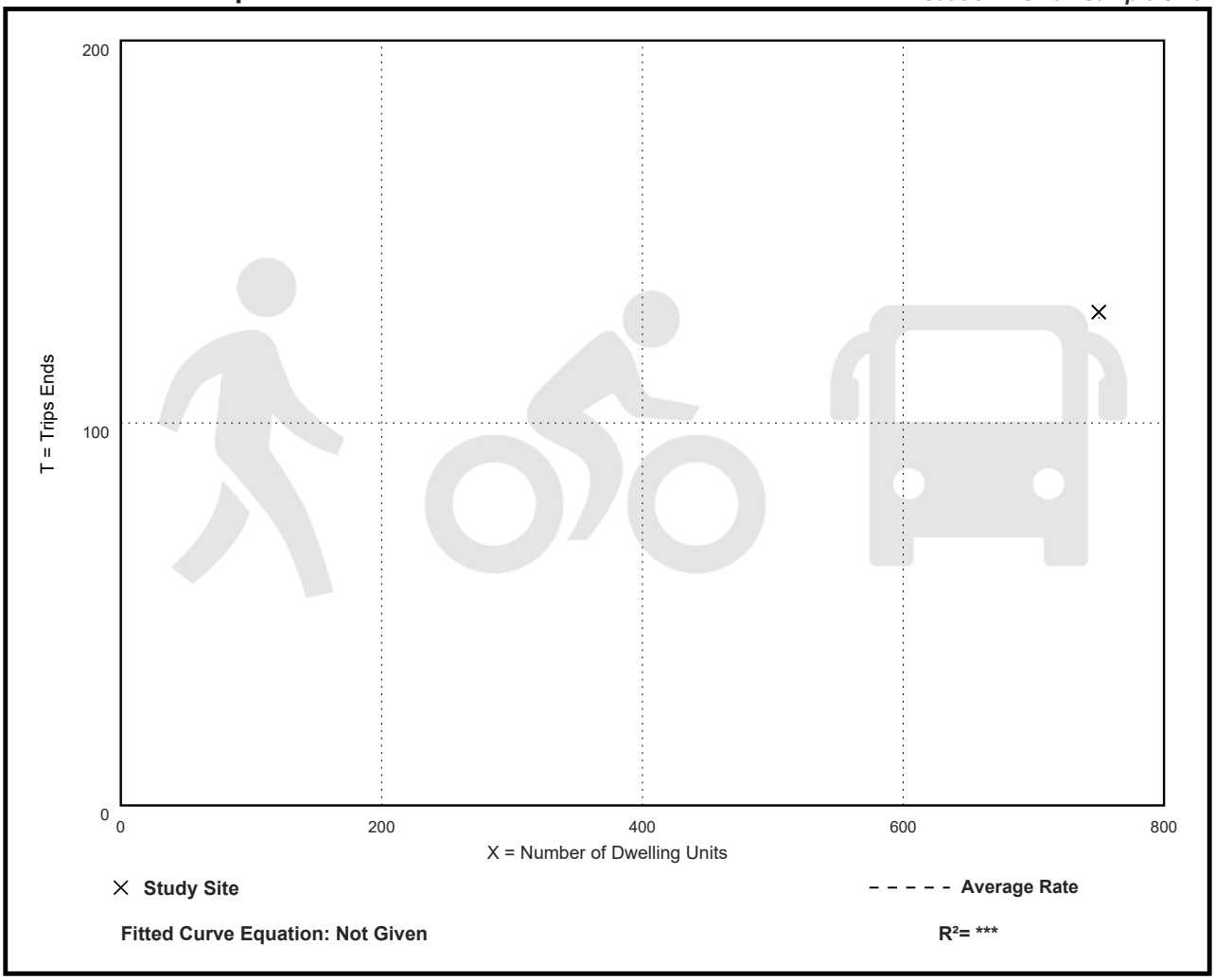
Walk+Bike+Transit Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
Number of Studies: 1
Avg. Num. of Dwelling Units: 750
Directional Distribution: 89% entering, 11% exiting

Walk+Bike+Transit Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.17	0.17 - 0.17	***

Data Plot and Equation

Caution – Small Sample Size



Multifamily Housing (High-Rise)
Close to Rail Transit (222)

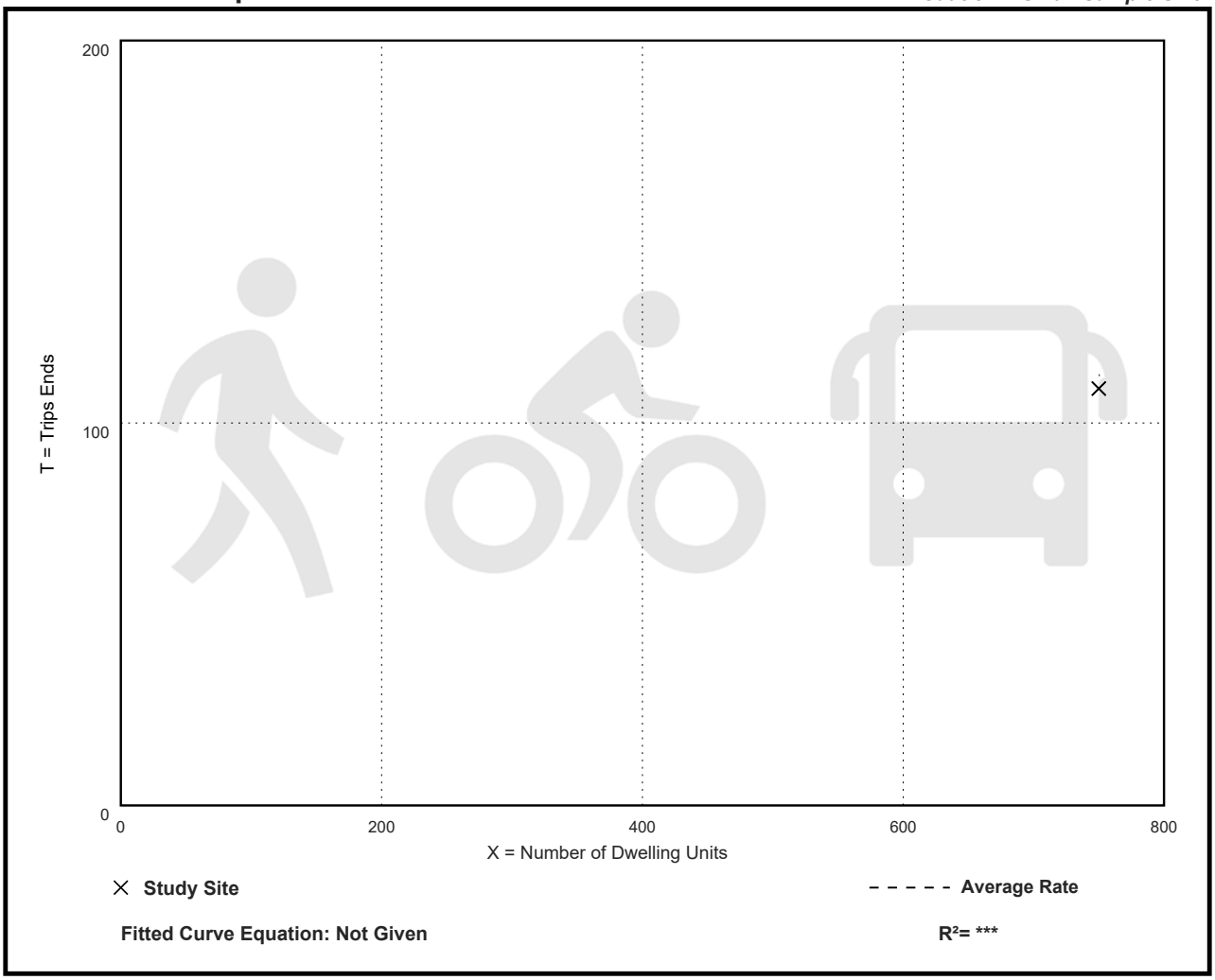
Walk+Bike+Transit Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
Number of Studies: 1
Avg. Num. of Dwelling Units: 750
Directional Distribution: 34% entering, 66% exiting

Walk+Bike+Transit Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.15	0.15 - 0.15	***

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Not Given

R^2= ***

Land Use: 822
Strip Retail Plaza (<40k)

Description

A strip retail plaza is an integrated group of commercial establishments that is planned, developed, owned, and managed as a unit. Each study site in this land use has less than 40,000 square feet of gross leasable area (GLA). Because a strip retail plaza is open-air, the GLA is the same as the gross floor area of the building.

The 40,000 square feet GFA threshold between strip retail plaza and shopping plaza (Land Use 821) was selected based on an examination of the overall shopping center/plaza database. No shopping plaza with a supermarket as its anchor is smaller than 40,000 square feet GLA.

Shopping center (>150k) (Land use 820), shopping plaza (40-150k) (Land Use 821), and factory outlet center (Land Use 823) are related uses.

Additional Data

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (https://www.ite.org/technical-resources/topics/trip-and-parking-generation/).

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alberta (CAN), California, Delaware, Florida, New Jersey, Ontario (CAN), South Dakota, Vermont, Washington, and Wisconsin.

Source Numbers

304, 358, 423, 428, 437, 507, 715, 728, 936, 960, 961, 974, 1009

Strip Retail Plaza (<40k)
(822)

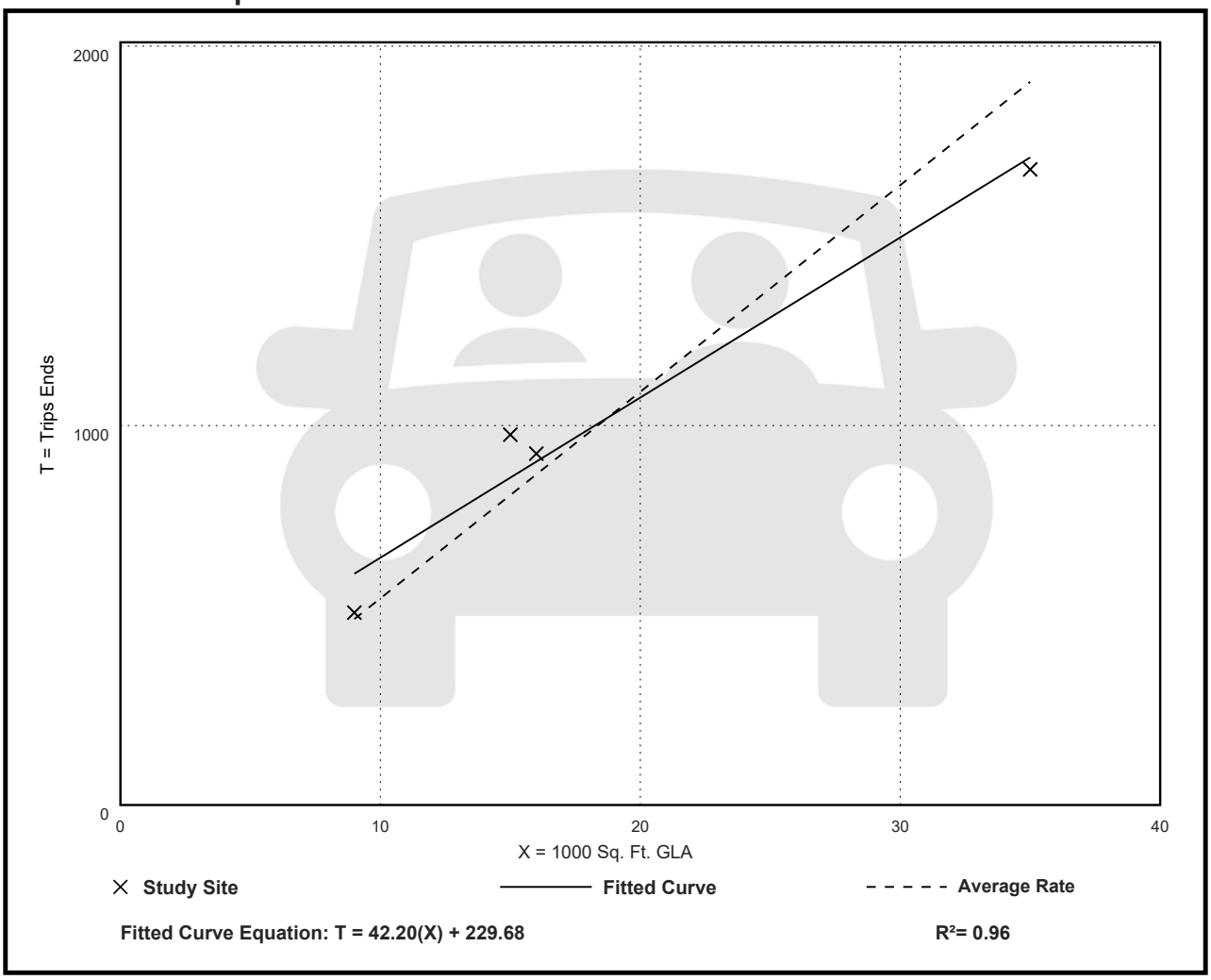
Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 4
Avg. 1000 Sq. Ft. GLA: 19
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
54.45	47.86 - 65.07	7.81

Data Plot and Equation



Fitted Curve Equation: T = 42.20(X) + 229.68

R^2= 0.96

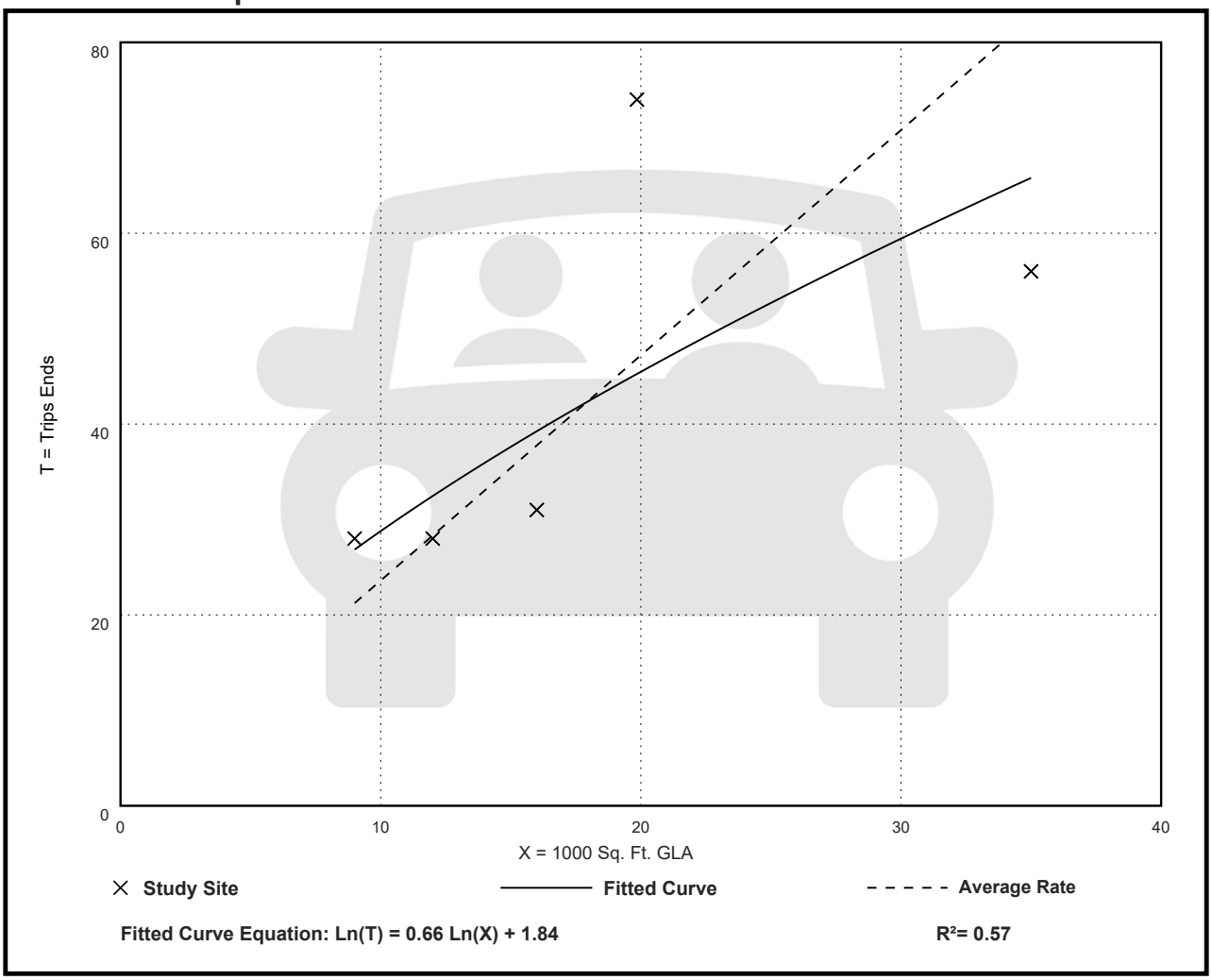
Strip Retail Plaza (<40k)
(822)

Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
Number of Studies: 5
Avg. 1000 Sq. Ft. GLA: 18
Directional Distribution: 60% entering, 40% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
2.36	1.60 - 3.73	0.94

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.66 Ln(X) + 1.84

R^2= 0.57

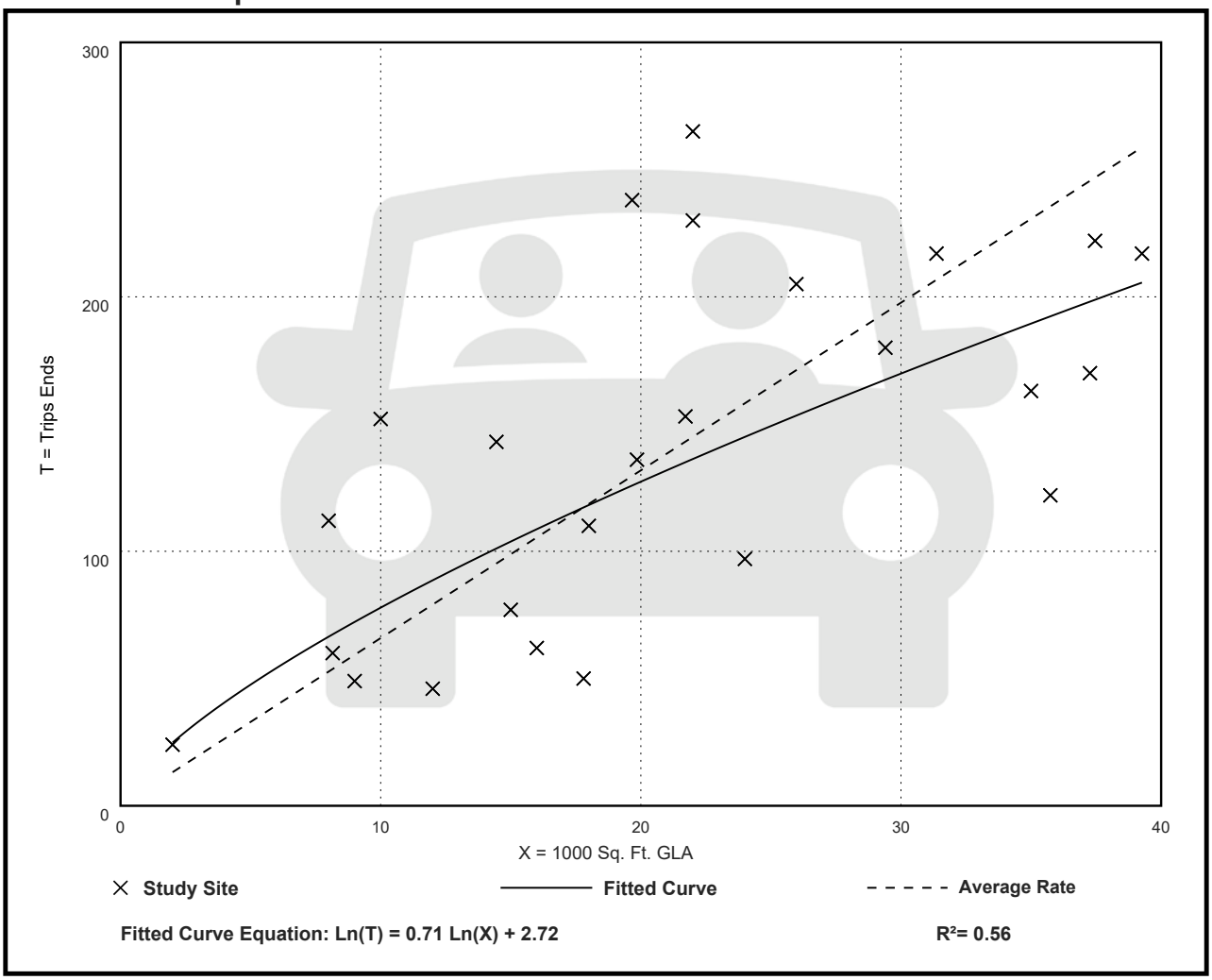
Strip Retail Plaza (<40k)
(822)

Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
Number of Studies: 25
Avg. 1000 Sq. Ft. GLA: 21
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
6.59	2.81 - 15.20	2.94

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.71 Ln(X) + 2.72

R^2= 0.56

Strip Retail Plaza (<40k)
(822)

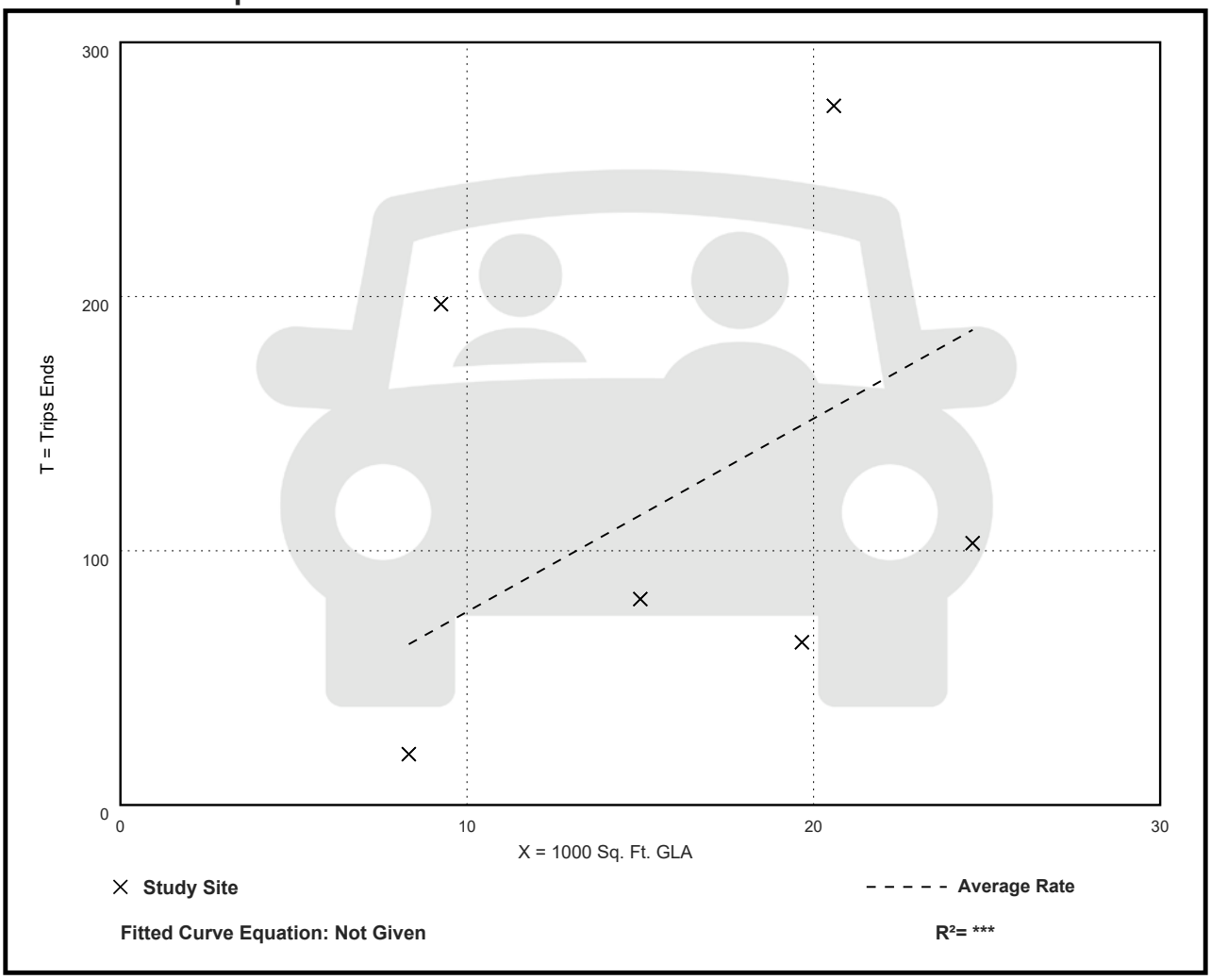
Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
On a: Weekday,
AM Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 6
Avg. 1000 Sq. Ft. GLA: 16
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
7.60	2.40 - 21.30	6.45

Data Plot and Equation



Fitted Curve Equation: Not Given

R^2= ***

Strip Retail Plaza (<40k)
(822)

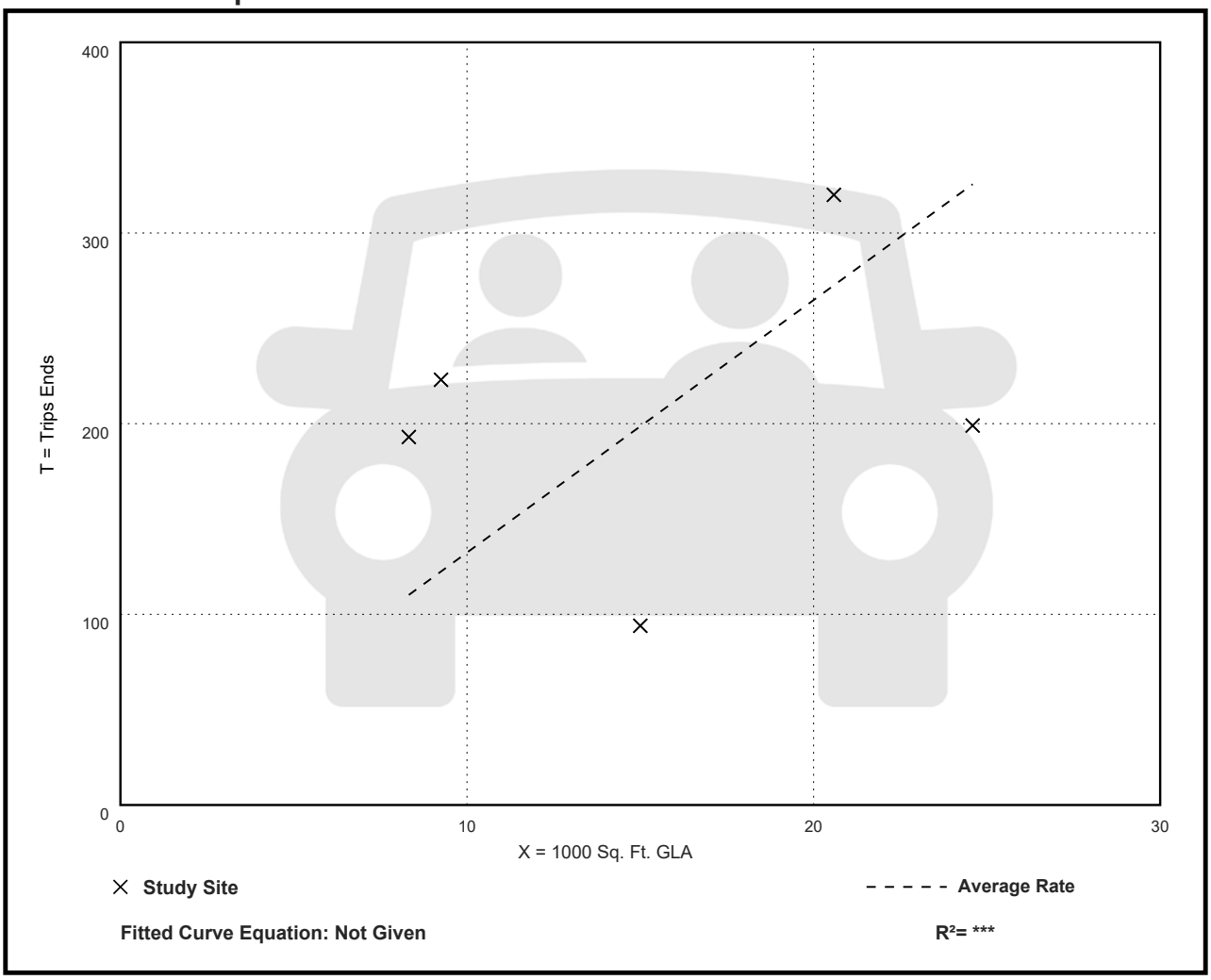
Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
On a: Weekday,
PM Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 5
Avg. 1000 Sq. Ft. GLA: 16
Directional Distribution: 54% entering, 46% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
13.24	6.27 - 24.11	7.40

Data Plot and Equation



Fitted Curve Equation: Not Given

R^2= ***

Strip Retail Plaza (<40k)
(822)

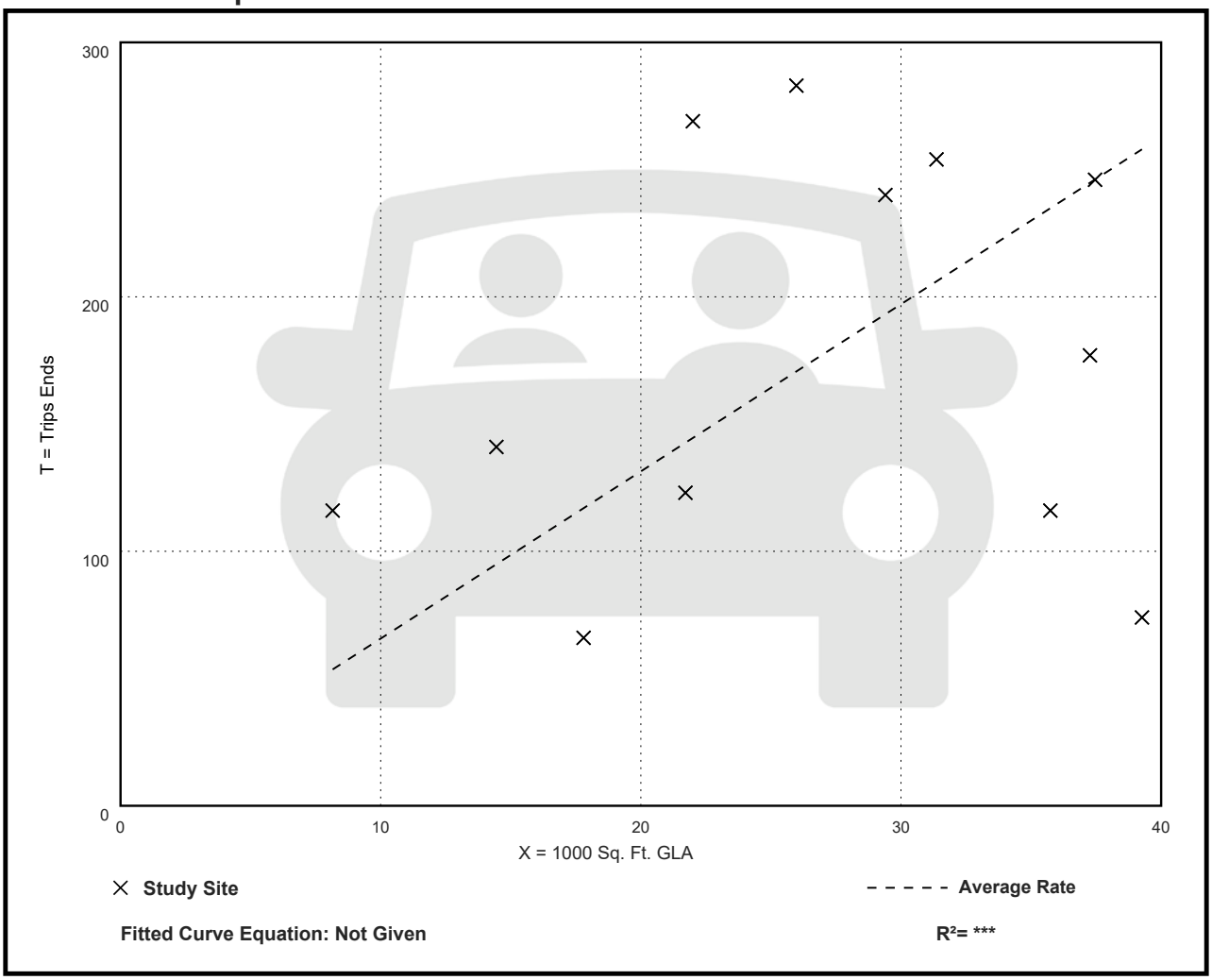
Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
On a: Saturday, Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 12
Avg. 1000 Sq. Ft. GLA: 27
Directional Distribution: 51% entering, 49% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
6.57	1.88 - 14.23	3.45

Data Plot and Equation



Strip Retail Plaza (<40k)
(822)

Vehicle Trip Ends vs: Employees
On a: Weekday,
AM Peak Hour of Generator

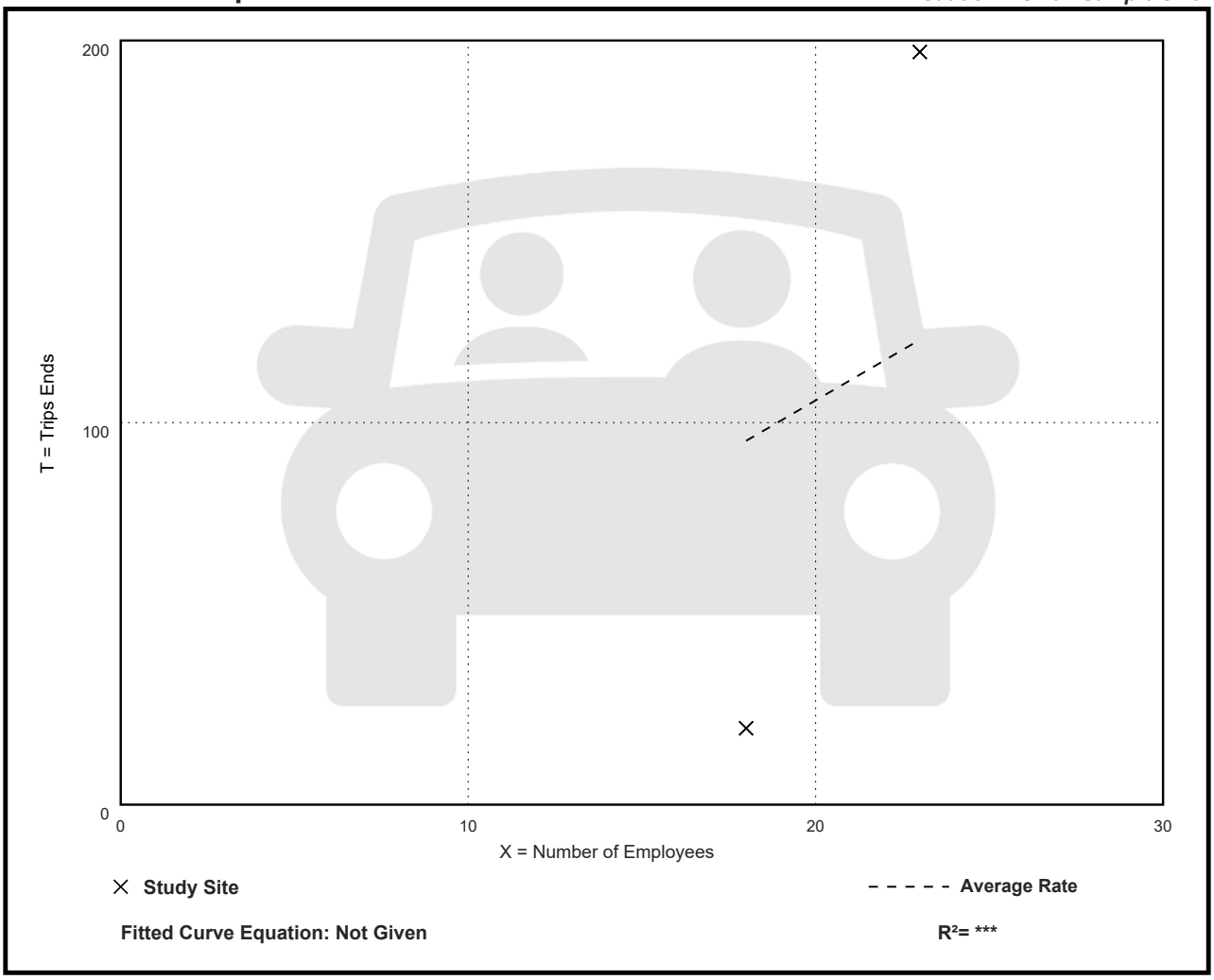
Setting/Location: General Urban/Suburban
Number of Studies: 2
Avg. Num. of Employees: 21
Directional Distribution: 52% entering, 48% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
5.29	1.11 - 8.57	***

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Not Given

R^2= ***

Strip Retail Plaza (<40k)
(822)

Vehicle Trip Ends vs: Employees
On a: Weekday,
PM Peak Hour of Generator

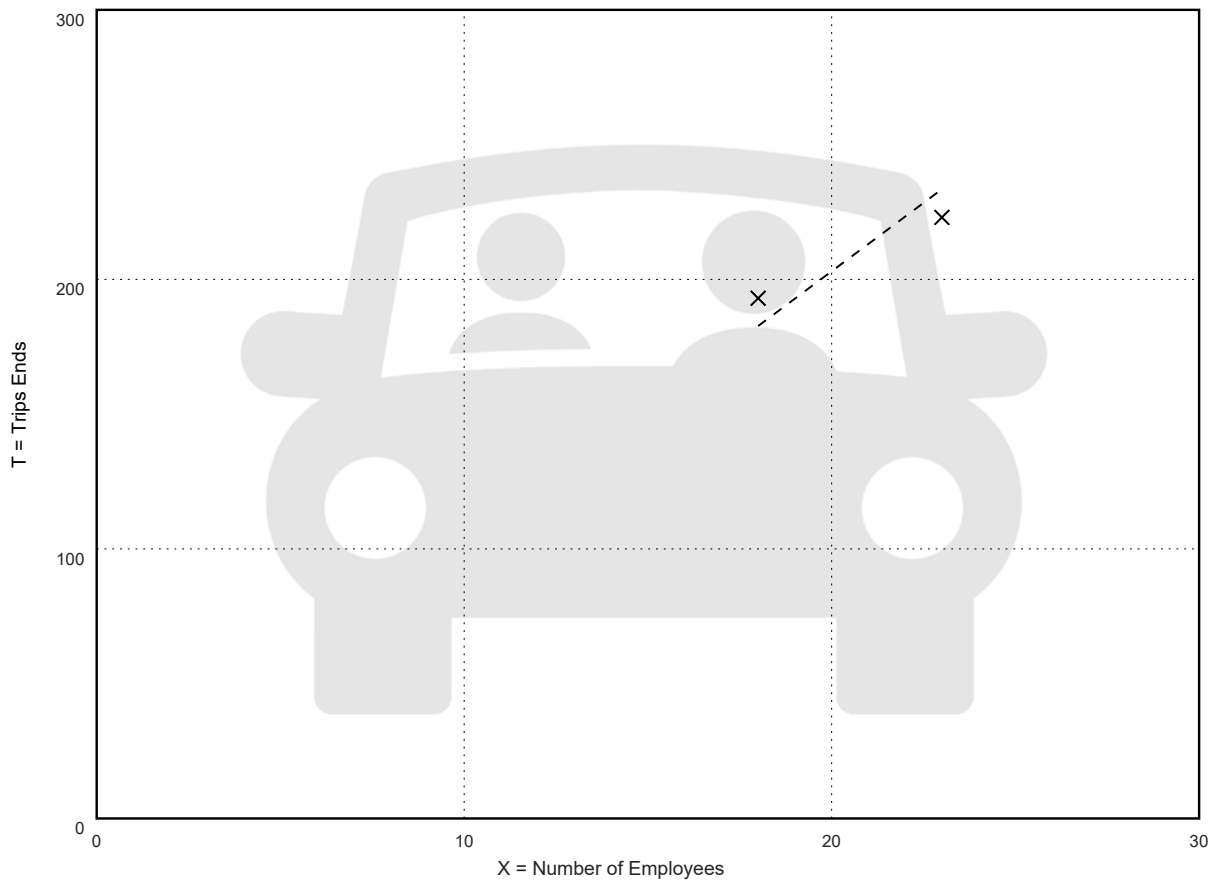
Setting/Location: General Urban/Suburban
Number of Studies: 2
Avg. Num. of Employees: 21
Directional Distribution: 56% entering, 44% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
10.15	9.70 - 10.72	***

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Not Given

R^2= ***

Strip Retail Plaza (<40k)
(822)

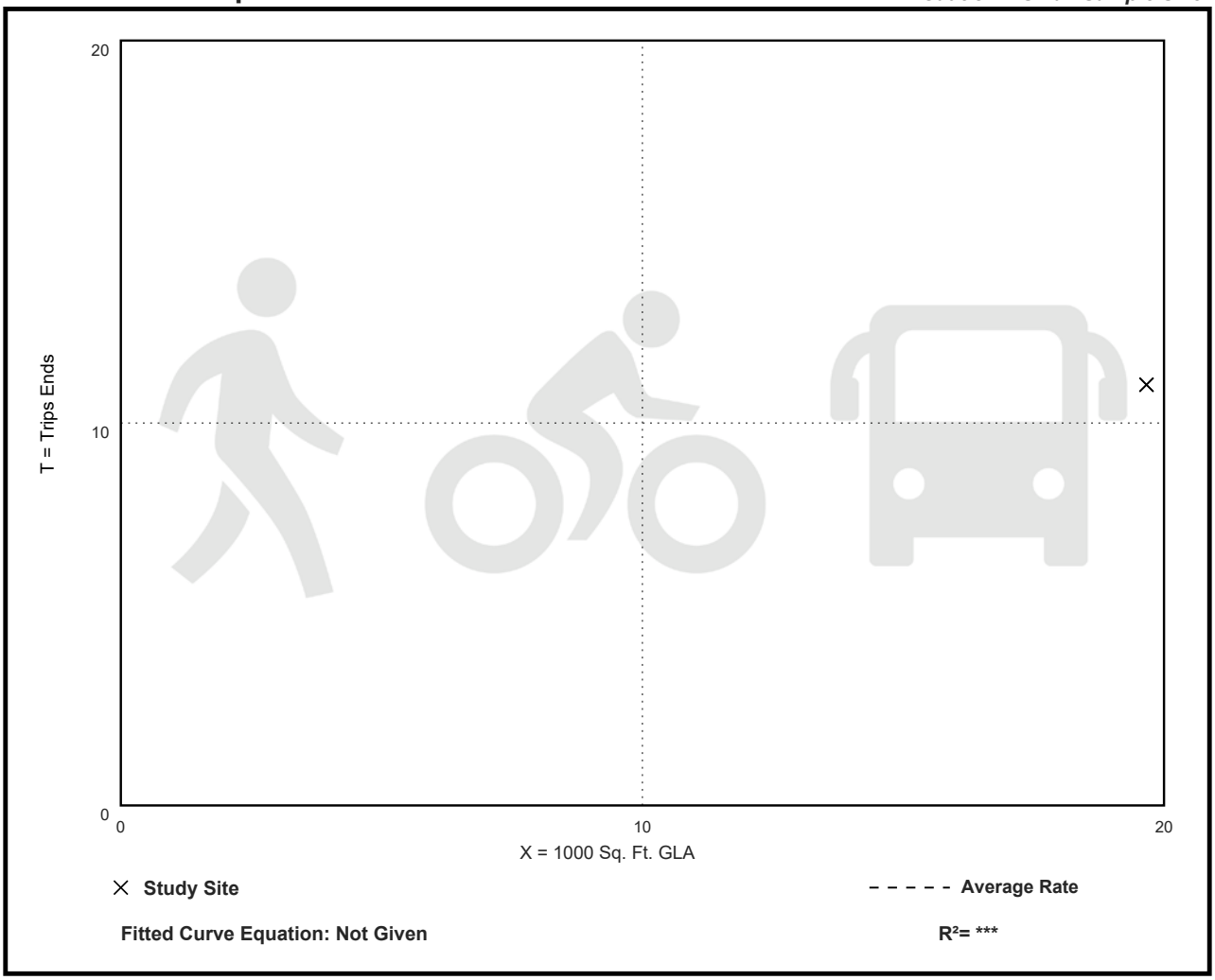
Walk+Bike+Transit Trip Ends vs: 1000 Sq. Ft. GLA
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
Number of Studies: 1
Avg. 1000 Sq. Ft. GLA: 20
Directional Distribution: Not Available

Walk+Bike+Transit Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
0.56	0.56 - 0.56	***

Data Plot and Equation

Caution – Small Sample Size



Strip Retail Plaza (<40k)
(822)

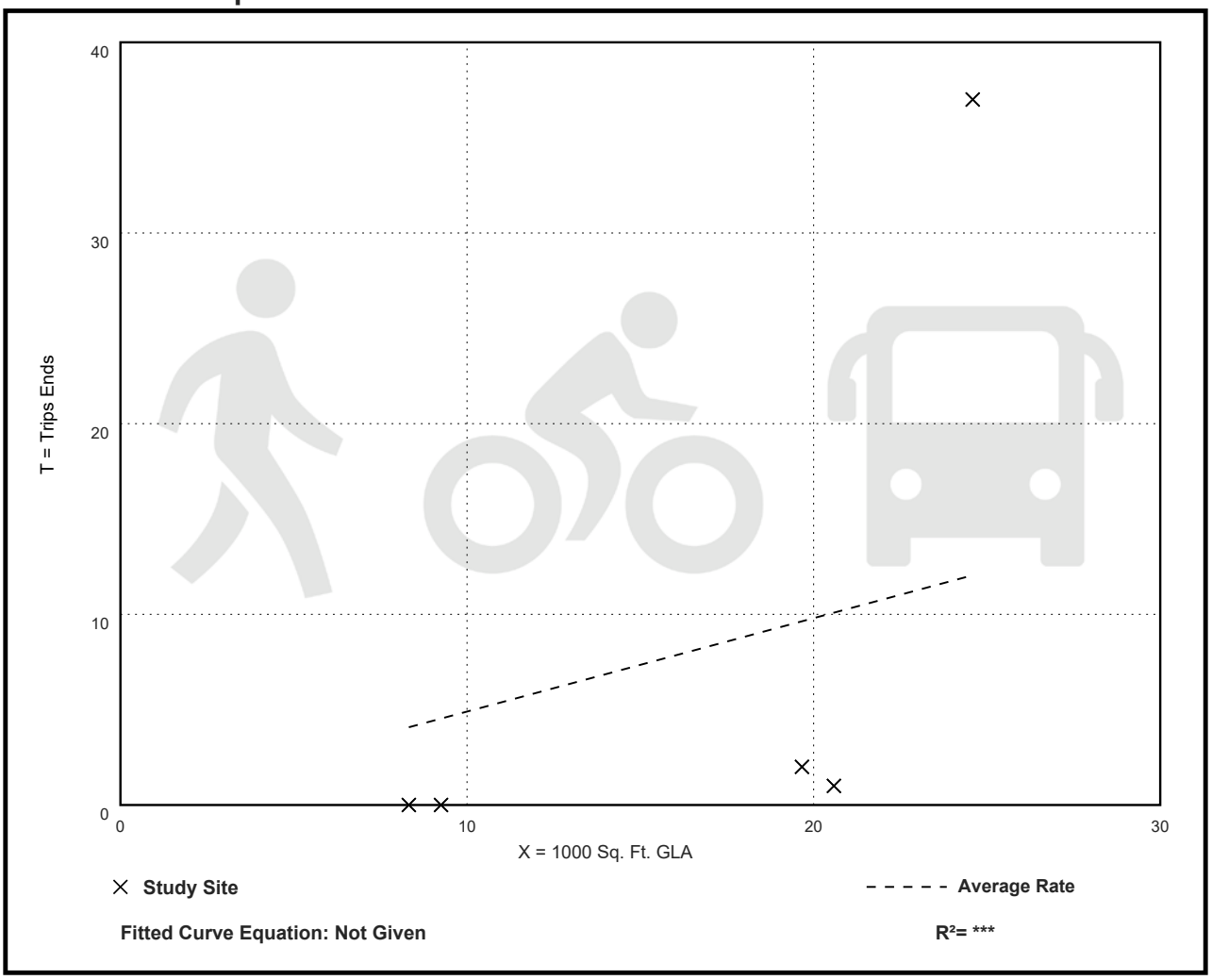
Walk+Bike+Transit Trip Ends vs: 1000 Sq. Ft. GLA
On a: Weekday,
AM Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 5
Avg. 1000 Sq. Ft. GLA: 16
Directional Distribution: Not Available

Walk+Bike+Transit Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
0.49	0.00 - 1.50	0.74

Data Plot and Equation



Strip Retail Plaza (<40k)
(822)

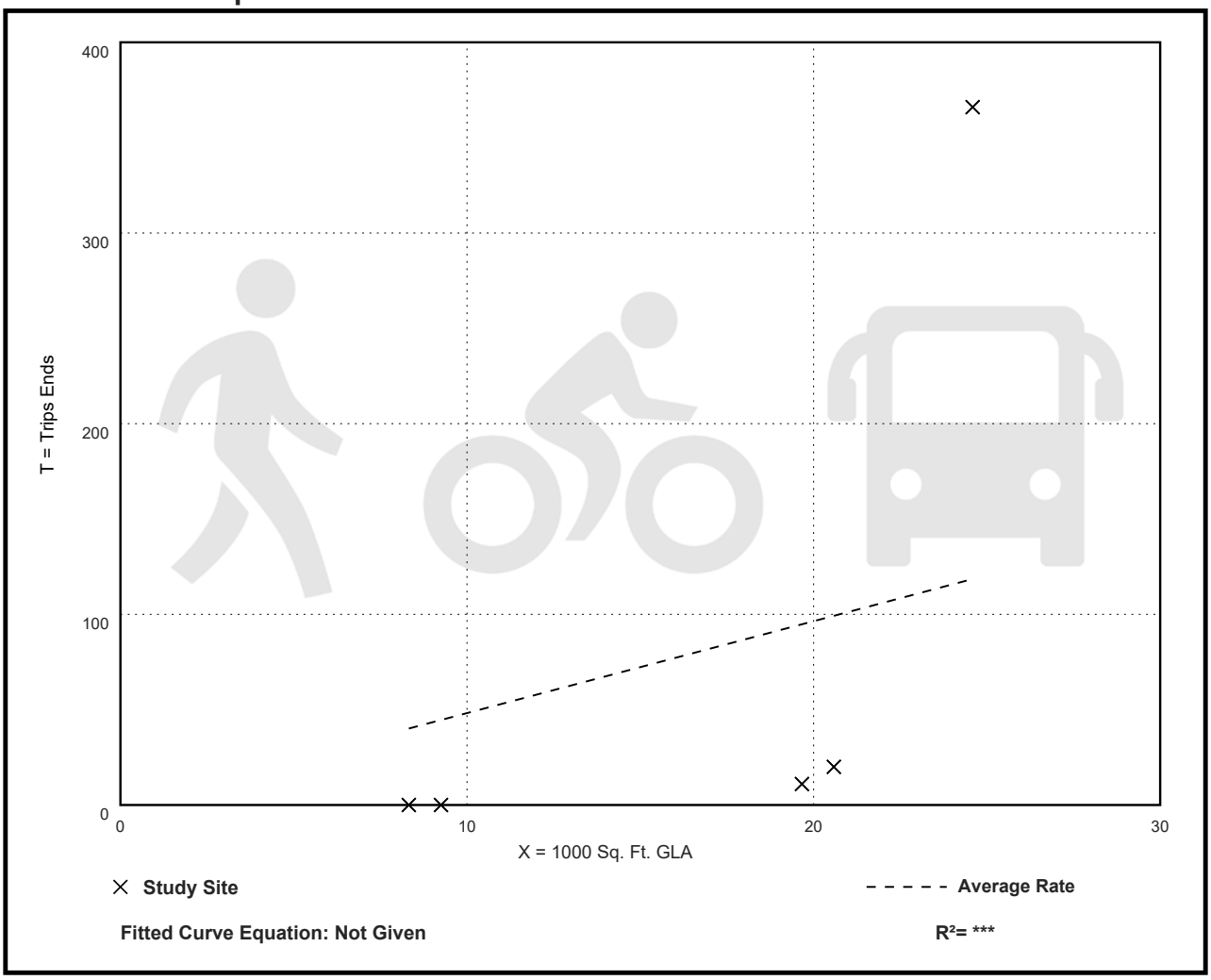
Walk+Bike+Transit Trip Ends vs: 1000 Sq. Ft. GLA
On a: Weekday,
PM Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 5
Avg. 1000 Sq. Ft. GLA: 16
Directional Distribution: Not Available

Walk+Bike+Transit Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
4.82	0.00 - 14.88	7.35

Data Plot and Equation



Strip Retail Plaza (<40k)
(822)

Walk+Bike+Transit Trip Ends vs: Employees
On a: Weekday,
AM Peak Hour of Generator

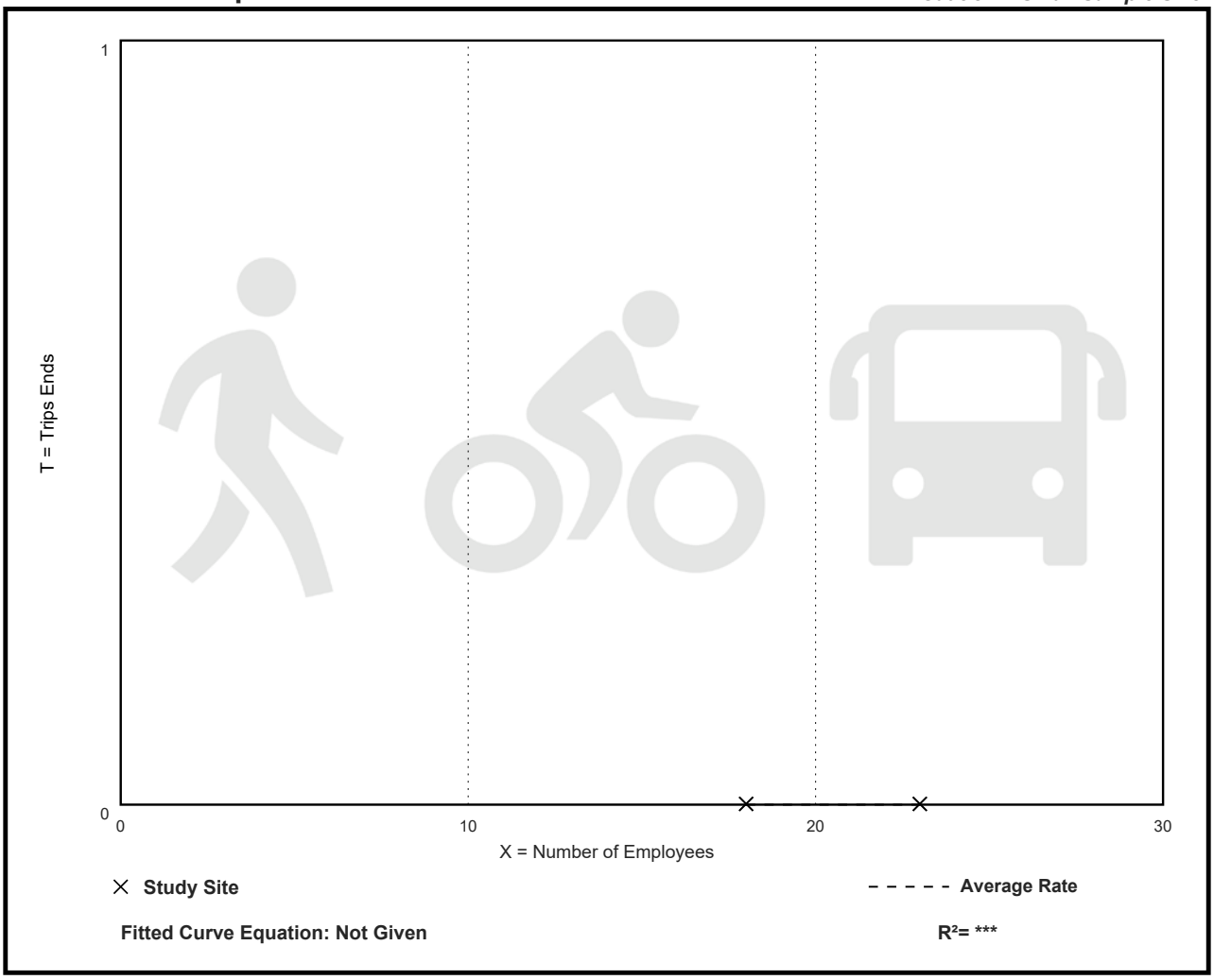
Setting/Location: General Urban/Suburban
Number of Studies: 2
Avg. Num. of Employees: 21
Directional Distribution: Not Available

Walk+Bike+Transit Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.00	0.00 - 0.00	***

Data Plot and Equation

Caution – Small Sample Size



Strip Retail Plaza (<40k)
(822)

Walk+Bike+Transit Trip Ends vs: Employees
On a: Weekday,
PM Peak Hour of Generator

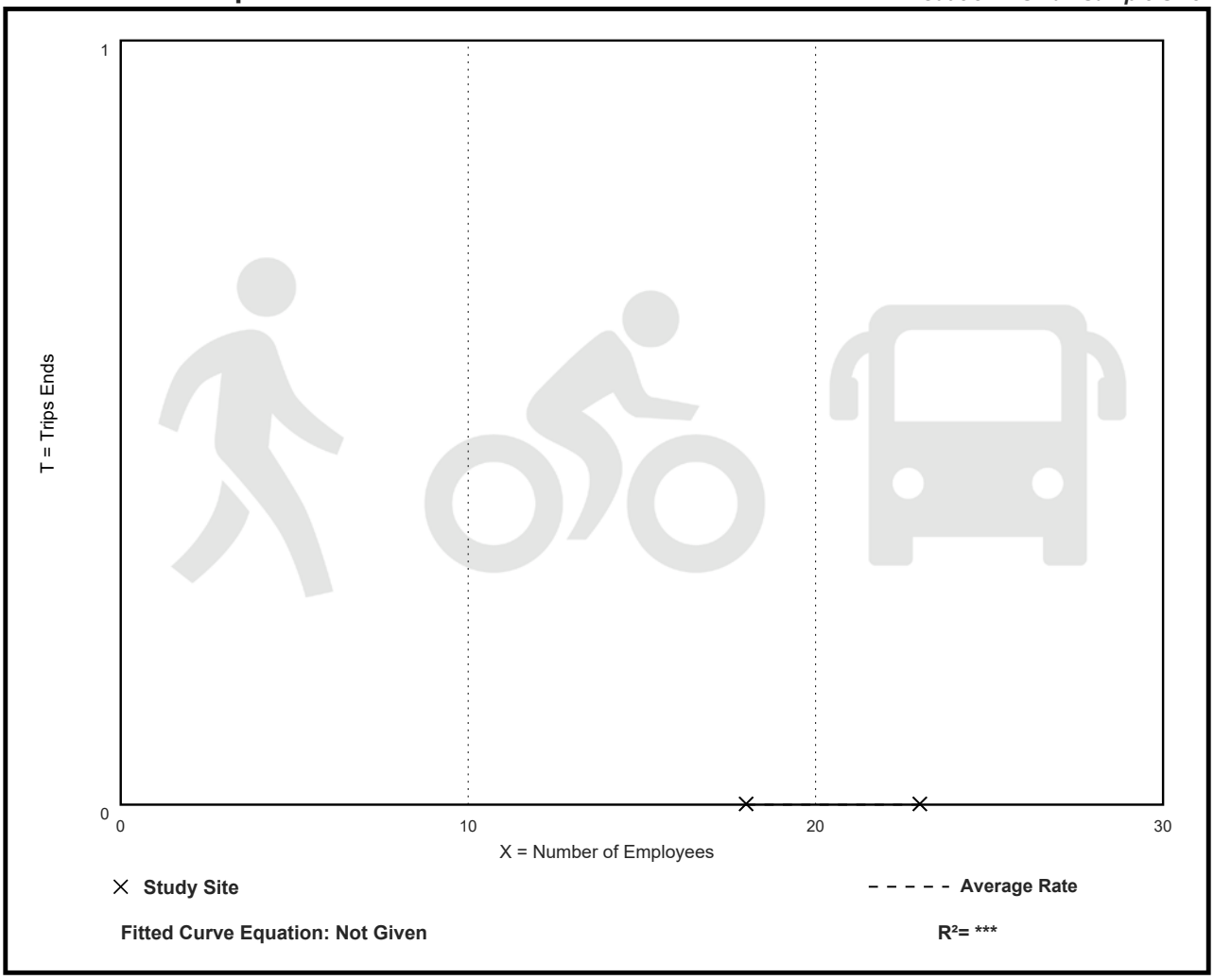
Setting/Location: General Urban/Suburban
Number of Studies: 2
Avg. Num. of Employees: 21
Directional Distribution: Not Available

Walk+Bike+Transit Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.00	0.00 - 0.00	***

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Not Given

R^2= *

Appendix D ITE Internal Capture Spreadsheet

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Transportation Impact Study	**Organization:**	Stantec Consulting Ltd.
Project Location:	84-104 Plains Road East	**Performed By:**	
Scenario Description:		**Date:**	04-Dec-24
Analysis Year:		**Checked By:**	
Analysis Period:	**AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail				32	19	13
Restaurant				0		
Cinema/Entertainment				0		
Residential				87	22	65
Hotel				0		
All Other Land Uses[2]				0		
				119	41	78

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	119	41	78
Internal Capture Percentage	2%	2%	1%
External Vehicle-Trips[5]	117	40	77
External Transit-Trips[6]	0	0	0
External Non-Motorized Trips[6]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	5%	0%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	0%	2%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

[4]Enter vehicle occupancy assumed in Table 1-A vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made to Tables 5-A, 9-A (O and D). Enter transit, non-motorized percentages that will result with proposed mixed-use project complete.

[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.

[6]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Transportation Impact Study	**Organization:**	Stantec Consulting Ltd.
Project Location:	84-104 Plains Road East	**Performed By:**	
Scenario Description:		**Date:**	04-Dec-24
Analysis Year:		**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail				97	49	48
Restaurant				0		
Cinema/Entertainment				0		
Residential				117	77	40
Hotel				0		
All Other Land Uses[2]				0		
				214	126	88

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	12	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	5	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	214	126	88
Internal Capture Percentage	16%	13%	19%
External Vehicle-Trips[5]	180	109	71
External Transit-Trips[6]	0	0	0
External Non-Motorized Trips[6]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	10%	25%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	16%	13%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

[4]Enter vehicle occupancy assumed in Table 1-P vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made

[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

[6]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

Appendix E TTS Trip Distribution Data

Mon Feb 12 2024 11:15:04 GMT-0500 (Eastern Standard Time) - Run Time: 2257ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Planning district of household - pd_hhld
Column: Planning district of employment - pd_emp

RowG:(40)
ColG:
TblG:

Filters:
No Filters

Trip 2016
Table:

Not employed	130078
PD 1 of Toronto	11791
PD 2 of Toronto	625
PD 3 of Toronto	262
PD 4 of Toronto	665
PD 5 of Toronto	561
PD 6 of Toronto	179
PD 7 of Toronto	595
PD 8 of Toronto	1512
PD 9 of Toronto	1551
PD 10 of Toronto	387
PD 11 of Toronto	905
PD 12 of Toronto	270
PD 13 of Toronto	416
PD 14 of Toronto	52
PD 16 of Toronto	142
Pickering	135
Whitby	50
Oshawa	111
Newmarket	28
Richmond Hill	295
Markham	475
Vaughan	1550
Caledon	65
Brampton	2422
Mississauga	26283
Halton Hills	234
Milton	5287
Oakville	38272
Burlington	115463
Flamborough	3395
Dundas	799
Ancaster	1867
Glanbrook	751
Stoney Creek	2020
Hamilton	18693
Grimsby	346
Lincoln	548
Niagara-on-the-Lake	103
St. Catharines	873
Niagara Falls	1093
Welland	58
Port Colborne	91
Fort Erie	447
Waterloo	541
Kitchener	239
Cambridge	927
North Dumfries	10
Wilmot	32
City of Guelph	1611
Puslinch	428
Guelph/Eramosa	86
Essa	40
Hastings	51
Oxford	327
Brant	43
Haldimand-Norfolk	75
Brantford	658
No Usual Place	23684
External	214

Appendix F Current Signal Timing Plans

Intersection Name:	TS ID:	Line No:	Model:	IP address:	Controller Make:
Plains Road @ Cooke Blvd	117	4	ACS/3	172.24.15.2	Econolite

Type of Operation: 8 Phase Semi-Actuated

No	Date			Description	Prepared by:
	Y	M	D		
5	2019	5	8	Plains Road Optimization	MA
6	2022	6	23	Plains Optimization	JR

*-Start from Main Menu

PHASE DESCRIPTION

Ph1		Ph5	EBLT - Plains Road
Ph2	EB - Plains Road	Ph6	WB - Plains Road
Ph3		Ph7	
Ph4	NB - Driveway	Ph8	SB - Cooke Blvd

CONFIGURATION (PHASE SEQ): PHASE IN USE/EXCLUSIVE PED (MM) *- 1 - 2

Phase:	1	2	3	4	5	6	7	8
Phase in Use		X		X	X	X		X
Exclusive PED								

CONTROLLER TIMING DATA - VEHICLE TIMING * - 2 - 1

Timing Plan: 1

	Phase: 1	2	3	4	5	6	7	8
Minimum Green		8		8	6	8		8
Walk		8		8		8		8
Ped. Clearance		11		14		11		14
Pedestrian Carry Over								
Vehicle Extension		3		3	3	3		3
MAX 1		40		30	10	40		30
MAX 2		40		30	10	40		30
Yellow Change		3.7		3.3	3	3.7		3.3
Red Clearance		2.3		2.6		2.3		2.6
Phase Minimum:	0.0	25.0	0.0	27.9	9.0	25.0	0.0	27.9

PHASE DATA - VEHICLE AND PEDESTRIAN RECALLS * - 2 - 8

Phase:	1	2	3	4	5	6	7	8
Lock Detector								
Vehicle Recall								
Pedestrian Recall		X				X		
MAX Recall		X				X		
Min Recall								

COORDINATION: COORDINATOR PATTERN, SPLIT PATTERN *** - 3 - 2, - 3 - 3**

Coordinator Pattern (CP)	Cycle Length	Offset (sec)	Timing Plan	Split Pattern	Phases (sec)							
					1	2	3	4	5	6	7	8
1	110	102	1	1		78		32	16	62		32
2	90	84	1	2		52		38	12	40		38
3	110	96	1	3		78		32	16	62		32
4	90	12	1	4		60		30	12	48		30
10	0	0	1	10		0		0	0	0		0

TIME BASE: ACTION PLAN, DAY PLAN *** - 5 - 2, - 5 - 3, -5 - 4**

Day Plan	Sched. #	Action Plan	Time Period	Pattern	Timing Plan
1	1	4	06:00	4	1
1	1	1	07:00	1	1
1	1	2	09:00	2	1
1	1	3	15:30	3	1
1	1	4	19:00	4	1
1	1	10	22:00	254	1
2	2	4	08:00	4	1
2	2	3	10:30	3	1
2	2	4	17:00	4	1
2	2	10	21:00	254	1
3	3	4	09:30	4	1
3	3	2	12:00	2	1
3	3	4	17:00	4	1
3	3	10	21:00	254	1

Schedule 1 = Day Plan 1
Schedule 2 = Day Plan 2
Schedule 3 = Day Plan 3

Day Plan 1 (Weekday)
Day Plan 2 (Saturday)
Day Plan 3 (Sunday, Holidays)

Action Plan 10 = free (254)

Special Programming:

TIME BASE DATA - TIME OF YEAR EVENTS *** - 5 - 5**

Events	Exception Day		MON/ MON	DOW/ DOW	WOM/ Year	Day Plan
New Year's Day	1	Fixed	1	1	0	3
Family Day	2	Float	2	2	3	3
Good Friday	3	Float	4	6	1	3
Victoria Day	4	Float	5	2	3	3
Canada Day	5	Fixed	7	1	0	3
Civic Day	6	Float	8	2	1	3
Labour Day	7	Float	9	2	1	3
Thanksgiving	8	Float	10	2	2	3
Christmas Day	9	Fixed	12	25	0	3

Intersection Name:	TS ID:	Line No:	Model:	IP address:	Controller Make:
Plains Road @ Waterdown Rd	100	4	ACS/3	172.24.7.2	Econolite

Type of Operation: 8 Phase Semi-Actuated

No	Date			Description	Prepared by:
	Y	M	D		
8	2019	5	15	Plains Road Optimization	MA
9	2022	5	19	Increase Main Street min green	JR
10	2022	6	23	Optimization	JR

*-Start from Main Menu

PHASE DESCRIPTION

Ph1	WBLT - Plains Road	Ph5	EBLT - Plains Road
Ph2	EB - Plains Road	Ph6	WB - Plains Road
Ph3	SBLT - Waterdown Road	Ph7	NBLT - Waterdown Road
Ph4	NB - Waterdown Road	Ph8	SB - Waterdown Road

CONFIGURATION (PHASE SEQ): PHASE IN USE/EXCLUSIVE PED (MM) *- 1 - 2

Phase:	1	2	3	4	5	6	7	8
Phase in Use	X	X	X	X	X	X	X	X
Exclusive PED								

CONTROLLER TIMING DATA - VEHICLE TIMING * - 2 - 1

Timing Plan: 1

Phase:	1	2	3	4	5	6	7	8
Minimum Green	6	20	6	8	6	20	6	8
Walk		8		10		8		10
Ped. Clearance		13		17		17		17
Pedestrian Carry Over								
Vehicle Extension	3	3	3	3	3	3	3	3
MAX 1	12	35	12	25	12	35	12	25
MAX 2	12	35	12	25	12	35	12	25
Yellow Change	3	3.7	3	3.3	3	3.7	3	3.3
Red Clearance		2.6		3		2.6		3
Phase Minimum:	9.0	27.3	9.0	33.3	9.0	31.3	9.0	33.3

PHASE DATA - VEHICLE AND PEDESTRIAN RECALLS * - 2 - 8

Phase:	1	2	3	4	5	6	7	8
Lock Detector								
Vehicle Recall								
Pedestrian Recall								
MAX Recall		X				X		
Min Recall								

COORDINATION: COORDINATOR PATTERN, SPLIT PATTERN *** - 3 - 2, - 3 - 3**

Coordinator Pattern (CP)	Cycle Length	Offset (sec)	Timing Plan	Split Pattern	Phases (sec)							
					1	2	3	4	5	6	7	8
1	110	0	1	1	12	51	13	34	31	32	10	37
2	90	84	1	2	12	34	10	34	14	32	10	34
3	110	0	1	3	15	49	20	26	18	46	10	36
4	90	2	1	4	12	34	10	34	14	32	10	34
10	0	0	1	10	0	0	0	0	0	0	0	0

TIME BASE: ACTION PLAN, DAY PLAN *** - 5 - 2, - 5 - 3, -5 - 4**

Day Plan	Sched. #	Action Plan	Time Period	Pattern	Timing Plan
1	1	4	06:00	4	1
1	1	1	07:00	1	1
1	1	2	09:00	2	1
1	1	3	15:30	3	1
1	1	4	19:00	4	1
1	1	10	22:00	254	1
2	2	4	08:00	4	1
2	2	3	10:30	3	1
2	2	4	17:00	4	1
2	2	10	21:00	254	1
3	3	4	09:30	4	1
3	3	2	12:00	2	1
3	3	4	17:00	4	1
3	3	10	21:00	254	1

Schedule 1 = Day Plan 1
Schedule 2 = Day Plan 2
Schedule 3 = Day Plan 3

Day Plan 1 (Weekday)
Day Plan 2 (Saturday)
Day Plan 3 (Sunday, Holidays)

Action Plan 10 = free (254)

Special Programming:

TIME BASE DATA - TIME OF YEAR EVENTS *** - 5 - 5**

Events	Exception Day		MON/ MON	DOW/ DOW	WOM/ Year	Day Plan
New Year's Day	1	Fixed	1	1	0	3
Family Day	2	Float	2	2	3	3
Good Friday	3	Float	4	6	1	3
Victoria Day	4	Float	5	2	3	3
Canada Day	5	Fixed	7	1	0	3
Civic Day	6	Float	8	2	1	3
Labour Day	7	Float	9	2	1	3
Thanksgiving	8	Float	10	2	2	3
Christmas Day	9	Fixed	12	25	0	3

Intersection Name:	TS ID:	Line No:	Model:	IP address:	Controller Make:
Plains Road @ St. Matthews	116	4	ACS/3	172.24.16.2	Econolite

Type of Operation: 8 Phase Semi-Actuated

No	Date			Description	Prepared by:
	Y	M	D		
4	2018	10	12	Placed back in coordination AM & Mid-day. Wknds to remain in FREE	EN
5	2022	6	23	Optimization	JR

*-Start from Main Menu

PHASE DESCRIPTION

Ph1		Ph5	
Ph2	EB - Plains Road	Ph6	WB - Plains Road
Ph3		Ph7	
Ph4		Ph8	SB - St. Matthews Avenue

CONFIGURATION (PHASE SEQ): PHASE IN USE/EXCLUSIVE PED (MM) *- 1 - 2

Phase:	1	2	3	4	5	6	7	8
Phase in Use		X		X		X		X
Exclusive PED								

CONTROLLER TIMING DATA - VEHICLE TIMING * - 2 - 1

Timing Plan: 1

Phase:	1	2	3	4	5	6	7	8
Minimum Green		8				8		8
Walk		30				30		8
Ped. Clearance		8				8		13
Pedestrian Carry Over								
Vehicle Extension		3				3		3
MAX 1		40				40		30
MAX 2		40				40		30
Yellow Change		3.7				3.7		3
Red Clearance		1.7				1.7		3
Phase Minimum:	**0**	**43.4**	**0**	**0**	**0**	**43.4**	**0**	**27**

PHASE DATA - VEHICLE AND PEDESTRIAN RECALLS * - 2 - 8

Phase:	1	2	3	4	5	6	7	8
Lock Detector								
Vehicle Recall								
Pedestrian Recall		X				X		
MAX Recall		X				X		
Min Recall								

COORDINATION: COORDINATOR PATTERN, SPLIT PATTERN *** - 3 - 2, - 3 - 3**

Coordinator Pattern (CP)	Cycle Length	Offset (sec)	Timing Plan	Split Pattern	Phases (sec)							
					1	2	3	4	5	6	7	8
1	110	0	1	1		80				80		30
2	90	4	1	2		60				60		30
3	110	94	1	3		80				80		30
4	90	7	1	4		60				60		30
10	0	0	1	10		0				0		0

TIME BASE: ACTION PLAN, DAY PLAN *** - 5 - 2, - 5 - 3, -5 - 4**

Day Plan	Sched. #	Action Plan	Time Period	Pattern	Timing Plan	
1	1	4	06:00	4	1	Schedule 1 = Day Plan 1
1	1	1	07:00	1	1	Schedule 2 = Day Plan 2
1	1	2	09:00	2	1	Schedule 3 = Day Plan 3
1	1	3	15:30	3	1	
1	1	4	19:00	4	1	Day Plan 1 (Weekday)
1	1	10	22:00	254	1	Day Plan 2 (Saturday)
2	2	10	08:00	254	1	Day Plan 3 (Sunday, Holidays)
3	3	10	08:00	254	1	
						Action Plan 10 = free (254)

Special Programming:

TIME BASE DATA - TIME OF YEAR EVENTS *** - 5 - 5**

Events	Exception Day		MON/ MON	DOW/ DOW	WOM/ Year	Day Plan
New Year's Day	1	Fixed	1	1	0	3
Family Day	2	Float	2	2	3	3
Good Friday	3	Float	4	6	1	3
Victoria Day	4	Float	5	2	3	3
Canada Day	5	Fixed	7	1	0	3
Civic Day	6	Float	8	2	1	3
Labour Day	7	Float	9	2	1	3
Thanksgiving	8	Float	10	2	2	3
Christmas Day	9	Fixed	12	25	0	3

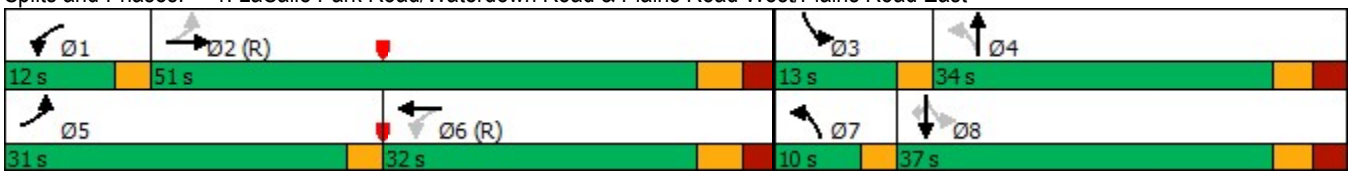
Appendix G Synchro Reports: Existing Conditions

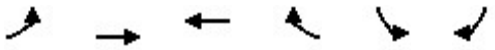
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	452	642	79	87	270	148	49	213	68	154	196	142
Future Volume (vph)	452	642	79	87	270	148	49	213	68	154	196	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	34.0		0.0	40.0		0.0	30.0		0.0	0.0		44.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1719	3383	0	1687	3138	0	1719	1722	0	1687	1776	1509
Flt Permitted	0.370			0.349			0.602			0.259		
Satd. Flow (perm)	661	3383	0	620	3138	0	1080	1722	0	451	1776	1473
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			88			14				158
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		160.9			159.9			99.5			160.2	
Travel Time (s)		9.7			9.6			7.2			11.5	
Confl. Peds. (#/hr)	14					14	10		34	34		10
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	7%	7%	7%	5%	5%	5%	7%	7%	7%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	502	801	0	97	464	0	54	313	0	171	218	158
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6			4			8		8
Detector Phase	5	2		1	6		7	4		3	8	8
Switch Phase												
Minimum Initial (s)	6.0	20.0		6.0	20.0		6.0	8.0		6.0	8.0	8.0
Minimum Split (s)	9.0	27.3		9.0	31.3		9.0	33.3		9.0	33.3	33.3
Total Split (s)	31.0	51.0		12.0	32.0		10.0	34.0		13.0	37.0	37.0
Total Split (%)	28.2%	46.4%		10.9%	29.1%		9.1%	30.9%		11.8%	33.6%	33.6%
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	3.3		3.0	3.3	3.3
All-Red Time (s)	0.0	2.6		0.0	2.6		0.0	3.0		0.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	6.3		3.0	6.3		3.0	6.3		3.0	6.3	6.3
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	None
Act Effct Green (s)	64.5	50.2		45.4	34.2		33.4	23.4		39.5	28.3	28.3
Actuated g/C Ratio	0.59	0.46		0.41	0.31		0.30	0.21		0.36	0.26	0.26
v/c Ratio	0.81	0.52		0.29	0.45		0.15	0.83		0.63	0.48	0.32
Control Delay	26.3	23.3		20.3	28.3		22.7	58.0		35.2	38.4	6.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	26.3	23.3		20.3	28.3		22.7	58.0		35.2	38.4	6.7
LOS	C	C		C	C		C	E		D	D	A
Approach Delay		24.5			26.9			52.8			28.2	
Approach LOS		C			C			D			C	
Queue Length 50th (m)	64.2	66.5		8.4	37.5		7.8	64.4		26.8	42.3	0.0
Queue Length 95th (m)	#107.2	91.3		22.0	67.3		15.8	94.0		41.9	63.8	15.6
Internal Link Dist (m)		136.9			135.9			75.5			136.2	
Turn Bay Length (m)	34.0			40.0			30.0					44.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)	656	1553		350	1036		371	444		274	495	525
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.77	0.52		0.28	0.45		0.15	0.70		0.62	0.44	0.30

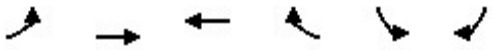
Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 29.4		Intersection LOS: C	
Intersection Capacity Utilization 92.0%		ICU Level of Service F	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1: LaSalle Park Road/Waterdown Road & Plains Road West/Plains Road East





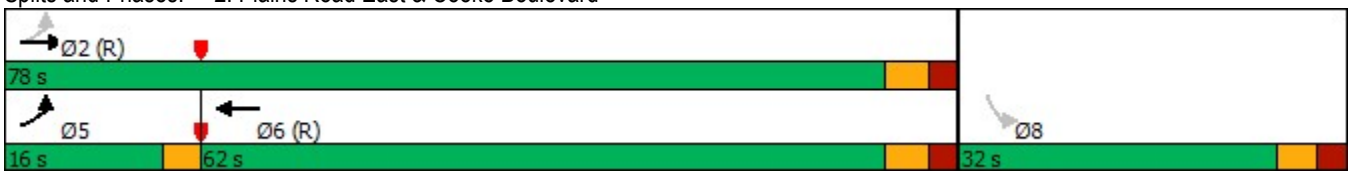
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	39	934	554	29	17	23
Future Volume (vph)	39	934	554	29	17	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	37.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.5				7.5	
Satd. Flow (prot)	1719	3438	3372	0	1409	0
Flt Permitted	0.408				0.992	
Satd. Flow (perm)	729	3438	3372	0	1408	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			7		92	
Link Speed (k/h)		60	60		50	
Link Distance (m)		159.9	151.8		141.0	
Travel Time (s)		9.6	9.1		10.2	
Confl. Peds. (#/hr)	13			13	3	17
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.25
Heavy Vehicles (%)	5%	5%	6%	6%	15%	15%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	40	963	601	0	110	0
Turn Type	pm+pt	NA	NA		Perm	
Protected Phases	5	2	6			
Permitted Phases	2				8	
Detector Phase	5	2	6		8	
Switch Phase						
Minimum Initial (s)	6.0	8.0	8.0		8.0	
Minimum Split (s)	9.0	25.0	25.0		27.9	
Total Split (s)	16.0	78.0	62.0		32.0	
Total Split (%)	14.5%	70.9%	56.4%		29.1%	
Yellow Time (s)	3.0	3.7	3.7		3.3	
All-Red Time (s)	0.0	2.3	2.3		2.6	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	
Total Lost Time (s)	3.0	6.0	6.0		5.9	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None	C-Max	C-Max		None	
Act Effct Green (s)	90.0	87.0	81.4		11.1	
Actuated g/C Ratio	0.82	0.79	0.74		0.10	
v/c Ratio	0.06	0.35	0.24		0.49	
Control Delay	1.7	2.4	5.8		19.9	
Queue Delay	0.0	0.1	0.0		0.0	
Total Delay	1.7	2.5	5.8		19.9	
LOS	A	A	A		B	
Approach Delay		2.4	5.8		19.9	
Approach LOS		A	A		B	
Queue Length 50th (m)	0.5	11.5	19.2		3.9	
Queue Length 95th (m)	m2.5	28.3	40.8		18.8	
Internal Link Dist (m)		135.9	127.8		117.0	
Turn Bay Length (m)	37.0					

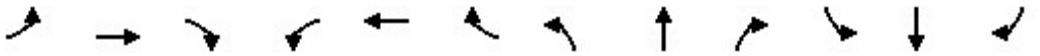


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Base Capacity (vph)	713	2719	2495		404	
Starvation Cap Reductn	0	485	0		0	
Spillback Cap Reductn	0	0	0		0	
Storage Cap Reductn	0	0	0		0	
Reduced v/c Ratio	0.06	0.43	0.24		0.27	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 102 (93%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.49			
Intersection Signal Delay: 4.7		Intersection LOS: A	
Intersection Capacity Utilization 47.4%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2: Plains Road East & Cooke Boulevard





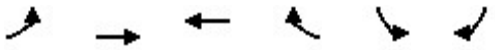
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	894	3	5	578	2	3	0	30	4	0	11
Future Volume (vph)	2	894	3	5	578	2	3	0	30	4	0	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	20.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1752	3505	0	1752	3505	0	0	1660	0	0	1690	0
Flt Permitted	0.950			0.950				0.996			0.987	
Satd. Flow (perm)	1752	3505	0	1752	3505	0	0	1660	0	0	1690	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		151.8			110.7			94.9			126.3	
Travel Time (s)		10.9			8.0			6.8			9.1	
Confl. Peds. (#/hr)	11		10	10		11	1		1	1		1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	2	934	0	5	604	0	0	34	0	0	15	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 35.1%		ICU Level of Service A	
Analysis Period (min) 15			

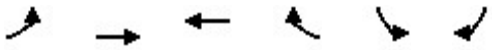


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	925	10	9	564	20	27
Future Volume (vph)	925	10	9	564	20	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	12.0		0.0	0.0
Storage Lanes		0	1		1	0
Taper Length (m)			7.5		7.5	
Satd. Flow (prot)	3498	0	1752	3505	1717	0
Flt Permitted			0.950		0.979	
Satd. Flow (perm)	3498	0	1752	3505	1717	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	110.7			55.2	112.9	
Travel Time (s)	8.0			4.0	8.1	
Confl. Peds. (#/hr)		17	17			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	3%	3%	3%	3%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	974	0	9	588	49	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 35.9%		ICU Level of Service A	
Analysis Period (min) 15			



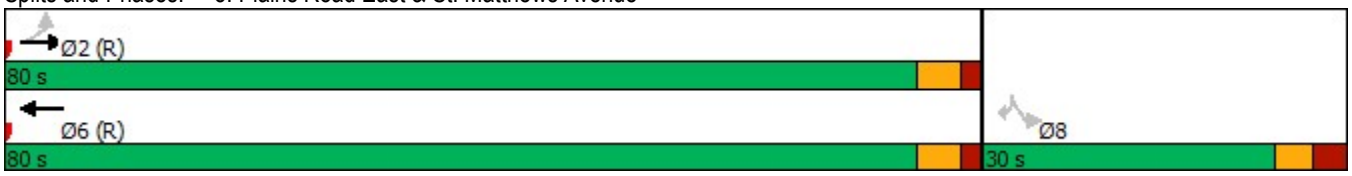
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	2	957	563	0	2	14
Future Volume (vph)	2	957	563	0	2	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	14.0			0.0	7.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.5				7.5	
Satd. Flow (prot)	1703	3406	3374	0	1805	1615
Flt Permitted	0.406				0.950	
Satd. Flow (perm)	726	3406	3374	0	1796	1588
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						16
Link Speed (k/h)		50	50		50	
Link Distance (m)		55.2	147.8		130.9	
Travel Time (s)		4.0	10.6		9.4	
Confl. Peds. (#/hr)	3			3	3	3
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	6%	6%	7%	7%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2	1100	647	0	2	16
Turn Type	Perm	NA	NA		Perm	Perm
Protected Phases		2	6			
Permitted Phases	2				8	8
Detector Phase	2	2	6		8	8
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0		8.0	8.0
Minimum Split (s)	43.4	43.4	43.4		27.0	27.0
Total Split (s)	80.0	80.0	80.0		30.0	30.0
Total Split (%)	72.7%	72.7%	72.7%		27.3%	27.3%
Yellow Time (s)	3.7	3.7	3.7		3.0	3.0
All-Red Time (s)	1.7	1.7	1.7		3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.4	5.4	5.4		6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	C-Max		None	None
Act Effct Green (s)	99.6	99.6	99.6		10.6	10.6
Actuated g/C Ratio	0.91	0.91	0.91		0.10	0.10
v/c Ratio	0.00	0.36	0.21		0.01	0.10
Control Delay	1.0	1.0	2.3		41.0	18.7
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	1.0	1.0	2.3		41.0	18.7
LOS	A	A	A		D	B
Approach Delay		1.0	2.3		21.2	
Approach LOS		A	A		C	
Queue Length 50th (m)	0.0	0.1	0.0		0.4	0.0
Queue Length 95th (m)	m0.1	8.2	30.8		2.4	5.8
Internal Link Dist (m)		31.2	123.8		106.9	
Turn Bay Length (m)	14.0				7.0	

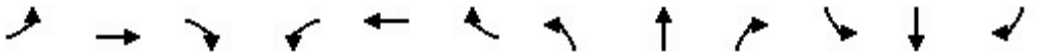


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Base Capacity (vph)	657	3085	3056		391	358
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.00	0.36	0.21		0.01	0.04

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.36			
Intersection Signal Delay: 1.6		Intersection LOS: A	
Intersection Capacity Utilization 48.9%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 5: Plains Road East & St. Matthews Avenue



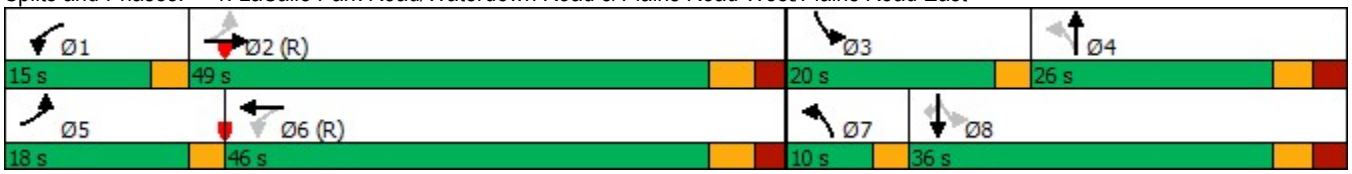


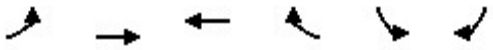
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	220	412	47	98	780	165	80	138	39	208	134	340
Future Volume (vph)	220	412	47	98	780	165	80	138	39	208	134	340
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	34.0		0.0	40.0		0.0	30.0		0.0	0.0		44.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1770	3486	0	1752	3394	0	1770	1794	0	1770	1863	1583
Flt Permitted	0.151			0.471			0.665			0.382		
Satd. Flow (perm)	281	3486	0	869	3394	0	1226	1794	0	708	1863	1545
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13			25			11				331
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		160.9			159.9			99.5			160.2	
Travel Time (s)		9.7			9.6			7.2			11.5	
Confl. Peds. (#/hr)	6					6	10		6	6		10
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	237	494	0	105	1016	0	86	190	0	224	144	366
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6			4			8		8
Detector Phase	5	2		1	6		7	4		3	8	8
Switch Phase												
Minimum Initial (s)	6.0	20.0		6.0	20.0		6.0	8.0		6.0	8.0	8.0
Minimum Split (s)	9.0	27.3		9.0	31.3		9.0	33.3		9.0	33.3	33.3
Total Split (s)	18.0	49.0		15.0	46.0		10.0	26.0		20.0	36.0	36.0
Total Split (%)	16.4%	44.5%		13.6%	41.8%		9.1%	23.6%		18.2%	32.7%	32.7%
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	3.3		3.0	3.3	3.3
All-Red Time (s)	0.0	2.6		0.0	2.6		0.0	3.0		0.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	6.3		3.0	6.3		3.0	6.3		3.0	6.3	6.3
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	None
Act Effct Green (s)	66.8	52.2		59.5	47.8		25.9	15.7		37.1	25.8	25.8
Actuated g/C Ratio	0.61	0.47		0.54	0.43		0.24	0.14		0.34	0.23	0.23
v/c Ratio	0.69	0.30		0.20	0.68		0.27	0.72		0.58	0.33	0.60
Control Delay	23.9	19.2		6.3	21.4		26.5	57.1		33.1	36.6	9.8
Queue Delay	0.0	0.0		0.0	0.3		0.0	0.0		0.0	0.0	0.0
Total Delay	23.9	19.2		6.3	21.7		26.5	57.1		33.1	36.6	9.8
LOS	C	B		A	C		C	E		C	D	A
Approach Delay		20.7			20.3			47.6			22.1	
Approach LOS		C			C			D			C	
Queue Length 50th (m)	23.4	34.7		7.2	98.1		13.2	38.9		37.3	27.4	6.3
Queue Length 95th (m)	48.8	53.4		4.9	93.9		23.2	61.7		54.8	43.6	32.3
Internal Link Dist (m)		136.9			135.9			75.5			136.2	
Turn Bay Length (m)	34.0			40.0			30.0					44.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)	376	1660		593	1487		324	330		402	503	658
Starvation Cap Reductn	0	0		0	93		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.63	0.30		0.18	0.73		0.27	0.58		0.56	0.29	0.56

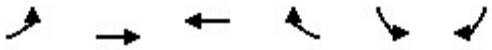
Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 23.5		Intersection LOS: C	
Intersection Capacity Utilization 79.9%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: LaSalle Park Road/Waterdown Road & Plains Road West/Plains Road East





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	11	691	1235	87	65	41
Future Volume (vph)	11	691	1235	87	65	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	37.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.5				7.5	
Satd. Flow (prot)	1770	3539	3492	0	1702	0
Flt Permitted	0.135				0.970	
Satd. Flow (perm)	251	3539	3492	0	1693	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			10		27	
Link Speed (k/h)		60	60		50	
Link Distance (m)		159.9	151.8		141.0	
Travel Time (s)		9.6	9.1		10.2	
Confl. Peds. (#/hr)	11			11	6	3
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Shared Lane Traffic (%)						
Lane Group Flow (vph)	12	776	1486	0	119	0
Turn Type	pm+pt	NA	NA		Perm	
Protected Phases	5	2	6			
Permitted Phases	2				8	
Detector Phase	5	2	6		8	
Switch Phase						
Minimum Initial (s)	6.0	8.0	8.0		8.0	
Minimum Split (s)	9.0	25.0	25.0		27.9	
Total Split (s)	16.0	78.0	62.0		32.0	
Total Split (%)	14.5%	70.9%	56.4%		29.1%	
Yellow Time (s)	3.0	3.7	3.7		3.3	
All-Red Time (s)	0.0	2.3	2.3		2.6	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	
Total Lost Time (s)	3.0	6.0	6.0		5.9	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None	C-Max	C-Max		None	
Act Effct Green (s)	88.2	85.2	83.4		12.9	
Actuated g/C Ratio	0.80	0.77	0.76		0.12	
v/c Ratio	0.04	0.28	0.56		0.54	
Control Delay	3.2	3.9	6.6		42.9	
Queue Delay	0.0	0.0	0.0		0.0	
Total Delay	3.2	3.9	6.6		42.9	
LOS	A	A	A		D	
Approach Delay		3.9	6.6		42.9	
Approach LOS		A	A		D	
Queue Length 50th (m)	0.3	27.1	52.0		20.0	
Queue Length 95th (m)	m2.0	37.9	75.8		34.9	
Internal Link Dist (m)		135.9	127.8		117.0	
Turn Bay Length (m)	37.0					
Base Capacity (vph)	380	2742	2650		422	

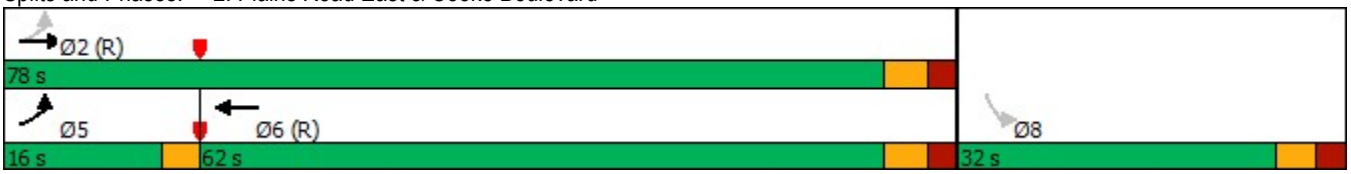


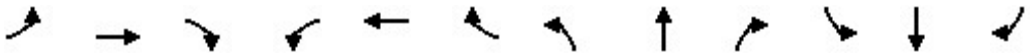
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Starvation Cap Reductn	0	0	0		0	
Spillback Cap Reductn	0	0	32		0	
Storage Cap Reductn	0	0	0		0	
Reduced v/c Ratio	0.03	0.28	0.57		0.28	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 96 (87%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.56			
Intersection Signal Delay: 7.5		Intersection LOS: A	
Intersection Capacity Utilization 54.7%		ICU Level of Service A	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Plains Road East & Cooke Boulevard





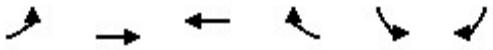
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	773	7	16	1314	8	2	0	10	3	0	6
Future Volume (vph)	6	773	7	16	1314	8	2	0	10	3	0	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	20.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1787	3571	0	1787	3571	0	0	1548	0	0	1701	0
Flt Permitted	0.950			0.950				0.992			0.984	
Satd. Flow (perm)	1787	3571	0	1787	3571	0	0	1548	0	0	1701	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		151.8			110.7			94.9			126.3	
Travel Time (s)		10.9			8.0			6.8			9.1	
Confl. Peds. (#/hr)	10		11	11		10						
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	8%	8%	8%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	6	796	0	16	1349	0	0	12	0	0	9	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 46.6%		ICU Level of Service A	
Analysis Period (min) 15			

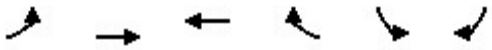


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	826	12	27	1339	5	15
Future Volume (vph)	826	12	27	1339	5	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	12.0		0.0	0.0
Storage Lanes		0	1		1	0
Taper Length (m)			7.5		7.5	
Satd. Flow (prot)	3567	0	1787	3574	1688	0
Flt Permitted			0.950		0.988	
Satd. Flow (perm)	3567	0	1787	3574	1688	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	110.7			55.2	112.9	
Travel Time (s)	8.0			4.0	8.1	
Confl. Peds. (#/hr)		14	14			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	1%	1%	1%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	855	0	28	1366	20	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 47.0%		ICU Level of Service A	
Analysis Period (min) 15			



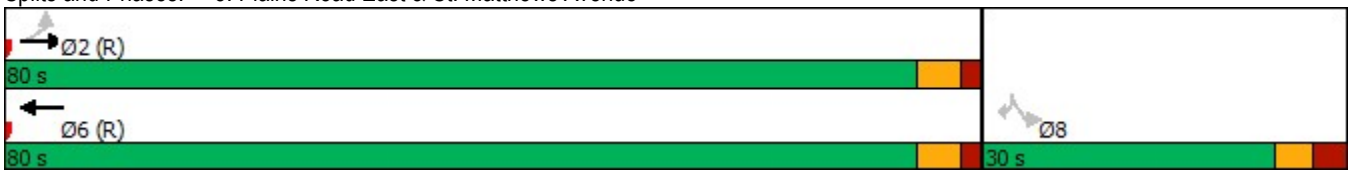
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	16	825	1418	20	19	12
Future Volume (vph)	16	825	1418	20	19	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	14.0			0.0	7.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.5				7.5	
Satd. Flow (prot)	1787	3574	3531	0	1805	1615
Flt Permitted	0.162				0.950	
Satd. Flow (perm)	304	3574	3531	0	1791	1581
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			3			12
Link Speed (k/h)		50	50		50	
Link Distance (m)		55.2	147.8		130.9	
Travel Time (s)		4.0	10.6		9.4	
Confl. Peds. (#/hr)	7			7	5	6
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	1%	2%	2%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	16	842	1467	0	19	12
Turn Type	Perm	NA	NA		Perm	Perm
Protected Phases		2	6			
Permitted Phases	2				8	8
Detector Phase	2	2	6		8	8
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0		8.0	8.0
Minimum Split (s)	43.4	43.4	43.4		27.0	27.0
Total Split (s)	80.0	80.0	80.0		30.0	30.0
Total Split (%)	72.7%	72.7%	72.7%		27.3%	27.3%
Yellow Time (s)	3.7	3.7	3.7		3.0	3.0
All-Red Time (s)	1.7	1.7	1.7		3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.4	5.4	5.4		6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	C-Max		None	None
Act Effct Green (s)	95.8	95.8	95.8		10.6	10.6
Actuated g/C Ratio	0.87	0.87	0.87		0.10	0.10
v/c Ratio	0.06	0.27	0.48		0.11	0.07
Control Delay	2.1	1.3	4.0		44.1	19.9
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	2.1	1.3	4.0		44.1	19.9
LOS	A	A	A		D	B
Approach Delay		1.3	4.0		34.7	
Approach LOS		A	A		C	
Queue Length 50th (m)	0.2	8.5	39.3		4.1	0.0
Queue Length 95th (m)	1.5	16.2	95.0		10.3	5.5
Internal Link Dist (m)		31.2	123.8		106.9	
Turn Bay Length (m)	14.0				7.0	

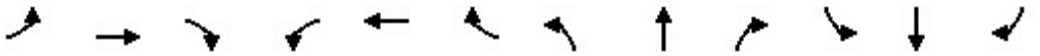


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Base Capacity (vph)	264	3111	3074		390	354
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.06	0.27	0.48		0.05	0.03

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 94 (85%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.48			
Intersection Signal Delay: 3.5		Intersection LOS: A	
Intersection Capacity Utilization 58.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 5: Plains Road East & St. Matthews Avenue





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	894	3	5	578	2	3	0	30	4	0	11
Future Volume (Veh/h)	2	894	3	5	578	2	3	0	30	4	0	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	2	931	3	5	602	2	3	0	31	4	0	11
Pedestrians		1			1			10			11	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			1			1	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		152			166							
pX, platoon unblocked	1.00			0.93			0.93	0.93	0.93	0.93	0.93	1.00
vC, conflicting volume	615			944			1270	1572	478	1126	1572	314
vC1, stage 1 conf vol							946	946		624	624	
vC2, stage 2 conf vol							323	625		502	948	
vCu, unblocked vol	613			781			1129	1455	278	973	1455	312
tC, single (s)	4.2			4.2			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			99	100	95	99	100	98
cM capacity (veh/h)	946			759			304	307	666	380	304	683

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	2	621	313	5	401	203	34	15
Volume Left	2	0	0	5	0	0	3	4
Volume Right	0	0	3	0	0	2	31	11
cSH	946	1700	1700	759	1700	1700	602	563
Volume to Capacity	0.00	0.37	0.18	0.01	0.24	0.12	0.06	0.03
Queue Length 95th (m)	0.1	0.0	0.0	0.2	0.0	0.0	1.4	0.7
Control Delay (s)	8.8	0.0	0.0	9.8	0.0	0.0	11.3	11.6
Lane LOS	A			A			B	B
Approach Delay (s)	0.0			0.1			11.3	11.6
Approach LOS							B	B

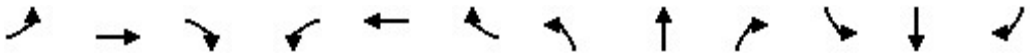
Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	35.1%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	925	10	9	564	20	27
Future Volume (Veh/h)	925	10	9	564	20	27
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	964	10	9	588	21	28
Pedestrians					17	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (m)	262			55		
pX, platoon unblocked			0.94		0.96	0.94
vC, conflicting volume			991		1298	504
vC1, stage 1 conf vol					986	
vC2, stage 2 conf vol					312	
vCu, unblocked vol			868		1088	351
tC, single (s)			4.2		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		94	95
cM capacity (veh/h)			711		335	605

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	643	331	9	294	294	49
Volume Left	0	0	9	0	0	21
Volume Right	0	10	0	0	0	28
cSH	1700	1700	711	1700	1700	450
Volume to Capacity	0.38	0.19	0.01	0.17	0.17	0.11
Queue Length 95th (m)	0.0	0.0	0.3	0.0	0.0	2.9
Control Delay (s)	0.0	0.0	10.1	0.0	0.0	14.0
Lane LOS			B			B
Approach Delay (s)	0.0		0.2			14.0
Approach LOS						B

Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	35.9%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	773	7	16	1314	8	2	0	10	3	0	6
Future Volume (Veh/h)	6	773	7	16	1314	8	2	0	10	3	0	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	6	789	7	16	1341	8	2	0	10	3	0	6
Pedestrians								11			10	
Lane Width (m)								3.6			3.6	
Walking Speed (m/s)								1.2			1.2	
Percent Blockage								1			1	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		152			166							
pX, platoon unblocked	0.88			0.95			0.90	0.90	0.95	0.90	0.90	0.88
vC, conflicting volume	1359			807			1524	2206	409	1804	2206	684
vC1, stage 1 conf vol							816	816		1387	1387	
vC2, stage 2 conf vol							708	1391		416	819	
vCu, unblocked vol	1131			687			1109	1864	267	1418	1863	363
tC, single (s)	4.1			4.1			7.7	6.7	7.1	7.5	6.5	6.9
tC, 2 stage (s)							6.7	5.7		6.5	5.5	
tF (s)	2.2			2.2			3.6	4.1	3.4	3.5	4.0	3.3
p0 queue free %	99			98			99	100	99	98	100	99
cM capacity (veh/h)	539			854			307	188	670	173	203	557

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	6	526	270	16	894	455	12	9
Volume Left	6	0	0	16	0	0	2	3
Volume Right	0	0	7	0	0	8	10	6
cSH	539	1700	1700	854	1700	1700	560	320
Volume to Capacity	0.01	0.31	0.16	0.02	0.53	0.27	0.02	0.03
Queue Length 95th (m)	0.3	0.0	0.0	0.5	0.0	0.0	0.5	0.7
Control Delay (s)	11.8	0.0	0.0	9.3	0.0	0.0	11.6	16.6
Lane LOS	B			A			B	C
Approach Delay (s)	0.1			0.1			11.6	16.6
Approach LOS							B	C

Intersection Summary				
Average Delay	0.2			
Intersection Capacity Utilization	46.6%	ICU Level of Service		A
Analysis Period (min)	15			

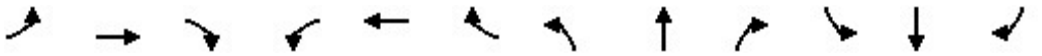


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	826	12	27	1339	5	15
Future Volume (Veh/h)	826	12	27	1339	5	15
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	843	12	28	1366	5	15
Pedestrians					14	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (m)	262			55		
pX, platoon unblocked			0.97		0.89	0.97
vC, conflicting volume			869		1602	442
vC1, stage 1 conf vol					863	
vC2, stage 2 conf vol					739	
vCu, unblocked vol			802		1279	361
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			96		99	98
cM capacity (veh/h)			789		334	614

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	562	293	28	683	683	20
Volume Left	0	0	28	0	0	5
Volume Right	0	12	0	0	0	15
cSH	1700	1700	789	1700	1700	508
Volume to Capacity	0.33	0.17	0.04	0.40	0.40	0.04
Queue Length 95th (m)	0.0	0.0	0.9	0.0	0.0	1.0
Control Delay (s)	0.0	0.0	9.7	0.0	0.0	12.4
Lane LOS			A			B
Approach Delay (s)	0.0		0.2			12.4
Approach LOS						B

Intersection Summary				
Average Delay	0.2			
Intersection Capacity Utilization	47.0%	ICU Level of Service		A
Analysis Period (min)	15			

Appendix H Synchro Reports: Future Background Conditions

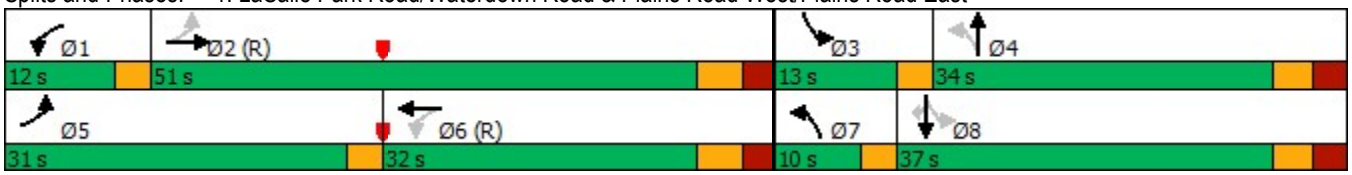


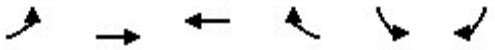
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	480	702	79	91	319	172	49	213	70	168	198	151
Future Volume (vph)	480	702	79	91	319	172	49	213	70	168	198	151
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	34.0		0.0	40.0		0.0	30.0		0.0	0.0		44.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1719	3387	0	1687	3139	0	1719	1720	0	1687	1776	1509
Flt Permitted	0.287			0.327			0.604			0.256		
Satd. Flow (perm)	514	3387	0	581	3139	0	1083	1720	0	446	1776	1473
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13			85			14				168
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		160.9			159.9			99.5			160.2	
Travel Time (s)		9.7			9.6			7.2			11.5	
Confl. Peds. (#/hr)	14					14	10		34	34		10
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	7%	7%	7%	5%	5%	5%	7%	7%	7%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	533	868	0	101	545	0	54	315	0	187	220	168
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6			4			8		8
Detector Phase	5	2		1	6		7	4		3	8	8
Switch Phase												
Minimum Initial (s)	6.0	20.0		6.0	20.0		6.0	8.0		6.0	8.0	8.0
Minimum Split (s)	9.0	27.3		9.0	31.3		9.0	33.3		9.0	33.3	33.3
Total Split (s)	31.0	51.0		12.0	32.0		10.0	34.0		13.0	37.0	37.0
Total Split (%)	28.2%	46.4%		10.9%	29.1%		9.1%	30.9%		11.8%	33.6%	33.6%
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	3.3		3.0	3.3	3.3
All-Red Time (s)	0.0	2.6		0.0	2.6		0.0	3.0		0.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	6.3		3.0	6.3		3.0	6.3		3.0	6.3	6.3
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	None
Act Effct Green (s)	64.2	50.0		41.9	30.6		33.6	23.5		39.8	28.5	28.5
Actuated g/C Ratio	0.58	0.45		0.38	0.28		0.31	0.21		0.36	0.26	0.26
v/c Ratio	0.89	0.56		0.34	0.58		0.15	0.83		0.68	0.48	0.33
Control Delay	36.1	24.4		21.3	32.6		22.7	58.2		38.3	38.2	6.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	36.1	24.4		21.3	32.6		22.7	58.2		38.3	38.2	6.6
LOS	D	C		C	C		C	E		D	D	A
Approach Delay		28.9			30.8			53.0			29.0	
Approach LOS		C			C			D			C	
Queue Length 50th (m)	72.0	74.5		9.4	50.8		7.8	64.9		29.6	42.7	0.0
Queue Length 95th (m)	#144.0	101.4		23.1	78.8		15.8	95.0		45.5	64.6	16.2
Internal Link Dist (m)		136.9			135.9			75.5			136.2	
Turn Bay Length (m)	34.0			40.0			30.0					44.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)	614	1545		317	935		373	443		274	495	532
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.87	0.56		0.32	0.58		0.14	0.71		0.68	0.44	0.32

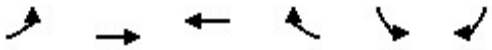
Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 32.3		Intersection LOS: C	
Intersection Capacity Utilization 94.4%		ICU Level of Service F	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1: LaSalle Park Road/Waterdown Road & Plains Road West/Plains Road East





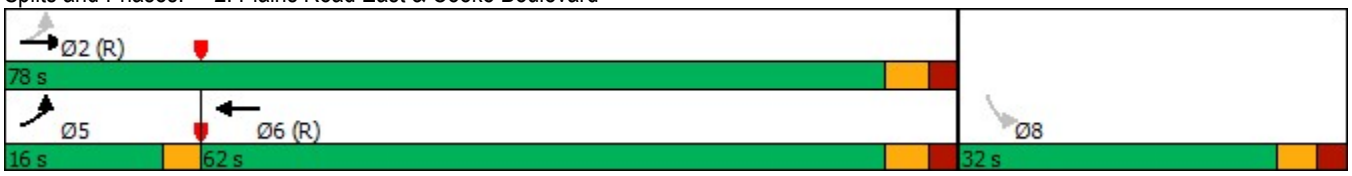
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	55	991	593	31	30	42
Future Volume (vph)	55	991	593	31	30	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	37.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.5				7.5	
Satd. Flow (prot)	1719	3438	3372	0	1407	0
Flt Permitted	0.386				0.992	
Satd. Flow (perm)	690	3438	3372	0	1406	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			7		168	
Link Speed (k/h)		60	60		50	
Link Distance (m)		159.9	151.8		141.0	
Travel Time (s)		9.6	9.1		10.2	
Confl. Peds. (#/hr)	13			13	3	17
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.25
Heavy Vehicles (%)	5%	5%	6%	6%	15%	15%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	57	1022	643	0	199	0
Turn Type	pm+pt	NA	NA		Perm	
Protected Phases	5	2	6			
Permitted Phases	2				8	
Detector Phase	5	2	6		8	
Switch Phase						
Minimum Initial (s)	6.0	8.0	8.0		8.0	
Minimum Split (s)	9.0	25.0	25.0		27.9	
Total Split (s)	16.0	78.0	62.0		32.0	
Total Split (%)	14.5%	70.9%	56.4%		29.1%	
Yellow Time (s)	3.0	3.7	3.7		3.3	
All-Red Time (s)	0.0	2.3	2.3		2.6	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	
Total Lost Time (s)	3.0	6.0	6.0		5.9	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None	C-Max	C-Max		None	
Act Effct Green (s)	89.5	86.5	78.9		11.6	
Actuated g/C Ratio	0.81	0.79	0.72		0.11	
v/c Ratio	0.09	0.38	0.27		0.67	
Control Delay	1.8	2.5	6.6		21.5	
Queue Delay	0.0	0.1	0.0		0.0	
Total Delay	1.8	2.6	6.6		21.5	
LOS	A	A	A		C	
Approach Delay		2.6	6.6		21.5	
Approach LOS		A	A		C	
Queue Length 50th (m)	0.7	13.2	21.0		6.8	
Queue Length 95th (m)	m3.1	29.8	43.6		27.5	
Internal Link Dist (m)		135.9	127.8		117.0	
Turn Bay Length (m)	37.0					

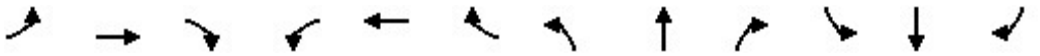


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Base Capacity (vph)	682	2704	2420		461	
Starvation Cap Reductn	0	492	0		0	
Spillback Cap Reductn	0	0	0		0	
Storage Cap Reductn	0	0	0		0	
Reduced v/c Ratio	0.08	0.46	0.27		0.43	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 102 (93%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 5.9		Intersection LOS: A	
Intersection Capacity Utilization 49.0%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2: Plains Road East & Cooke Boulevard





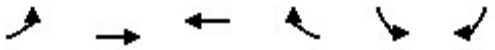
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	975	3	5	619	10	3	0	30	35	0	16
Future Volume (vph)	2	975	3	5	619	10	3	0	30	35	0	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	20.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1752	3505	0	1752	3498	0	0	1660	0	0	1758	0
Flt Permitted	0.950			0.950				0.996			0.967	
Satd. Flow (perm)	1752	3505	0	1752	3498	0	0	1660	0	0	1758	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		151.8			110.7			94.9			126.3	
Travel Time (s)		10.9			8.0			6.8			9.1	
Confl. Peds. (#/hr)	11		10	10		11	1		1	1		1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	2	1019	0	5	655	0	0	34	0	0	53	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 43.5%		ICU Level of Service A	
Analysis Period (min) 15			

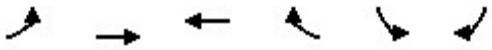


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1039	10	9	612	20	27
Future Volume (vph)	1039	10	9	612	20	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	12.0		0.0	0.0
Storage Lanes		0	1		1	0
Taper Length (m)			7.5		7.5	
Satd. Flow (prot)	3501	0	1752	3505	1717	0
Flt Permitted			0.950		0.979	
Satd. Flow (perm)	3501	0	1752	3505	1717	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	110.7			55.2	112.9	
Travel Time (s)	8.0			4.0	8.1	
Confl. Peds. (#/hr)		17	17			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	3%	3%	3%	3%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1092	0	9	638	49	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 39.1%		ICU Level of Service A	
Analysis Period (min) 15			



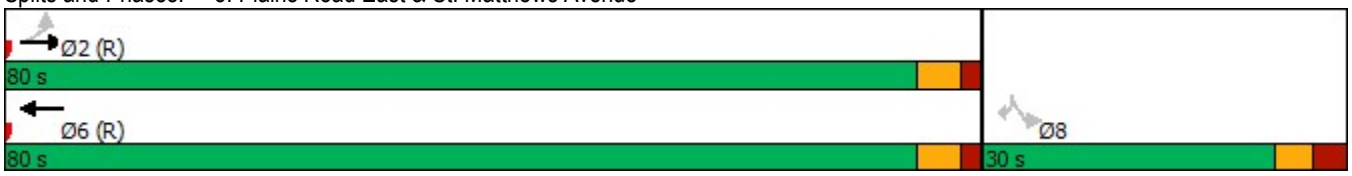
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	2	1073	611	0	2	14
Future Volume (vph)	2	1073	611	0	2	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	14.0			0.0	7.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.5				7.5	
Satd. Flow (prot)	1703	3406	3374	0	1805	1615
Flt Permitted	0.385				0.950	
Satd. Flow (perm)	689	3406	3374	0	1796	1588
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						16
Link Speed (k/h)		50	50		50	
Link Distance (m)		55.2	147.8		130.9	
Travel Time (s)		4.0	10.6		9.4	
Confl. Peds. (#/hr)	3			3	3	3
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	6%	6%	7%	7%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2	1233	702	0	2	16
Turn Type	Perm	NA	NA		Perm	Perm
Protected Phases		2	6			
Permitted Phases	2				8	8
Detector Phase	2	2	6		8	8
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0		8.0	8.0
Minimum Split (s)	43.4	43.4	43.4		27.0	27.0
Total Split (s)	80.0	80.0	80.0		30.0	30.0
Total Split (%)	72.7%	72.7%	72.7%		27.3%	27.3%
Yellow Time (s)	3.7	3.7	3.7		3.0	3.0
All-Red Time (s)	1.7	1.7	1.7		3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.4	5.4	5.4		6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	C-Max		None	None
Act Effct Green (s)	99.6	99.6	99.6		10.6	10.6
Actuated g/C Ratio	0.91	0.91	0.91		0.10	0.10
v/c Ratio	0.00	0.40	0.23		0.01	0.10
Control Delay	1.0	1.1	2.3		41.0	18.7
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	1.0	1.1	2.3		41.0	18.7
LOS	A	A	A		D	B
Approach Delay		1.1	2.3		21.2	
Approach LOS		A	A		C	
Queue Length 50th (m)	0.0	0.0	0.0		0.4	0.0
Queue Length 95th (m)	m0.1	11.0	33.8		2.4	5.8
Internal Link Dist (m)		31.2	123.8		106.9	
Turn Bay Length (m)	14.0				7.0	

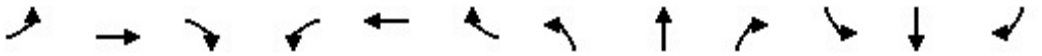


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Base Capacity (vph)	624	3085	3056		391	358
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.00	0.40	0.23		0.01	0.04

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.40			
Intersection Signal Delay: 1.7		Intersection LOS: A	
Intersection Capacity Utilization 48.9%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 5: Plains Road East & St. Matthews Avenue





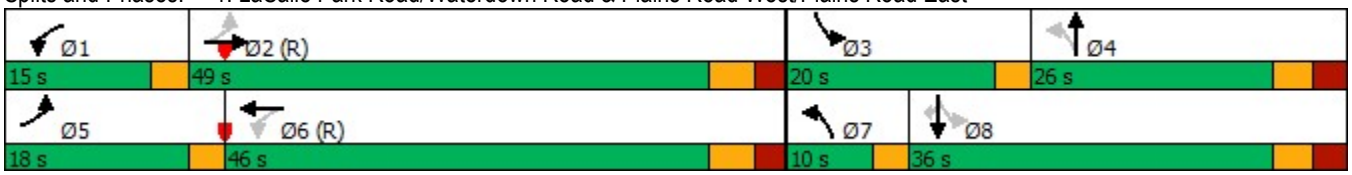
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	234	473	48	101	871	181	80	138	44	232	135	362
Future Volume (vph)	234	473	48	101	871	181	80	138	44	232	135	362
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	34.0		0.0	40.0		0.0	30.0		0.0	0.0		44.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1770	3490	0	1752	3394	0	1770	1787	0	1770	1863	1583
Flt Permitted	0.102			0.441			0.665			0.373		
Satd. Flow (perm)	190	3490	0	813	3394	0	1226	1787	0	691	1863	1545
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			25			13				321
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		160.9			159.9			99.5			160.2	
Travel Time (s)		9.7			9.6			7.2			11.5	
Confl. Peds. (#/hr)	6					6	10		6	6		10
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	252	561	0	109	1132	0	86	195	0	249	145	389
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6			4			8		8
Detector Phase	5	2		1	6		7	4		3	8	8
Switch Phase												
Minimum Initial (s)	6.0	20.0		6.0	20.0		6.0	8.0		6.0	8.0	8.0
Minimum Split (s)	9.0	27.3		9.0	31.3		9.0	33.3		9.0	33.3	33.3
Total Split (s)	18.0	49.0		15.0	46.0		10.0	26.0		20.0	36.0	36.0
Total Split (%)	16.4%	44.5%		13.6%	41.8%		9.1%	23.6%		18.2%	32.7%	32.7%
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	3.3		3.0	3.3	3.3
All-Red Time (s)	0.0	2.6		0.0	2.6		0.0	3.0		0.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	6.3		3.0	6.3		3.0	6.3		3.0	6.3	6.3
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	None
Act Effct Green (s)	66.1	51.2		57.8	45.9		26.0	15.9		37.9	26.6	26.6
Actuated g/C Ratio	0.60	0.47		0.53	0.42		0.24	0.14		0.34	0.24	0.24
v/c Ratio	0.81	0.34		0.22	0.79		0.27	0.72		0.64	0.32	0.63
Control Delay	41.2	20.3		6.9	25.1		26.2	57.1		34.4	36.0	12.3
Queue Delay	0.0	0.0		0.0	0.5		0.0	0.0		0.0	0.0	0.0
Total Delay	41.2	20.3		6.9	25.6		26.2	57.1		34.4	36.0	12.3
LOS	D	C		A	C		C	E		C	D	B
Approach Delay		26.8			23.9			47.7			23.7	
Approach LOS		C			C			D			C	
Queue Length 50th (m)	33.6	41.7		3.1	122.6		12.9	39.5		41.3	27.1	12.3
Queue Length 95th (m)	#75.5	61.6		m7.0	#163.7		23.2	62.5		60.7	43.8	42.6
Internal Link Dist (m)		136.9			135.9			75.5			136.2	
Turn Bay Length (m)	34.0			40.0			30.0					44.0

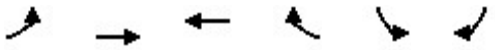
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)	335	1631		554	1431		326	330		404	503	651
Starvation Cap Reductn	0	0		0	64		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.75	0.34		0.20	0.83		0.26	0.59		0.62	0.29	0.60

Intersection Summary	
Area Type:	Other
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 26.8	Intersection LOS: C
Intersection Capacity Utilization 85.3%	ICU Level of Service E
Analysis Period (min) 15	

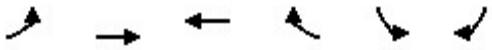
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: LaSalle Park Road/Waterdown Road & Plains Road West/Plains Road East





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	38	734	1318	93	82	65
Future Volume (vph)	38	734	1318	93	82	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	37.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.5				7.5	
Satd. Flow (prot)	1770	3539	3492	0	1691	0
Flt Permitted	0.108				0.973	
Satd. Flow (perm)	201	3539	3492	0	1683	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			9		34	
Link Speed (k/h)		60	60		50	
Link Distance (m)		159.9	151.8		141.0	
Travel Time (s)		9.6	9.1		10.2	
Confl. Peds. (#/hr)	11			11	6	3
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Shared Lane Traffic (%)						
Lane Group Flow (vph)	43	825	1585	0	165	0
Turn Type	pm+pt	NA	NA		Perm	
Protected Phases	5	2	6			
Permitted Phases	2				8	
Detector Phase	5	2	6		8	
Switch Phase						
Minimum Initial (s)	6.0	8.0	8.0		8.0	
Minimum Split (s)	9.0	25.0	25.0		27.9	
Total Split (s)	16.0	78.0	62.0		32.0	
Total Split (%)	14.5%	70.9%	56.4%		29.1%	
Yellow Time (s)	3.0	3.7	3.7		3.3	
All-Red Time (s)	0.0	2.3	2.3		2.6	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	
Total Lost Time (s)	3.0	6.0	6.0		5.9	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None	C-Max	C-Max		None	
Act Effct Green (s)	86.7	83.7	78.0		14.4	
Actuated g/C Ratio	0.79	0.76	0.71		0.13	
v/c Ratio	0.17	0.31	0.64		0.66	
Control Delay	4.9	4.3	9.1		47.8	
Queue Delay	0.0	0.1	0.1		0.0	
Total Delay	4.9	4.4	9.2		47.8	
LOS	A	A	A		D	
Approach Delay		4.4	9.2		47.8	
Approach LOS		A	A		D	
Queue Length 50th (m)	1.7	29.5	71.1		28.6	
Queue Length 95th (m)	m5.1	39.7	80.4		46.9	
Internal Link Dist (m)		135.9	127.8		117.0	
Turn Bay Length (m)	37.0					
Base Capacity (vph)	343	2692	2477		425	

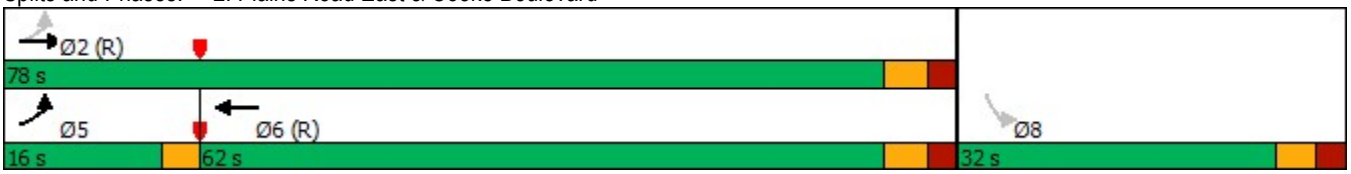


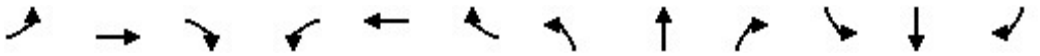
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Starvation Cap Reductn	0	737	0		0	
Spillback Cap Reductn	0	0	97		0	
Storage Cap Reductn	0	0	0		0	
Reduced v/c Ratio	0.13	0.42	0.67		0.39	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 96 (87%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 10.0		Intersection LOS: B	
Intersection Capacity Utilization 59.0%		ICU Level of Service B	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Plains Road East & Cooke Boulevard





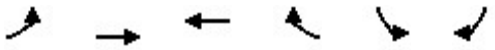
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	844	7	16	1421	54	2	0	10	7	0	13
Future Volume (vph)	6	844	7	16	1421	54	2	0	10	7	0	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	20.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1787	3571	0	1787	3556	0	0	1548	0	0	1703	0
Flt Permitted	0.950			0.950				0.992			0.983	
Satd. Flow (perm)	1787	3571	0	1787	3556	0	0	1548	0	0	1703	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		151.8			110.7			94.9			126.3	
Travel Time (s)		10.9			8.0			6.8			9.1	
Confl. Peds. (#/hr)	10		11	11		10						
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	8%	8%	8%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	6	868	0	16	1505	0	0	12	0	0	20	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 51.0%		ICU Level of Service A	
Analysis Period (min) 15			

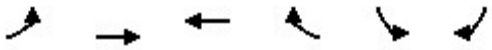


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	904	12	27	1493	5	15
Future Volume (vph)	904	12	27	1493	5	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	12.0		0.0	0.0
Storage Lanes		0	1		1	0
Taper Length (m)			7.5		7.5	
Satd. Flow (prot)	3567	0	1787	3574	1688	0
Flt Permitted			0.950		0.988	
Satd. Flow (perm)	3567	0	1787	3574	1688	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	110.7			55.2	112.9	
Travel Time (s)	8.0			4.0	8.1	
Confl. Peds. (#/hr)		14	14			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	1%	1%	1%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	934	0	28	1523	20	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 51.3%		ICU Level of Service A	
Analysis Period (min) 15			



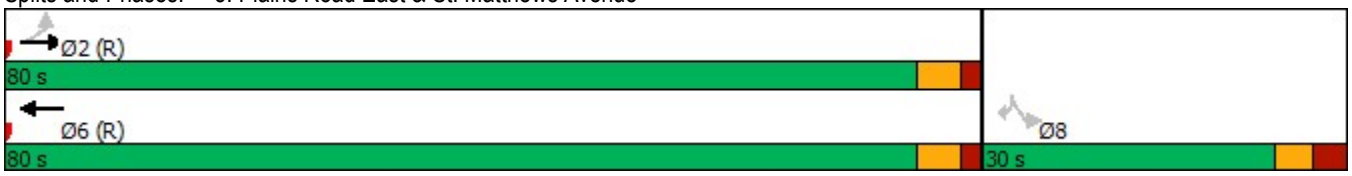
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	16	903	1577	20	19	12
Future Volume (vph)	16	903	1577	20	19	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	14.0			0.0	7.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.5				7.5	
Satd. Flow (prot)	1787	3574	3531	0	1805	1615
Flt Permitted	0.133				0.950	
Satd. Flow (perm)	250	3574	3531	0	1791	1581
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			2			12
Link Speed (k/h)		50	50		50	
Link Distance (m)		55.2	147.8		130.9	
Travel Time (s)		4.0	10.6		9.4	
Confl. Peds. (#/hr)	7			7	5	6
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	1%	2%	2%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	16	921	1629	0	19	12
Turn Type	Perm	NA	NA		Perm	Perm
Protected Phases		2	6			
Permitted Phases	2				8	8
Detector Phase	2	2	6		8	8
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0		8.0	8.0
Minimum Split (s)	43.4	43.4	43.4		27.0	27.0
Total Split (s)	80.0	80.0	80.0		30.0	30.0
Total Split (%)	72.7%	72.7%	72.7%		27.3%	27.3%
Yellow Time (s)	3.7	3.7	3.7		3.0	3.0
All-Red Time (s)	1.7	1.7	1.7		3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.4	5.4	5.4		6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	C-Max		None	None
Act Effct Green (s)	95.8	95.8	95.8		10.6	10.6
Actuated g/C Ratio	0.87	0.87	0.87		0.10	0.10
v/c Ratio	0.07	0.30	0.53		0.11	0.07
Control Delay	2.4	1.4	4.5		44.1	19.9
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	2.4	1.4	4.5		44.1	19.9
LOS	A	A	A		D	B
Approach Delay		1.4	4.5		34.7	
Approach LOS		A	A		C	
Queue Length 50th (m)	0.2	8.7	47.3		4.1	0.0
Queue Length 95th (m)	m1.6	19.2	114.4		10.3	5.5
Internal Link Dist (m)		31.2	123.8		106.9	
Turn Bay Length (m)	14.0				7.0	

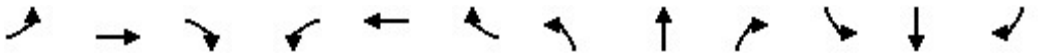


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Base Capacity (vph)	217	3111	3074		390	354
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.07	0.30	0.53		0.05	0.03

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 94 (85%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay: 3.7		Intersection LOS: A	
Intersection Capacity Utilization 62.4%		ICU Level of Service B	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 5: Plains Road East & St. Matthews Avenue





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	975	3	5	619	10	3	0	30	35	0	16
Future Volume (Veh/h)	2	975	3	5	619	10	3	0	30	35	0	16
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	2	1016	3	5	645	10	3	0	31	36	0	17
Pedestrians		1			1			10			11	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			1			1	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		152			166							
pX, platoon unblocked	0.99			0.91			0.92	0.92	0.91	0.92	0.92	0.99
vC, conflicting volume	666			1029			1382	1708	520	1215	1704	340
vC1, stage 1 conf vol							1032	1032		671	671	
vC2, stage 2 conf vol							350	676		544	1033	
vCu, unblocked vol	648			844			1200	1555	288	1018	1551	319
tC, single (s)	4.2			4.2			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			99	100	95	90	100	97
cM capacity (veh/h)	911			709			276	284	648	362	282	671

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	2	677	342	5	430	225	34	53
Volume Left	2	0	0	5	0	0	3	36
Volume Right	0	0	3	0	0	10	31	17
cSH	911	1700	1700	709	1700	1700	579	424
Volume to Capacity	0.00	0.40	0.20	0.01	0.25	0.13	0.06	0.12
Queue Length 95th (m)	0.1	0.0	0.0	0.2	0.0	0.0	1.5	3.4
Control Delay (s)	9.0	0.0	0.0	10.1	0.0	0.0	11.6	14.7
Lane LOS	A			B			B	B
Approach Delay (s)	0.0			0.1			11.6	14.7
Approach LOS							B	B

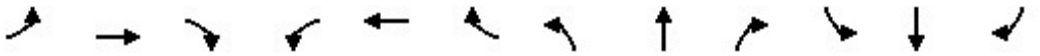
Intersection Summary				
Average Delay	0.7			
Intersection Capacity Utilization	43.5%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1039	10	9	612	20	27
Future Volume (Veh/h)	1039	10	9	612	20	27
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	1082	10	9	638	21	28
Pedestrians					17	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (m)	262			55		
pX, platoon unblocked			0.93		0.94	0.93
vC, conflicting volume			1109		1441	563
vC1, stage 1 conf vol					1104	
vC2, stage 2 conf vol					337	
vCu, unblocked vol			959		1190	370
tC, single (s)			4.2		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		93	95
cM capacity (veh/h)			646		296	578

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	721	371	9	319	319	49
Volume Left	0	0	9	0	0	21
Volume Right	0	10	0	0	0	28
cSH	1700	1700	646	1700	1700	411
Volume to Capacity	0.42	0.22	0.01	0.19	0.19	0.12
Queue Length 95th (m)	0.0	0.0	0.3	0.0	0.0	3.2
Control Delay (s)	0.0	0.0	10.7	0.0	0.0	14.9
Lane LOS			B			B
Approach Delay (s)	0.0		0.1			14.9
Approach LOS						B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	39.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	844	7	16	1421	54	2	0	10	7	0	13
Future Volume (Veh/h)	6	844	7	16	1421	54	2	0	10	7	0	13
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	6	861	7	16	1450	55	2	0	10	7	0	13
Pedestrians								11			10	
Lane Width (m)								3.6			3.6	
Walking Speed (m/s)								1.2			1.2	
Percent Blockage								1			1	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		152			166							
pX, platoon unblocked	0.85			0.94			0.88	0.88	0.94	0.88	0.88	0.85
vC, conflicting volume	1515			879			1658	2434	445	1972	2410	762
vC1, stage 1 conf vol							888	888		1520	1520	
vC2, stage 2 conf vol							770	1547		452	891	
vCu, unblocked vol	1245			734			1142	2027	270	1501	2000	355
tC, single (s)	4.1			4.1			7.7	6.7	7.1	7.5	6.5	6.9
tC, 2 stage (s)							6.7	5.7		6.5	5.5	
tF (s)	2.2			2.2			3.6	4.1	3.4	3.5	4.0	3.3
p0 queue free %	99			98			99	100	98	95	100	98
cM capacity (veh/h)	470			810			287	159	658	148	178	543

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	6	574	294	16	967	538	12	20
Volume Left	6	0	0	16	0	0	2	7
Volume Right	0	0	7	0	0	55	10	13
cSH	470	1700	1700	810	1700	1700	542	281
Volume to Capacity	0.01	0.34	0.17	0.02	0.57	0.32	0.02	0.07
Queue Length 95th (m)	0.3	0.0	0.0	0.5	0.0	0.0	0.5	1.8
Control Delay (s)	12.8	0.0	0.0	9.5	0.0	0.0	11.8	18.8
Lane LOS	B			A			B	C
Approach Delay (s)	0.1			0.1			11.8	18.8
Approach LOS							B	C

Intersection Summary				
Average Delay	0.3			
Intersection Capacity Utilization	51.0%	ICU Level of Service		A
Analysis Period (min)	15			

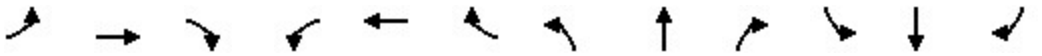


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	904	12	27	1493	5	15
Future Volume (Veh/h)	904	12	27	1493	5	15
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	922	12	28	1523	5	15
Pedestrians					14	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (m)	262			55		
pX, platoon unblocked			0.95		0.87	0.95
vC, conflicting volume			948		1760	481
vC1, stage 1 conf vol					942	
vC2, stage 2 conf vol					818	
vCu, unblocked vol			848		1339	359
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			96		98	98
cM capacity (veh/h)			746		311	607

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	615	319	28	762	762	20
Volume Left	0	0	28	0	0	5
Volume Right	0	12	0	0	0	15
cSH	1700	1700	746	1700	1700	490
Volume to Capacity	0.36	0.19	0.04	0.45	0.45	0.04
Queue Length 95th (m)	0.0	0.0	0.9	0.0	0.0	1.0
Control Delay (s)	0.0	0.0	10.0	0.0	0.0	12.7
Lane LOS			B			B
Approach Delay (s)	0.0		0.2			12.7
Approach LOS						B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	51.3%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix I Synchro Reports: Future Total Conditions

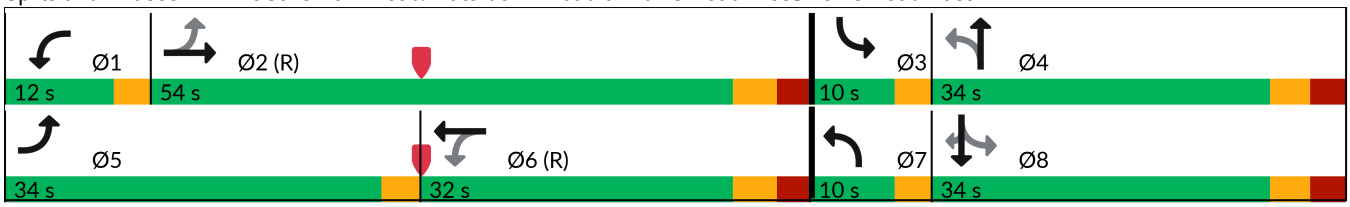


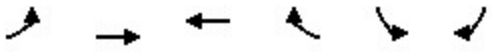
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	480	705	79	92	325	193	49	213	72	176	198	151
Future Volume (vph)	480	705	79	92	325	193	49	213	72	176	198	151
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	34.0		0.0	40.0		0.0	30.0		0.0	0.0		44.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99				0.98		0.99	0.99		0.98		0.98
Frt		0.985			0.944			0.962				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	3387	0	1687	3125	0	1719	1718	0	1687	1776	1509
Flt Permitted	0.285			0.326			0.517			0.270		
Satd. Flow (perm)	511	3387	0	579	3125	0	928	1718	0	469	1776	1473
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14			103			15				168
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		160.9			159.9			99.5			160.2	
Travel Time (s)		9.7			9.6			7.2			11.5	
Confl. Peds. (#/hr)	14					14	10		34	34		10
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	5%	5%	7%	7%	7%	5%	5%	5%	7%	7%	7%
Adj. Flow (vph)	533	783	88	102	361	214	54	237	80	196	220	168
Shared Lane Traffic (%)												
Lane Group Flow (vph)	533	871	0	102	575	0	54	317	0	196	220	168
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6			4			8		8
Detector Phase	5	2		1	6		7	4		3	8	8
Switch Phase												
Minimum Initial (s)	6.0	20.0		6.0	20.0		6.0	8.0		6.0	8.0	8.0
Minimum Split (s)	9.0	27.3		9.0	31.3		9.0	33.3		9.0	33.3	33.3
Total Split (s)	34.0	54.0		12.0	32.0		10.0	34.0		10.0	34.0	34.0
Total Split (%)	30.9%	49.1%		10.9%	29.1%		9.1%	30.9%		9.1%	30.9%	30.9%
Maximum Green (s)	31.0	47.7		9.0	25.7		7.0	27.7		7.0	27.7	27.7
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	3.3		3.0	3.3	3.3
All-Red Time (s)	0.0	2.6		0.0	2.6		0.0	3.0		0.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	6.3		3.0	6.3		3.0	6.3		3.0	6.3	6.3
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	None
Walk Time (s)		8.0			8.0			10.0			10.0	10.0
Flash Don't Walk (s)		13.0			17.0			17.0			17.0	17.0
Pedestrian Calls (#/hr)		5			5			5			5	5
Act Effct Green (s)	67.1	52.9		44.6	33.3		33.7	23.6		34.5	25.6	25.6
Actuated g/C Ratio	0.61	0.48		0.41	0.30		0.31	0.21		0.31	0.23	0.23
v/c Ratio	0.87	0.53		0.32	0.56		0.16	0.84		0.88	0.53	0.36

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay (s/veh)	31.9	22.0		19.3	30.0		24.7	58.1		65.8	42.1	7.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)	31.9	22.0		19.3	30.0		24.7	58.1		65.8	42.1	7.3
LOS	C	C		B	C		C	E		E	D	A
Approach Delay (s/veh)		25.8			28.4			53.3			40.1	
Approach LOS		C			C			D			D	
Queue Length 50th (m)	67.7	70.7		9.3	51.4		8.2	65.0		32.5	44.3	0.0
Queue Length 95th (m)	#133.0	96.6		22.6	81.0		16.6	95.8		#65.1	67.2	16.8
Internal Link Dist (m)		136.9			135.9			75.5			136.2	
Turn Bay Length (m)	34.0			40.0			30.0					44.0
Base Capacity (vph)	655	1635		330	1019		335	443		224	447	496
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.81	0.53		0.31	0.56		0.16	0.72		0.88	0.49	0.34

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay (s/veh): 32.5		Intersection LOS: C	
Intersection Capacity Utilization 94.9%		ICU Level of Service F	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1: LaSalle Park Road/Waterdown Road & Plains Road West/Plains Road East



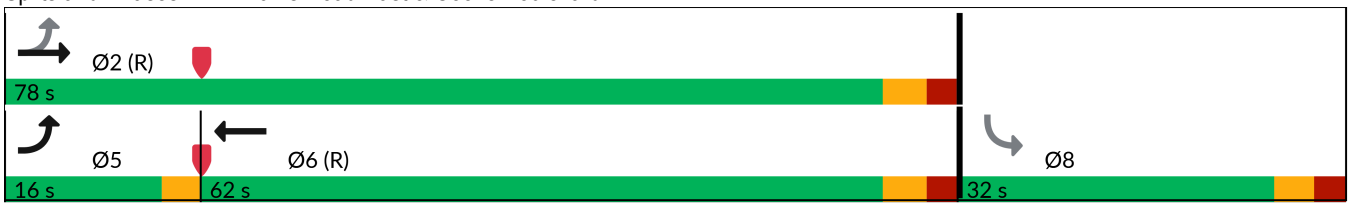


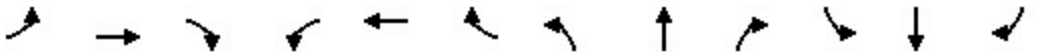
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	55	1004	621	32	31	42
Future Volume (vph)	55	1004	621	32	31	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	37.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor	0.99		1.00		0.97	
Frt			0.993		0.887	
Flt Protected	0.950				0.992	
Satd. Flow (prot)	1719	3438	3372	0	1409	0
Flt Permitted	0.373				0.992	
Satd. Flow (perm)	668	3438	3372	0	1408	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			7		168	
Link Speed (k/h)		60	60		50	
Link Distance (m)		159.9	151.8		141.0	
Travel Time (s)		9.6	9.1		10.2	
Confl. Peds. (#/hr)	13			13	3	17
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.25
Heavy Vehicles (%)	5%	5%	6%	6%	15%	15%
Adj. Flow (vph)	57	1035	640	33	32	168
Shared Lane Traffic (%)						
Lane Group Flow (vph)	57	1035	673	0	200	0
Turn Type	pm+pt	NA	NA		Perm	
Protected Phases	5	2	6			
Permitted Phases	2				8	
Detector Phase	5	2	6		8	
Switch Phase						
Minimum Initial (s)	6.0	8.0	8.0		8.0	
Minimum Split (s)	9.0	25.0	25.0		27.9	
Total Split (s)	16.0	78.0	62.0		32.0	
Total Split (%)	14.5%	70.9%	56.4%		29.1%	
Maximum Green (s)	13.0	72.0	56.0		26.1	
Yellow Time (s)	3.0	3.7	3.7		3.3	
All-Red Time (s)	0.0	2.3	2.3		2.6	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	
Total Lost Time (s)	3.0	6.0	6.0		5.9	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Recall Mode	None	C-Max	C-Max		None	
Walk Time (s)		8.0	8.0		8.0	
Flash Don't Walk (s)		11.0	11.0		14.0	
Pedestrian Calls (#/hr)		5	5		5	
Act Effct Green (s)	89.5	86.5	78.9		11.6	
Actuated g/C Ratio	0.81	0.79	0.72		0.11	
v/c Ratio	0.09	0.38	0.28		0.67	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Control Delay (s/veh)	2.2	2.5	6.7		21.7	
Queue Delay	0.0	0.1	0.0		0.0	
Total Delay (s/veh)	2.2	2.6	6.7		21.7	
LOS	A	A	A		C	
Approach Delay (s/veh)		2.6	6.7		21.7	
Approach LOS		A	A		C	
Queue Length 50th (m)	1.2	16.9	22.4		7.0	
Queue Length 95th (m)	m3.8	m29.4	45.2		27.7	
Internal Link Dist (m)		135.9	127.8		117.0	
Turn Bay Length (m)	37.0					
Base Capacity (vph)	667	2703	2419		462	
Starvation Cap Reductn	0	491	0		0	
Spillback Cap Reductn	0	0	0		0	
Storage Cap Reductn	0	0	0		0	
Reduced v/c Ratio	0.09	0.47	0.28		0.43	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 102 (93%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay (s/veh): 5.9		Intersection LOS: A	
Intersection Capacity Utilization 49.4%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

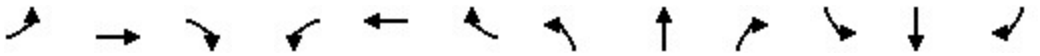
Splits and Phases: 2: Plains Road East & Cooke Boulevard





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	982	10	7	633	10	18	0	35	35	0	16
Future Volume (vph)	2	982	10	7	633	10	18	0	35	35	0	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	20.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.999			0.998			0.912			0.957	
Flt Protected	0.950			0.950				0.983			0.967	
Satd. Flow (prot)	1752	3501	0	1752	3498	0	0	1703	0	0	1758	0
Flt Permitted	0.950			0.950				0.983			0.967	
Satd. Flow (perm)	1752	3501	0	1752	3498	0	0	1703	0	0	1758	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		151.8			110.7			94.9			126.3	
Travel Time (s)		10.9			8.0			6.8			9.1	
Confl. Peds. (#/hr)	11		10	10		11	1		1	1		1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	2	1023	10	7	659	10	19	0	36	36	0	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	2	1033	0	7	669	0	0	55	0	0	53	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 39.9%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	982	10	7	633	10	18	0	35	35	0	16
Future Volume (Veh/h)	2	982	10	7	633	10	18	0	35	35	0	16
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	2	1023	10	7	659	10	19	0	36	36	0	17
Pedestrians		1			1			10			11	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			1			1	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		152			166							
pX, platoon unblocked	0.99			0.91			0.92	0.92	0.91	0.92	0.92	0.99
vC, conflicting volume	680			1043			1404	1736	528	1242	1736	347
vC1, stage 1 conf vol							1042	1042		689	689	
vC2, stage 2 conf vol							362	694		553	1047	
vCu, unblocked vol	663			855			1220	1583	290	1044	1583	327
tC, single (s)	4.2			4.2			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			93	100	94	90	100	97
cM capacity (veh/h)	900			701			272	279	644	351	275	663

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	2	682	351	7	439	230	55	53
Volume Left	2	0	0	7	0	0	19	36
Volume Right	0	0	10	0	0	10	36	17
cSH	900	1700	1700	701	1700	1700	437	414
Volume to Capacity	0.00	0.40	0.21	0.01	0.26	0.14	0.13	0.13
Queue Length 95th (m)	0.1	0.0	0.0	0.2	0.0	0.0	3.4	3.5
Control Delay (s/veh)	9.0	0.0	0.0	10.2	0.0	0.0	14.4	15.0
Lane LOS	A			B			B	B
Approach Delay (s/veh)	0.0			0.1			14.4	15.0
Approach LOS							B	B

Intersection Summary				
Average Delay	0.9			
Intersection Capacity Utilization	39.9%	ICU Level of Service		A
Analysis Period (min)	15			



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1044	17	12	614	34	33
Future Volume (vph)	1044	17	12	614	34	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	12.0		0.0	0.0
Storage Lanes		0	1		1	0
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.998				0.933	
Flt Protected			0.950		0.975	
Satd. Flow (prot)	3498	0	1752	3505	1728	0
Flt Permitted			0.950		0.975	
Satd. Flow (perm)	3498	0	1752	3505	1728	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	110.7			55.2	112.9	
Travel Time (s)	8.0			4.0	8.1	
Confl. Peds. (#/hr)		17	17			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	3%	3%	3%	3%	0%	0%
Adj. Flow (vph)	1088	18	13	640	35	34
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1106	0	13	640	69	0
Sign Control	Free			Free	Stop	

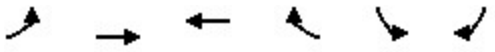
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 40.0%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1044	17	12	614	34	33
Future Volume (Veh/h)	1044	17	12	614	34	33
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	1088	18	12	640	35	34
Pedestrians					17	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (m)	262			55		
pX, platoon unblocked			0.93		0.94	0.93
vC, conflicting volume			1123		1458	570
vC1, stage 1 conf vol					1114	
vC2, stage 2 conf vol					344	
vCu, unblocked vol			971		1205	374
tC, single (s)			4.2		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			98		88	94
cM capacity (veh/h)			638		293	574

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	725	381	12	320	320	69
Volume Left	0	0	12	0	0	35
Volume Right	0	18	0	0	0	34
cSH	1700	1700	638	1700	1700	386
Volume to Capacity	0.43	0.22	0.02	0.19	0.19	0.18
Queue Length 95th (m)	0.0	0.0	0.5	0.0	0.0	5.1
Control Delay (s/veh)	0.0	0.0	10.8	0.0	0.0	16.3
Lane LOS			B			C
Approach Delay (s/veh)	0.0		0.2			16.3
Approach LOS						C

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		

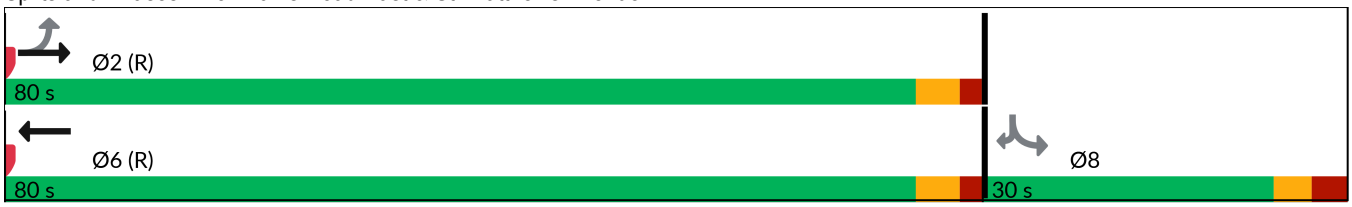


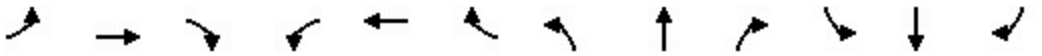
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	2	1084	616	0	2	14
Future Volume (vph)	2	1084	616	0	2	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	14.0			0.0	7.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor	1.00				1.00	0.98
Frt						0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1703	3406	3374	0	1805	1615
Flt Permitted	0.382				0.950	
Satd. Flow (perm)	684	3406	3374	0	1796	1588
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						16
Link Speed (k/h)		50	50		50	
Link Distance (m)		55.2	147.8		130.9	
Travel Time (s)		4.0	10.6		9.4	
Confl. Peds. (#/hr)	3			3	3	3
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	6%	6%	7%	7%	0%	0%
Adj. Flow (vph)	2	1246	708	0	2	16
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2	1246	708	0	2	16
Turn Type	Perm	NA	NA		Perm	Perm
Protected Phases		2	6			
Permitted Phases	2				8	8
Detector Phase	2	2	6		8	8
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0		8.0	8.0
Minimum Split (s)	43.4	43.4	43.4		27.0	27.0
Total Split (s)	80.0	80.0	80.0		30.0	30.0
Total Split (%)	72.7%	72.7%	72.7%		27.3%	27.3%
Maximum Green (s)	74.6	74.6	74.6		24.0	24.0
Yellow Time (s)	3.7	3.7	3.7		3.0	3.0
All-Red Time (s)	1.7	1.7	1.7		3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.4	5.4	5.4		6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	C-Max	C-Max	C-Max		None	None
Walk Time (s)	30.0	30.0	30.0		8.0	8.0
Flash Don't Walk (s)	8.0	8.0	8.0		13.0	13.0
Pedestrian Calls (#/hr)	5	5	5		5	5
Act Effct Green (s)	99.6	99.6	99.6		10.6	10.6
Actuated g/C Ratio	0.91	0.91	0.91		0.10	0.10
v/c Ratio	0.00	0.40	0.23		0.01	0.10

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Control Delay (s/veh)	1.0	1.1	2.3		41.0	18.7
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay (s/veh)	1.0	1.1	2.3		41.0	18.7
LOS	A	A	A		D	B
Approach Delay (s/veh)		1.1	2.3		21.2	
Approach LOS		A	A		C	
Queue Length 50th (m)	0.0	0.0	0.0		0.4	0.0
Queue Length 95th (m)	m0.1	11.6	34.1		2.4	5.8
Internal Link Dist (m)		31.2	123.8		106.9	
Turn Bay Length (m)	14.0				7.0	
Base Capacity (vph)	619	3085	3056		391	358
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.00	0.40	0.23		0.01	0.04

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.40			
Intersection Signal Delay (s/veh): 1.7		Intersection LOS: A	
Intersection Capacity Utilization 48.9%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 5: Plains Road East & St. Matthews Avenue



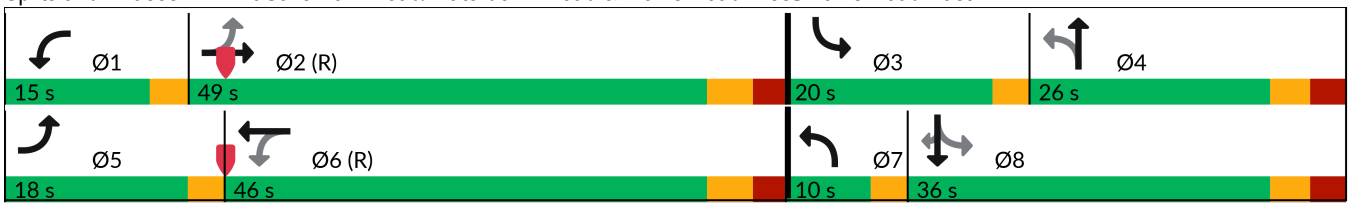


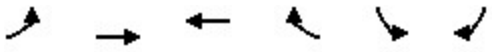
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	234	483	48	104	877	196	80	138	48	257	135	362
Future Volume (vph)	234	483	48	104	877	196	80	138	48	257	135	362
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	34.0		0.0	40.0		0.0	30.0		0.0	0.0		44.0
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					0.99		0.99	1.00		1.00		0.98
Frt		0.986			0.973			0.961				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3490	0	1752	3390	0	1770	1781	0	1770	1863	1583
Flt Permitted	0.091			0.432			0.665			0.364		
Satd. Flow (perm)	170	3490	0	797	3390	0	1226	1781	0	675	1863	1545
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			27			14				320
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		160.9			159.9			99.5			160.2	
Travel Time (s)		9.7			9.6			7.2			11.5	
Confl. Peds. (#/hr)	6					6	10		6	6		10
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	252	519	52	112	943	211	86	148	52	276	145	389
Shared Lane Traffic (%)												
Lane Group Flow (vph)	252	571	0	112	1154	0	86	200	0	276	145	389
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6			4			8		8
Detector Phase	5	2		1	6		7	4		3	8	8
Switch Phase												
Minimum Initial (s)	6.0	20.0		6.0	20.0		6.0	8.0		6.0	8.0	8.0
Minimum Split (s)	9.0	27.3		9.0	31.3		9.0	33.3		9.0	33.3	33.3
Total Split (s)	18.0	49.0		15.0	46.0		10.0	26.0		20.0	36.0	36.0
Total Split (%)	16.4%	44.5%		13.6%	41.8%		9.1%	23.6%		18.2%	32.7%	32.7%
Maximum Green (s)	15.0	42.7		12.0	39.7		7.0	19.7		17.0	29.7	29.7
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	3.3		3.0	3.3	3.3
All-Red Time (s)	0.0	2.6		0.0	2.6		0.0	3.0		0.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	6.3		3.0	6.3		3.0	6.3		3.0	6.3	6.3
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	None
Walk Time (s)		8.0			8.0			10.0			10.0	10.0
Flash Don't Walk (s)		13.0			17.0			17.0			17.0	17.0
Pedestrian Calls (#/hr)		5			5			5			5	5
Act Effct Green (s)	65.5	50.5		57.3	45.3		26.2	16.1		38.5	27.2	27.2
Actuated g/C Ratio	0.60	0.46		0.52	0.41		0.24	0.15		0.35	0.25	0.25
v/c Ratio	0.83	0.36		0.23	0.82		0.26	0.74		0.70	0.31	0.62

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay (s/veh)	47.0	20.8		7.1	26.4		25.9	57.4		36.7	35.5	12.1
Queue Delay	0.0	0.0		0.0	0.6		0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)	47.0	20.8		7.1	27.0		25.9	57.4		36.7	35.5	12.1
LOS	D	C		A	C		C	E		D	D	B
Approach Delay (s/veh)		28.9			25.2			48.0			24.7	
Approach LOS		C			C			D			C	
Queue Length 50th (m)	36.3	43.0		3.2	126.9		12.8	40.4		46.5	27.0	12.4
Queue Length 95th (m)	#79.6	62.8		m7.2	#169.7		23.2	64.2		67.7	43.8	42.8
Internal Link Dist (m)		136.9			135.9			75.5			136.2	
Turn Bay Length (m)	34.0			40.0			30.0					44.0
Base Capacity (vph)	325	1607		543	1411		328	330		405	503	650
Starvation Cap Reductn	0	0		0	60		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.78	0.36		0.21	0.85		0.26	0.61		0.68	0.29	0.60

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay (s/veh): 28.1		Intersection LOS: C	
Intersection Capacity Utilization 87.5%		ICU Level of Service E	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 1: LaSalle Park Road/Waterdown Road & Plains Road West/Plains Road East





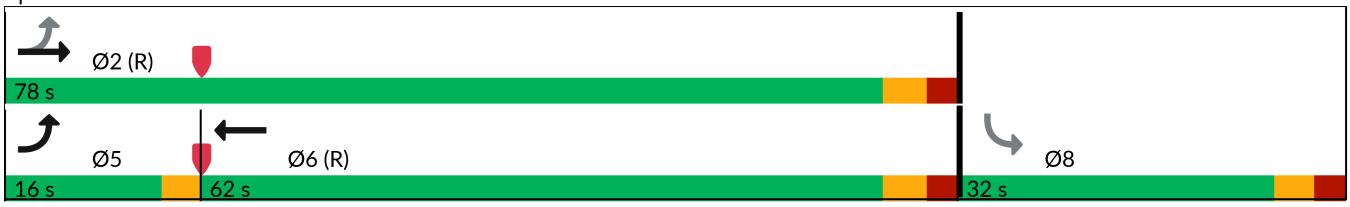
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	38	773	1342	95	85	65
Future Volume (vph)	38	773	1342	95	85	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	37.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor			1.00		0.99	
Frt			0.990		0.942	
Flt Protected	0.950				0.972	
Satd. Flow (prot)	1770	3539	3492	0	1693	0
Flt Permitted	0.102				0.972	
Satd. Flow (perm)	190	3539	3492	0	1685	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			10		33	
Link Speed (k/h)		60	60		50	
Link Distance (m)		159.9	151.8		141.0	
Travel Time (s)		9.6	9.1		10.2	
Confl. Peds. (#/hr)	11			11	6	3
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	43	869	1508	107	96	73
Shared Lane Traffic (%)						
Lane Group Flow (vph)	43	869	1615	0	169	0
Turn Type	pm+pt	NA	NA		Perm	
Protected Phases	5	2	6			
Permitted Phases	2				8	
Detector Phase	5	2	6		8	
Switch Phase						
Minimum Initial (s)	6.0	8.0	8.0		8.0	
Minimum Split (s)	9.0	25.0	25.0		27.9	
Total Split (s)	16.0	78.0	62.0		32.0	
Total Split (%)	14.5%	70.9%	56.4%		29.1%	
Maximum Green (s)	13.0	72.0	56.0		26.1	
Yellow Time (s)	3.0	3.7	3.7		3.3	
All-Red Time (s)	0.0	2.3	2.3		2.6	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	
Total Lost Time (s)	3.0	6.0	6.0		5.9	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Recall Mode	None	C-Max	C-Max		None	
Walk Time (s)		8.0	8.0		8.0	
Flash Don't Walk (s)		11.0	11.0		14.0	
Pedestrian Calls (#/hr)		5	5		5	
Act Effct Green (s)	86.5	83.5	77.8		14.6	
Actuated g/C Ratio	0.79	0.76	0.71		0.13	
v/c Ratio	0.18	0.32	0.65		0.67	
Control Delay (s/veh)	5.0	4.4	9.4		48.5	

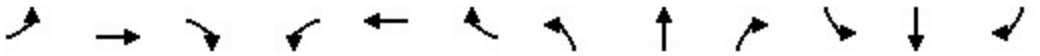
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Queue Delay	0.0	0.1	0.1		0.0	
Total Delay (s/veh)	5.0	4.5	9.5		48.6	
LOS	A	A	A		D	
Approach Delay (s/veh)		4.6	9.5		48.6	
Approach LOS		A	A		D	
Queue Length 50th (m)	1.7	32.6	72.8		29.6	
Queue Length 95th (m)	m4.7	42.4	82.5		48.2	
Internal Link Dist (m)		135.9	127.8		117.0	
Turn Bay Length (m)	37.0					
Base Capacity (vph)	336	2685	2471		424	
Starvation Cap Reductn	0	711	0		0	
Spillback Cap Reductn	0	0	150		1	
Storage Cap Reductn	0	0	0		0	
Reduced v/c Ratio	0.13	0.44	0.70		0.40	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 96 (87%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay (s/veh): 10.3		Intersection LOS: B	
Intersection Capacity Utilization 59.8%		ICU Level of Service B	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

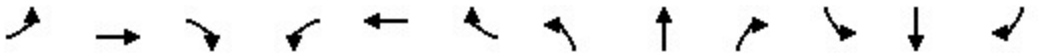
Splits and Phases: 2: Plains Road East & Cooke Boulevard





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	865	28	24	1434	54	15	1	15	7	1	13
Future Volume (vph)	6	865	28	24	1434	54	15	1	15	7	1	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	20.0		0.0	20.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.995			0.995			0.935			0.916	
Flt Protected	0.950			0.950				0.976			0.984	
Satd. Flow (prot)	1787	3556	0	1787	3556	0	0	1605	0	0	1713	0
Flt Permitted	0.950			0.950				0.976			0.984	
Satd. Flow (perm)	1787	3556	0	1787	3556	0	0	1605	0	0	1713	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		151.8			110.7			94.9			126.3	
Travel Time (s)		10.9			8.0			6.8			9.1	
Confl. Peds. (#/hr)	10		11	11		10						
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	8%	8%	8%	0%	0%	0%
Adj. Flow (vph)	6	883	29	24	1463	55	15	1	15	7	1	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	6	912	0	24	1518	0	0	31	0	0	21	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 51.4%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	865	28	24	1434	54	15	1	15	7	1	13
Future Volume (Veh/h)	6	865	28	24	1434	54	15	1	15	7	1	13
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	6	883	29	24	1463	55	15	1	15	7	1	13
Pedestrians								11			10	
Lane Width (m)								3.6			3.6	
Walking Speed (m/s)								1.2			1.2	
Percent Blockage								1			1	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		152			166							
pX, platoon unblocked	0.84			0.93			0.88	0.88	0.93	0.88	0.88	0.84
vC, conflicting volume	1528			923			1714	2497	467	2018	2484	769
vC1, stage 1 conf vol							921	921		1549	1549	
vC2, stage 2 conf vol							793	1576		469	935	
vCu, unblocked vol	1257			765			1176	2065	274	1521	2051	358
tC, single (s)	4.1			4.1			7.7	6.7	7.1	7.5	6.5	6.9
tC, 2 stage (s)							6.7	5.7		6.5	5.5	
tF (s)	2.2			2.2			3.6	4.1	3.4	3.5	4.0	3.3
p0 queue free %	99			97			95	99	98	95	99	98
cM capacity (veh/h)	465			783			275	152	650	140	169	540

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	6	589	323	24	975	543	31	21
Volume Left	6	0	0	24	0	0	15	7
Volume Right	0	0	29	0	0	55	15	13
cSH	465	1700	1700	783	1700	1700	368	262
Volume to Capacity	0.01	0.35	0.19	0.03	0.57	0.32	0.08	0.08
Queue Length 95th (m)	0.3	0.0	0.0	0.8	0.0	0.0	2.2	2.1
Control Delay (s/veh)	12.9	0.0	0.0	9.7	0.0	0.0	15.7	19.9
Lane LOS	B			A			C	C
Approach Delay (s/veh)	0.1			0.2			15.7	19.9
Approach LOS							C	C

Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	51.4%	ICU Level of Service		A
Analysis Period (min)	15			



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	909	33	35	1501	18	20
Future Volume (vph)	909	33	35	1501	18	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	12.0		0.0	0.0
Storage Lanes		0	1		1	0
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.995				0.929	
Flt Protected			0.950		0.977	
Satd. Flow (prot)	3556	0	1787	3574	1725	0
Flt Permitted			0.950		0.977	
Satd. Flow (perm)	3556	0	1787	3574	1725	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	110.7			55.2	112.9	
Travel Time (s)	8.0			4.0	8.1	
Confl. Peds. (#/hr)		14	14			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	1%	1%	1%	0%	0%
Adj. Flow (vph)	928	34	36	1532	18	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	962	0	36	1532	38	0
Sign Control	Free			Free	Stop	

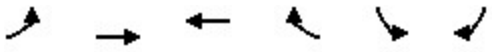
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 51.5%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	909	33	35	1501	18	20
Future Volume (Veh/h)	909	33	35	1501	18	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	928	34	36	1532	18	20
Pedestrians					14	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (m)	262			55		
pX, platoon unblocked			0.95		0.87	0.95
vC, conflicting volume			976		1797	495
vC1, stage 1 conf vol					959	
vC2, stage 2 conf vol					838	
vCu, unblocked vol			868		1358	361
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			95		94	97
cM capacity (veh/h)			730		304	602

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	619	343	36	766	766	38
Volume Left	0	0	36	0	0	18
Volume Right	0	34	0	0	0	20
cSH	1700	1700	730	1700	1700	411
Volume to Capacity	0.36	0.20	0.05	0.45	0.45	0.09
Queue Length 95th (m)	0.0	0.0	1.2	0.0	0.0	2.4
Control Delay (s/veh)	0.0	0.0	10.2	0.0	0.0	14.6
Lane LOS			B			B
Approach Delay (s/veh)	0.0		0.2			14.6
Approach LOS						B

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	51.5%	ICU Level of Service	A
Analysis Period (min)	15		

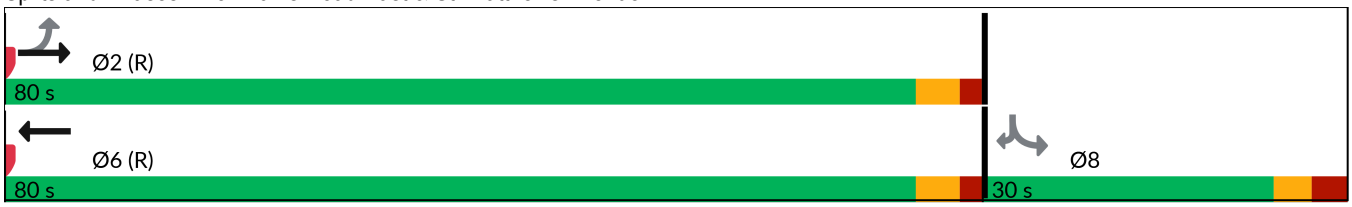


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	17	912	1592	20	19	13
Future Volume (vph)	17	912	1592	20	19	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	14.0			0.0	7.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor	1.00		1.00		0.99	0.98
Frt			0.998			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1787	3574	3531	0	1805	1615
Flt Permitted	0.130				0.950	
Satd. Flow (perm)	244	3574	3531	0	1791	1581
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			2			13
Link Speed (k/h)		50	50		50	
Link Distance (m)		55.2	147.8		130.9	
Travel Time (s)		4.0	10.6		9.4	
Confl. Peds. (#/hr)	7			7	5	6
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	1%	2%	2%	0%	0%
Adj. Flow (vph)	17	931	1624	20	19	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	17	931	1644	0	19	13
Turn Type	Perm	NA	NA		Perm	Perm
Protected Phases		2	6			
Permitted Phases	2				8	8
Detector Phase	2	2	6		8	8
Switch Phase						
Minimum Initial (s)	8.0	8.0	8.0		8.0	8.0
Minimum Split (s)	43.4	43.4	43.4		27.0	27.0
Total Split (s)	80.0	80.0	80.0		30.0	30.0
Total Split (%)	72.7%	72.7%	72.7%		27.3%	27.3%
Maximum Green (s)	74.6	74.6	74.6		24.0	24.0
Yellow Time (s)	3.7	3.7	3.7		3.0	3.0
All-Red Time (s)	1.7	1.7	1.7		3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.4	5.4	5.4		6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	C-Max	C-Max	C-Max		None	None
Walk Time (s)	30.0	30.0	30.0		8.0	8.0
Flash Don't Walk (s)	8.0	8.0	8.0		13.0	13.0
Pedestrian Calls (#/hr)	5	5	5		5	5
Act Effct Green (s)	95.8	95.8	95.8		10.6	10.6
Actuated g/C Ratio	0.87	0.87	0.87		0.10	0.10
v/c Ratio	0.08	0.30	0.53		0.11	0.08

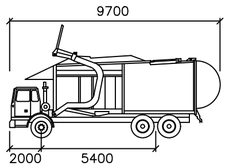
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Control Delay (s/veh)	2.4	1.4	4.5		44.1	19.8
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay (s/veh)	2.4	1.4	4.5		44.1	19.8
LOS	A	A	A		D	B
Approach Delay (s/veh)		1.4	4.5		34.3	
Approach LOS		A	A		C	
Queue Length 50th (m)	0.3	8.6	48.3		4.1	0.0
Queue Length 95th (m)	m1.6	19.4	116.4		10.3	5.5
Internal Link Dist (m)		31.2	123.8		106.9	
Turn Bay Length (m)	14.0				7.0	
Base Capacity (vph)	212	3111	3074		390	355
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.08	0.30	0.53		0.05	0.04

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 94 (85%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay (s/veh): 3.8		Intersection LOS: A	
Intersection Capacity Utilization 62.8%		ICU Level of Service B	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 5: Plains Road East & St. Matthews Avenue

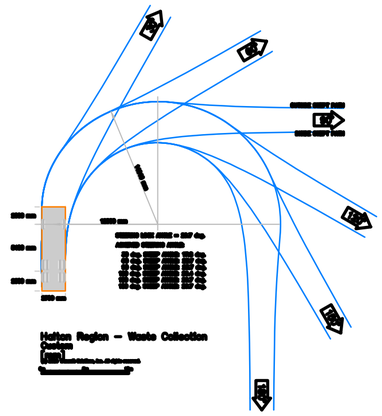


Appendix J AutoTURN Swept Path Analysis

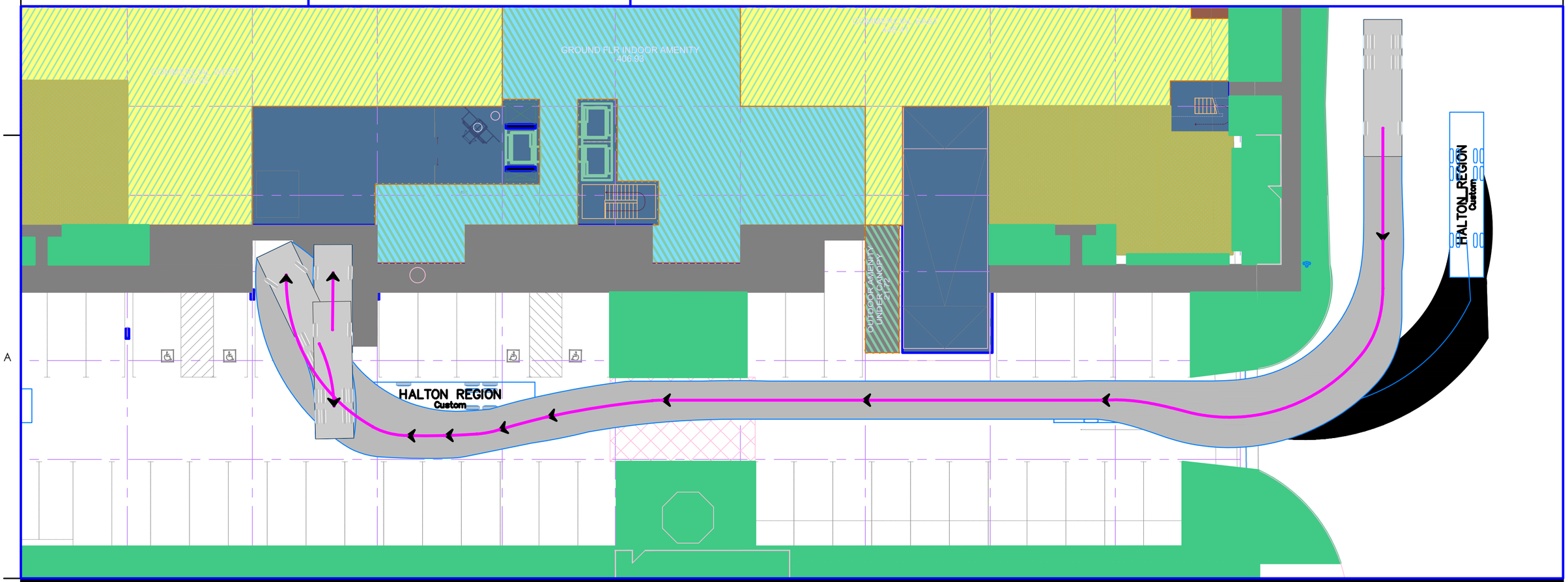


Halton Region – Waste Collection

	mm
Width	: 2700
Track	: 2700
Lock to Lock Time	: 6.0
Steering Angle	: 26.7







0	First Submission	TD	AM	2024.12.04
Revision		By	Appd	YYYY.MM.DD
A	First Submission	TD	AM	2024.12.04
Issued		By	Appd	YYYY.MM.DD

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Burlington, ON

File Name: 1382_AUTOTURN_DFT0_20241204	TD	TD	AM	2025.01.17
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

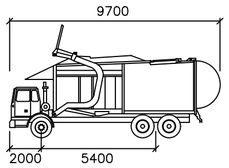
Title
Swept Path Analysis
Waste Collection Vehicle Entering

Project No.	Scale
165001382	1:200
Revision	**Sheet**
0	1 of 2

Drawing No.
SP-001

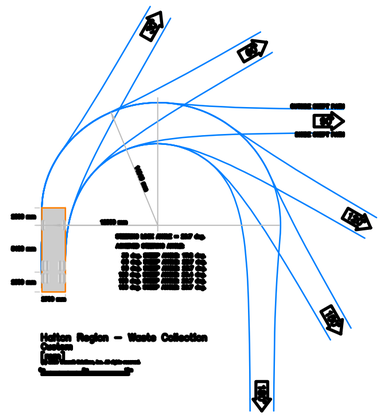
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ORIGINAL SHEET - ISO A2

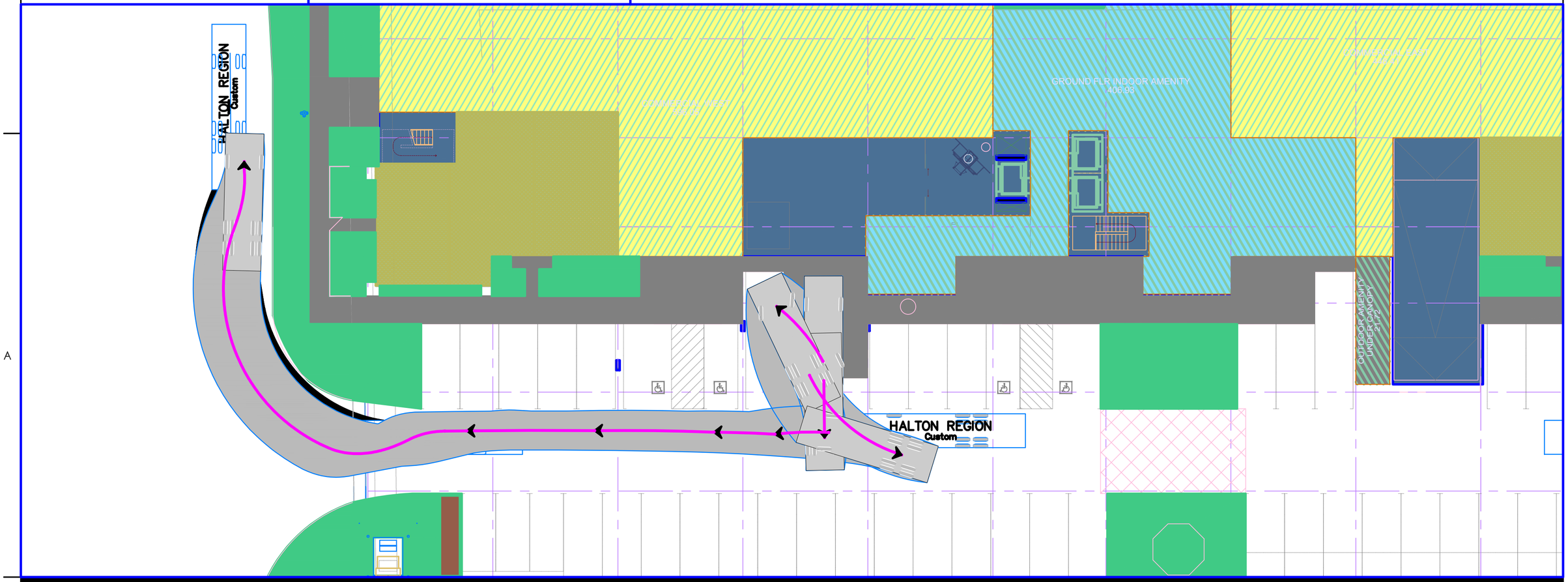


Halton Region – Waste Collection

	mm
Width	: 2700
Track	: 2700
Lock to Lock Time	: 6.0
Steering Angle	: 26.7







0 First Submission	TD	AM	2024.12.04
Revision	By	Appd	YYYY.MM.DD
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File Name: 1382_AUTOTURN_DFT0_20241204	TD	TD	AM	2025.01.17
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
Swept Path Analysis
Waste Collection Vehicle Exiting

Project No.	Scale
165001382	1:200
Revision	**Sheet**
0	2 of 2

Drawing No.
SP-002

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ORIGINAL SHEET - ISO A2

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