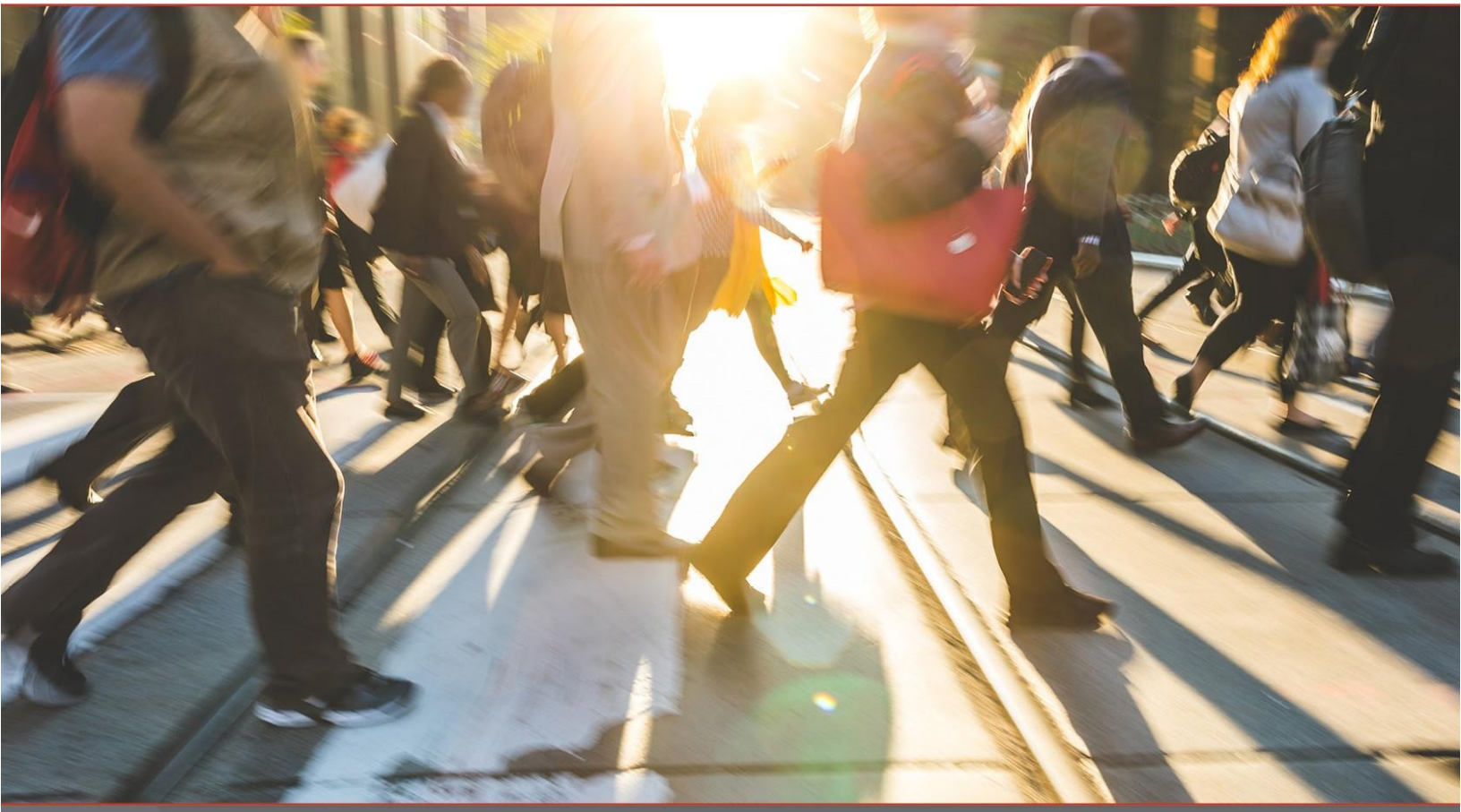
SEATON
PARCEL 24 LANDS

Traffic Sensitivity Analysis
City of Pickering



Prepared For: TACCGATE Developments Inc.

First Submission: December 6th, 2024

Updated: July 18th, 2025

BA Group

© BA Consulting Group Ltd.

Kitchener
40 Weber Street, Suite 60
Kitchener, ON N2H 6R3

Ottawa
135 Laurier Avenue West, Suite 208
Ottawa, ON K1P 5J2

Toronto
95 St. Clair Avenue West, Suite 1000
Toronto, ON M4V 1N6

www.bagroup.com

AUTHORSHIP

Date	Revision	Update
06/12/2024	Version 1	First Submission
18/07/2025	Version 2	Second Submission

PREPARED BY

Lead Author

Anthony J. Latorre, B.A.Sc., EIT
Lead Transportation Analyst

REVIEWED BY

Project Manager

Mohammad S. Bari, P.Eng.
Associate

TABLE OF CONTENTS

1.0 INTRODUCTION 1
1.1 Background 1
1.2 Residential Subdivision SP-2015-05 1
1.3 Seaton Transportation Operations Review 2
1.4 Purpose of this Report 2
1.5 Road Network Nomenclature 3
1.6 Arterial Road Network 3
1.7 Public Transit 4
1.8 Active Transportation 4

2.0 TRANSPORTATION DEMAND MANAGEMENT 5
2.1 Transit Infrastructure 5
2.2 Cycling Infrastructure 5
2.3 Pedestrian Infrastructure 5
2.4 Provide Walking, Cycling and Transit Information 5

3.0 VEHICULAR PARKING 6
3.1 On-Site Parking 6
3.2 On-Street Parking 6

4.0 PAVEMENT MARKING AND SIGNAGE PLAN 6

5.0 TRAFFIC VOLUMES 7
5.1 Ultimate Conditions 7
5.2 Interim Conditions 9

6.0 INTERSECTION CAPACITY ANALYSIS 12
6.1 Traffic Signal Warrant 12
6.2 Peter Matthews Drive / Alexander Knox Road 13
6.3 Peter Matthews Drive / Doverwood Avenue / Northern Site Access 14
6.4 Peter Matthews Drive / Street 16AG 15
6.5 Peter Matthews Drive / Street A (Southern Site Access) 16

7.0 RESPONSE TO COMMENTS 17
7.1 Engineering Services Department Comments – May 7, 2025 17
7.2 City Development Department Comments – June 18, 2025 22

8.0 SUMMARY AND CONCLUSIONS 24

LIST OF TABLES

Table 1 Study Area Street Naming Conventions 3
Table 2 Projected Full Build-Out Vehicular Trip Generation – P24 Lands 8
Table 3 Vehicular Trip Generation Rates 11
Table 4 Projected Interim Vehicular Trip Generation – P24 Lands 11
Table 5 Peter Matthews Drive / Alexander Knox Road Traffic Operations 13
Table 6 Peter Matthews Drive / Doverwood Avenue / Northern Site Access Traffic Operations 14
Table 7 Peter Matthews Drive / Street 16AG Traffic Operations 15
Table 8 Peter Matthews Drive / Street A (Southern Site Access) Traffic Operations 16
Table 9 Peter Matthews Drive / Street 'A' (Southern Site Access) – Queueing Assessment 23

LIST OF FIGURES

Figure 1: Site Location 2
Figure 2: Draft Plan 2
Figure 3: Planned Transit Network 2
Figure 4: Road Network – Ultimate Configuration 2
Figure 5: Base Traffic Volumes – Ultimate Conditions 2
Figure 6: Base Traffic Volumes & Re-addition of 20% Reduction – Ultimate Conditions 2
Figure 7: Street 19AN Traffic Volume Redistribution– Ultimate Conditions 2
Figure 8: Future Traffic Volumes – Ultimate Conditions 2
Figure 9: Road Network – Interim Configuration 2
Figure 10: Base Traffic Volumes – Interim Conditions 2
Figure 11: Site Traffic Volumes – Interim Conditions 2
Figure 12: Future Traffic Volumes – Interim Conditions 2

TABLE OF APPENDICES

Appendix A: Figures
Appendix B: City of Pickering Zoning By-Law 7364/14
Appendix C: Full Sized Drawings
Appendix D: Regional Road EA Design
Appendix E: Signal Timing Plan
Appendix F: Synchro Sheets
Appendix G: Traffic Warrant Analysis
Appendix H: Agency Comments

1.0 INTRODUCTION

BA Group is retained by TACCGATE Developments Inc. to provide transportation consulting services regarding the proposed development of Parcel 24 within residential subdivision SP-2015-05. The development parcel is located on the east side of Peter Matthews Drive and south of Alexander Knox Road. The subdivision is located in Neighbourhood 19 – Wilson Meadows of the City of Pickering's planned Seaton community.

1.1 Background

In December 2024, BA Group prepared a report titled "*Seaton Parcel 24 Lands Traffic Sensitivity Analysis*", dated December 6, 2024, as part of the Draft Plan of Subdivision and Zoning By-law Amendment submissions to the City of Pickering. This study examined various transportation aspects related to residential subdivision SP-2025-01 and provided conclusions and recommendations satisfying a number of municipal and regional requirements.

This report provides an update to the December 2024 report to address transportation related comments received from the City of Pickering in memorandums dated May 7, 2025, and June 18, 2025. Responses to comments received by the City of Pickering are addressed in **Section 7.0** of this report.

1.2 Residential Subdivision SP-2015-05

The residential subdivision of interest to this study (Parcel 24) is contained within SP-2015-05 and is herein referred to as the "P24 Lands" or the "Site". The P24 Lands are proposed in the vicinity of the Alexander Knox Road / Peter Matthews Drive intersection, south of Alexander Knox Road and east of Peter Matthews Drive. Notably, additional lands within SP-2015-05, located sparsely throughout Neighbourhoods 18 – Mount Pleasant and 19 – Wilson Meadows of the Seaton community are to be assessed in subsequent submissions.

The P24 Lands will include 76 detached dwellings and 28 townhouse dwellings. The location of the P24 Lands within the broader Seaton context is illustrated on **Figure 1**, and the Draft plan is illustrated on **Figure 2**.

All report figures are attached in **Appendix A**.

1.3 Seaton Transportation Operations Review

In May 2013, BA Group completed a transportation planning exercise on behalf of the Seaton Landowners Group and issued a summary report and technical appendix entitled *Seaton Transportation Operations Review* (the "2013 Report") which examined several transportation-related elements of the entire "full build-out" Seaton community (approximately 61,000 residents and 30,500 jobs).

Utilizing draft plans and assumptions regarding future land uses and transportation facilities, the study derived traffic forecasts to evaluate projected traffic operations throughout the Seaton community. Through this assessment, the 2013 Report identified potential problem areas, recommended mitigation measures, and commented on several long-term transportation considerations relevant to the future full build-out of the Seaton community.

The traffic volume projections presented in the 2013 Report have since been used by both HDR (*Central Pickering Development Class EA Travel Demand Modelling Analysis* – April 29, 2014) and the Region of Durham (*Operational Analysis for Seaton Arterial Development* – April 16, 2014) in their respective evaluations of future traffic operations along regional arterial roads throughout Seaton. Additionally, these volumes constitute the basis from which the traffic volume projections used as part of the current study were derived.

1.4 Purpose of this Report

This report addresses transportation considerations pertaining to the P24 Lands, largely City of Pickering requirements, upon which final approval of residential subdivision SP-2015-05 is conditional. Specifically, these requirements are satisfied through the submission of a Traffic Sensitivity Analysis, including:

- a Traffic Impact Study;
- an Intersection Control Plan;
- a Traffic Signal Implementation Program;
- a Traffic Management Implementation Plan;
- a Transportation Planning Exercise; and,
- a Transportation Demand Management Plan.

Notably, the purpose, scope, methodology, scale, horizon period, findings, and recommendations of the 2013 Report are similar in nature to those typically associated with standard transportation planning exercises. Moreover, the review implicitly considers the transportation-related impacts of the residential subdivisions of interest to the current study. As such, the 2013 Report satisfies the need for a Transportation Planning Exercise required by the City of Pickering as part of the approval process for residential subdivision SP-2015-05.

1.5 Road Network Nomenclature

This report uses street names based on the proposed plans. As a result of the adopted roadway nomenclature, there may be some discrepancy between the labelling of streets in this report and on previously dated submissions.

To provide clarity and consistency in the street naming conventions used in this study, the current and equivalent street nomenclature from the 2013 Report is summarized in **Table 1**.

Table 1 Study Area Street Naming Conventions

BA Group's 2013 Report Nomenclature	Current Nomenclature	Road Classification
Whitevale Bypass	Alexander Knox Road	Type B Arterial
Whitevale Road		
Sideline 22	Peter Matthews Drive	
Street 19FA	Doverwood Avenue / Northern Site Access	Local
Street 19AR	Street A (Southern Site Access)	

1.6 Arterial Road Network

Alexander Knox Road is a future four-lane east-west arterial road that will extend from Brock Road in the east to York Durham Line in the west. As part of the build-out of Seaton, Alexander Knox Road will constitute the formerly titled Whitevale Bypass and a segment of Whitevale Road from Brock Road in the east to Peter Matthews Drive in the west and will function as a Type B Arterial Road with a posted speed of 60 km/h. Currently, Alexander Knox Road is under construction and does not exist west of its intersection with Peter Matthews Drive.

Peter Matthews Drive is a four-lane north-south arterial road extending from Taunton Road in the south to Alexander Knox Road in the north. As part of the build-out of Seaton, Peter Matthews Drive will connect with Rossland Road at its intersection with Brock Road in the south and will extend to Highway 7 in the north. Peter Matthews Drive constitutes the former Sideline 22 and will function as a Type B Arterial Road with a posted speed of 60 km/h. Currently, Peter Matthews Drive exists west of the Site where it terminates at its intersection with Alexander Knox Road and is planned for construction further north to Highway 7 as part of future phases of Seaton development.

1.7 Public Transit

A review of the Region of Durham's *Staged Servicing and Implementation Strategy* (the "SSIS") indicates potential bus service routing near the Site at both the build out of the first phase of development as well as the full build-out of the Seaton community. It is proposed that, under both conditions, transit routes will be located along Alexander Knox Road and Peter Matthews Drive in the vicinity of the Site.

As part of the first phase of the Seaton community and under interim conditions, the following transit routes are proposed along area roads:

- **Alexander Knox Road:** Routes 3 and 4; and,
- **Peter Matthews Drive:** Routes 3 and 4.

As part of the full build-out of the Seaton community and under ultimate conditions, the following transit routes are proposed along area roads:

- **Alexander Knox Road:** Routes 3 and 4; and,
- **Peter Matthews Drive:** Routes 3, 4, and 6.

Under ultimate conditions, far-sided bus stops are planned at signalized intersections along Peter Matthews Drive in both a northerly and southerly direction. The nearest stop is located immediately west of the Site at the Peter Matthews Drive / Doverwood Avenue / Northern Site Access intersection. Near-sided bus stops are planned at signalized intersections along Alexander Knox Road in both an easterly and westerly direction. The nearest stop is located at the Alexander Knox Road / Peter Matthews Drive intersection, approximately a 5-minute walk north of the Site.

The ultimate condition of transit routes and bus stops are illustrated on **Figure 3**.

1.8 Active Transportation

To encourage the use of transit and active modes of transportation, active transportation infrastructure is proposed throughout and in proximity to the Site as a means to connect the proposed community with the abovementioned transit routes.

As part of the build-out of the Seaton community, the following active transportation improvements are proposed:

- A 3.0 metre bi-directional multi-use path is proposed along the east side of Peter Matthews Drive bordering and in the vicinity of the Site;
- 1.5 metre separated on-street bike lanes are proposed along Alexander Knox Road in both an easterly and westerly direction; and,

Pedestrian sidewalks and crossings will be constructed throughout the Site to provide adequate connections between residential units and the transit infrastructure noted in **Section 1.7**.

2.0 TRANSPORTATION DEMAND MANAGEMENT

Transportation Demand Management ("TDM") is a series of infrastructure, policy or operational measures designed to discourage peak period, single-occupant automobile travel.

BA Group has confirmed that the following TDM measures will be implemented as part of the development of the P24 Lands.

2.1 Transit Infrastructure

The Site will be served by transit routes operated by Durham Region Transit (DRT) along Alexander Knox Road and Peter Matthews Drive. Far-sided bus stops are planned at signalized intersections along Peter Matthews Drive in both a northerly and southerly direction. The nearest stop is located immediately west of the Site at the Peter Matthews Drive / Doverwood Avenue / Northern Site Access intersection. Near-sided bus stops are planned at signalized intersections along Alexander Knox Road in both an easterly and westerly direction. The nearest stop is located at the Alexander Knox Road / Peter Matthews Drive intersection, approximately a 5-minute walk north of the Site.

2.2 Cycling Infrastructure

Cycling infrastructure is proposed proximate to the Site along area arterial roads. Bordering the Site, 1.5 metre separated on-street bike lanes are proposed along Alexander Knox Road in both an easterly and westerly direction. Furthermore, a 3.0 metre bi-directional multi-use path is proposed along the east side of Peter Matthews Drive bordering and in the vicinity of the Site.

2.3 Pedestrian Infrastructure

Smooth and sufficiently wide sidewalks, street crossings, and detectable signs and signals will be provided throughout the Site to provide adequate connections between residential units and surrounding transit infrastructure.

2.4 Provide Walking, Cycling and Transit Information

To encourage the use of non-auto modes of transportation by residents, the developer will have information available in the sales office on walking routes, trails, cycling and transit (e.g., GO and Durham Transit schedules). This will include information on the extensive trail and bikeway system to be constructed within both the public street network and in the natural heritage lands of Seaton.

3.0 VEHICULAR PARKING

3.1 On-Site Parking

Parking for individual dwellings will be provided in accordance with the City of Pickering's Seaton Area Zoning By-law 7364/14. Excerpts from that by-law area are attached in **Appendix B**.

3.2 On-Street Parking

Drawings PK-01 and PK-02 illustrate the potential on-street parking available in the P24 Lands. The Site has been divided into two areas to determine if any specific zone falls beneath our best practices threshold of 0.25 spaces per residential unit for on-street visitor parking.

The overall parking supply is approximately 0.55 spaces per unit. The overall supply is sufficient, and specific issues that are problematic have not been identified. The subject lands have sufficient on-street parking available to meet the recurring needs of residents and visitors.

4.0 PAVEMENT MARKING AND SIGNAGE PLAN

Drawings TC-01 and TC-02 illustrate proposed pavement markings and signage for the subject lands.

Generally speaking, a minimalist approach to the use of on-street parking signage has been adopted for the P24 Lands. Parking signage has been included on roads that would benefit from defined parking zones, such as arterial roads. Local roads which are not anticipated to have parking issues do not have parking signage. These roads are 8.5 metres in width and can accommodate one-way traffic in the unlikely event that vehicles are parked on both sides of the street. As per the City of Pickering's request, no-parking signage has been added along local road segments which have road bends or are identified as fire routes. Should parking issues be identified over time, additional signage could be introduced by the municipality as required.

The majority of intersections are proposed as side-street STOP control. All-way STOP control is proposed at the following intersections as a means to provide improved connectivity and to manage traffic volumes across multiple approaches along Street A:

- Street A & Street C; and,
- Street A & Street B (Southern Intersection).

Full size drawings are attached in **Appendix C**.

5.0 TRAFFIC VOLUMES

The projected future traffic volumes at several area intersections were assessed based upon forecasted vehicular traffic volumes in the vicinity of the Site. Due to the planned phased construction of the area roadway network to align with ongoing area development, the forecast of vehicular volumes and the corresponding assessment of traffic operations were performed under two scenarios, referred to as “ultimate” conditions and “interim” conditions.

Both scenarios were assessed for the weekday morning (AM) and afternoon (PM) peak hours. These analysis periods are appropriate in that they reflect the times on the area road network when traffic volumes are at their greatest.

5.1 Ultimate Conditions

5.1.1 Road Network

The future area road network, as well as corresponding lane configurations and intersection controls in the vicinity of the Site under ultimate conditions are illustrated on **Figure 4**. Future intersection layouts have been generally assumed in accordance with the 2013 Report and the *Central Pickering Development Plan – Class Environmental Assessment for Regional Services in the City of Pickering* (the “Regional EA”).

The major roadways providing access to the Site under ultimate conditions are summarized below. A localized copy of the Regional EA within the vicinity of the Site is attached in **Appendix D**.

Alexander Knox Road

Under ultimate conditions, Alexander Knox Road will function as a major east-west arterial road from Brock Road in the east to York-Durham Line in the west. In the vicinity of the Site, Alexander Knox Road will consist of a four-lane bi-directional road, with dedicated left-turn lanes at area signalized intersections. Additionally, the Alexander Knox Road / Peter Matthews Drive intersection will possess channelized right-turns on all approaches, as illustrated on **Figure 4**.

Peter Matthews Drive

Under ultimate conditions, Peter Matthews Drive will function as a major north-south arterial road from Rossland Road in the south to Highway 7 in the north. In the vicinity of the Site, Peter Matthews Drive will consist of a four-lane bi-directional road, with dedicated right- and left-turn lanes at select area intersections. The configuration of Peter Matthews Drive in the vicinity of the Site is illustrated on **Figure 4**. Currently, two access points to the Site are proposed along Peter Matthews Drive, including one fully signalized intersection and one side-street stop-controlled unsignalized intersection.

5.1.2 Study Area and Analysis Periods

An assessment of future traffic operations under ultimate conditions was conducted at key future access locations to the P24 Lands as follows:

- Alexander Knox Road / Peter Matthews Drive;
- Peter Matthews Drive / Doverwood Avenue / Northern Site Access;
- Peter Matthews Drive / Street A (Southern Site Access); and,
- Peter Matthews Drive / Street 16AG.

It is noted that the full build-out of Seaton has already been assessed as part of the 2013 Report, with lane configurations and traffic control addressed further in the subsequent Environmental Assessments. On this basis, the intention of this analysis is to focus specifically on the operations for intersections within the vicinity of the Site with updated lane configurations and traffic controls.

5.1.3 Forecasted Traffic Volumes

As part of the modeling exercise conducted to derive full build-out Seaton traffic volumes, a 20% mode split reduction was applied throughout the entire six-neighbourhood study area. Since the current traffic operations assessment has been conducted with respect to local access to the P24 Lands, it was determined that, in order to produce conservative results and recommendations, it would be appropriate to undo this 20% reduction in the case of trips generated by the P24 Lands.

To reintroduce the additional 20% of traffic volumes removed in the 2013 Report, the projected number of vehicle trips generated by the P24 Lands as of the 2013 Report were first disaggregated. That is, traffic originating from the P24 Lands were isolated from corridor (through) traffic. These volumes represent the base future traffic volumes for the Site. This locally generated traffic was then factored up, in order to undo the 20% mode split reduction, and assigned throughout the area road network.

A summary of the projected full build-out trip generation for the P24 Lands is provided in **Table 2**.

Table 2 Projected Full Build-Out Vehicular Trip Generation – P24 Lands

	AM Peak Hour			PM Peak Hour		
	In	Out	2-Way	In	Out	2-Way
Estimated Site Trip Generation per 2013 Report (with 20% mode split reduction)	20	60	80	65	35	100
Estimated Site Trip Generation (with 20% mode split reduction removed)	25	75	100	80	45	125
Additional Site Trip Generation Associated with Removal of 20% Mode Split Reduction	**5**	**15**	**20**	**15**	**10**	**25**

The base future volumes as detailed in the 2013 Report are illustrated on **Figure 5**, and the future volumes inclusive of the previously removed 20% mode split reduction are illustrated on **Figure 6**. It is noted that some adjustments were made to reflect lane configuration changes from the 2013 Report and the subsequent Environmental Assessment processes. The reassignment of volumes as a result of these changes is illustrated on **Figure 7.** The resulting future total traffic volumes were used as inputs to conduct the ultimate conditions intersection capacity analysis and are illustrated on **Figure 8**.

5.2 Interim Conditions

5.2.1 Road Network

As discussed above, the construction of the roadway infrastructure supporting the development is expected to occur in phases. For the purpose of analysis, it is assumed that external road network infrastructure in the vicinity of the Site assumed to be built under interim conditions are consistent with ultimate conditions, with the exception of:

- The extension of Alexander Knox Road from Collector 1 (a north-south collector road under construction approximately 1 kilometre west of Whites Road) in the east to York Durham Line in the west; and,
- The northern extension of Peter Matthews Drive from Alexander Knox Road in the south to Highway 7 in the north.

Area developments constructed as part of the interim condition of the Seaton community have been generally assumed in accordance with Phase 1 of the SSIS.

The future area road network, as well as corresponding lane configurations and intersection controls in the vicinity of the Site under interim conditions are illustrated on **Figure 9**.

5.2.2 Forecasted Traffic Volumes

Estimates of future traffic volumes in the vicinity of the Site under interim conditions were derived using the following methodology:

- **Step 1:** Two-thirds of the 2013 Report through volumes were assumed along Alexander Knox Road at the Alexander Knox Road / Peter Matthews Drive intersection and carried along the corridors;
- **Step 2:** Two-thirds of the 2013 Report turning movement volumes were assumed for movements applicable to the interim 3-legged intersection of Alexander Knox Road / Peter Matthews Drive and carried along the corridor;
- **Step 3:** 20% of the 2013 Report through volumes along Peter Matthews Drive at Alexander Knox Road were assumed and redistributed as turning movements (in addition to **Step 2** volumes), representative of the interim buildout of the road terminating at Alexander Knox Road. The 20% factor is a conservative measure which considers both the interim build-out of the Seaton community and the diversion of trips away from the corridor as a result of the interim road network.
- **Step 4:** Future traffic volumes generated by the Parcel 8 development directly west of the Site (628 residential units), as distributed within BA Group's report entitled "*Seaton Parcel 8 Lands – Traffic Sensitivity Analysis*" dated May 14, 2025;
- **Step 5:** Trip generation associated with the proposed P24 Lands. Trip generation rates adopted and summarized in **Table 3** are consistent with those outlined in the 2013 Report and the 9th Edition of the Institute of Transportation Engineers (ITE)'s Trip Generation Manual. It is noted that the ITE's Trip Generation Manual is currently in its 11th Edition, however, the residential trip generation rates presented within the 9th Edition are noted to be generally comparable, albeit, more conservative (i.e. greater) than their 11th Edition equivalents[1]. To maintain consistency with the 2013 Report and to conservatively assess the operations of the Site, the ITE's 9th Edition trip generation rates as summarized in **Table 3** have been adopted for the purposes of analysis. The projected interim Site trip generation is summarized in **Table 4**; and,
- **Step 6:** Site trips distributed and assigned to study area intersections based on the distributions outlined in the 2013 Report for Neighbourhoods 16 and 19 and the interim road network condition.

[1] Trip generation rates for Land Use Code (LUC) 210: Single-Family Detached Housing and LUC 230: Residential Townhouse of the 9th Edition of the ITE's Trip Generation Manual have been compared with their equivalent 11th Edition trip generation rates for LUC 210: Single-Family Detached Housing and LUC 215: Single-Family Attached Housing, respectively.

Table 3 Vehicular Trip Generation Rates

Land Use	AM Peak Hour			PM Peak Hour		
	In	Out	2-Way	In	Out	2-Way
Residential Detached Dwelling (per unit)	0.20	0.57	0.77	0.65	0.37	1.02
Residential Townhouse (per unit)	0.11	0.56	0.67	0.46	0.23	0.69

Table 4 Projected Interim Vehicular Trip Generation – P24 Lands

Land Use	Size	AM Peak Hour			PM Peak Hour		
		In	Out	2-Way	In	Out	2-Way
Residential Detached Dwelling	76 units	15	45	60	50	25	75
Residential Townhouse	28 units	0	15	15	10	5	15
Total	**104 units**	**15**	**60**	**75**	**60**	**30**	**90**

Future background volumes under interim conditions, inclusive of **Steps 1 – 4**, are illustrated on **Figure 10.** Projected Site traffic volumes under interim conditions, inclusive of **Steps 5 – 6**, are illustrated on **Figure 11.** Resulting future total traffic volumes, which were used as inputs to conduct the interim conditions intersection capacity analysis are illustrated on **Figure 12.**

6.0 INTERSECTION CAPACITY ANALYSIS

Traffic operations have been assessed based upon the principles and methodology outlined in the Highway Capacity Manual (HCM) 2000. This analysis has been performed using Trafficware's Synchro 11 software, in accordance with *The Regional Municipality of Durham's Traffic Impact Study Guidelines* (dated October 2011) and Chapter 9 of *The Regional Municipally of Durham's Design Specifications for Traffic Control Devices, Pavement Markings, Signage and Roadside Protection* (dated April 2023).

For signalized intersections, the volume-to-capacity ratio (v/c) is an indicator of the capacity utilization for the key movements in the intersection. A v/c of 1.00 indicates that certain governing traffic movements through the intersection are operating at or near maximum capacity. The primary overall level of service (LOS) indicator is delay, both on individual movements and expressed as an average for all vehicles processed. Many busy urban intersections operate at LOS D to E, which reflects average delays in the range of 35 to 80 seconds.

For unsignalized intersections, level of service (LOS) characterizes operational conditions for key movements in terms of delay within the traffic stream. LOS A represents a good level of service with short delays. LOS F represents a poor level of service with long delays. The volume to capacity ratio (v/c) is an indicator of the capacity utilization for key movements at the intersection and resultant residual capacity potential.

An existing signal timing plan provided by the Region of Durham and attached in **Appendix E** for the intersection of Peter Matthews Drive / Alexander Knox Road has been utilized in the development of future signalized intersections within the vicinity of the Site. Interim and Ultimate future total traffic scenarios include optimized signal phasing and timing parameters to respond to changing traffic conditions as appropriate, whilst maintaining cycle lengths.

Detailed Synchro 11 worksheets are attached in **Appendix F**.

Traffic analysis results for area signalized and unsignalized intersections are discussed in the following sections.

6.1 Traffic Signal Warrant

The intersection of Peter Matthews Drive / Doverwood Avenue / Northern Site Access provides access to the Site and was planned to be signalized as part of the initial planning of Seaton. A traffic signal warrant was conducted based on Ontario Traffic Manual methodologies and is attached in **Appendix G**.

Based on the analysis, as part of the interim condition, a traffic signal is not warranted at the Peter Matthews Drive / Doverwood Avenue / Northern Site Access intersection. While a signal is not warranted, it is recommended that the intersection be constructed as a signalized intersection under interim conditions to support active and transit mobility throughout and adjacent to the Site. It is further recommended that this intersection is monitored as development within the area progresses and that reasonable underground signal related infrastructure be installed during the initial construction of the intersection.

6.2 Peter Matthews Drive / Alexander Knox Road

The results of the traffic operations analysis for the Peter Matthews Drive / Alexander Knox Road signalized intersection are provided in **Table 5**.

Table 5 Peter Matthews Drive / Alexander Knox Road Traffic Operations

Lane Group	Interim Future Total Conditions			Ultimate Future Total Conditions		
	V/C	LOS	Delay (s)	V/C	LOS	Delay (s)
EBL	–			0.28 (0.43)	A (C)	7.9 (25.9)
EBT	0.17 (0.29)	A (A)	1.8 (8.5)	0.27 (0.54)	A (C)	6.8 (24.3)
EBR	0.02 (0.07)	A (A)	1.2 (4.0)	0.01 (0.03)	A (B)	9.2 (19.3)
WBL	0.25 (0.49)	A (A)	7.8 (7.7)	0.29 (0.47)	B (B)	12.5 (14.7)
WBT	0.18 (0.19)	A (A)	6.6 (6.7)	0.30 (0.33)	B (B)	11.4 (14.1)
WBR	–			0.10 (0.06)	A (B)	10.0 (11.7)
NBL	0.18 (0.13)	C (B)	23.4 (19.9)	0.02 (0.16)	A (A)	6.4 (7.3)
NBT	–			0.76 (0.41)	C (B)	22.5 (13.9)
NBR	0.14 (0.12)	D (C)	54.3 (24.3)	0.04 (0.08)	B (A)	11.1 (7.4)
SBL	–			0.50 (0.67)	C (D)	34.7 (36.2)
SBT				0.34 (0.79)	C (D)	29.7 (35.0)
SBR				0.06 (0.08)	C (C)	27.3 (24.2)
Overall	**0.23 (0.43)**	**B (A)**	**14.0 (9.7)**	**0.45 (0.63)**	**B (C)**	**16.3 (23.0)**

Notes:
1. 00 (00) – AM Peak (PM Peak)

All movements operate at acceptable levels of service and within capacity. The additional traffic generated by the proposed development can be appropriately accommodated at the Peter Matthews Drive / Alexander Knox Road intersection in the interim and ultimate scenarios.

6.3 Peter Matthews Drive / Doverwood Avenue / Northern Site Access

The results of the traffic operations analysis for the Peter Matthews Drive / Doverwood Avenue / Northern Site Access signalized intersection are provided in **Table 6**.

Table 6 Peter Matthews Drive / Doverwood Avenue / Northern Site Access Traffic Operations

Lane Group	Interim Future Total Conditions			Ultimate Future Total Conditions		
	V/C	LOS	Delay (s)	V/C	LOS	Delay (s)
EBL	0.18 (0.12)	D (D)	36.6 (37.5)	0.14 (0.17)	D (C)	35.1 (34.2)
EBTR	0.02 (0.01)	D (D)	35.3 (36.7)	0.16 (0.47)	D (D)	35.3 (37.2)
WBL	0.05 (0.03)	D (D)	35.6 (36.8)	0.03 (--)[2]	C (--)[2]	34.2 (--)[2]
WBTR	0.01 (0.01)	D (D)	35.3 (36.7)	0.07 (0.03)	C (C)	34.5 (33.0)
NBL	0.02 (0.06)	A (A)	6.6 (6.1)	0.23 (0.73)	B (C)	10.4 (30.3)
NBT	0.09 (0.08)	A (A)	7.4 (6.2)	0.31 (0.23)	B (B)	11.0 (10.8)
NBR	--[2] (0.00)	--[2] (A)	--[2] (4.6)	--[2] (0.00)	--[2] (A)	--[2] (6.1)
SBL	0.01 (0.03)	A (A)	1.5 (4.1)	0.01 (0.04)	A (A)	8.8 (5.2)
SBT	0.07 (0.14)	A (A)	2.2 (5.1)	0.16 (0.34)	A (A)	8.7 (5.3)
SBR	0.00 (0.02)	A (A)	5.2 (4.7)	0.06 (0.19)	B (A)	13.5 (4.8)
Overall	**0.11 (0.14)**	**B (A)**	**11.1 (8.2)**	**0.28 (0.67)**	**B (B)**	**15.0 (14.3)**

Notes:
1. 00 (00) – AM Peak (PM Peak)
2. Zero volumes projected for movement

All movements operate at acceptable levels of service and within capacity. The additional traffic generated by the proposed development can be appropriately accommodated at the Peter Matthews Drive / Doverwood Avenue / Northern Site Access intersection in the interim and ultimate scenarios.

6.4 Peter Matthews Drive / Street 16AG

The results of the traffic operations analysis for the Peter Matthews Drive / Street 16AG signalized intersection are provided in **Table 7**.

Table 7 Peter Matthews Drive / Street 16AG Traffic Operations

Lane Group	Interim Future Total Conditions			Ultimate Future Total Conditions		
	V/C	LOS	Delay (s)	V/C	LOS	Delay (s)
EBL	0.07 (0.06)	D (D)	35.4 (37.0)	0.07 (0.06)	D (D)	35.4 (37.0)
EBTR	0.02 (0.01)	C (D)	35.0 (36.7)	0.02 (0.01)	C (D)	35.0 (36.7)
WBL	0.30 (0.20)	D (D)	37.5 (38.2)	0.30 (0.20)	D (D)	37.5 (38.2)
WBTR	0.00 (0.00)	C (D)	34.9 (36.6)	0.00 (0.00)	C (D)	34.9 (36.6)
NBL	0.03 (0.09)	A (A)	5.5 (5.3)	0.04 (0.18)	A (A)	5.6 (6.4)
NBT	0.08 (0.10)	A (A)	5.7 (5.1)	0.35 (0.33)	A (A)	7.3 (6.4)
NBR	0.01 (0.03)	A (A)	5.3 (4.8)	0.01 (0.03)	A (A)	5.3 (4.8)
SBL	0.01 (0.01)	B (B)	13.5 (13.2)	0.01 (0.03)	A (A)	9.0 (5.1)
SBT	0.09 (0.13)	B (B)	13.1 (13.8)	0.26 (0.38)	A (A)	9.8 (7.8)
SBR	0.00 (0.02)	A (A)	5.3 (4.7)	0.00 (0.02)	A (A)	5.3 (4.7)
Overall	**0.13 (0.14)**	**B (B)**	**14.7 (11.9)**	**0.34 (0.35)**	**B (A)**	**10.3 (8.2)**

Notes:
1. 00 (00) – AM Peak (PM Peak)

All movements operate at acceptable levels of service and within capacity. The additional traffic generated by the proposed development can be appropriately accommodated at the Peter Matthews Drive / Street 16AG intersection in the interim and ultimate scenarios.

6.5 Peter Matthews Drive / Street A (Southern Site Access)

The results of the traffic operations analysis for the Peter Matthews Drive / Southern Site Access unsignalized intersection are provided in **Table 8**.

Table 8 Peter Matthews Drive / Street A (Southern Site Access) Traffic Operations

Lane Group	Interim Future Total Conditions			Ultimate Future Total Conditions		
	V/C	LOS	Delay (s)	V/C	LOS	Delay (s)
WBLR	0.04 (0.02)	A (B)	10.0 (10.2)	0.09 (0.08)	B (C)	14.4 (16.6)
SBL	0.00 (0.02)	A (A)	7.7 (7.8)	0.02 (0.05)	A (A)	9.8 (9.8)

Notes:
1. 00 (00) – AM Peak (PM Peak)

All movements operate at acceptable levels of service and within capacity. The additional traffic generated by the proposed development can be appropriately accommodated at the Peter Matthews Drive / Street A (Southern Site Access) intersection in the interim and ultimate scenarios.

7.0 RESPONSE TO COMMENTS

The following provides a response to the transportation related comments provided by the City of Pickering in memorandums dated May 7, 2025, and June 18, 2025. These comments are attached in **Appendix H**.

7.1 Engineering Services Department Comments – May 7, 2025

7.1.1 Development Services

General Comments

Comment 32

Development Services has no comments on the Traffic Sensitivity Analysis.

Response

Noted.

7.1.2 Transportation & Traffic Comments

General Comments

Comment 1

Provide sightline review calculations for the intersection of Street A and Street B.

Response

Noted. BA Group has prepared a Sightline review for the intersection of Street A and Street B. Please refer to drawings FD-01, SL-01 and SL-02 in **Appendix C** for more information.

Comment 2

Confirm whether the angle of intersection between Street A and B complies with the Transportation Association (TAC) guidelines.

Response

The angle between Streets A and B is 80 degrees. As per the Geometric Design Guide for Canadian Roads – Chapter 9, an angle between 70 - 110 degrees is deemed appropriate for an intersection. Please refer to drawing FD-01 in **Appendix C** for more information.

Comment 3

Provide an AutoTurn diagram for emergency and waste collection vehicles.

Response

All streets have been designed as per standards, and as such, are considered appropriate for the circulation of emergency and waste collection vehicles. BA group has prepared Vehicle Manoeuvring Diagrams (VMDs) utilizing the Caledon Fire Truck A-302 and the Peel Region Side-Loading Refuse Collection vehicle. The Peel Region Side-Loading Refuse Collection vehicle closely matches the dimensions of the front-loading garbage truck outlined in **Appendix "A"** of the Durham Region Technical and Risk Management Guidelines for Waste Collection Services on Private Property (schedule "P" to by-law 46-2011). Please refer to drawings VMD-01 to VMD-08 in **Appendix C** for more information.

Traffic Impact Study

Comment 4

In Section 1.5 of the report, confirm the posted speed limit on Alexander Knox Road, as 1.5m on-street bike lanes are proposed.

Response

Section 1.6 has been revised to note a posted speed of 60 km/h along Alexander Knox Road and Peter Matthews Drive, as outlined within the Region of Durham's Traffic and Parking By-law 03-2021 as amended in By-law 24-2023. The amendment further notes Alexander Knox Road to operate with reserved bicycle lanes throughout its interim buildout between Peter Matthews Drive and Brock Road.

Comment 5

Table 5 shows that the northbound right-turn movement at the intersection of Peter Matthews Drive and Alexander Knox Road will have a Level of Service (LOS) of F during both the AM and PM peak hours in the interim condition. Provide an explanation for why the northbound right-turn movement would operate poorly in the interim and improve slightly in the ultimate scenario.

Response

Contrary to volume-to-capacity ratios (v/c) which provide a more effective indicator of the acceptability of an individual intersection, delay and level-of-service (LOS) are more reflective of individual driver experience and are influenced by contextual factors such as cycle lengths and intersection coordination. In the case of closely spaced and coordinated signals, the average delay experienced within a lane group can be heavily influenced by appropriately timed offsets between signalized intersections along a corridor.

Future signal timing plans adopted as part of the 2024 submission utilized optimized signal phasing and timing parameters to respond to changing traffic conditions as appropriate, whilst maintaining a 100 second cycle length and existing offset values at all intersections within the study area, consistent with the existing signal timing plan at the intersection of Alexander Knox Road and Peter Matthews Drive. As part of this submission, offset values at future signalized intersections have been revised in each peak hour to minimize delays at the critical intersection of Alexander Knox Road and Peter Matthews Drive, whilst maintaining an offset of 0 seconds in each peak hour at the existing Alexander Knox Road and Peter Matthews Drive intersection. **Section 6.0** provides revised signalized operations analysis results, demonstrating all lane groups at signalized intersections within the study area to operate at an LOS D or better.

Furthermore, it is anticipated that the northbound approach at the intersection of Alexander Knox Road and Peter Matthews Drive will operate with decreased delays under ultimate conditions than interim conditions, whilst overall intersection operations (v/c's and delays) are anticipated to generally increase. This is a result of the interim three-legged configuration of this intersection prior to the northern extension of Peter Matthews Drive to Highway 7 under ultimate conditions, and the greater utilization of turning movements as an alternative to through traffic[2].

[2] As noted in **Section 5.2.2**, through traffic traveling along Peter Matthews Drive to or from Highway 7 or Highway 407 to the north under ultimate conditions have been conservatively diverted as turning movements at the intersection of Alexander Knox Road and Peter Matthews Drive under interim conditions, representative of vehicles utilizing Brock Road or Whites Road as alternative routes to or from Highway 7 or Highway 407 to the north.

Comment 6

On drawing TC-02, a pedestrian crossover (PXO) is proposed at an angle, located at a 90- degree bend and sharp corner. Confirm that the proposed location does not impact driver's sightline or reduce pedestrian visibility. Additionally, confirm whether the PXO is designed in accordance with the Ontario Traffic Manual Bool 15.

Response

The proposed pedestrian crossover (PXO) with appropriate signage is positioned to ensure that approaching legs have a clear sight line to the crossing. By placing the pedestrian crossing at the bend, it ensures approaching vehicles from both legs of the crossing have clear sightlines to pedestrians waiting or in the process of crossing the street. Similarly, the position of the pedestrian crossing allows pedestrians to appropriately observe any oncoming vehicle from both legs of the crossing.

The proposed pedestrian crossover (PXO) has been designed in accordance with the Ontario Traffic Manual (OTM) Book 15 standards and such that vehicular and pedestrian sightlines are maintained.

Comment 7

On drawing TC-02, include the length of the dragon's teeth marking for the proposed pedestrian crossover located at the corner/bend on Street A. Confirm whether this length complies with the requirements of the TAC Guide.

Response

Noted. Shark teeth have been modified and labeled to comply with OTM Book 15 Figure 12. Please refer to drawing TC-02 in **Appendix C** for dimensions.

Comment 8

On drawing TC-02, provide a flashing beacon for the PXO signs, as pedestrians are forced to cross at this location due to the sidewalk switching sides.

Response

Noted. Drawing TC-02 in **Appendix C** has been revised to include flashing beacons for the PXO signs as per OTM Book 15. While not warranted based on OTM Book 15 methodology, the proposed pedestrian crossover (PXO) has been considered to accommodate pedestrian desire lines and flashing beacons have been applied to improve visibility for approaching drivers. Based on the foregoing, a Level 2 Type C pedestrian crossing as per OTM Book 15 would be appropriate at this location.

Comment 9

On drawings TC-01 and TC-02, label the widths of the proposed pedestrian crossings and confirm that they meet the requirements of the TAC Guide.

Response

Noted. The zebra pedestrian crossing on TC-02, has been modified to reflect a width of 3 metres to comply with OTM Book 15 requirements. Additionally, drawings TC-01 and TC-02 have been revised to include the dimension of all pedestrian crossings.

The TAC guide refers to 2.5-metre-wide crossings as “typical”. Furthermore, in accordance with OTM Book 15 Section 6.2.1, the minimum width for a sidewalk is 2.5 metres. Given the low pedestrian traffic expected in a suburban development, the dimensions used are considered appropriate and meet the requirements of the TAC guide and the Ontario Traffic Manual (OTM). Please refer to Drawings TC-02 and TC-02 in **Appendix C** for dimensions.

Comment 10

On drawings TC-01 and TC-02, label the curb radius dimensions at all intersection locations, including the 90 degrees bend within the subdivision.

Response

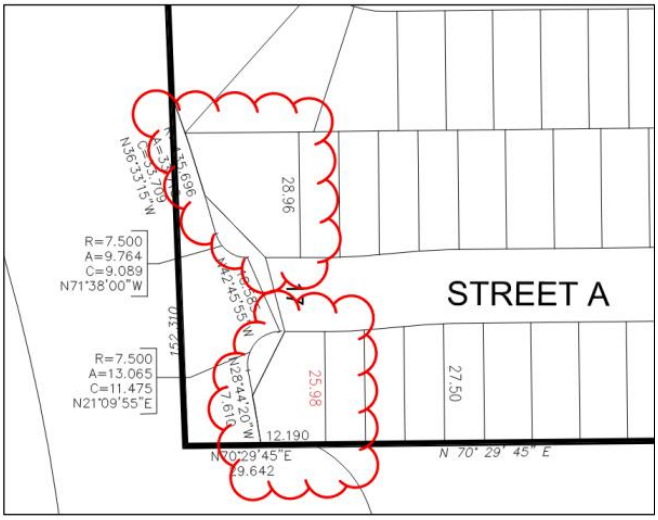
Noted. Drawings TC-01 and TC-02 have been revised to include all curb radii dimensions. Please refer to **Appendix C** for dimensions.

7.2 City Development Department Comments – June 18, 2025

Lot Siting Plan Details – Proposed Dwellings near the Peter Matthews Intersection

Comment 1

There are two lots that are next to the daylighting triangles along Peter Matthews Drive, shown in red below:



Please show where the driveways will be located on these lots and ensure they do not have any operational conflict with the intersection.

Response

Proposed driveway locations for all lots are illustrated on drawings TC-01 and TC-02 in **Appendix C**. Notably, the location of Lot 51 (southern lot) and Lot 52 (northern lot) driveways spans 7 – 13 metres and 12 – 18 metres upstream (east) of the stop line along Street A at Peter Matthews Drive. Comparatively, Trafficware's Synchro 11 software assumes 1 passenger vehicle in queue to correspond with 7.6 metres of queueing, inclusive of the average vehicle length and the average space between vehicles. Based on the foregoing, the proposed driveway locations enable queues of between 1 – 2 vehicles without any blockage.

As detailed in **Section 6.5**, the intersection of Peter Matthews Drive and Street 'A' is projected to operate with all movements at an acceptable level of service (LOS) C or better and well within capacity. Furthermore, projected 95th percentile queue lengths for the westbound approach at this intersection are summarized in **Table 9**, indicating peak hour queues of less than 1 vehicle. In consideration that 95th percentile queues represent near maximum queues experienced within a peak hour, it is reasonable to assume that a queue of greater than 1 vehicle is unlikely and would not be an operational conflict with either of the adjacent lot driveways.

Table 9 Peter Matthews Drive / Street 'A' (Southern Site Access) – Queueing Assessment

Lane Group	95th Percentile Queue Length (m)	
	Interim Future Total Conditions	Ultimate Future Total Conditions
WBLR	1.1 (0.6)	2.4 (2.1)

Notes:
1. 00 (00) – AM Peak (PM Peak)

8.0 SUMMARY AND CONCLUSIONS

Overview

1. This study examines transportation aspects related to the proposed development of Parcel 24 ("P24 Lands" or the "Site") within residential subdivision SP-2015-05.

2. The Site is located in the vicinity of the Alexander Knox Road / Peter Matthews Drive intersection, south of Alexander Knox Road and east of Peter Matthews Drive. Additionally lands within SP-2015-05, located sparsely throughout Neighbourhoods 18 – Mount Pleasant and 19 – Wilson Meadows of the Seaton community are to be assessed in a subsequent submission.

3. The P24 Lands will include 76 detached dwellings and 28 townhouse dwellings.

4. In May 2013, BA Group completed a transportation planning exercise on behalf of the Seaton Landowners Group and issued a summary report and technical appendix entitled Seaton Transportation Operations Review (the "2013 Report") which examined several transportation-related elements of the entire "full build-out" Seaton community. The conclusions drawn from this report in-part guided the development of the ultimate and interim conditions utilized in this study.

Transportation Demand Management

5. The following Transportation Demand Management ("TDM") measures will be implemented as part of the development of the Site:

    a) The Site will be served by transit routes operated by Durham Region Transit (DRT) along Alexander Knox Road and Peter Matthews Drive in the vicinity of the Site;

    b) A 3.0 metre bi-directional multi-use path along the east of Peter Matthews Drive bordering and in the vicinity of the Site;

    c) 1.5 metre separated on-street bike lanes along Alexander Knox Road in both an easterly and westerly direction;

    d) Pedestrian sidewalks and crossings will be constructed throughout the Site to provide adequate connections between residential units and surrounding transit infrastructure; and,

    e) Provision of information in the sales office on walking routes, trails, cycling and transit.

Vehicular Parking

6. The overall parking supply is approximately 0.57 spaces per unit. The overall supply is sufficient, and specific issues that are problematic have not been identified. The subject lands have sufficient on-street parking available to meet the recurring needs of residents and visitors.

Traffic Volumes – Ultimate Conditions

7. Future intersection layouts have been generally assumed in accordance with the 2013 Report and the *Central Pickering Development Plan – Class Environmental Assessment for Regional Services in the City of Pickering* (the "Regional EA").

8. The full build-out of Seaton has already been assessed as part of the 2013 Report, with lane configurations and traffic control addressed further in the subsequent Environmental Assessments. On this basis, the intention of the ultimate analysis is to focus specifically on the operations for intersections within the vicinity of the Site with updated lane configurations and traffic controls.

9. Traffic forecasts used in the evaluation of future intersection operations were based on projections obtained from future total volumes outlined in the 2013 Report.

10. As part of the modeling exercise conducted to derive full build-out Seaton traffic volumes, a 20% mode split reduction was applied throughout the entire six-neighbourhood study area. Since the current traffic operations assessment has been conducted with respect to local access to the P24 Lands, it was determined that, in order to produce conservative results and recommendations, it would be appropriate to undo this 20% reduction in the case of trips generated by the P24 Lands.

11. Removal of the 20% mode split reduction for the Site resulted in an estimated 20 and 25 additional two-way trips generated by the P24 Lands during the morning and afternoon peak hours, respectively.

Traffic Volumes – Interim Conditions

12. The construction of the roadway infrastructure supporting the development is expected to occur in phases.

13. For the purposes of analysis, it is assumed that external road network infrastructure in the vicinity of the Site assumed to be built under interim conditions are consistent with ultimate conditions, with the exception of:

    a) The extension of Alexander Knox Road from Collector 1 (a north-south collector road under construction approximately 1 kilometre west of Whites Road) in the east to York Durham Line in the west; and,

    b) The northern extension of Peter Matthews Drive from Alexander Knox Road in the south to Highway 7 in the north.

14. Area developments constructed as part of the interim condition of the Seaton community have been generally assumed in accordance with Phase 1 of the Region of Durham's *Staged Servicing and Implementation Strategy* (the "SSIS").

15. Traffic forecasts used in the evaluation of future intersection operations were based on projections obtained from future total volumes outlined in the 2013 Report and utilized under ultimate conditions with some additional adjustments made to represent interim conditions.

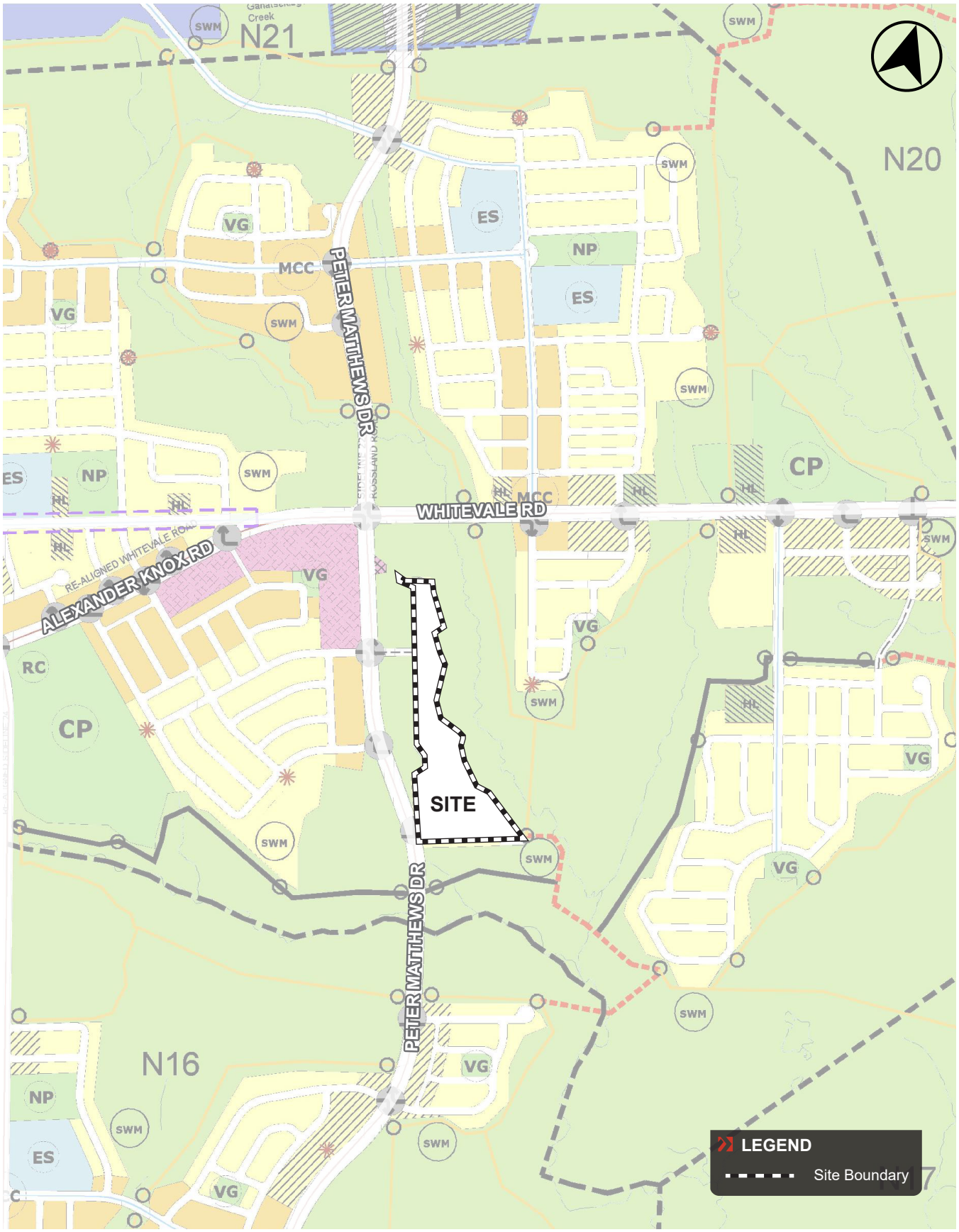
16. Under these conditions, the P24 Lands are projected to generate in the order of 75 and 90 two-way vehicular trips during the morning and afternoon peak hours, respectively.

Traffic Operations

17. A capacity analysis has been completed using the principles and methodologies outlined in the Highway Capacity Manual (HCM) 2000 and Trafficware's Synchro 11 software for intersections within the study area.

18. The results of the traffic operations analysis indicates that all intersections within the study area operate at acceptable levels of service and within capacity under interim and ultimate conditions.

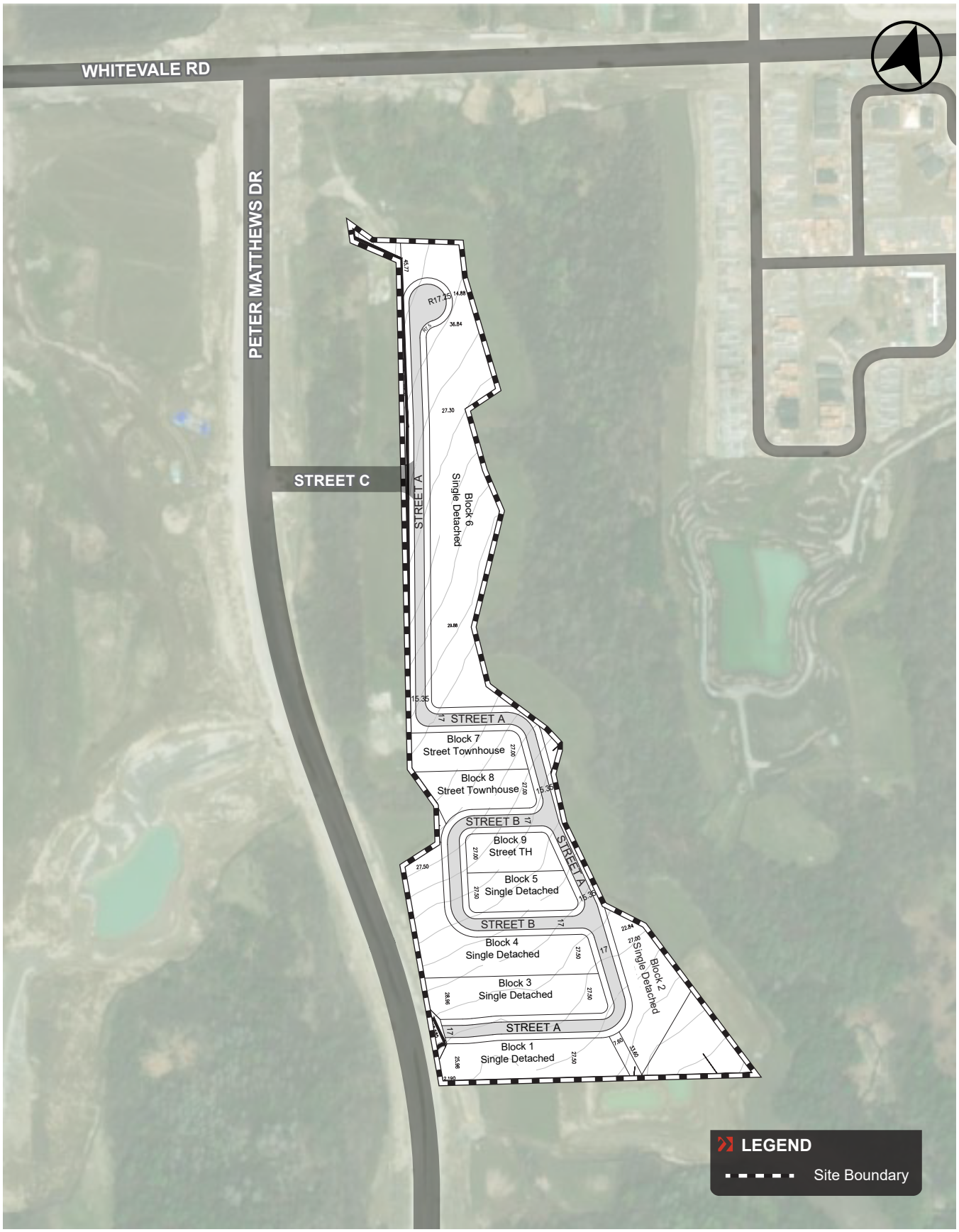
Appendix A:
Figures



\\bamediaaccount.file.core.windows.net\fp02data\WP\8160\03\Graphics\AdobeIDs\8160-01 - Figures for Report_May 2024.indd

Aerial maps provided courtesy of: Esri, DigitalGlobe, GeoEye, Earthstar Geographies, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, the GIS User Community and/or Google Earth/Maps.

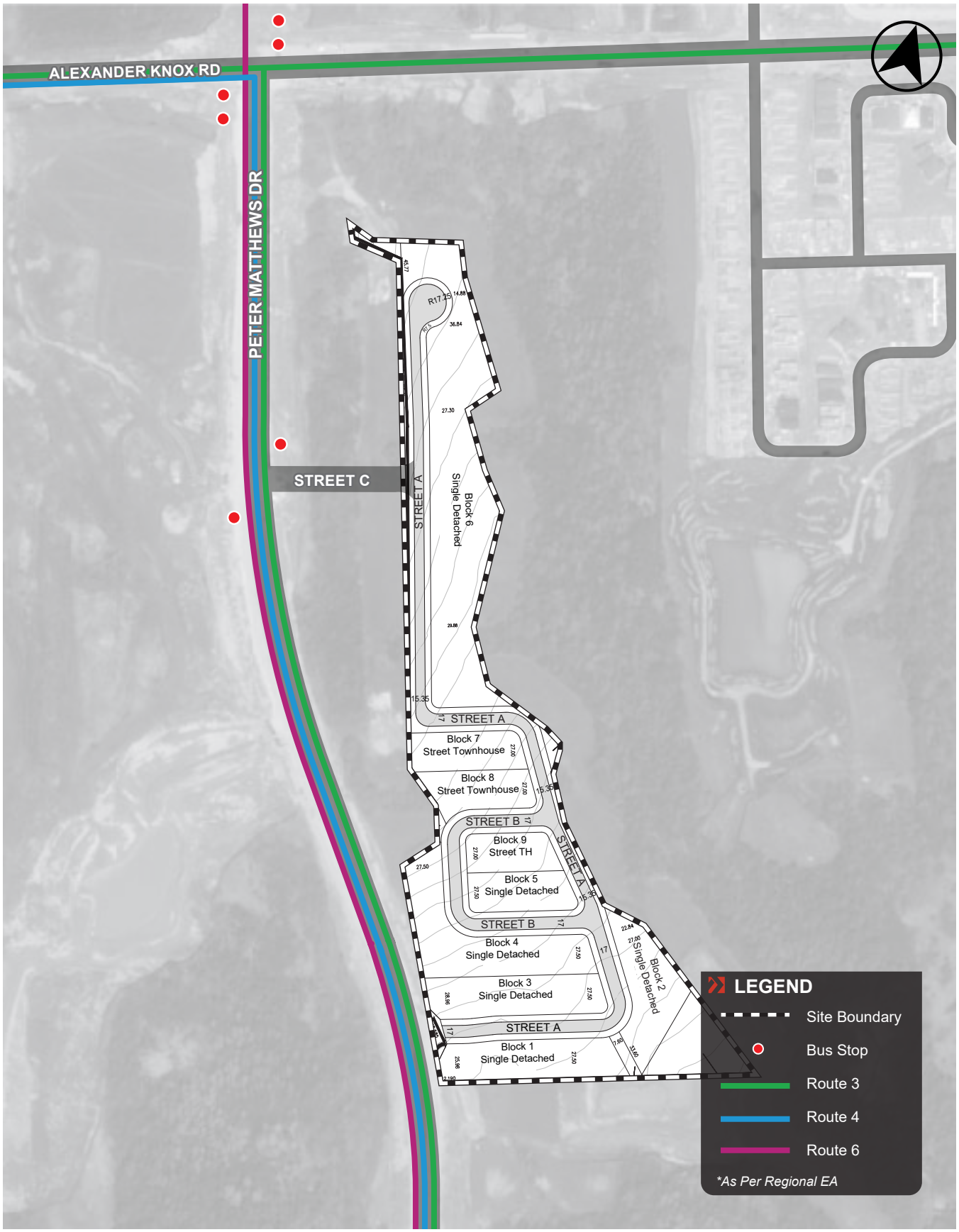
FIGURE 1 SITE LOCATION



\\bamediaaccount.file.core.windows.net\fp02data\WP\8160\03\Graphics\AdobeIDs\8160-01 - Figures for Report_May 2024.indd

Aerial maps provided courtesy of: Esri, DigitalGlobe, GeoEye, Earthstar Geographies, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, the GIS User Community and/or Google Earth/Maps.

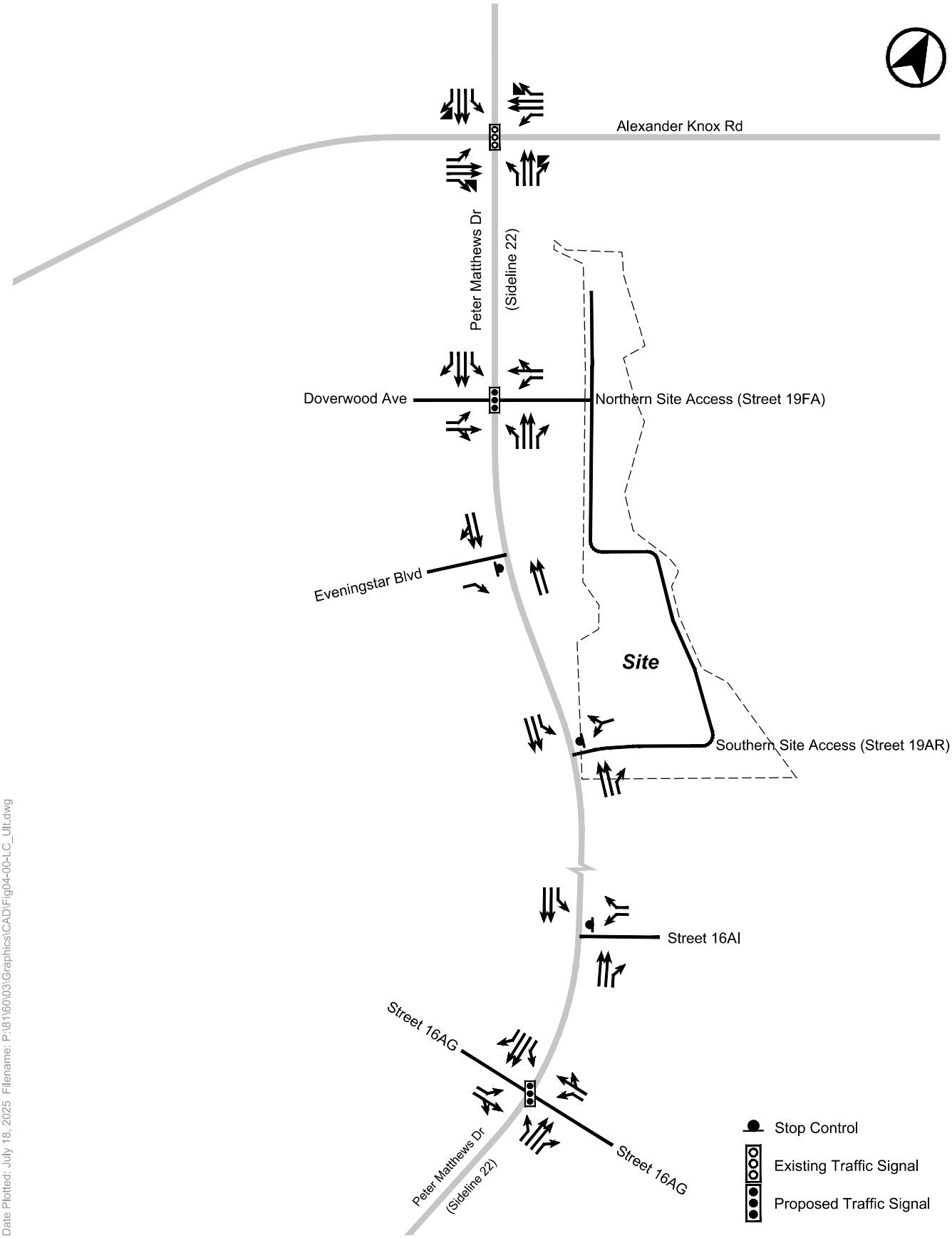
FIGURE 2 DRAFT PLAN



\\bamediaaccount.file.core.windows.net\fp02data\WP\8160\03\Graphics\AdobeIDs\8160-01 - Figures for Report_May 2024.indd

Aerial maps provided courtesy of: Esri, DigitalGlobe, GeoEye, Earthstar Geographies, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, the GIS User Community and/or Google Earth/Maps.

FIGURE 3 PLANNED TRANSIT NETWORK



Date Plotted: July 18, 2025 Filename: P:\8116\03\Graphics\CAD\Fig04-00-LC_Ult.dwg

FIGURE 4 ROAD NETWORK - ULTIMATE CONFIGURATION

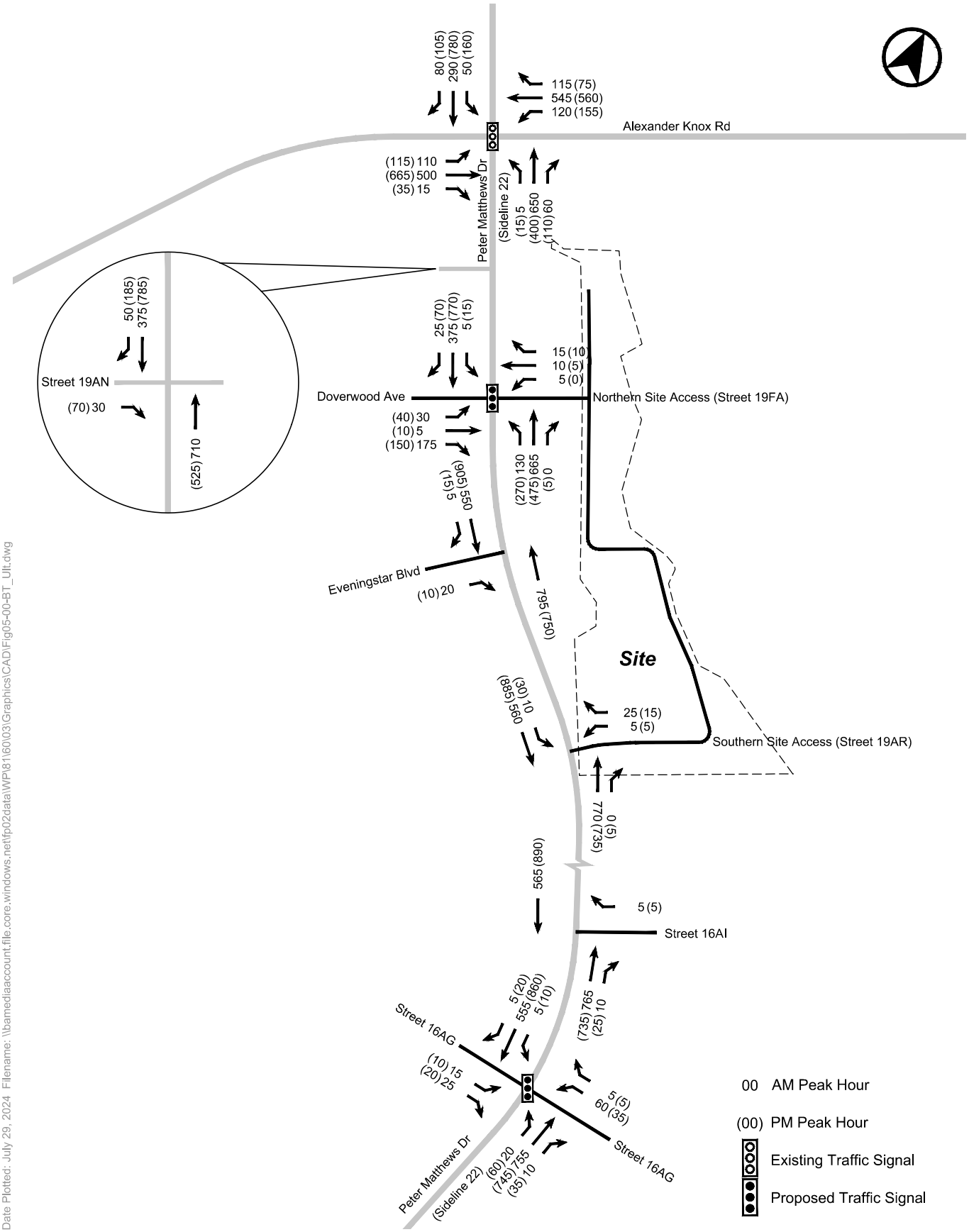
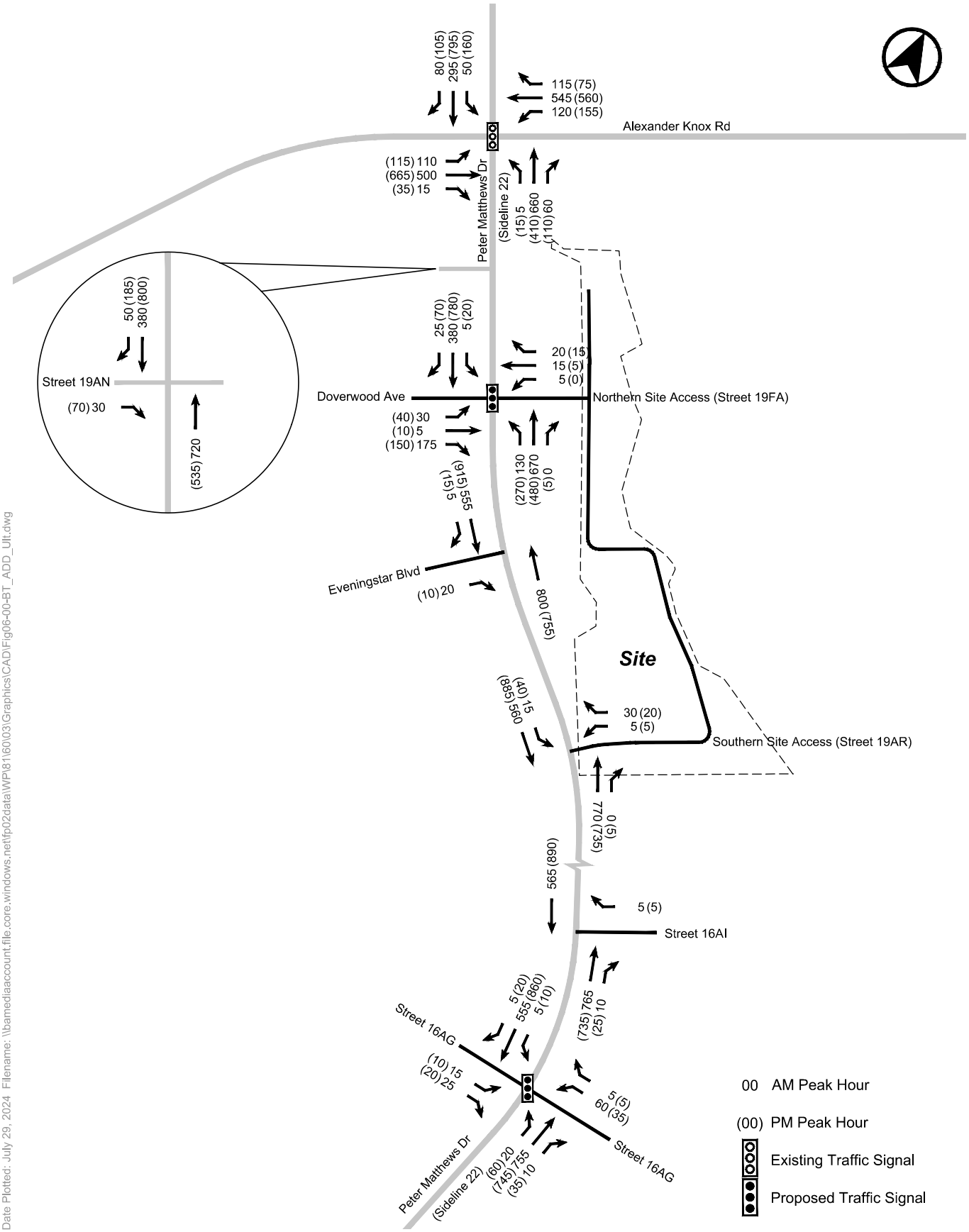
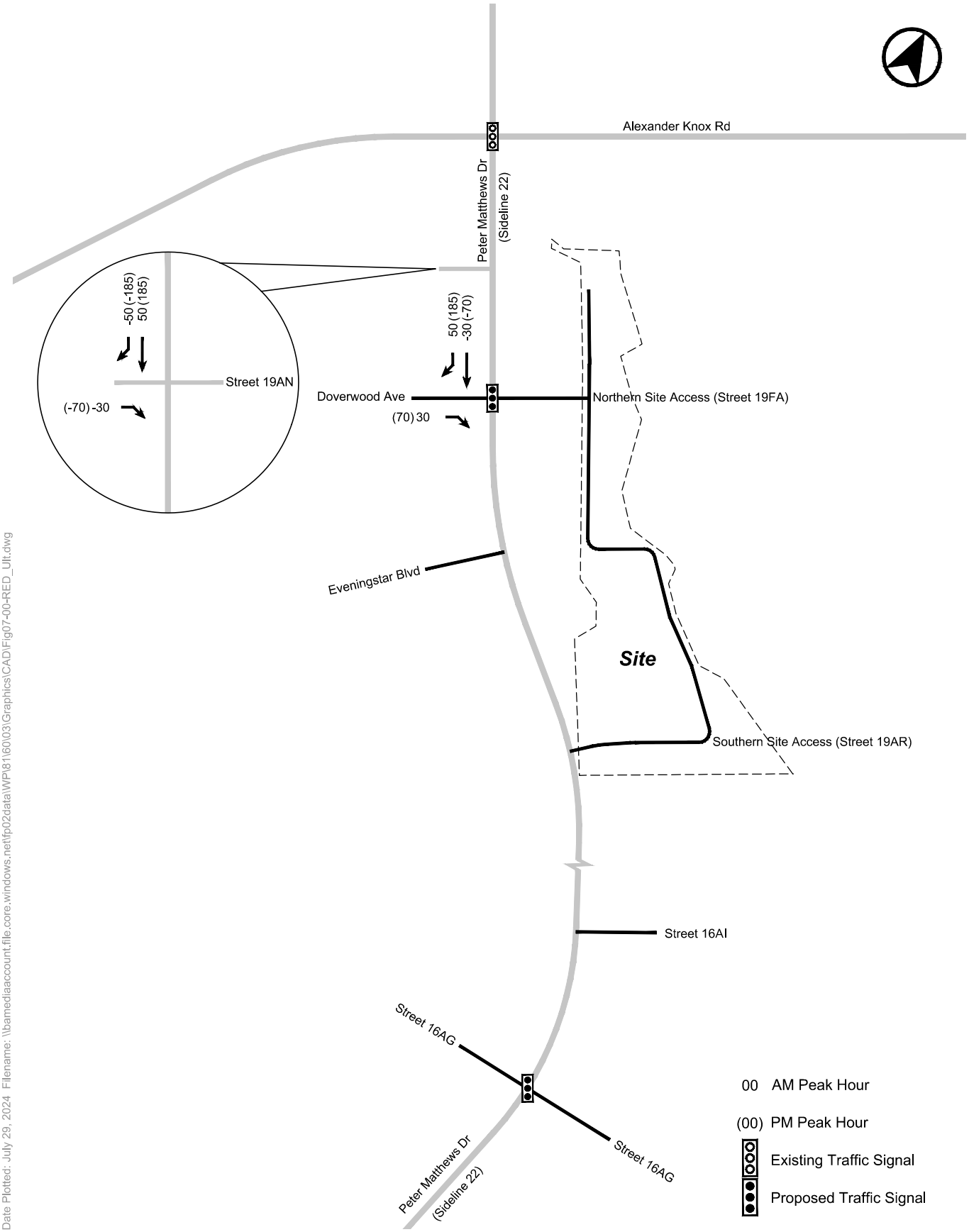


FIGURE 5 BASE TRAFFIC VOLUMES - ULTIMATE CONFIGURATION



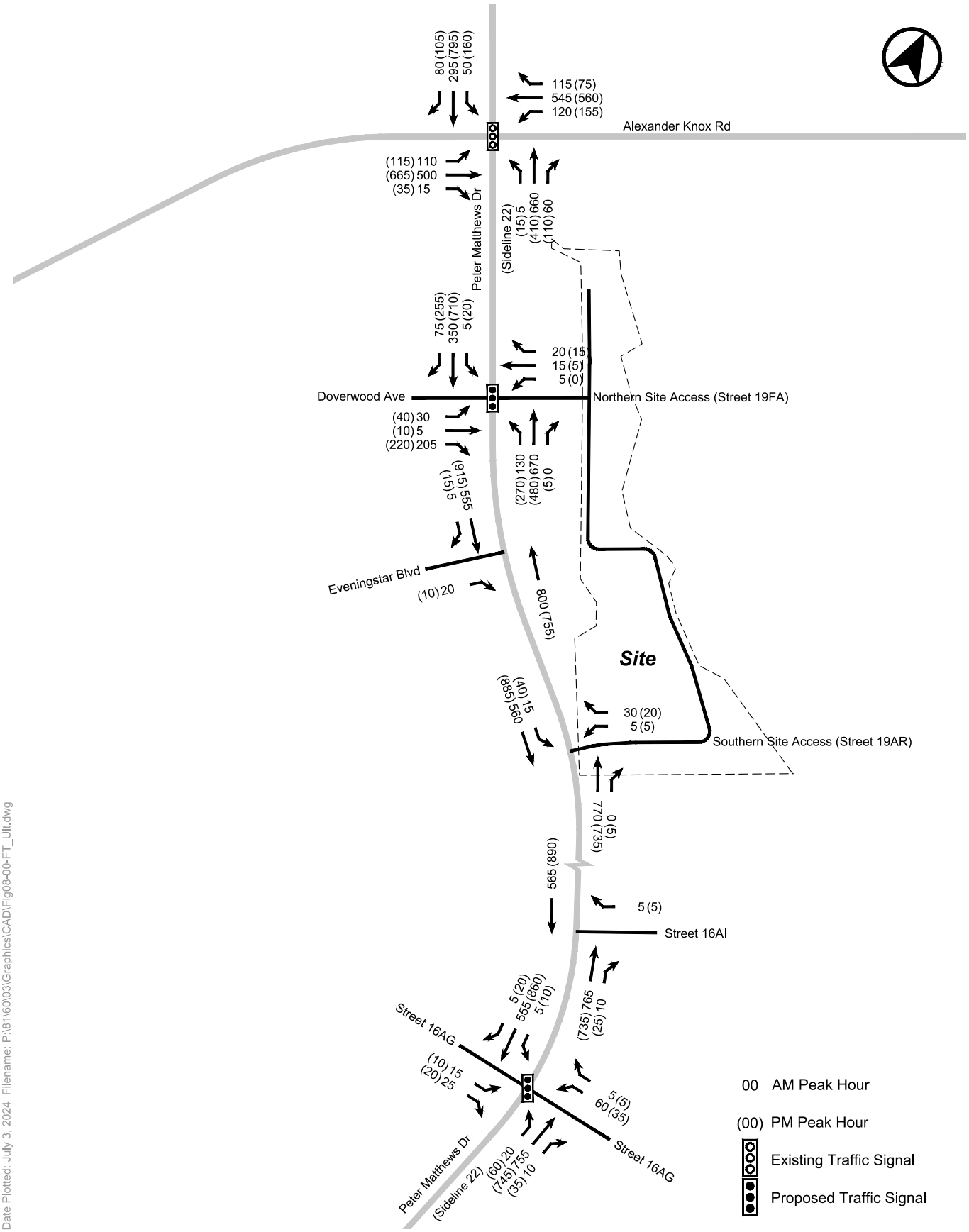
Date Plotted: July 29, 2024 Filename: \\bamediaaccount.file.core.windows.net\fp02data\WP\81\60\03\Graphics\CAD\Fig06-00-BT_ADD_Ult.dwg

FIGURE 6 BASE TRAFFIC VOLUMES AND RE-ADDITION OF 20% REDUCTION - ULTIMATE CONDITIONS



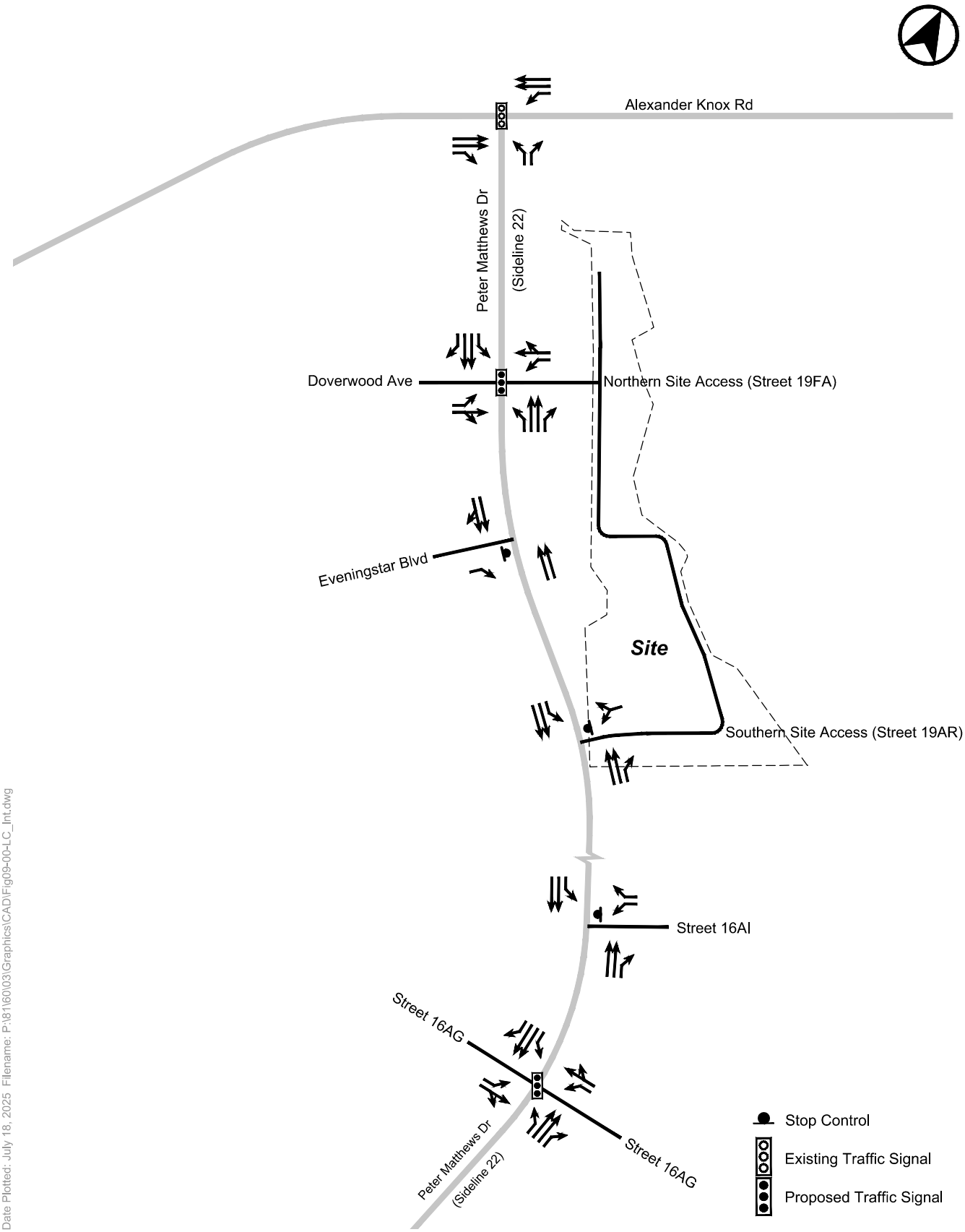
Date Plotted: July 29, 2024 Filename: \\bamediaaccount.file.core.windows.net\fp02data\WP\81\60\03\Graphics\CAD\Fig07-00-RED_Ult.dwg

FIGURE 7 STREET 19AN TRAFFIC VOLUMES REDISTRIBUTION - ULTIMATE CONDITIONS



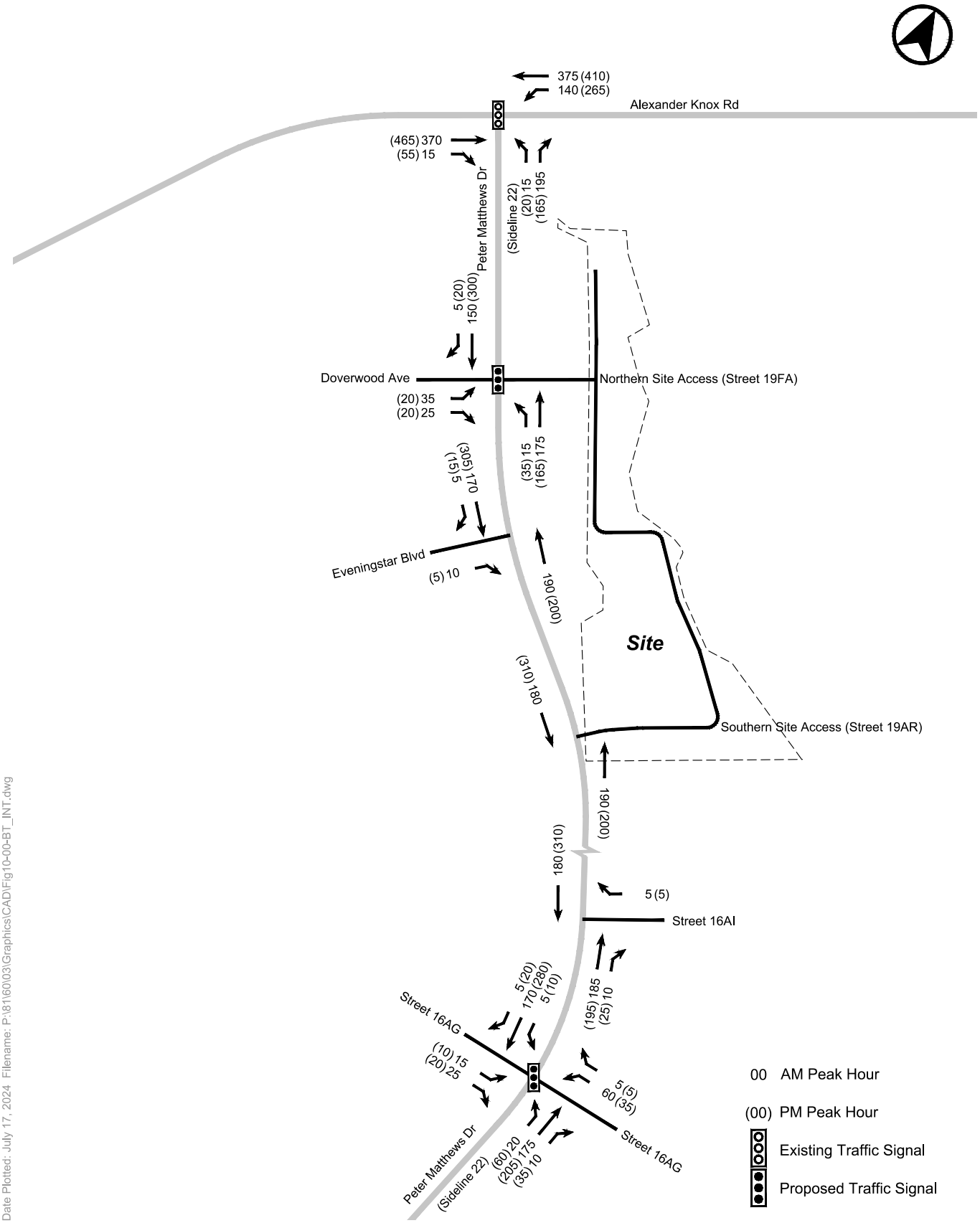
Date Plotted: July 3, 2024 Filename: P:\8116\03\Graphics\CAD\Fig08-00-FT_Ult.dwg

FIGURE 8 FUTURE TRAFFIC VOLUMES - ULTIMATE CONDITIONS



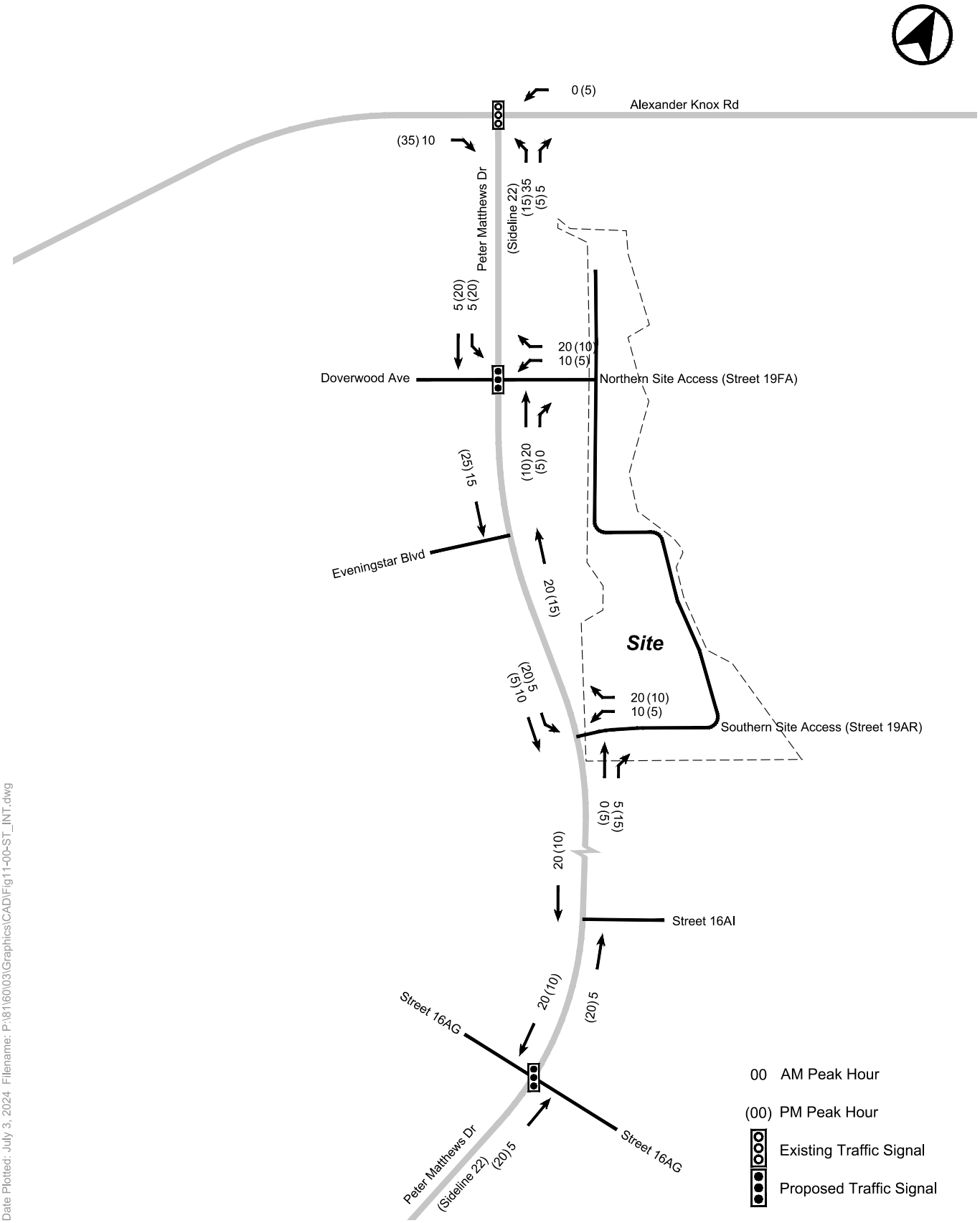
Date Plotted: July 18, 2025 Filename: P:\8116\03\Graphics\CAD\Fig09-00-LC_Int.dwg

FIGURE 9 ROAD NETWORK - INTERIM CONFIGURATION



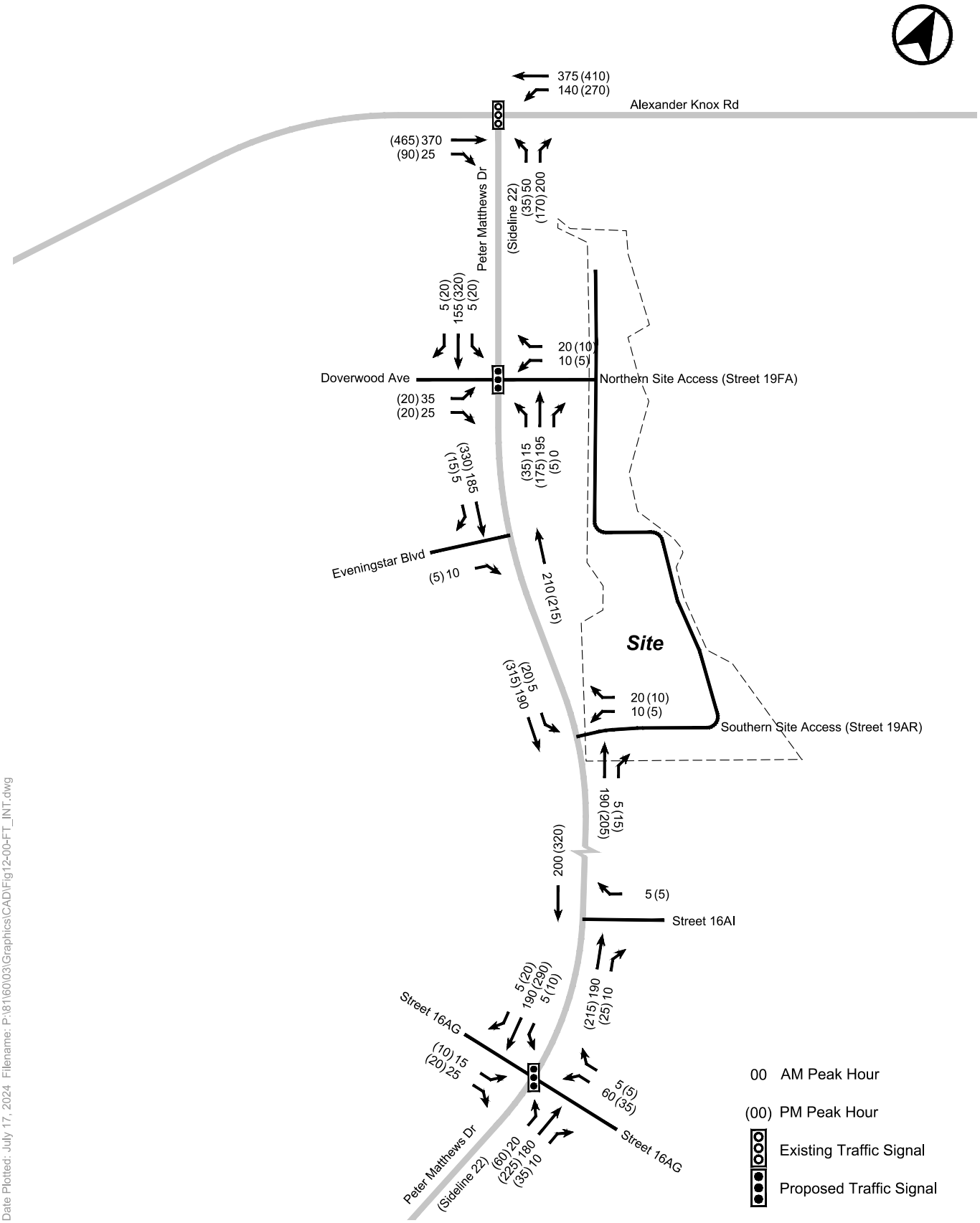
Date Plotted: July 17, 2024 Filename: P:\8160\03\Graphics\CAD\Fig10-00-BT_INT.dwg

FIGURE 10 BASE TRAFFIC VOLUMES - INTERIM CONDITIONS



Date Plotted: July 3, 2024 Filename: P:\8160\03\Graphics\CAD\Fig11-00-ST_INT.dwg

FIGURE 11 SITE TRAFFIC VOLUMES - INTERIM CONDITIONS



Date Plotted: July 17, 2024 Filename: P:\8160\03\Graphics\CAD\Fig12-00-FT_INT.dwg

FIGURE 12 FUTURE TRAFFIC VOLUMES - INTERIM CONDITIONS

Appendix B:
City of Pickering Zoning By-Law 7364/14

December 2, 2013

The Corporation of the City of Pickering

Zoning By-law 7364/14

Seaton Zoning By-law

Approved by Ontario Municipal Board Decisions dated:
December 17, 2013, and
January 24, 2014

Ontario Municipal Board Decisions Confirmed
By Order in Council 470/2014 dated March 26, 2014

h) External changes or alterations required for or relating to a *home-based business,* which would change the overall residential character of the *dwelling,* are not permitted.

i) Despite the uses prohibited in a *home-based business* as specified in Section 2.14 b), the selling of products assembled or developed on the premises is a permitted use in a *home-based business*, and the sale and distribution of catalogue items is a permitted use in a *home-based business* provided that no catalogue items are stored on the premises.

2.15 *Accessory Buildings* and *Structures*

a) *Accessory buildings* and *structures* are permitted on a *lot* where a *principal building* housing a principal permitted use, already exists or is under construction.

b) Except as may be provided *herein*, *accessory buildings* and *structures* are only permitted to be *erected* in the *rear yard*.

c) *Elementary school* or *secondary school* class room portables may be permitted within an *interior side yard* subject to an approved site plan.

d) *Accessory buildings* and *accessory structures* must be set back a minimum of 1.2 metres from all *lot lines* except that the *setback* from the interior *side lot line* may be reduced to 0.6 metres if there are no doors or windows on the wall facing the interior *side lot line*.

e) No *accessory building* shall exceed a *building height* of 3.5 metres except for:

   i) *elementary school* or *secondary school* class room portables, which shall not exceed a *building height* of 4.5 metres; and

   ii) a detached *private garage,* which for a flat roof shall not exceed a *building height* of 3.5 metres and for a pitched roof shall not exceed a *building height* of 4.5 metres.

f) The total *lot coverage* of all *accessory buildings,* excluding detached *private garages*, shall not exceed 5 percent of the *lot area*. Where a detached *private garage* is also provided on the *lot*, the total *lot coverage* of all *accessory buildings* and detached *private garages* shall not exceed 15 percent of the *lot area*. Where *elementary school* or *secondary school* class room portables are provided, the total *lot coverage* of all *accessory buildings* shall not exceed 15 percent of the *lot area.*

g) Human Habitation is not permitted in an *accessory building or accessory structure* except for a *coach house*.

2.16 Standards for Detached Private Garages Accessed by a *Driveway* from a *Street*

Detached *private garages* associated with a residential use that are accessed only by a *driveway* from a *street* are subject to the following requirements.

a) Permitted locations and *setbacks* from *lot lines*:

Detached *private garages* accessed only by a *private driveway* from a *street* shall be located:

i) a minimum distance from an exterior lot line equal to the *flankage yard* requirement for the *main building*;

ii) a minimum of 1.2 metres from the interior *side lot line*, but notwithstanding this provision:

A) the *setback* from the interior *side lot line* may be reduced to 0.6 metres if there are no doors or windows on the wall facing the interior *side lot line*; and

B) a detached *private garage* may share a common wall with another detached *private garage* on an abutting *lot* and no *setback* from the interior *side lot line* is required on that side of the *lot*.

iii) a minimum of 0.6 metres from the *rear lot line* except on a *through lot* in which case Section 2.16 a) iv) applies;

iv) no closer than 6.0 metres to the *lot line* abutting the *street* where the wall of the *private garage* containing the opening for vehicular access faces the *lot line* abutting the *street*;

v) where the *private garage* faces the *front lot line*, no closer than 2.0 metres to the *main building* on the *lot* other than a *private garage* connected to the *main building* by an enclosed or covered walkway.

vi) where the *private garage* faces the *rear lot line* on a *through lot*, no closer than 5.0 metres to the *main building* on the *lot*. The parking of *motor vehicles* is not permitted between the *private garage* and the *main building*.

b) *Driveway* width:

i) The maximum *driveway* width accessed from a *street* abutting the *front lot line* shall:

A) for *lots* having a *lot frontage* of less than 15.0 metres, be no more than 6.0 metres and tapered so that the maximum width is 3.0 metres at the *street line*;

B) for *lots* having a *lot frontage* between 15.0 metres and less than 18.0 metres, be no more than 6.0 metres;

C) for *lots* greater than 18.0 metres, be no wider than the width of the garage door and tapered so that the maximum width is 6.0 metres at the *street line*; and

ii) The maximum *driveway* width accessed from a *street* abutting the *rear lot line* on a *through lot* shall:

A) for *lots* having a *lot frontage* of less 6.0 metres, be no more than 3.0 metres;

B) for *lots* having a *lot frontage* between 6.0 and 9.0 metres, be no more than 4.6 metres;

C) for *lots* between 9.0 metres and less than 15.0 metres, be no more than 6.0 metres;

D) for *lots* greater than 15.0 metres, be no more than 9.0 metres and tapered so that the maximum width is 6.0 metres at the *street line*.

c) Garage door width:

The total width of all garage doors shall be no wider than the permitted width of the *driveway*.

2.17 Standards for Detached Private Garages Accessed by a Lane

Detached *private garages* associated with residential uses that are accessed only by a *lane* are subject to the following requirements.

a) Permitted locations and *setbacks* from *lot lines:*

Detached *private garages* are permitted in a *rear yard* and *interior side yard* only, and shall be located:

i) a minimum distance of 0.6 metres from the *rear lot line*; and

ii) a minimum of 1.2 metres from the interior *side lot line*, but notwithstanding this provision:

A) the *setback* from the interior *side lot line* may be reduced to 0.6 metres if there are no doors or windows on the wall facing the *interior side lot line*; and,

B) a detached *private garage* may share a common wall with another detached *private garage* on an abutting *lot* and no *setback* from the *interior side lot line* is required on that side of the *lot*.

iii) no closer than 5.0 metres to the *main building* on the *lot*. The parking of *motor vehicles* is not permitted in the *setback* area.

b) *Driveway* width:

The maximum *driveway* width that faces a *lane* shall be no wider than the total width of all garage doors.

2.18 Standards for Attached Private Garages on Lots Accessed by Lanes

Attached *private garages* associated with a residential use that are only accessed by a *lane* are subject to the following requirements.

a) Permitted locations and *setbacks* from *lot lines*:

Attached *private garages*, which are deemed to be part of the *main building* on the *lot*, are permitted provided that the wall of the *private garage* facing the *lane*:

i) is located no further than 7.5 metres from the *rear lot line*; and,

ii) is located no closer than 0.6 metres to the *rear lot line*.

b) *Driveway* width:

The maximum *driveway* width that faces a *lane* shall be no wider than the total width of all garage doors.

2.19 Standards for Attached Private Garages Accessed by a Driveway from a Street

Attached *private garages* associated with a residential use that are accessed only by a *driveway* from a *street* are subject to the following requirements.

a) Permitted locations and *setbacks* from *lot lines:*

Attached *private garages* accessed only by a *driveway* from a *street* shall be located:

i) a minimum distance from a *side lot line* equal to the minimum *side yard* requirement for the *main building*;

ii) no closer than 6.0 metres to the *lot line* abutting the *street* where the wall of the *private garage* containing the opening for vehicular access faces the *lot line* abutting the *street;* and

iii) no closer than 3.0 metres to the *lot line* abutting the *street* where the wall of the *private garage* containing the opening for vehicular access faces an *interior side lot line.*

b) Projections of *private garages*:

No part of a *private garage* shall project beyond the *front wall* of the *first storey* of the *dwelling* except:

i) where a *porch* is provided, in which case the *private garage* shall not project beyond the front of the *porch*; and

ii) on a *corner lot* where the wall of the *dwelling* facing the *flankage lot line* is treated as the *front wall* of the *dwelling* and the *private garage* projects no more than 1.5 metres beyond the remainder of the wall facing the *front lot line*; and

iii) where the wall of the *private garage* containing the opening for vehicular access faces an *interior side lot line*.

c) *Driveway* width:

The maximum *driveway* width shall:

i) for *lots* having a *lot frontage* of less than 9.0 metres, be no more than 3.0 metres;

ii) for *lots* having a *lot frontage* between 9.0 metres and less than 11.0 metres, be no more than 4.6 metres;

iii) for *lots* between 11.0 metres and less than 18.0 metres, be no more than 6.0 metres;

iv) for *lots* greater than 18.0 metres, be no wider than the width of the garage door and tapered so that the maximum width is 6.0 metres at the *street line*; and

v) for lots greater than 15.0 metres, where the wall of a *private garage* containing the opening for vehicular access faces an *interior side lot line,* be no wider than 7.5 metres and tapered so that the maximum width is 6.0 metres at the *street line*.

d) Garage door width:

The total width of all garage doors shall be no wider than the permitted width of the *driveway*.

2.20 Coach Houses

A *coach house* shall be permitted on a *corner lot* with a *lot frontage* of 10.0 metres or greater where the *corner lot* has access to a rear *lane* or on a *through lot* with a *lot frontage* of 10.0 metres or greater provided there is not an *accessory dwelling unit* in the *detached*, *semi-detached* or *street townhouse dwelling* and provided the *coach house*:

a) is located a minimum distance of 0.6 metres from the *rear lot line*;

b) is located a minimum of 1.2 metres from the interior *side lot line*;

c) is *setback* a minimum of 5.0 metres from the *main building* on the *lot*. The parking of *motor vehicles* is not permitted in the *setback* area; and

d) has a maximum *height* of 8.0 metres.

2.21 Live Work Unit

a) The following specific uses are permitted in a *live work unit*:

i) *dwelling unit;*
ii) *art gallery*;
iii) *café;*
iv) *restaurant*;
v) *medical office*;
vi) *convenience store*;
vii) *dry-cleaner's distribution station*;
viii) *office*;
ix) *personal service establishment*; and
x) *retail store*.

2.22 Model Homes

a) Up to 10 percent of the homes proposed in a plan of subdivision to a maximum of 20 *model homes* together with not fewer than two parking spaces per may be constructed on each draft plan of subdivision submitted to the City of Pickering, prior to registration of that plan of subdivision.

2.23 Lots on Public and Private Streets

Where the *lot* and *setback* requirements in a zone apply to freehold *lots* abutting a *street*, such provisions shall equally apply to freehold *lots* abutting a *private street*.

2.24 Yards abutting Daylighting Triangles

a) Where a lot abuts a *daylighting triangle*, the *setback* provisions and minimum *front landscaped open space* provisions shall be measured as if the *daylighting triangle* did not exist provided all *buildings* are setback 0.6 metres from the *daylighting triangle* with the exception of window sills, belt courses, cornices, eaves, and eave troughs which may project to within 0.3 metres of the *daylighting triangle*.

2.25 Primary Entrance Door Location on a Through Lot

For a detached dwelling, *semi-detached dwelling*, *street townhouse dwelling*, or *duplex dwelling* on a *through lot*, the *primary entrance door* shall face or nearly face the *front lot line* or in the case of a *corner lot* the *flankage lot line*.

3.0 Parking Regulations

3.1 Parking Space Requirements

Every *building* or *structure erected*, enlarged or *used* in accordance with the provisions of this By-law shall be provided with the minimum required number of *parking space*s specified in Table 1 on the same *lot*.

Table 1: Minimum Parking Requirements

Residential Uses	
Detached dwelling	2 spaces per dwelling unit
Semi-detached dwelling	2 spaces per dwelling unit
Accessory dwelling unit	1 space per dwelling unit
Street townhouse dwelling	2 spaces per dwelling unit
Duplex dwelling	2 spaces per dwelling unit
Multiple attached dwelling	1.25 spaces per dwelling unit for residents and 0.25 of a space per dwelling unit for visitors
Block townhouse dwelling	2 spaces per dwelling unit plus 0.25 of a space per dwelling unit for visitors
Back-to-back townhouse dwelling	2 spaces per dwelling unit
Apartment dwelling	1.25 spaces per dwelling unit for residents and 0.25 of a space per dwelling unit for visitors
Live work unit	2 spaces per live work unit
Bed and Breakfast establishment	2 spaces per dwelling unit plus 1.0 parking space per guest room
Retirement Home	0.3 spaces per living unit for residents and 0.05 spaces per living unit for visitors
Nursing Home or Long-Term Care	1.0 spaces per 3 resident bed
Commercial Uses:	
Animal Care Establishment	4.5 spaces per 100 square metres of gross leasable floor area
Arena	1.0 space per 4 fixed seats, but where permanent fixed seating is open-style bench or pew, each 0.5 metres of bench or pew space is equal to one (1) seat for the purpose of calculating required parking
Art Gallery	4.0 spaces per 100 square metres of gross leasable floor area
Assembly Hall, Convention Hall or Conference Hall	10.0 spaces per 100 square metres of gross leasable floor area
Bake Shop	6.0 spaces per 100 square metres of gross leasable floor area

Commercial Uses: (continued)	
Café	6.0 spaces per 100 square metres of gross leasable floor area
Car Washing E*stablishment*	4.5 spaces per 100 square metres of gross leasable floor area
Commercial Fitness/Recreation Centre	5.0 spaces per 100 square metres of gross leasable floor area
Commercial School	4.5 spaces per 100 square metres of gross leasable floor area
Convenience Store	4.5 spaces per 100 square metres of gross leasable floor area
Day Care Centre	3.5 spaces per 100 square metres of gross leasable floor area
Dry-Cleaner's Distributing Station	4.5 spaces per 100 square metres of gross leasable floor area
Financial Institution	5.0 spaces per 100 square metres of gross leasable floor area
Funeral Home	5.5 spaces per 100 square metres of gross leasable floor area
Garden Centre	3.2 spaces per 100 square metres of gross leasable floor area for retail sales and display of products and/or office; and 1.1 spaces per 100 square metres of gross leasable floor area for warehousing and/or wholesaling
Gas bar, including an Accessory Convenience Store and/or C*afé*	4.5 spaces per 100 square metres of gross leasable floor area
Home Improvement Centre	3.0 spaces per 100 square metres of gross leasable floor area
Hotel	1.0 space per guest room; plus 10.0 spaces per 100 square metres non-residential gross floor area used for public use including meeting rooms, conference rooms, recreational facilities, dining and lounge areas and other commercial facilities, but excluding bedrooms, kitchens, laundry rooms, washrooms, lobbies, hallways, elevators, stairways and recreational facilities directly related to the function of the overnight accommodation
Medical Office	6.5 spaces per 100 square metres of gross leasable floor area
Nightclub and *Tavern/Bar/Pub*	10.0 spaces per 100 square metres of gross leasable floor area
Office	3.5 spaces per 100 square metres of gross leasable floor area
Personal Service Establishment	5.0 spaces per 100 square metres of gross leasable floor area

Commercial Uses: (continued)	
Place of Amusement other than a bowling alley	5.5 spaces per 100 square metres of gross leasable floor area
Place of Worship	1.0 space per 5 fixed seats or 4.0 metres of bench space, or 10.0 spaces per 100 square metres of gross leasable floor area of assembly floor area whichever is the greater
Private Club	5.0 spaces per 100 square metres of gross leasable floor area
Retail Store	4.5 spaces per 100 square metres of gross leasable floor area
Restaurant	6.0 spaces per 100 square metres of gross leasable floor area
Service and Repair Shop (non-vehicle)	4.5 spaces per 100 square metres of gross leasable floor area
Supermarket	5.0 spaces per 100 square metres of gross leasable floor area
Vehicle Dealership	3.0 spaces per 100 square metres of gross leasable floor area
Vehicle Repair Shop	4 spaces per repair bay
Veterinary Clinic	4.5 spaces per 100 square metres of gross leasable floor area
Industrial Uses	
Ancillary retail sales	3.5 spaces per 100 square metres of gross leasable floor area
Business services: such as industrial supply, industrial equipment repair, contractor shop, service and repair shop	3.5 spaces per 100 square metres of gross leasable floor area
Data and communications: such as film, radio and television studio, call centre, data centre, programming and software development, phone, phone and internet provider	3.5 spaces per 100 square metres of gross leasable floor area
Educational: such as community college, university, trade school, training centre, adult education	15 spaces per classroom
Food processing: such as industrial bakery, dairy, cannery, distillery, brewery, meat processor	1.0 space per 100 square metres of gross leasable floor area up to 3,000 square metres of gross leasable floor area plus 0.5 spaces per 100 square metres of gross leasable floor area over 3,000 square metres of gross leasable floor area
Graphics and design: such as printing, publishing, graphic design, web design	3.5 spaces per 100 square metres of gross leasable floor area

Industrial Uses: (continued)	
Light manufacturing: such as assembly, processing, packaging and fabricating wholly within an enclosed building	1.0 space per 100 square metres of gross leasable floor area up to 3,000 square metres of gross leasable floor area plus 0.5 spaces per 100 square metres of gross leasable floor area over 3,000 square metres of gross leasable floor area
Research/laboratory and research and development facility	3.5 spaces per 100 square metres of gross leasable floor area
Storage and warehousing as an accessory use	1.0 space per 100 square metres of gross leasable floor area up to 2,000 square metres of gross leasable floor area plus 0.5 spaces per 100 square metres of gross leasable floor area over 2,000 square metres of gross leasable floor area
Community/Open Space Uses	
Community Centre	1 space per 4 persons capacity or 3.5 spaces per 100 square metres of gross leasable floor area, whichever is greater
Community Gardens	1 space per garden plot
Curling rinks, tennis courts, bowling alleys or similar recreational facilities	4 spaces per ice sheet, court or lane or similar recreational facility provided that, where facilities for a *tavern/bar/pub* or *assembly hall* are provided, the greater parking requirement for either the recreational facilities or for the assembly floor area shall apply
Emergency Service Facility	3.5 spaces per 100 square metres of gross floor area
Elementary School	1.5 spaces per classroom plus day care centre requirements if applicable
Golf Course	50 spaces for every 9 holes
Library	3.0 spaces per 100 square metres of gross leasable floor area
Private School	3 spaces per classroom
Secondary School	3 spaces per classroom

3.2 Part Spaces

Where *parking spaces* are calculated by *gross floor area*, or similar calculation, and the required parking is a fraction, the number of *parking spaces* shall be rounded up to the nearest whole number.

3.3 Parking for Multiple Uses on One Lot

a) Despite Section 3.1, where there are multiple retail, service commercial and personal service uses on a lot within a Minor Commercial Cluster "MCC", Local Node "LN", Community Node "CN", Community Node – Pedestrian Predominant Area "CN-PP", Mixed Corridor Type 2 "MC2", Mixed Corridor Type 3 "MC3" and Employment Service "ES" zone, the minimum required parking shall be as follows:

   i) on a lot with less than 2,800 square metres of gross leasable area: 4.5 spaces per 100 square metres of *gross leasable floor area* provided that where a *restaurant, supermarket*, *nightclub*, *tavern/bar/pub* or *assembly hall, convention hall or conference hall* occupies ten percent or more of the *gross leasable floor area*, the individual parking requirements for that use shall apply to the *gross leasable floor area* devoted that that use;

   ii) on a lot with between 2,800 square metres to 28,000 square metres of *gross leasable floor area*: 4.5 spaces per 100 square metres of *gross leasable floor area*;

   iii) on a lot with more than 28,000 square metres of *gross leasable floor area*: 5.0 spaces per 100 square metres of *gross leasable floor area*.

b) For all other uses in all other zones, where more than one *use* is being *used* on a *lot*, the required *parking space* will be the sum of the parking required for all *uses* on the *lot*.

3.4 Size of Parking Spaces and Aisles

a) *Parking spaces* shall be a minimum of 2.6 metres in width and 5.3 metres in length, exclusive of any land *used* for access, manoeuvring, *driveway* or similar purpose.

b) *Parking lot* aisles shall be a minimum of 3.8 metres in width for one way traffic and a minimum of 6.5 metres in width for two way traffic.

3.5 Setbacks of Parking Spaces and Lots

a) No *parking lot* or *parking space* shall be permitted within 3.0 metres of a *street line* or within any *daylighting triangle*.

b) No *parking lot* or *parking space* shall be permitted within 3.0 metres of a property line abutting a residential zone.

c) Notwithstanding Section 3.5 a) and b), individual *parking spaces* for a *detached dwelling*, *semi-detached dwelling, street townhouse dwelling, duplex dwelling, multiple attached dwelling, and back-to-back townhouse dwelling* may be located:

   i) within 3.0 metres of a *street line* but not within a *daylighting triangle*;

   ii) in a *rear yard* of a residential zone a minimum of 1.0 metre from the nearest *rear lot line* except where the *rear lot line* abuts a *lane* in which case the *parking space* shall be set back a minimum of 0.6 metres; and

iii) in an *interior side yard* of a residential zone to a minimum of 0.6 metres to the nearest *interior side lot line*, except where the *driveway* is a mutual *driveway* in which case no set back is required to the *interior side lot line*.

3.6 Standards for Parking Pads

a) One *parking pad* shall be permitted on a *lot* instead of, or in addition to, a detached *private garage* where:

i) an attached *private garage* does not form part of the *dwelling* on the *lot*; and,

ii) the *parking pad* is located in accordance with the regulations for detached *private garages*.

b) In addition, one *parking pad* shall be permitted in addition to an attached or detached *private garage* on a *lot* accessed by a *lane* and can be located in the *yard* adjacent to the *private garage* provided the *parking pad* is located in accordance with the regulations for detached and attached *private garages* accessed by a *lane*.

c) A driveway leading to a parking pad shall be no wider than the parking pad.

3.7 Parking and Loading within yards

a) In the Community Node – Pedestrian Predominant Area "CN-PP" Zone, no *parking lot* shall be located in the *front yard or* between a *building* and the *street line* or between a *building* and the edge of a *private street*.

b) No *loading space* shall be permitted in the *front yard* of any *zone*.

3.8 Parking Space Uses

The storage of goods, including for sale or display, is not permitted within required *parking spaces*. The storage of *motor vehicles* for sale and display is not exempt from this provision.

3.9 Restrictions on Vehicles in a Residential Zone

No *person* shall, in any Residential Zone, use any *lot*, *building* or *structure* for the parking or storage of *vehicle*s except in accordance with the following provisions:

a) Number of Vehicles

A maximum of four (4) *vehicle*s, only one of which may be a *trailer*, are permitted to park on the driveway of any *lot* in a residential zone.

b) Size of Vehicles

i) For those *vehicles* parked on any *lot*, the maximum permissible *height* is 2.6 metres, and the maximum permissible length is 6.7 metres;

ii) Notwithstanding section (i), one *vehicle* parked on a *driveway* in a *side yard* or *rear yard* can be of a size up to a maximum permissible *height* of 3.5 metres, and a maximum permissible length of 8.0 metres; and

iii) *Height* is measured from the *established grade* immediately beside the *vehicle* up to the *vehicle's* highest point, which excludes lights, antennas and other such items ancillary to the *vehicle's* body.

c) Location of Vehicles

No part of any *front yard* or *flankage yard* except a *driveway* is to be used for the parking or storage of *vehicles* and no *vehicle* is to encroach onto any road allowance.

d) Inoperative vehicles:

The parking or storage of an *inoperative vehicle* is not permitted on any *lot* in a residential zone, unless it is entirely within a fully enclosed *building* or *structure*.

e) Construction *Vehicle*s

The parking or storage of a *construction vehicle* or a *commercial vehicle* is not permitted on any *lot* in a residential zone, unless it is entirely within a fully enclosed *building* or *structure*.

f) Oversize *Vehicle*s:

A *vehicle* that exceeds the maximum permissible *vehicle* size provisions of Section 3.9b), is permitted to park temporarily on a *lot* in a residential zone for the sole purpose of delivering to, servicing or constructing the premises on that *lot*.

3.10 Loading Standards

a) For every *building* or *structure* to be erected for, altered for, or its use converted to a commercial or industrial use, involving the frequent shipping, loading or unloading of persons, animals, goods, wares or merchandise, off-street *loading spaces* shall be provided and maintained upon the same *lot* on which the principal use is located and in accordance with the following:

b) Any required off-street *loading space* shall:

i) not be used for the purpose of offering commodities for sale or display;

ii) provide for the temporary parking of one *commercial vehicle*;

iii) not be not less than 3.5 metres in width nor less than 9.0 metres in length, nor less than 4.5 metres in clear and unobstructed *height*, exclusive of any land used for access, maneuvering, *driveway* or a similar purpose;

iv) not be upon or partly upon any *street*, *lane* or alley; and,

v) have adequate access to permit ingress and egress of a *commercial vehicle* from a *street* by means of *driveways*, aisles, maneuvering areas or similar areas, no part of which access is to be used for the temporary parking or storage of any motor vehicle.

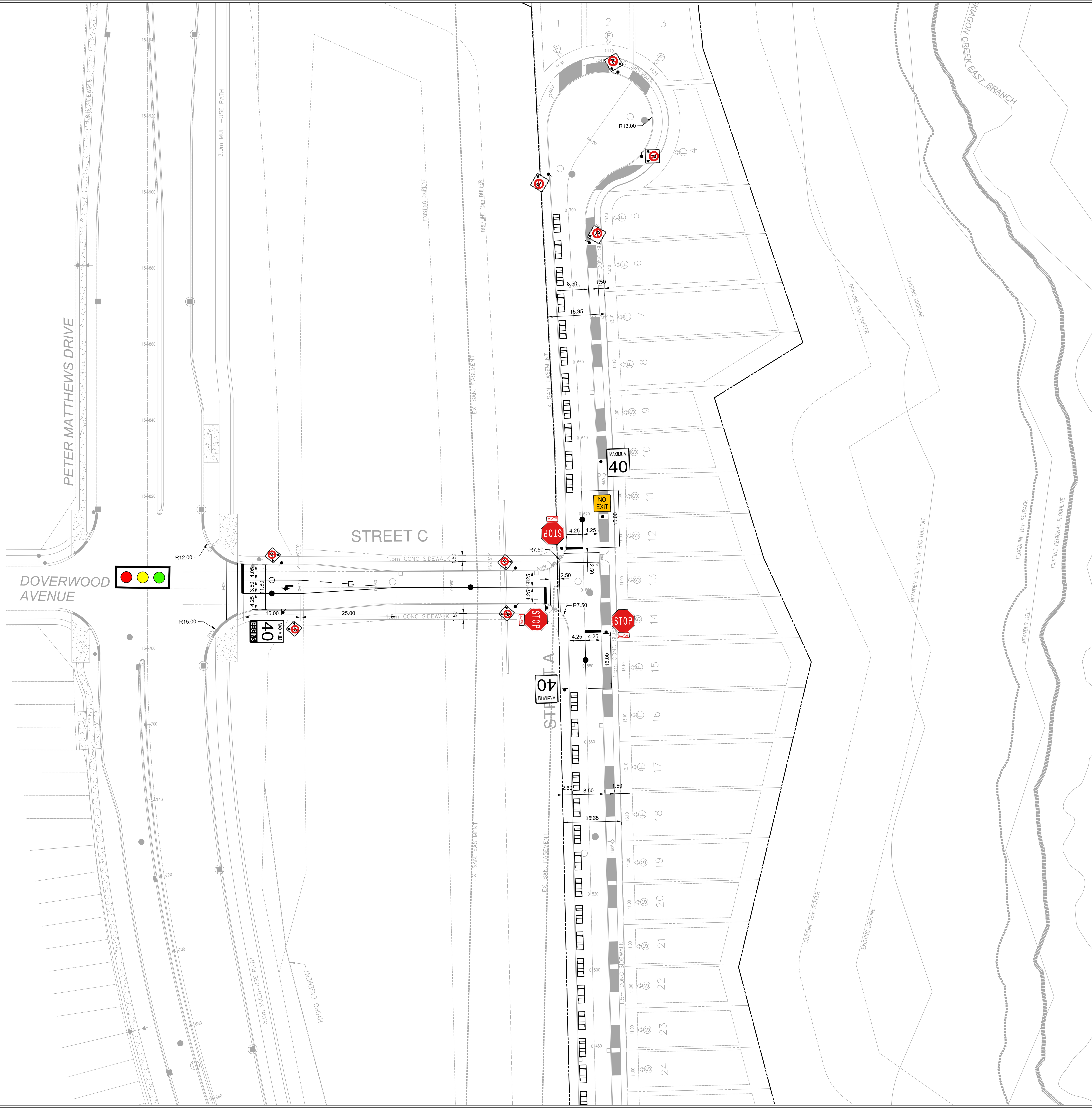
3.11 Tandem Parking

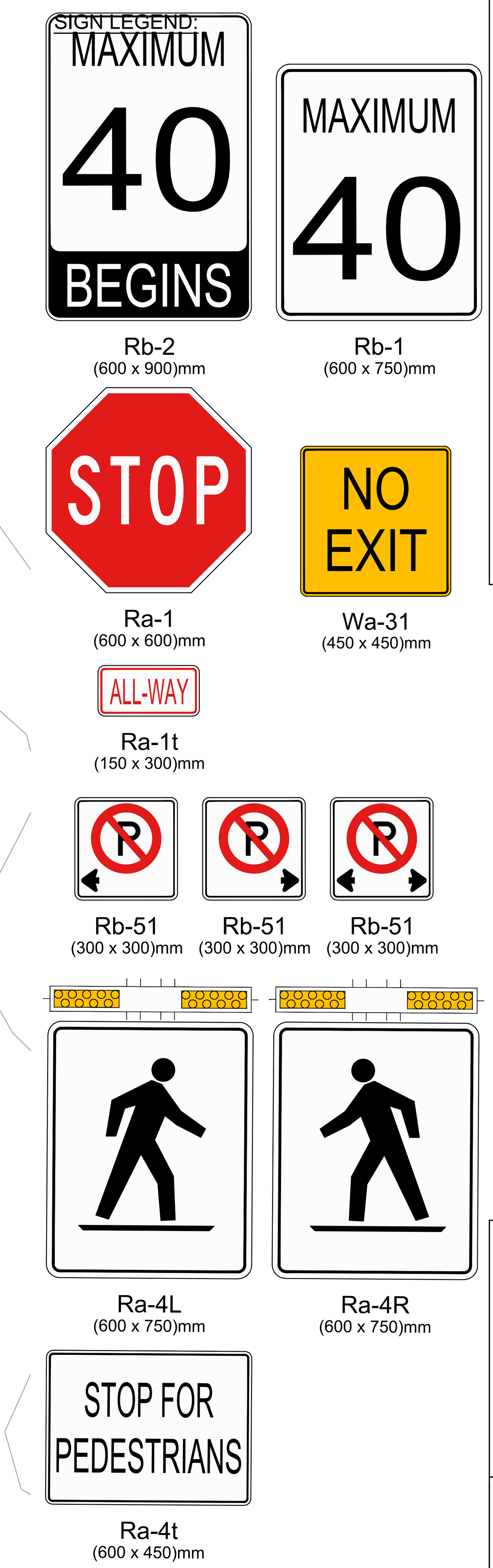
The required *parking spaces* for a *dwelling unit*, *live work unit* and / or a *bed and breakfast establishment* on an individual *lot* may be provided in a tandem configuration.

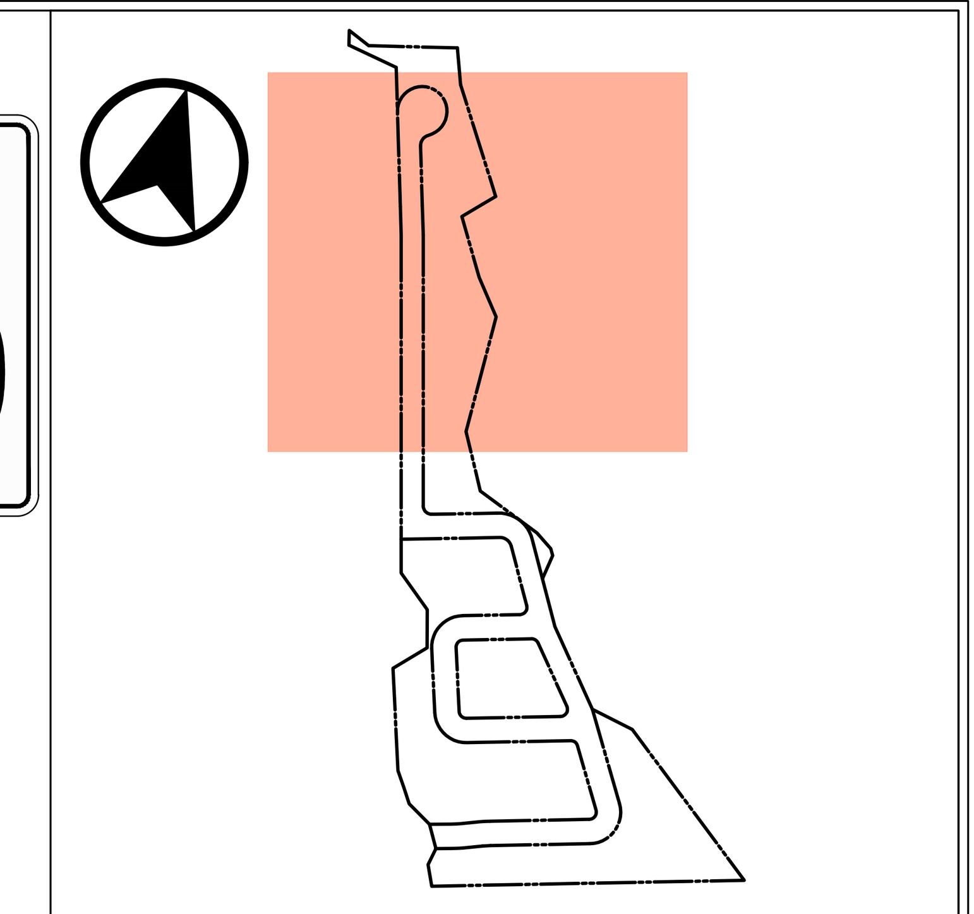
3.12 Private Garage Parking Size

Each *parking space* within a *private garage* shall have a minimum width of 2.9 metres and a minimum depth of 6.0 metres provided, however, that the minimum required width may include one interior step, and the minimum required depth may include two interior steps.

Appendix C:
Full Sized Drawings







SIGN MOUNT LEGEND

ALL SIGNS ARE SHOWN IN APPROXIMATE LOCATIONS AND TO BE DETERMINED ON SITE. SIGNS MUST BE VISIBLE TO DRIVER AND NOT OBSTRUCTED BY LANDSCAPE.

- PROPOSED SIGN POST
- PROPOSED POST PERPENDICULAR SIGN

PAVEMENT MARKING:

(NOTE-ALL MARKINGS MUST CONFORM TO THE ONTARIO TRAFFIC MANUAL (OTM) BOOK 11

- 10cm (4 in.) WHITE SOLID
- 10cm (4 in.) YELLOW SOLID
- 10cm (4 in.) WHITE (3m (10 ft.) LINE, 3m (10 ft.) GAP)
- LEFT TURN ARROW (3m (10 ft.))
- RIGHT TURN ARROW (3m (10 ft.))
- ALL STOP BARS TO BE 60cm (2 ft.) WHITE SOLID

BENCHMARK INFO - 4-034

ELEVATIONS ARE GEODETIC AND ARE REFERRED TO CITY OF PICKERING VERTICAL BENCH MARK NUMBER 4-034 HAVING AN ORTHOMETRIC ELEVATION OF 155.292 METRES. ELEVATIONS ARE REFERENCED TO THE CANADIAN GEODETIC VERTICAL DATIM OF 1928, 1978 ADJUSTMENT (CGVD-1928:1978).

BRASS CAP SET VERTICALLY IN A CHANCE ANCHOR, AT THE NORTHEAST CORNER OF INTERSECTION OF CONCESSION 5 ROAD AND DRIVEWAY TO #1740, 14.7 METRES EAST OF CENTRELINE OF DRIVEWAY TO #1740, 9.4 METRES NORTH OF CENTRELINE OF CONCESSION 5 ROAD AND 0.20 METRES BELOW GRADE.

APPROVED

______________________P. Eng.
Engineering & Services Department
Approval of works required by City of Pickering and as defined in the Pre-Servicing Agreement. The City is relying on the technical skill and ability of the P. Eng sealing and signing this drawing.
Date:______________

THE CORPORATION OF THE CITY OF PICKERING
Engineering & Services Department

No.	Issue / Revision	Date	Auth.	Appr.
0	ISSUED FOR SUBMISSION	12/6/24	MSB	
1	ISSUED FOR SUBMISSION	07/17/25	LC	

LICENSED PROFESSIONAL ENGINEER
M. S. BARI
100187117
July 17/25
PROVINCE OF ONTARIO

BA Group
BA Consulting Group Ltd.
1000 - 95 St. Clair Ave. W.
Toronto ON M4V 1N9
TEL 416 961 7110
EMAIL bagroup@bagroup.com
MOVEMENT IN URBAN ENVIRONMENTS
BAGROUP.COM

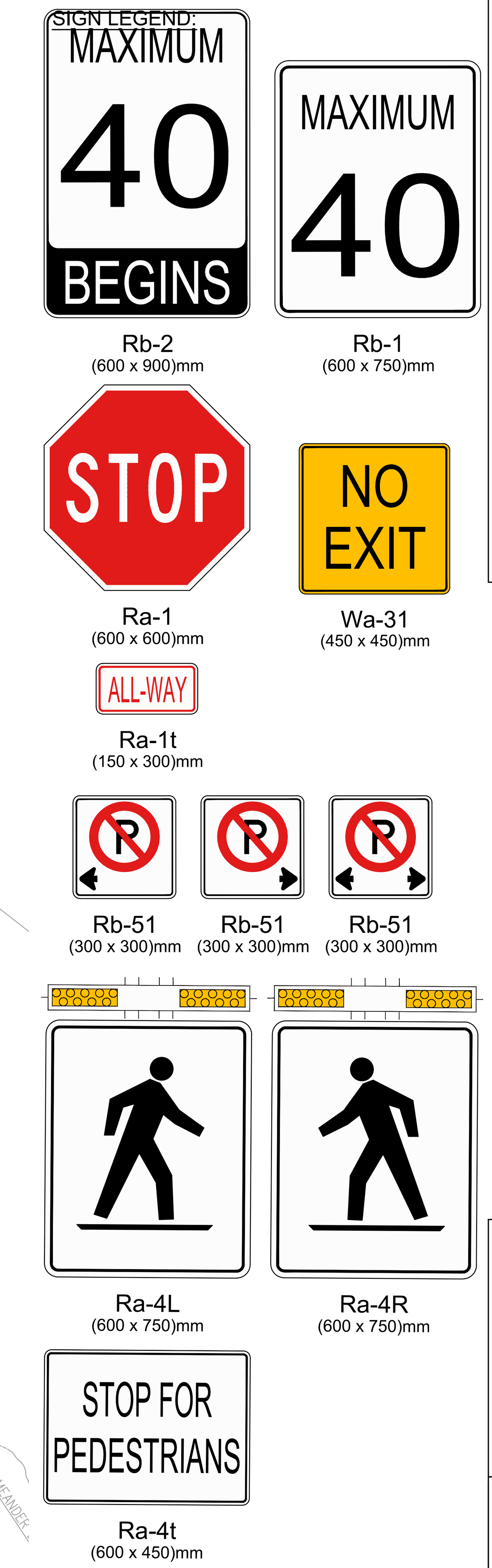
Client
TACCGATE DEVELOPMENTS
600 APPLEWOOD CRESCENT
CONCORD, ONTARIO
L4K 4B4

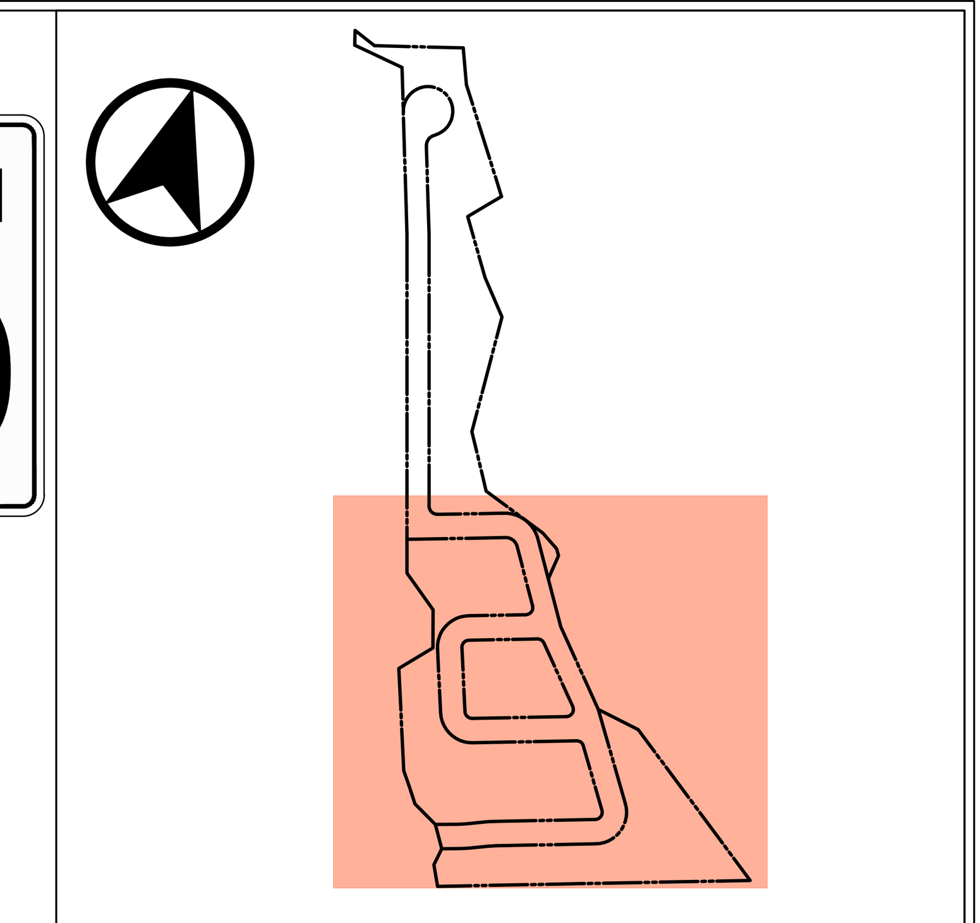
Drawing Title
WHITEVALE SUBDIVISION
PARCEL 24
PAVEMENT MARKING AND TRAFFIC CONTROL SIGNAGE PLAN

Drawn	Checked	Designed	Checked	Date	Drawing No.
LC	MSB	LC	MSB	12/06/24	TC01
Project No. 8160-03		Draft Plan of Subdivision No. SP-2015-05		Revision No. 1	
Scale 1:500					

0 5.0 10.0 20.0 30.0m

File: J:\8160-03\BA\Signage\2025\R01-June 17, 2025\ba-Parcel 24-SN-R1-Jun17-25-8160-03.dwg Date Plotted: July 30, 2025 - 1:41 PM





SIGN MOUNT LEGEND

ALL SIGNS ARE SHOWN IN APPROXIMATE LOCATIONS AND TO BE DETERMINED ON SITE. SIGNS MUST BE VISIBLE TO DRIVER AND NOT OBSTRUCTED BY LANDSCAPE.

- PROPOSED SIGN POST
- PROPOSED POST PERPENDICULAR SIGN

PAVEMENT MARKING:

(NOTE-ALL MARKINGS MUST CONFORM TO THE ONTARIO TRAFFIC MANUAL (OTM) BOOK 11

- 10cm (4 in.) WHITE SOLID
- 10cm (4 in.) YELLOW SOLID
- 10cm (4 in.) WHITE (3m (10 ft.) LINE, 3m (10 ft.) GAP)
- LEFT TURN ARROW (3m (10 ft.))
- RIGHT TURN ARROW (3m (10 ft.))
- ALL STOP BARS TO BE 60cm (2 ft.) WHITE SOLID

BENCHMARK INFO - 4-034

ELEVATIONS ARE GEODETIC AND ARE REFERRED TO CITY OF PICKERING VERTICAL BENCH MARK NUMBER 4-034 HAVING AN ORTHOMETRIC ELEVATION OF 155.292 METRES. ELEVATIONS ARE REFERENCED TO THE CANADIAN GEODETIC VERTICAL DATIM OF 1928, 1978 ADJUSTMENT (CGVD-1928:1978).

BRASS CAP SET VERTICALLY IN A CHANCE ANCHOR, AT THE NORTHEAST CORNER OF INTERSECTION OF CONCESSION 5 ROAD AND DRIVEWAY TO #1740, 14.7 METRES EAST OF CENTRELINE OF DRIVEWAY TO #1740, 9.4 METRES NORTH OF CENTRELINE OF CONCESSION 5 ROAD AND 0.20 METRES BELOW GRADE.

APPROVED

______________________________P. Eng.

Engineering & Services Department

Approval of works required by City of Pickering and as defined in the Pre-Servicing Agreement. The City is relying on the technical skill and ability of the P. Eng sealing and signing this drawing.

Date:______________________

THE CORPORATION OF THE CITY OF PICKERING

Engineering & Services Department

No.	Issue / Revision	Date	Auth.	Appr.
0	ISSUED FOR SUBMISSION	12/6/24	MSB	
1	ISSUED FOR SUBMISSION	7/17/25	LC	

LICENSED PROFESSIONAL ENGINEER
M. S. BARI
100187117
July 17/25
PROVINCE OF ONTARIO

BA Group

BA Consulting Group Ltd.
1000 - 95 St. Clair Ave. W.
Toronto ON M4V 1N9
TEL 416 961 7110
EMAIL bagroup@bagroup.com

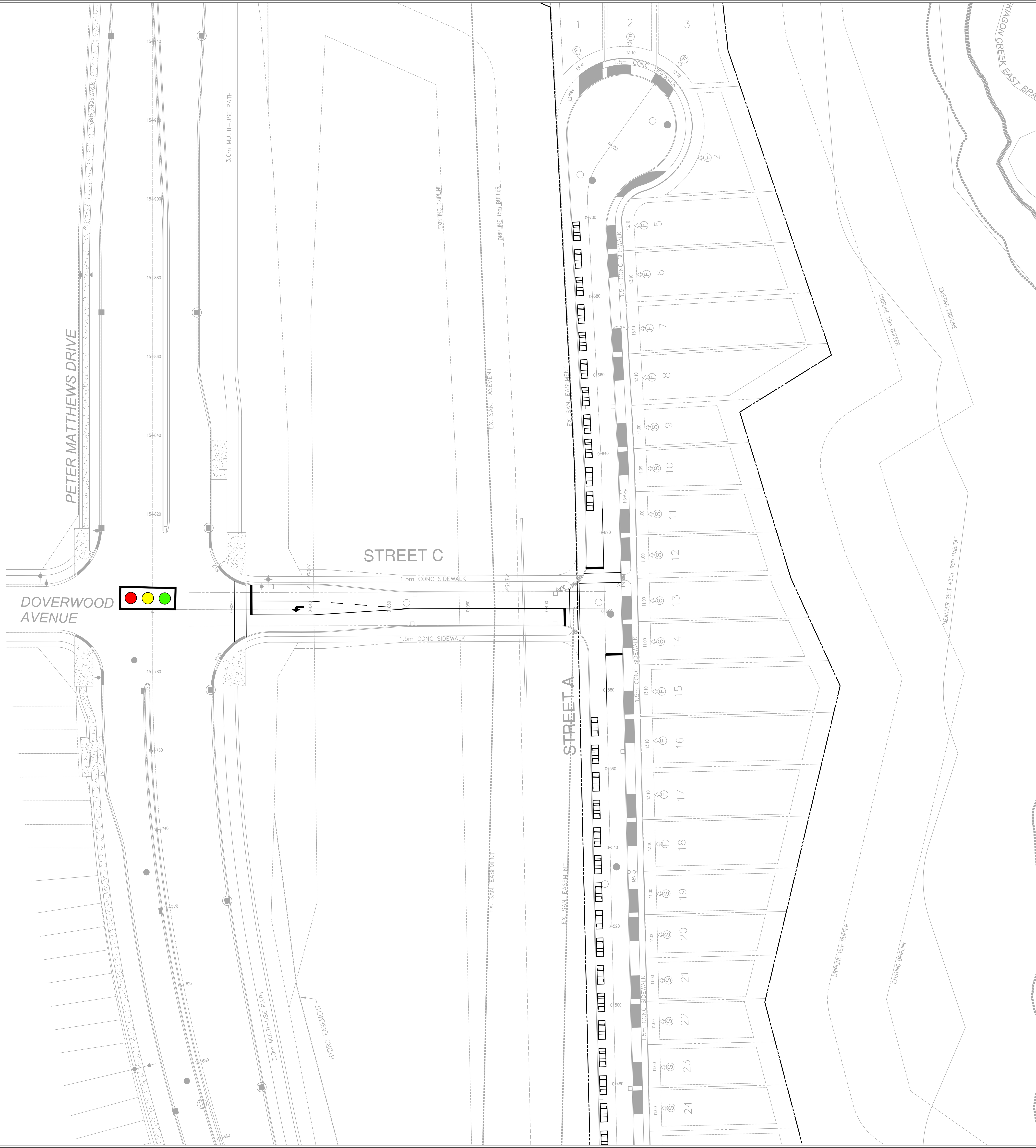
MOVEMENT IN URBAN ENVIRONMENTS
BAGROUP.COM

Client
TACCGATE DEVELOPMENTS
600 APPLEWOOD CRESCENT
CONCORD, ONTARIO
L4K 4B4

Drawing Title
WHITEVALE SUBDIVISION
PARCEL 24
PAVEMENT MARKING AND TRAFFIC CONTROL SIGNAGE PLAN

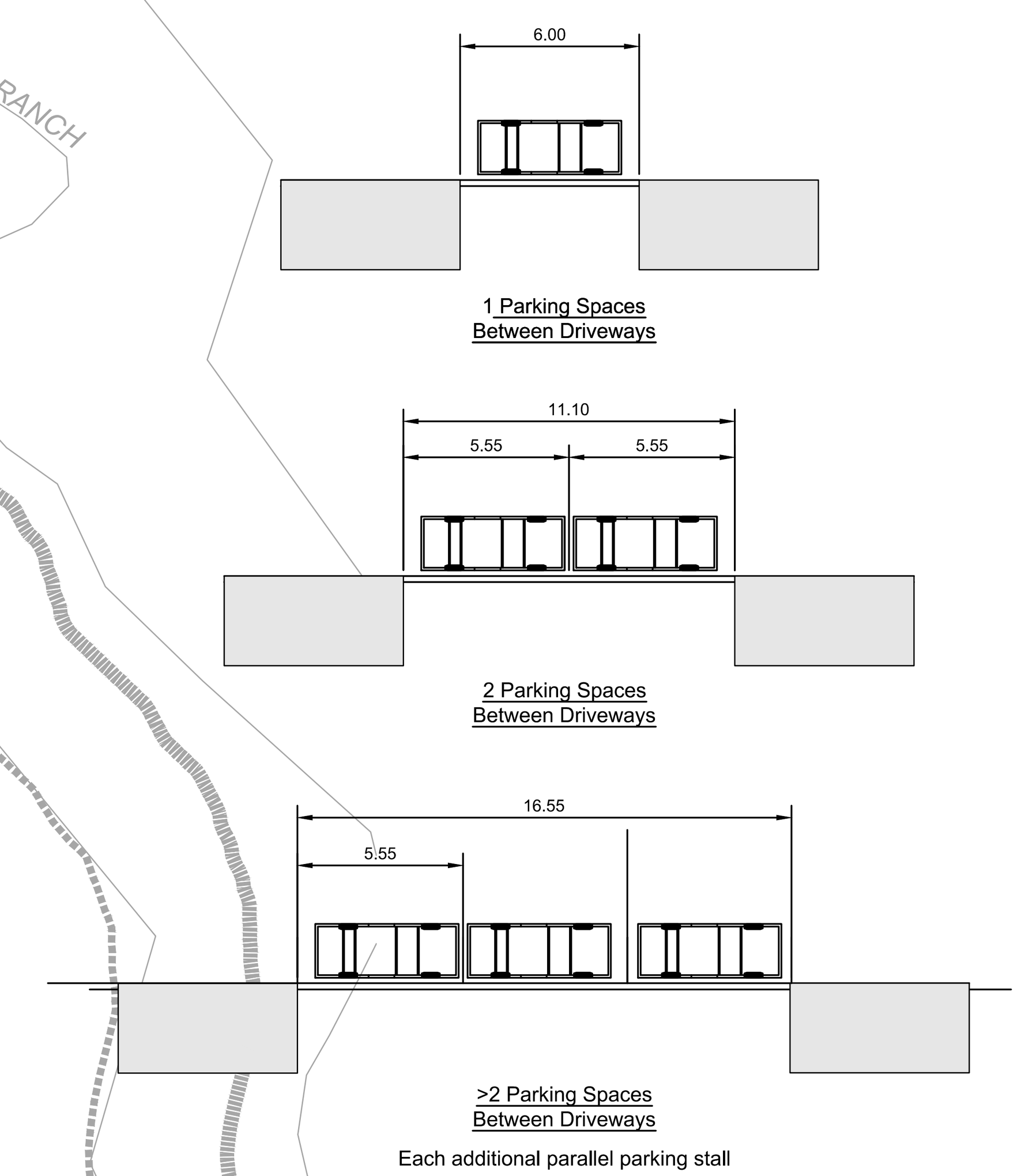
Drawn	Checked	Designed	Checked	Date	Drawing No.
LC	MSB	LC	MSB	12/06/24	TC02
Project No. 8160-03		Draft Plan of Subdivision No. SP-2015-05		Revision No. 1	
Scale 1:500		0 5.0 10.0 20.0 30.0m			

File: J:\8160-03\BA\Signage\2025\R01-June 17, 2025\ba-Parcel 24-SN-R1-Jun17-25-8160-03.dwg Date Plotted: July 30, 2025 - 1:41 PM

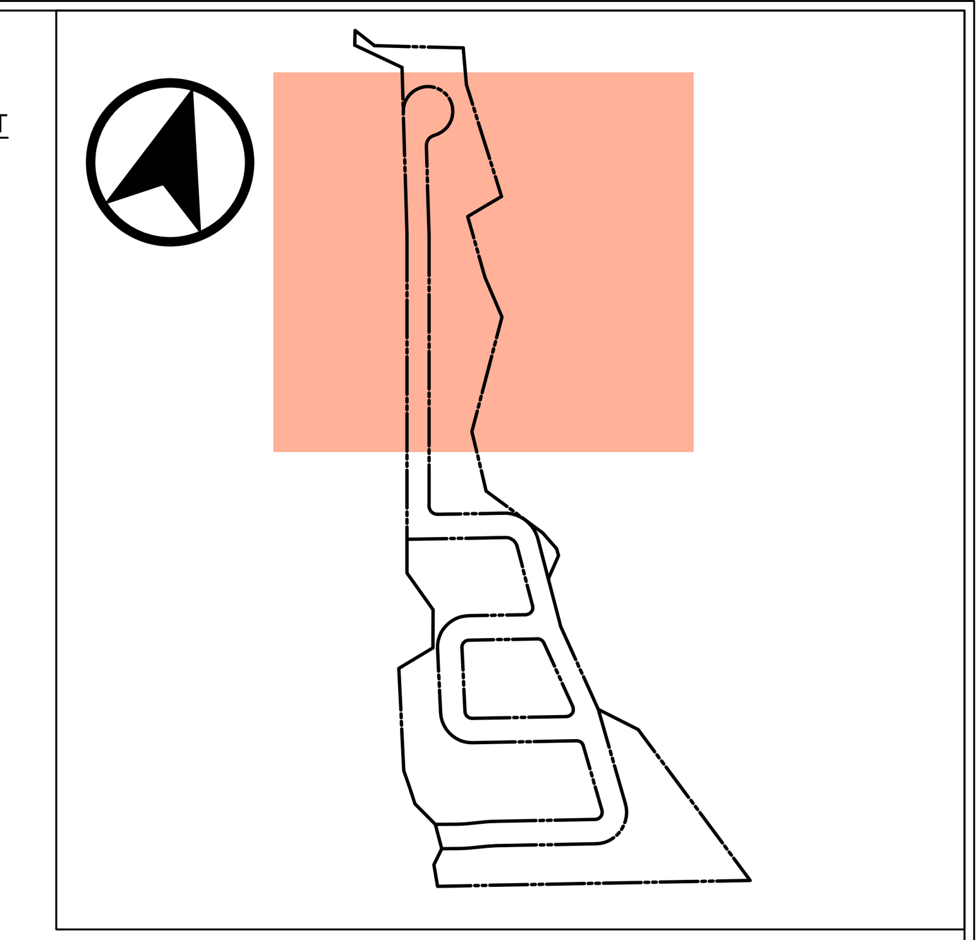


PARKING SUPPLY

AREA	LOTS	PARKING	RATIO PARKING/LOT
1	104	57	0.55



TYPICAL ON STREET PARKING CONFIGURATION
NTS



BENCHMARK INFO - 4-034
ELEVATIONS ARE GEODETIC AND ARE REFERRED TO CITY OF PICKERING VERTICAL BENCH MARK NUMBER 4-034 HAVING AN ORTHOMETRIC ELEVATION OF 155.292 METRES. ELEVATIONS ARE REFERENCED TO THE CANADIAN GEODETIC VERTICAL DATIM OF 1928, 1978 ADJUSTMENT (CGVD-1928:1978).

BRASS CAP SET VERTICALLY IN A CHANCE ANCHOR, AT THE NORTHEAST CORNER OF INTERSECTION OF CONCESSION 5 ROAD AND DRIVEWAY TO #1740, 14.7 METRES EAST OF CENTRELINE OF DRIVEWAY TO #1740, 9.4 METRES NORTH OF CENTRELINE OF CONCESSION 5 ROAD AND 0.20 METRES BELOW GRADE.

APPROVED

____________________P. Eng.
Engineering & Services Department
Approval of works required by City of Pickering and as defined in the Pre-Servicing Agreement. The City is relying on the technical skill and ability of the P. Eng sealing and signing this drawing.
Date:____________

THE CORPORATION OF THE CITY OF PICKERING
Engineering & Services Department

No.	Issue / Revision	Date	Auth.	Appr.
0	ISSUED FOR SUBMISSION	12/6/24	MSB	
1	ISSUED FOR SUBMISSION	7/17/25	LC	

LICENSED PROFESSIONAL ENGINEER
M. S. BARI
100187117
July 17/25
PROVINCE OF ONTARIO

BA Group
BA Consulting Group Ltd.
1000 - 95 St. Clair Ave. W.
Toronto ON M4V 1N9
TEL 416 961 7110
EMAIL bagroup@bagroup.com
MOVEMENT IN URBAN ENVIRONMENTS
BAGROUP.COM

Client
TACCGATE DEVELOPMENTS
600 APPLEWOOD CRESCENT
CONCORD, ONTARIO
L4K 4B4

Drawing Title
WHITEVALE SUBDIVISION
PARCEL 24
ON-STREET PARKING PLAN
AREA 1

Drawn	Checked	Designed	Checked	Date	Drawing No.
LC	MSB	LC	MSB	12/06/24	PK01
Project No. 8160-03		Draft Plan of Subdivision No. SP-2015-05		Revision No. 1	
Scale 1:500	0 5.0 10.0 20.0 30.0m				

File: J:\8160-03\BA\Signage\2025\R01-June 17, 2025\ba-Parcel 24-SN-R1-Jun17-25-8160-03.dwg Date Plotted: July 30, 2025 - 1:42 PM

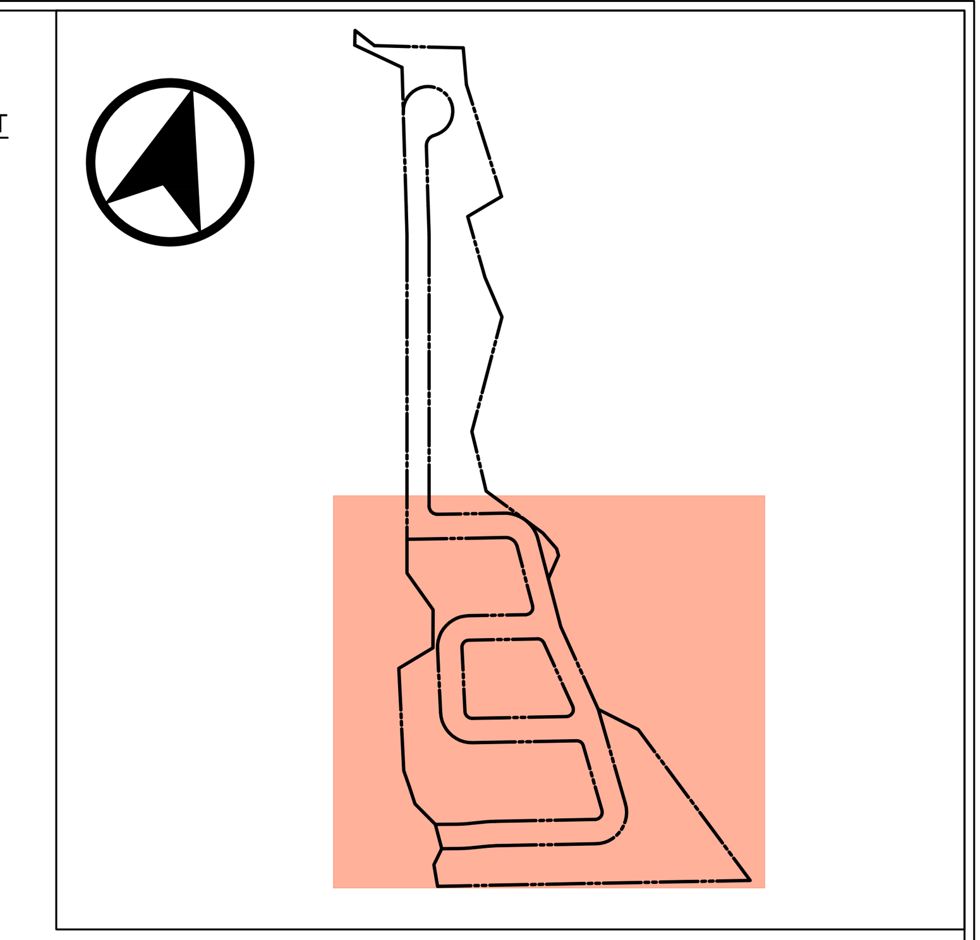
PARKING SUPPLY

AREA	LOTS	PARKING	RATIO PARKING/LOT
1	104	57	0.55

6.00
1 Parking Spaces Between Driveways
11.10
5.55
5.55
2 Parking Spaces Between Driveways
16.55
5.55
>2 Parking Spaces Between Driveways
Each additional parallel parking stall

TYPICAL ON STREET PARKING CONFIGURATION

NTS



BENCHMARK INFO - 4-034

ELEVATIONS ARE GEODETIC AND ARE REFERRED TO CITY OF PICKERING VERTICAL BENCH MARK NUMBER 4-034 HAVING AN ORTHOMETRIC ELEVATION OF 155.292 METRES. ELEVATIONS ARE REFERENCED TO THE CANADIAN GEODETIC VERTICAL DATIM OF 1928, 1978 ADJUSTMENT (CGVD-1928:1978).

BRASS CAP SET VERTICALLY IN A CHANCE ANCHOR, AT THE NORTHEAST CORNER OF INTERSECTION OF CONCESSION 5 ROAD AND DRIVEWAY TO #1740, 14.7 METRES EAST OF CENTRELINE OF DRIVEWAY TO #1740, 9.4 METRES NORTH OF CENTRELINE OF CONCESSION 5 ROAD AND 0.20 METRES BELOW GRADE.

APPROVED

________________ P. Eng.

Engineering & Services Department

Approval of works required by City of Pickering and as defined in the Pre-Servicing Agreement. The City is relying on the technical skill and ability of the P. Eng sealing and signing this drawing.

Date: ________________

THE CORPORATION OF THE CITY OF PICKERING

Engineering & Services Department

No.	Issue / Revision	Date	Auth.	Appr.
0	ISSUED FOR SUBMISSION	12/6/24	MSB	
1	ISSUED FOR SUBMISSION	7/17/25	LC	

LICENSED PROFESSIONAL ENGINEER
M. S. BARI
100187117
July 17/25
PROVINCE OF ONTARIO

BA Group

BA Consulting Group Ltd.
1000 - 95 St. Clair Ave. W.
Toronto ON M4V 1N9
TEL 416 961 7110
EMAIL bagroup@bagroup.com

MOVEMENT IN URBAN ENVIRONMENTS
BAGROUP.COM

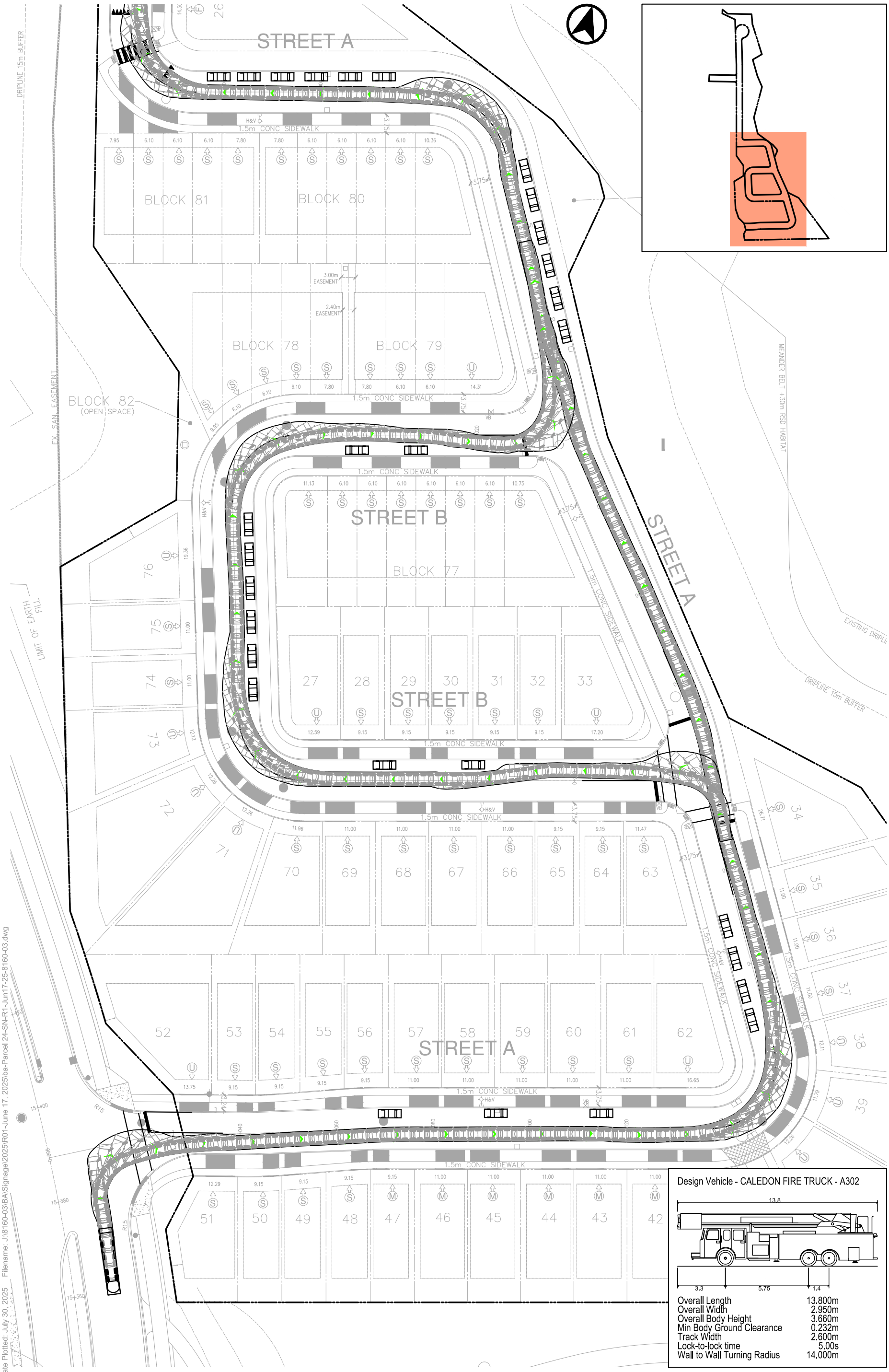
Client
TACCGATE DEVELOPMENTS
600 APPLEWOOD CRESCENT
CONCORD, ONTARIO
L4K 4B4

Drawing Title
WHITEVALE SUBDIVISION
PARCEL 24
ON-STREET PARKING PLAN
AREA 1

Drawn	Checked	Designed	Checked	Date	Drawing No.
LC	MSB	LC	MSB	12/06/24	PK02
Project No. 8160-03		Draft Plan of Subdivision No. SP-2015-05		Revision No. 1	
Scale 1:500					

0 5.0 10.0 20.0 30.0m

File: J:\8160-03\BA\Signage\2025\R01-June 17, 2025\ba-Parcel 24-SN-R1-Jun17-25-8160-03.dwg Date Plotted: July 30, 2025 - 1:42 PM



BA Group

PARCEL 24

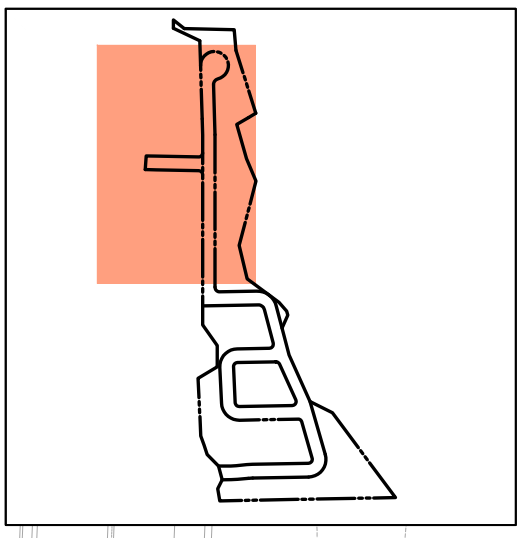
Vehicle Manoeuvring Diagram
Caledon Fire Truck - A302
Northbound

Project:	PARCEL 24
Project No.	8160-03
Date:	JUNE 19, 2025
Revised:	--

Scale 1:750 (0, 15, 30m)

Drawing No. VMD-01

Date Plotted: July 30, 2025 Filename: J:\8160-03\BA\Signage\2025\R01-June 17, 2025\ba-Parcel 24-SN-R1-Jun17-25-8160-03.dwg



STREET C

STREET A

1.5m CONC SIDEWALK

3.0m MULTI-USE PATH

HYDRO EASEMENT

EX. SAN. EASEMENT

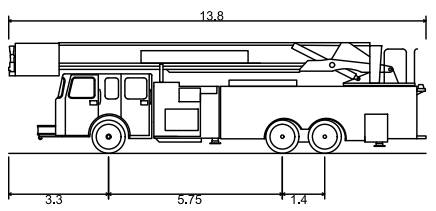
EXISTING DRIPLINE

DRIPLINE 15m BUFFER

H&V

VB

Design Vehicle - CALEDON FIRE TRUCK - A302



Overall Length	13.800m
Overall Width	2.950m
Overall Body Height	3.660m
Min Body Ground Clearance	0.232m
Track Width	2.600m
Lock-to-lock time	5.00s
Wall to Wall Turning Radius	14.000m

BA Group

PARCEL 24

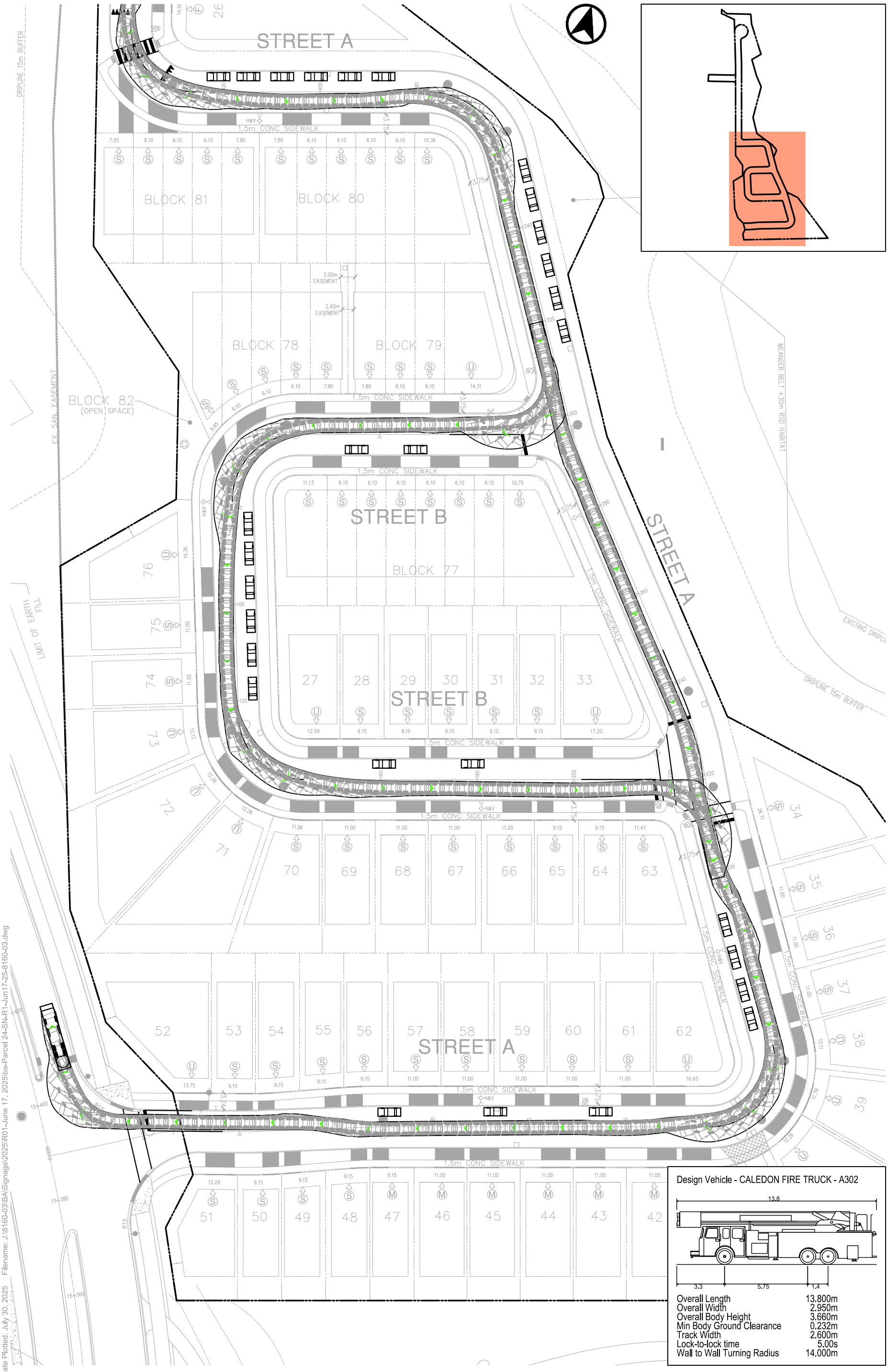
Vehicle Manoeuvring Diagram
Caledon Fire Truck - A302
Northbound

Project: PARCEL 24
Project No. 8160-03
Date: JUNE 19, 2025
Revised: --

Scale 1:750 (0, 15, 30m)

Drawing No. VMD-02

Date Plotted: July 30, 2025 Filename: J:\8160-03\BA\Signage\2025\R01-June 17, 2025\ba-Parcel 24-SN-R1-Jun17-25-8160-03.dwg



Design Vehicle - CALEDON FIRE TRUCK - A302

Overall Length	13.800m
Overall Width	2.950m
Overall Body Height	3.660m
Min Body Ground Clearance	0.232m
Track Width	2.600m
Lock-to-lock time	5.00s
Wall to Wall Turning Radius	14.000m

BA Group

PARCEL 24

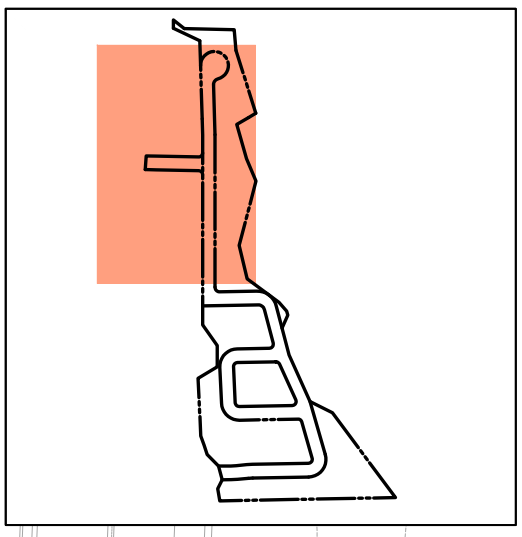
Vehicle Manoeuvring Diagram
Caledon Fire Truck - A302
Southbound

Project:	PARCEL 24
Project No.	8160-03
Date:	JUNE 18, 2025
Revised:	--

Scale 1:750 (0, 15, 30m)

Drawing No. VMD-3

Date Plotted: July 30, 2025 Filename: J:\8160-03\BA\Signage\2025\R01-June 17, 2025\ba-Parcel 24-SN-R1-Jun17-25-8160-03.dwg



STREET C

STREET A

1.5m CONC SIDEWALK

3.0m MULTI-USE PATH

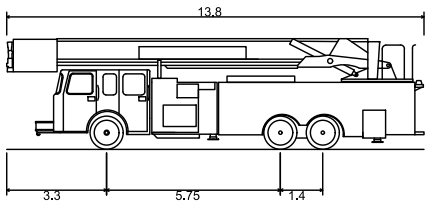
HYDRO EASEMENT

EX. SAN. EASEMENT

EXISTING DRIPLINE

DRIPLINE 15m BUFFER

Design Vehicle - CALEDON FIRE TRUCK - A302



Overall Length	13.800m
Overall Width	2.950m
Overall Body Height	3.660m
Min Body Ground Clearance	0.232m
Track Width	2.600m
Lock-to-lock time	5.00s
Wall to Wall Turning Radius	14.000m

BA Group

PARCEL 24

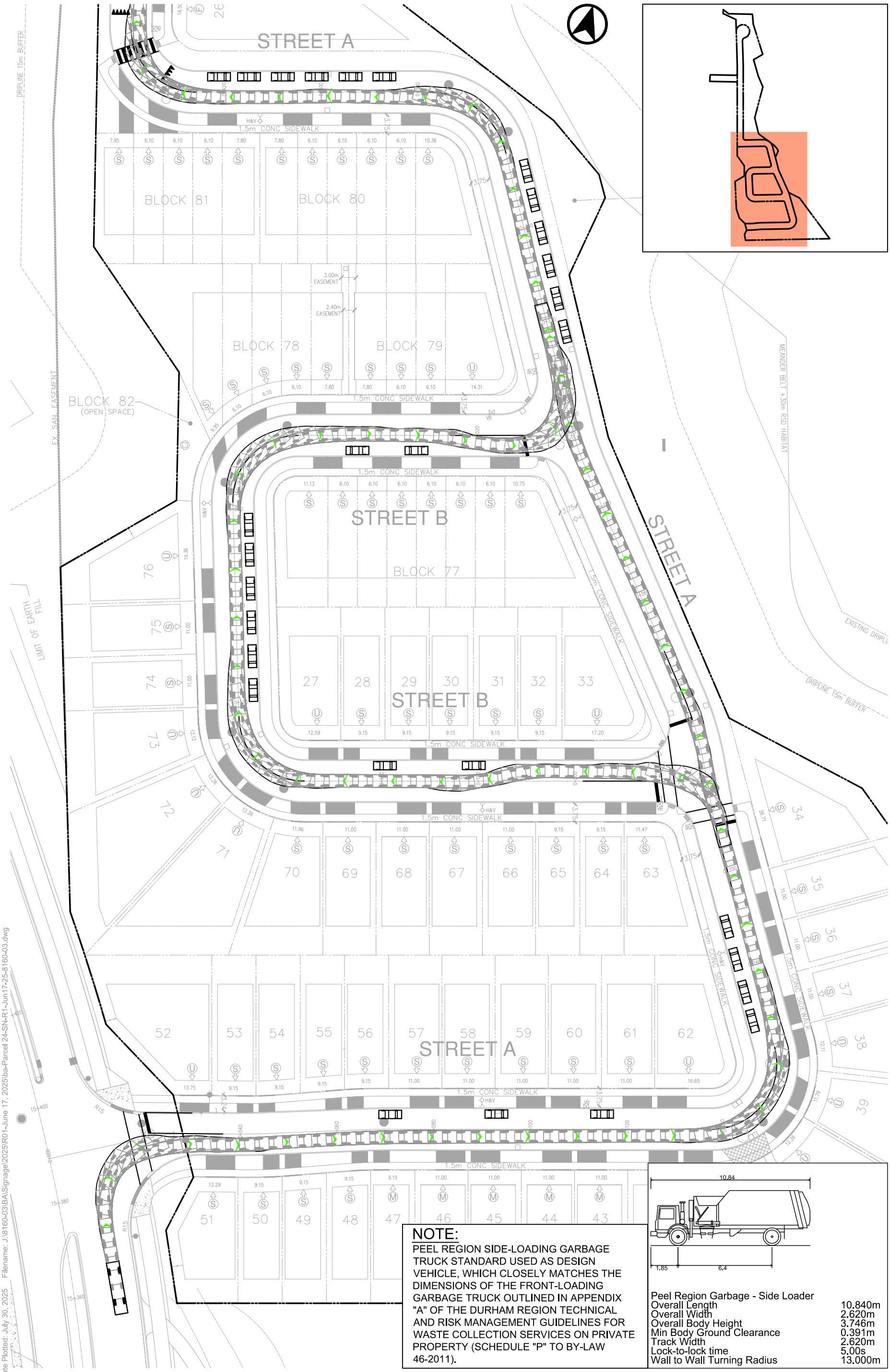
Vehicle Manoeuvring Diagram
Caledon Fire Truck - A302
Southbound

Project: PARCEL 24
Project No. 8160-03
Date: JUNE 19, 2025
Revised: --

Scale 1:750 (0, 15, 30m)

Drawing No. VMD-04

Date Plotted: July 30, 2025 Filename: J:\8160-03\BA\Signage\2025\R01-June 17, 2025\ba-Parcel 24-SN-R1-Jun17-25-8160-03.dwg



NOTE:

PEEL REGION SIDE-LOADING GARBAGE TRUCK STANDARD USED AS DESIGN VEHICLE, WHICH CLOSELY MATCHES THE DIMENSIONS OF THE FRONT-LOADING GARBAGE TRUCK OUTLINED IN APPENDIX "A" OF THE DURHAM REGION TECHNICAL AND RISK MANAGEMENT GUIDELINES FOR WASTE COLLECTION SERVICES ON PRIVATE PROPERTY (SCHEDULE "P" TO BY-LAW 46-2011).

Peel Region Garbage - Side Loader	
Overall Length	10.840m
Overall Width	2.620m
Overall Body Height	3.746m
Min Body Ground Clearance	0.391m
Track Width	2.620m
Lock-to-lock time	5.00s
Wall to Wall Turning Radius	13.000m

BA Group

PARCEL 24

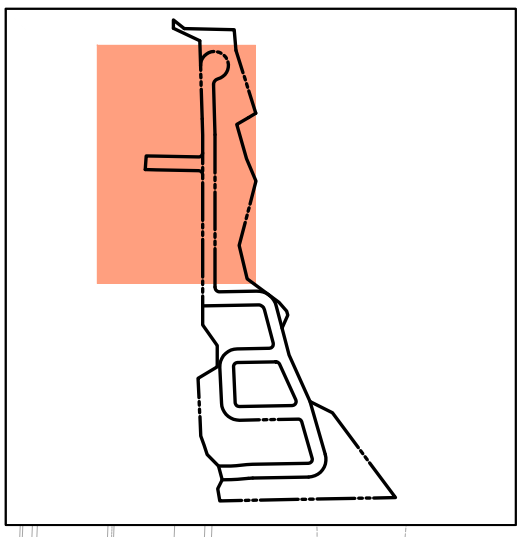
Vehicle Manoeuvring Diagram
Refuse Collection Vehicle
Northbound

Project:	PARCEL 24
Project No.	8160-03
Date:	JUNE 19, 2025
Revised:	--

Scale 1:750 (0, 15, 30m)

Drawing No. VMD-05

Date Plotted: July 30, 2025 Filename: J:\8160-03\BA\Signage\2025\R01-June 17, 2025\ba-Parcel 24-SN-R1-Jun17-25-8160-03.dwg



STREET C

STREET A

1.5m CONC SIDEWALK

3.0m MULTI-USE PATH

HYDRO EASEMENT

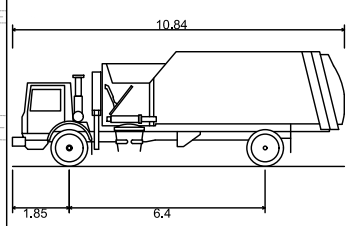
EXISTING DRIPLINE

DRIPLINE 15m BUFFER

EX. SAN. EASEMENT

NOTE:

PEEL REGION SIDE-LOADING GARBAGE TRUCK STANDARD USED AS DESIGN VEHICLE, WHICH CLOSELY MATCHES THE DIMENSIONS OF THE FRONT-LOADING GARBAGE TRUCK OUTLINED IN APPENDIX "A" OF THE DURHAM REGION TECHNICAL AND RISK MANAGEMENT GUIDELINES FOR WASTE COLLECTION SERVICES ON PRIVATE PROPERTY (SCHEDULE "P" TO BY-LAW 46-2011).



Peel Region Garbage - Side Loader	
Overall Length	10.840m
Overall Width	2.620m
Overall Body Height	3.746m
Min Body Ground Clearance	0.391m
Track Width	2.620m
Lock-to-lock time	5.00s
Wall to Wall Turning Radius	13.000m

BA Group

PARCEL 24

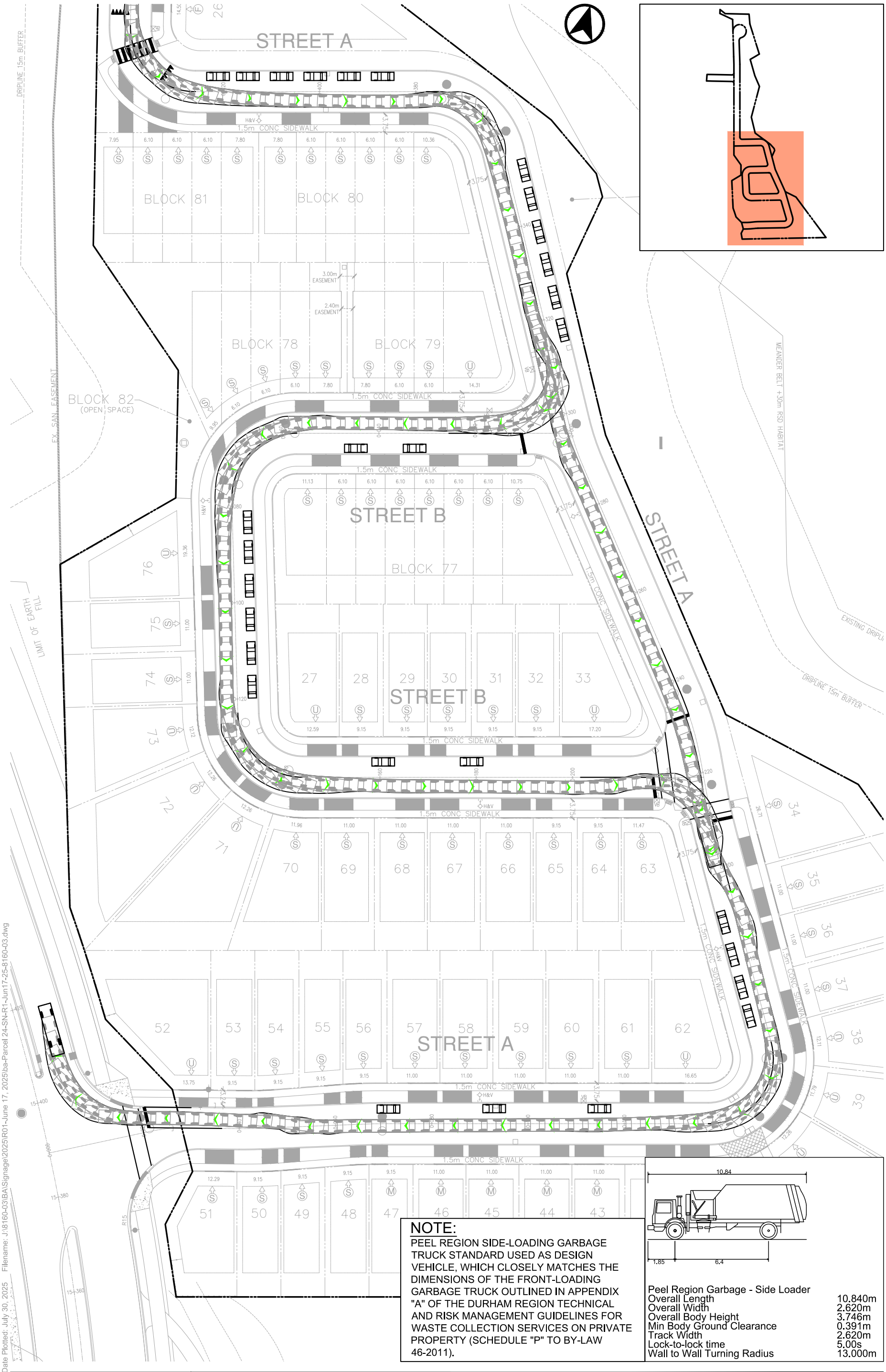
Vehicle Manoeuvring Diagram
Refuse Collection Vehicle
Northbound

Project:	PARCEL 24
Project No.	8160-03
Date:	JUNE 19, 2025
Revised:	--

Scale 1:750 (0, 15, 30m)

Drawing No. VMD-06

Date Plotted: July 30, 2025 Filename: J:\8160-03\BA\Signage\2025\R01-June 17, 2025\ba-Parcel 24-SN-R1-Jun17-25-8160-03.dwg



NOTE:
PEEL REGION SIDE-LOADING GARBAGE TRUCK STANDARD USED AS DESIGN VEHICLE, WHICH CLOSELY MATCHES THE DIMENSIONS OF THE FRONT-LOADING GARBAGE TRUCK OUTLINED IN APPENDIX "A" OF THE DURHAM REGION TECHNICAL AND RISK MANAGEMENT GUIDELINES FOR WASTE COLLECTION SERVICES ON PRIVATE PROPERTY (SCHEDULE "P" TO BY-LAW 46-2011).

Peel Region Garbage - Side Loader	
Overall Length	10.840m
Overall Width	2.620m
Overall Body Height	3.746m
Min Body Ground Clearance	0.391m
Track Width	2.620m
Lock-to-lock time	5.00s
Wall to Wall Turning Radius	13.000m

BA Group

PARCEL 24

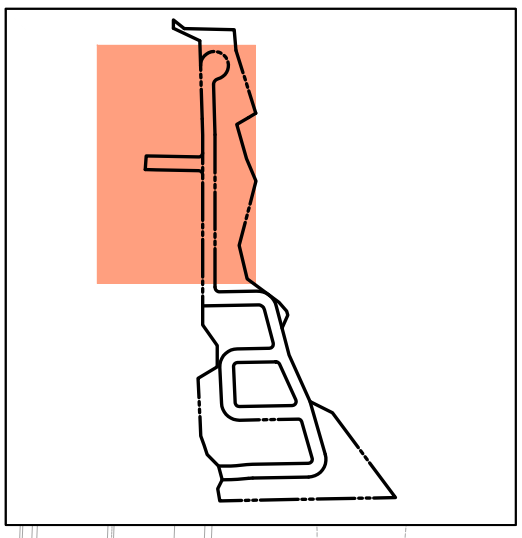
Vehicle Manoeuvring Diagram
Refuse Collection Vehicle
Southbound

Project:	PARCEL 24
Project No.	8160-03
Date:	JUNE 19, 2025
Revised:	--

Scale 1:750 (0, 15, 30m)

Drawing No. VMD-07

Date Plotted: July 30, 2025 Filename: J:\8160-03\BA\Signage\2025\R01-June 17, 2025\ba-Parcel 24-SN-R1-Jun17-25-8160-03.dwg



STREET C

STREET A

1.5m CONC SIDEWALK

3.0m MULTI-USE PATH

HYDRO EASEMENT

EXISTING DRIPLINE

DRIPLINE 15m BUFFER

EX. SAN. EASEMENT

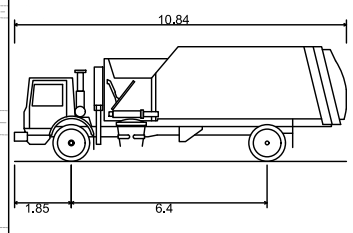
EX. SAN. EASEMENT

H&V

VB

NOTE:

PEEL REGION SIDE-LOADING GARBAGE TRUCK STANDARD USED AS DESIGN VEHICLE, WHICH CLOSELY MATCHES THE DIMENSIONS OF THE FRONT-LOADING GARBAGE TRUCK OUTLINED IN APPENDIX "A" OF THE DURHAM REGION TECHNICAL AND RISK MANAGEMENT GUIDELINES FOR WASTE COLLECTION SERVICES ON PRIVATE PROPERTY (SCHEDULE "P" TO BY-LAW 46-2011).



Peel Region Garbage - Side Loader	
Overall Length	10.840m
Overall Width	2.620m
Overall Body Height	3.746m
Min Body Ground Clearance	0.391m
Track Width	2.620m
Lock-to-lock time	5.00s
Wall to Wall Turning Radius	13.000m

BA Group

PARCEL 24

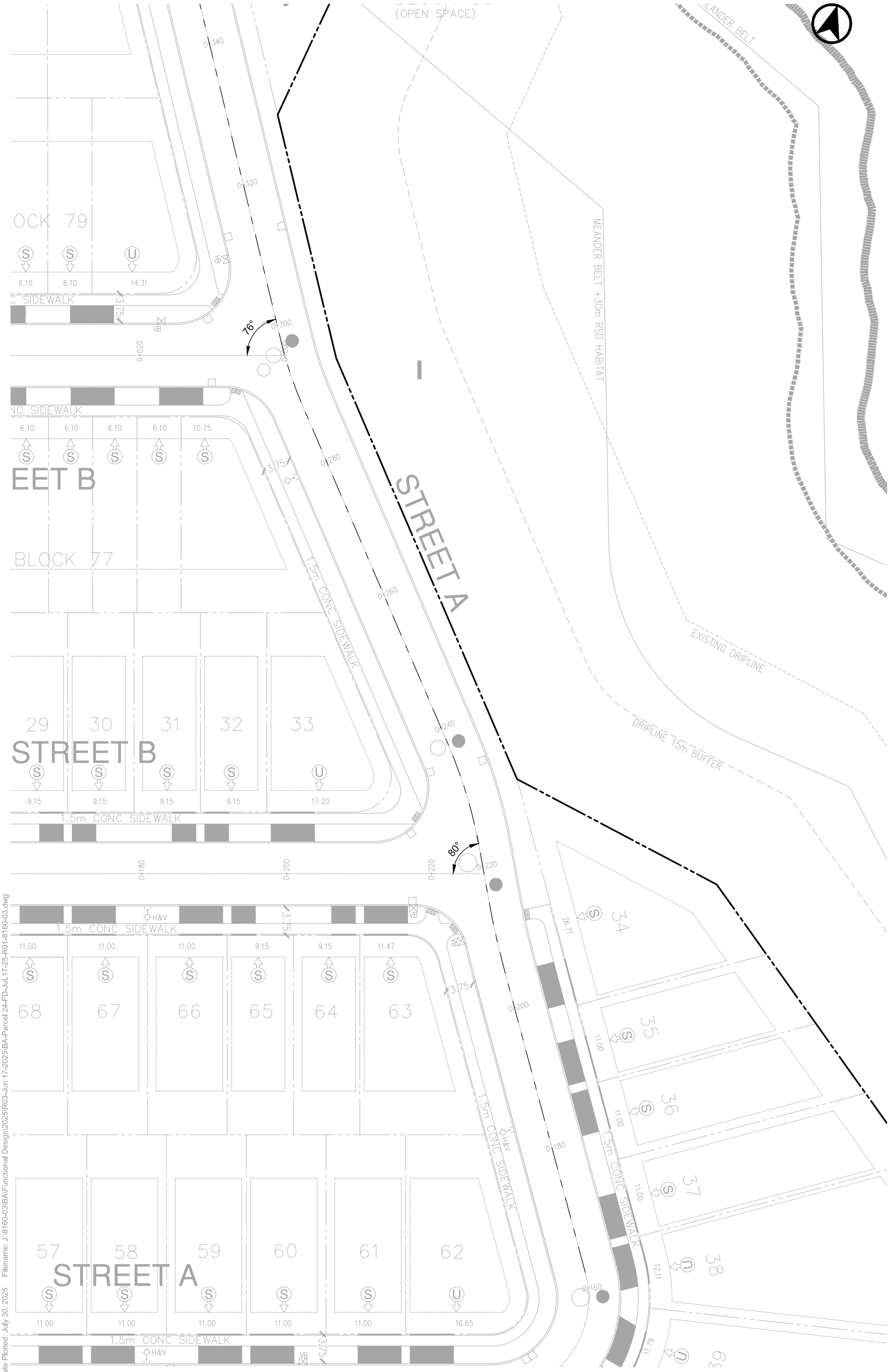
Vehicle Manoeuvring Diagram
Refuse Collection Vehicle
Southbound

Project: PARCEL 24
Project No. 8160-03
Date: JUNE 19, 2025
Revised: --

Scale 1:750 (0, 15, 30m)

Drawing No. VMD-08

Date Plotted: July 30, 2025 Filename: J:\8160-03\BA\Signage\2025\R01-June 17, 2025\ba-Parcel 24-SN-R1-Jun17-25-8160-03.dwg



Date Plotted: July 30, 2025 Filename: J:\8160-03\BA\Functional Design\2025\R03-Jun 17-2025\BA-Parcel 24-FD-JuL17-25-R01-8160-03.dwg

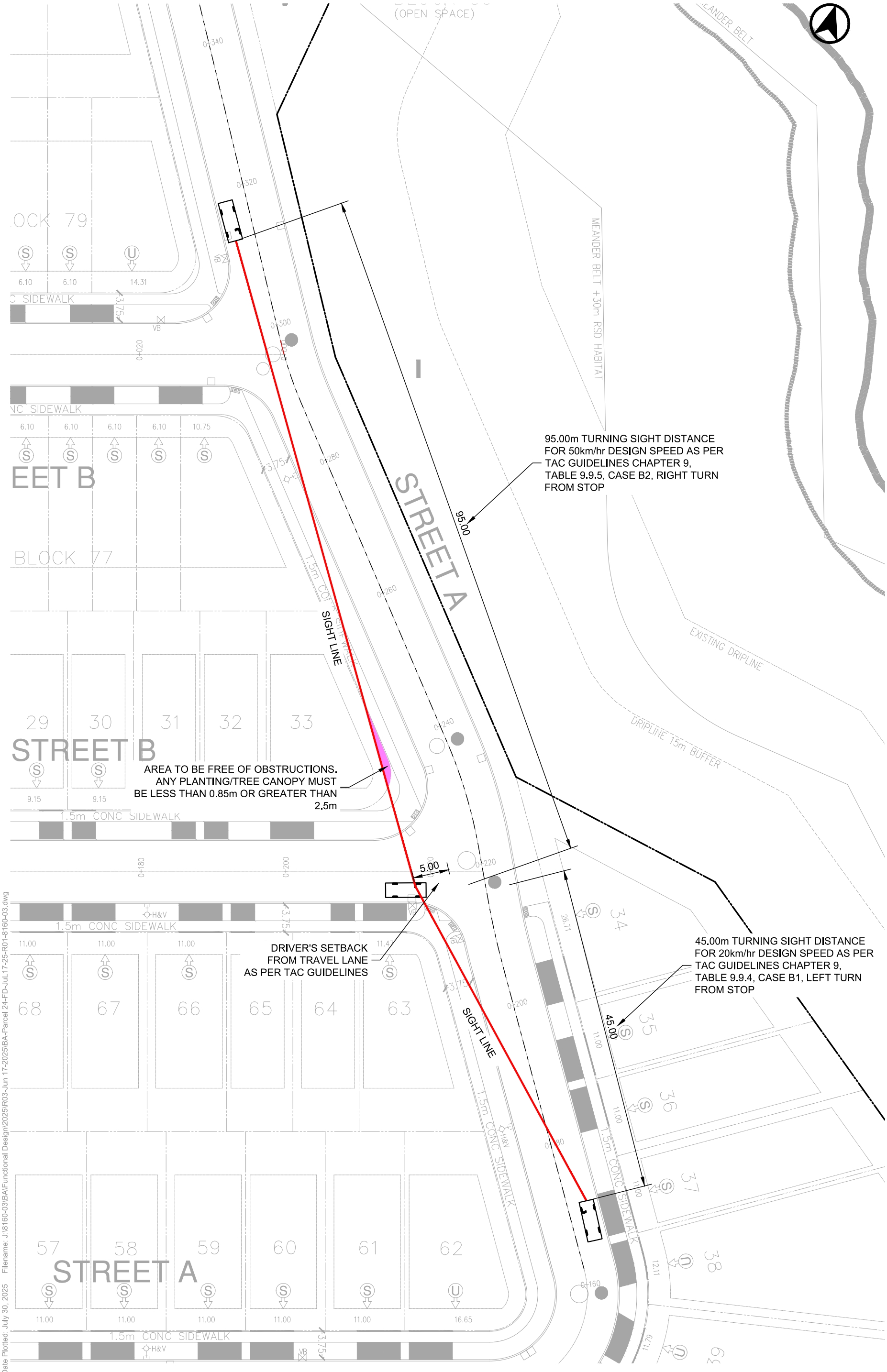
BA Group

PARCEL 24
FUNCTIONAL ROAD PLAN
INTERSECTION #1

Project:	PARCEL 24
Project No.	8160-03
Date:	APRIL 30, 2024
Revised:	JULY 17, 2025

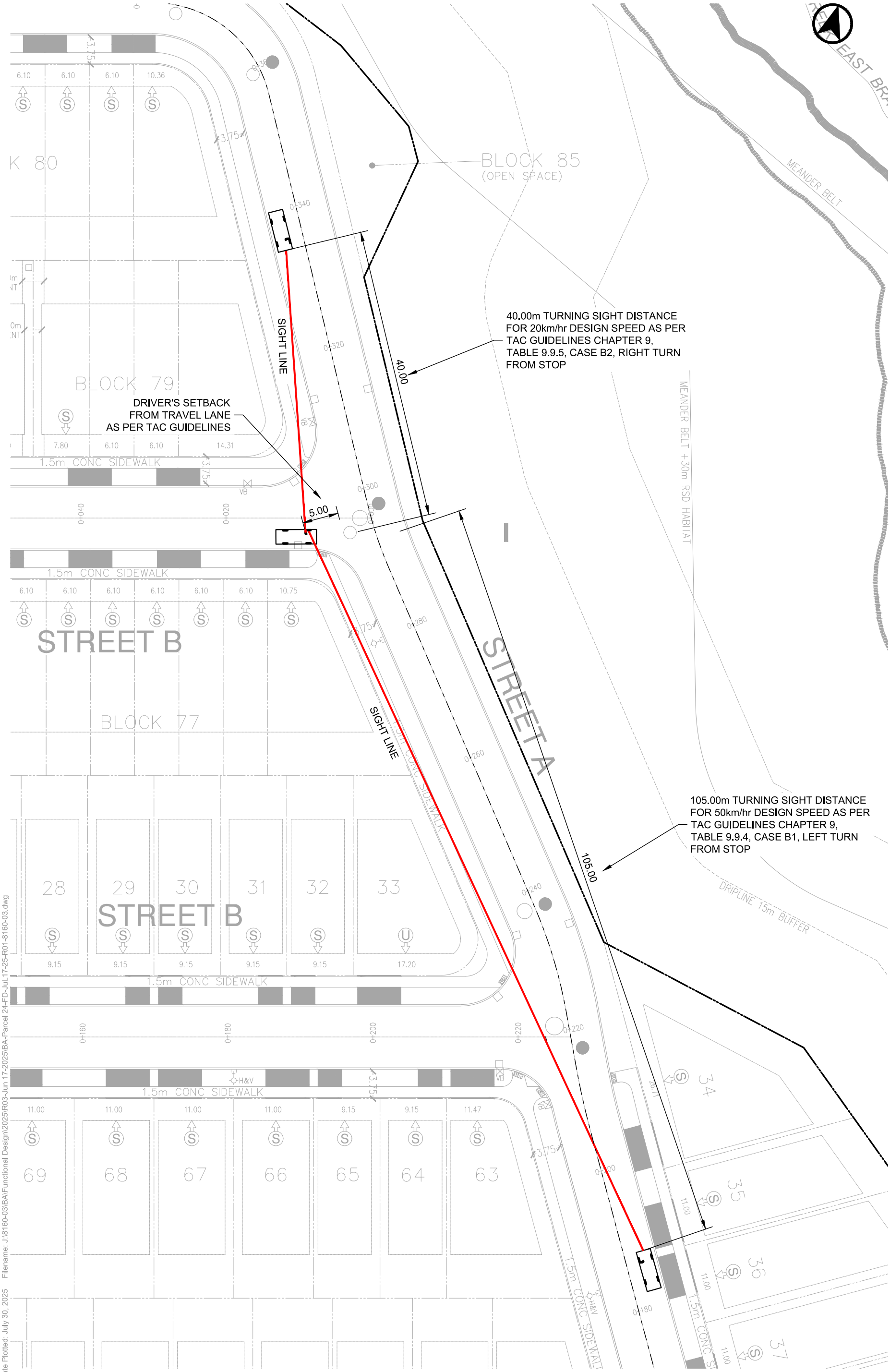
Scale 1:500 (0, 5, 10, 15, 20m)

Drawing No. FD-01



BA Group	PARCEL 24 SIGHT LINE REVIEW STREET 'B' / STREET 'A' INTERSECTION #1	Project: PARCEL 24 Project No. 8160-03 Date: APRIL 30, 2024 Revised: JULY 17, 2025	Scale 1:500 (0, 5, 10, 15, 20m) Drawing No. SL-01

Date Plotted: July 30, 2025 Filename: J:\8160-03\BA\Functional Design\2025\R03-Jun 17-2025\BA-Parcel 24-FD-JuL17-25-R01-8160-03.dwg



Filename: J:\8160-03\BA\Functional Design\2025\R03-Jun 17-2025\BA-Parcel 24-FD-JuL17-25-R01-8160-03.dwg

Date Plotted: July 30, 2025

BA Group

PARCEL 24

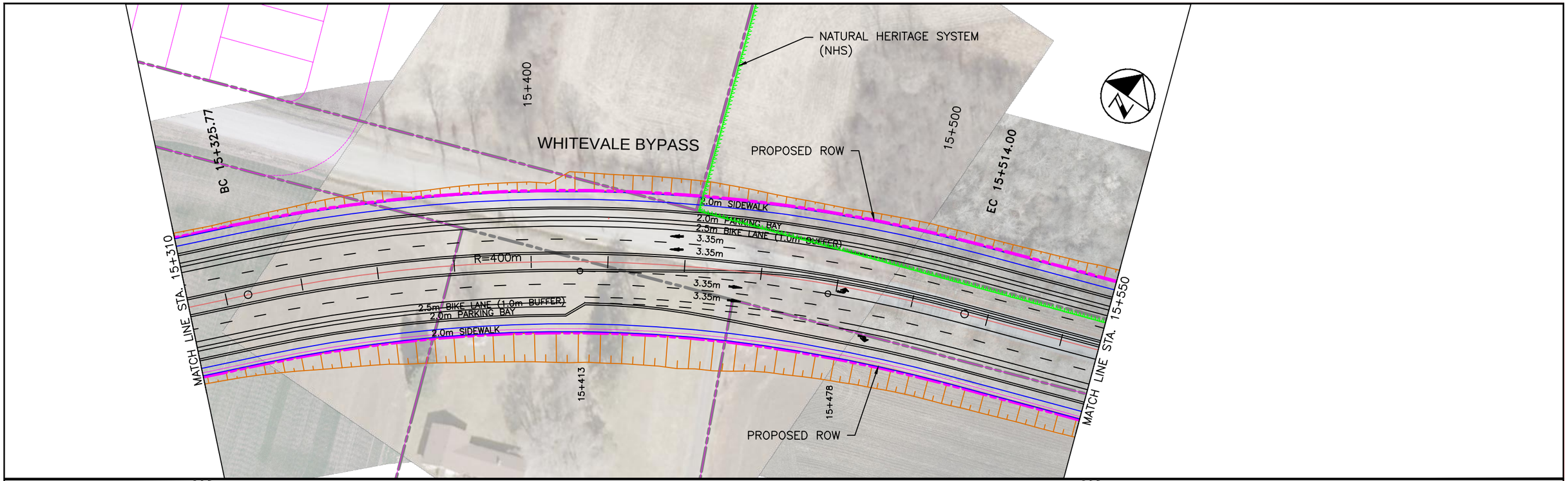
SIGHT LINE REVIEW
STREET 'B' / STREET 'A'
INTERSECTION #2

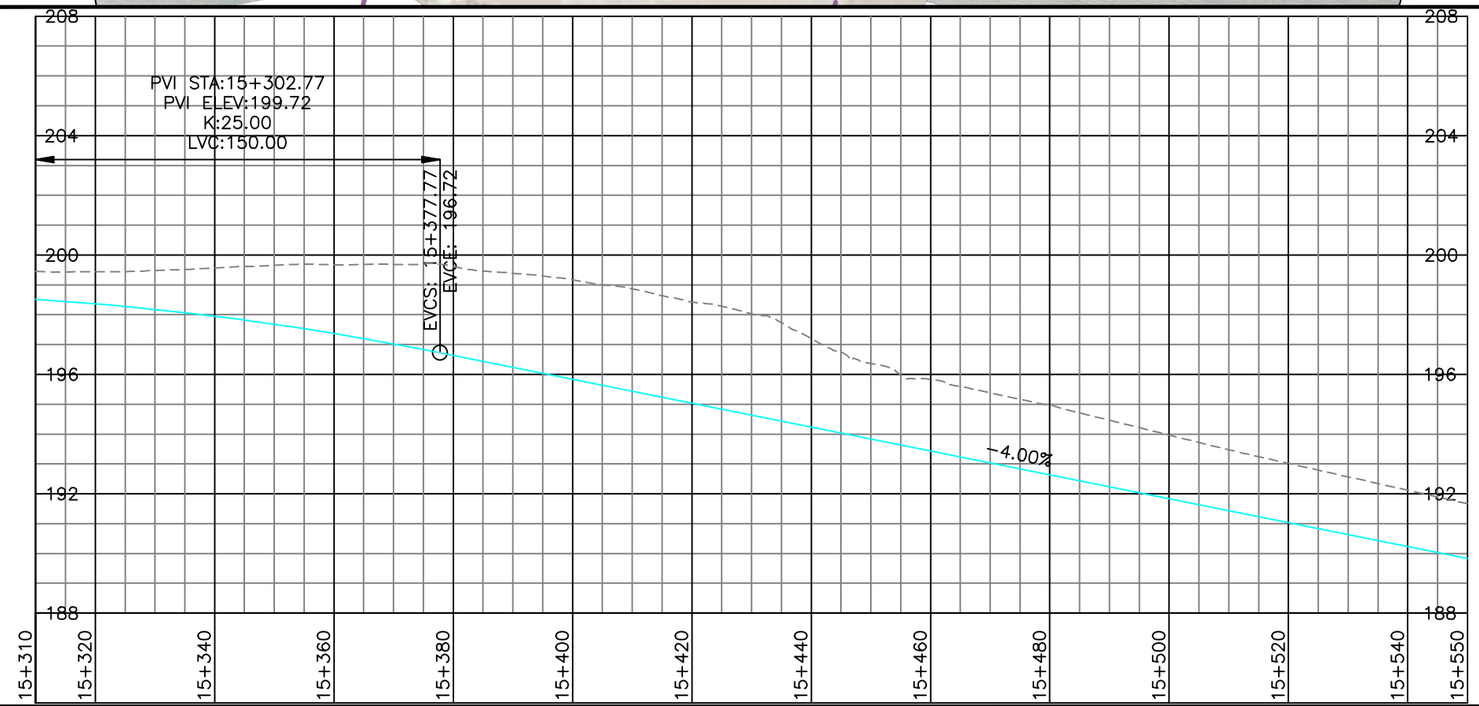
Project:	PARCEL 24
Project No.	8160-03
Date:	APRIL 30, 2024
Revised:	JULY 17, 2025

Scale 1:500 (0, 5, 10, 15, 20m)

Drawing No. SL-02

Appendix D:
Regional Road EA Design





CENTRAL PICKERING DEVELOPMENT PLAN
CLASS ENVIRONMENTAL ASSESSMENT
FOR REGIONAL SERVICES IN
THE CITY OF PICKERING

- NATURAL HERITAGE SYSTEM (NHS)
- PROPOSED RIGHT OF WAY
- EXISTING RIGHT OF WAY
- LIMIT OF CUT
- LIMIT OF FILL
- CENTRE ALIGNMENT
- WATER COURSE

HDR

THE REGIONAL MUNICIPALITY OF DURHAM

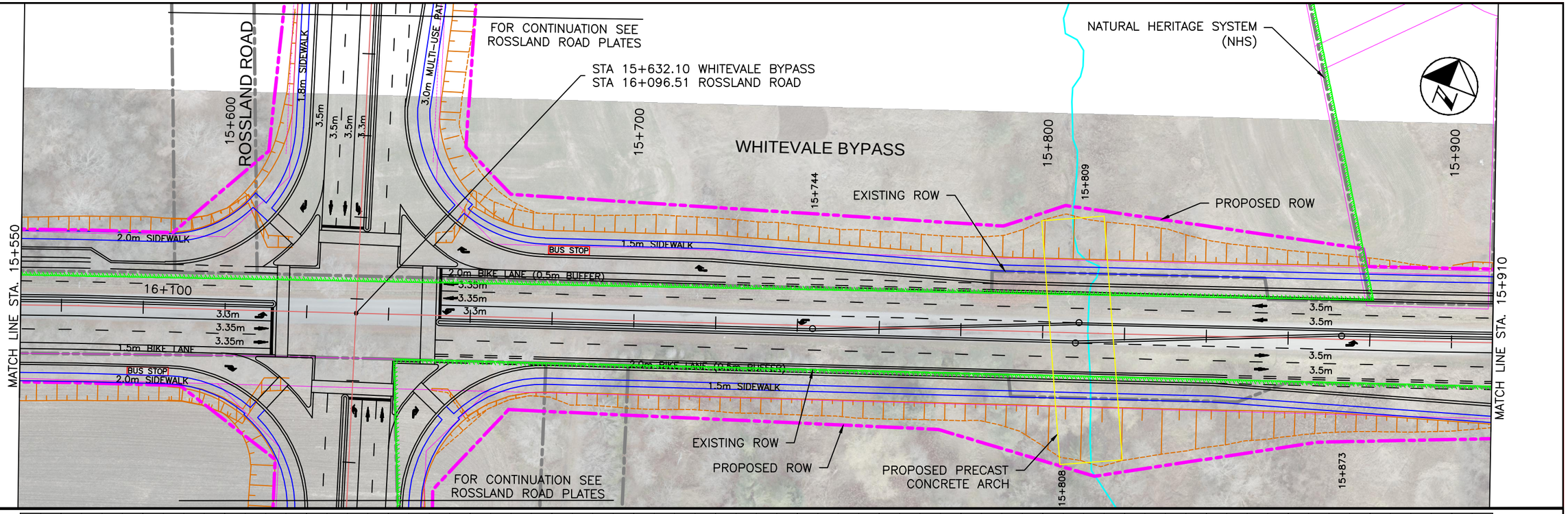
MAY 22, 2014

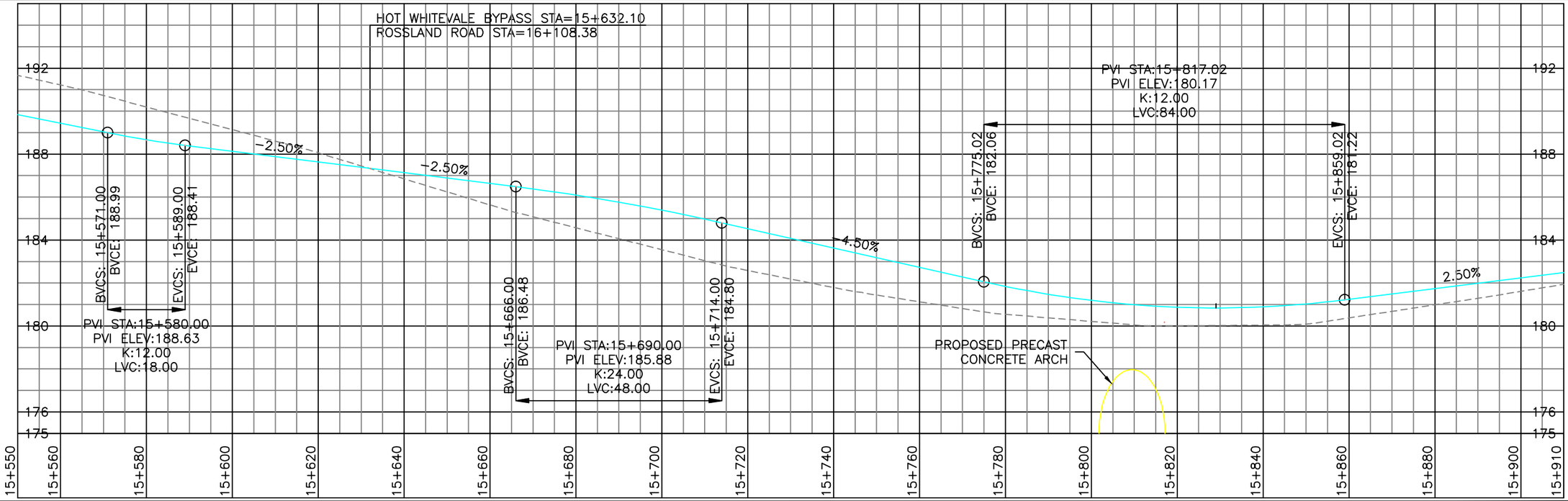
SCALE
HORIZONTAL 10m 0 10m
VERTICAL 2m 0 2m

WHITEVALE BYPASS

STATION 15+310 TO 15+550

SHEET NO.
16





CENTRAL PICKERING DEVELOPMENT PLAN
CLASS ENVIRONMENTAL ASSESSMENT
FOR REGIONAL SERVICES IN
THE CITY OF PICKERING

- NATURAL HERITAGE SYSTEM (NHS)
- PROPOSED RIGHT OF WAY
- EXISTING RIGHT OF WAY
- LIMIT OF CUT
- LIMIT OF FILL
- CENTRE ALIGNMENT
- WATER COURSE

HDR

THE REGIONAL MUNICIPALITY OF DURHAM

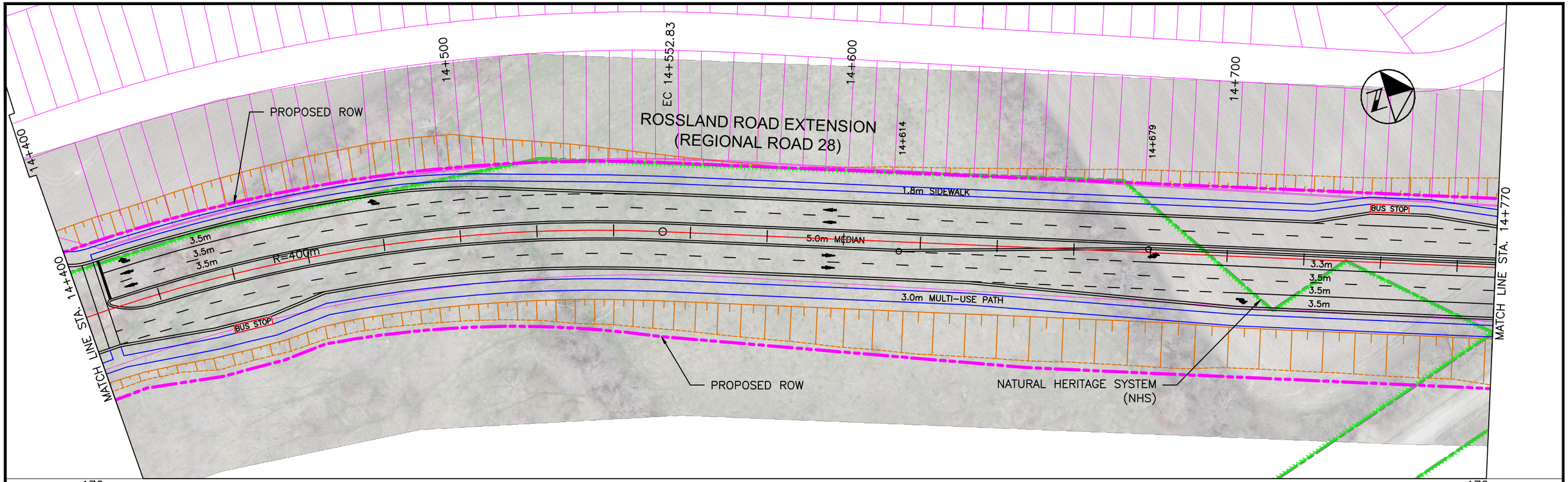
MAY 22, 2014

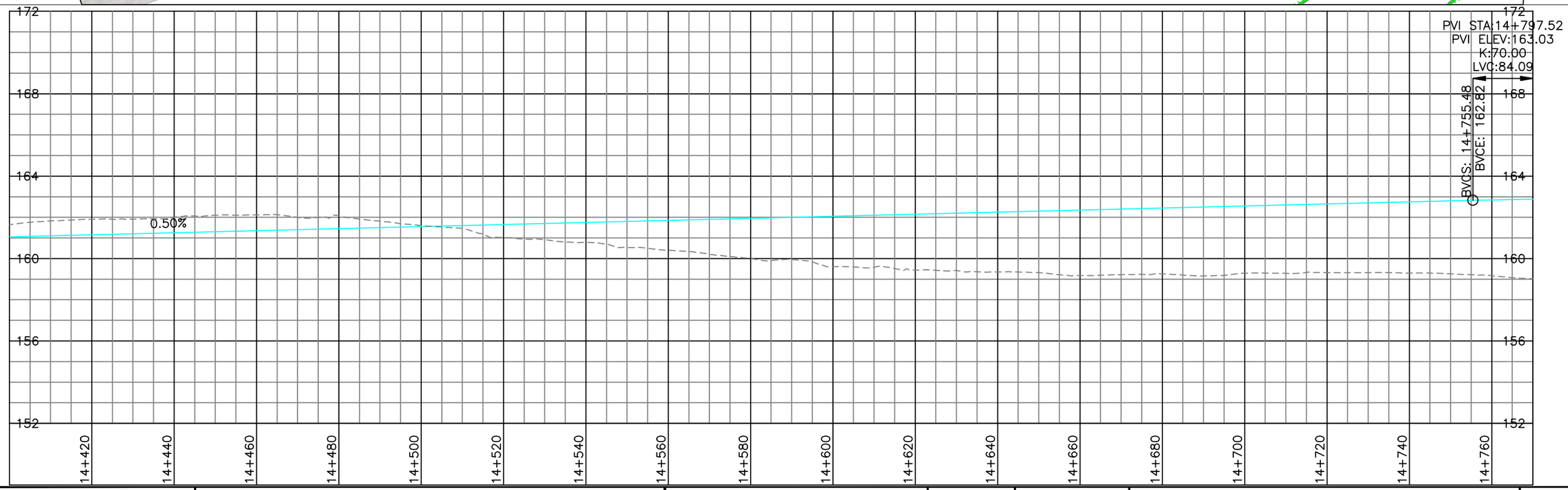
SCALE
HORIZONTAL 10m 0 10m
VERTICAL 2m 0 2m

WHITEVALE BYPASS

STATION 15+550 TO 15+910

SHEET NO. 17





CENTRAL PICKERING DEVELOPMENT PLAN
CLASS ENVIRONMENTAL ASSESSMENT
FOR REGIONAL SERVICES IN
THE CITY OF PICKERING

NATURAL HERITAGE SYSTEM (NHS)
PROPOSED RIGHT OF WAY
EXISTING RIGHT OF WAY
LIMIT OF CUT
LIMIT OF FILL
CENTRE ALIGNMENT
WATER COURSE
EXISTING PROFILE
PROPOSED PROFILE

HDR

THE REGIONAL MUNICIPALITY OF DURHAM

MAY 22, 2014

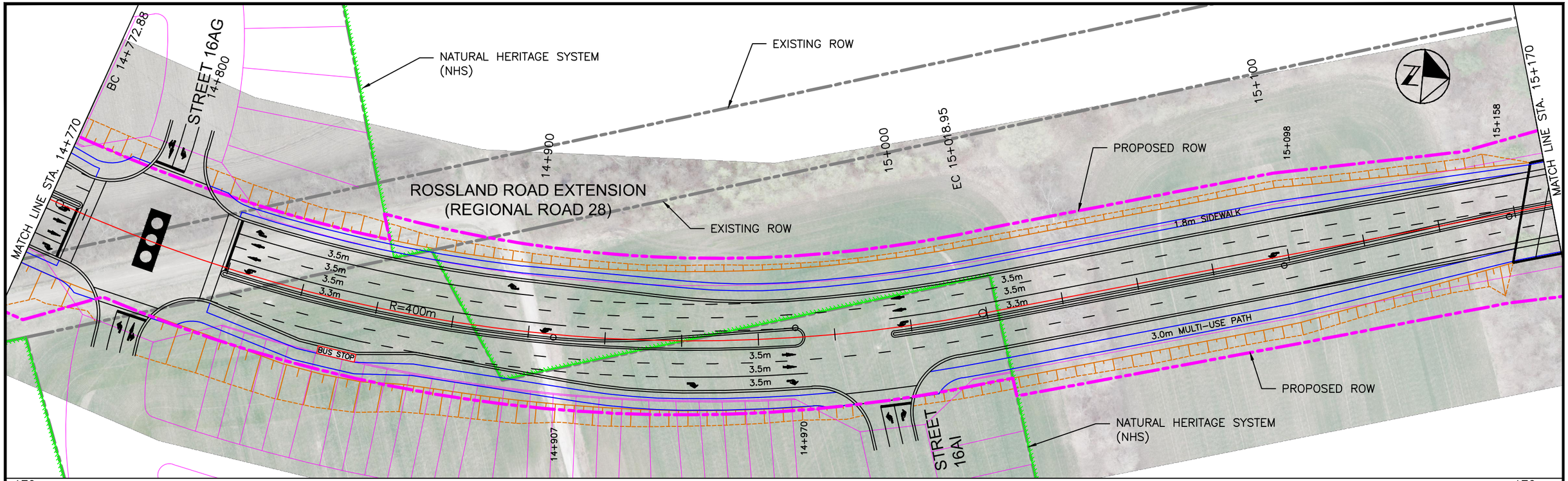
SCALE
HORIZONTAL 10m 0 10m
VERTICAL 2m 0 2m

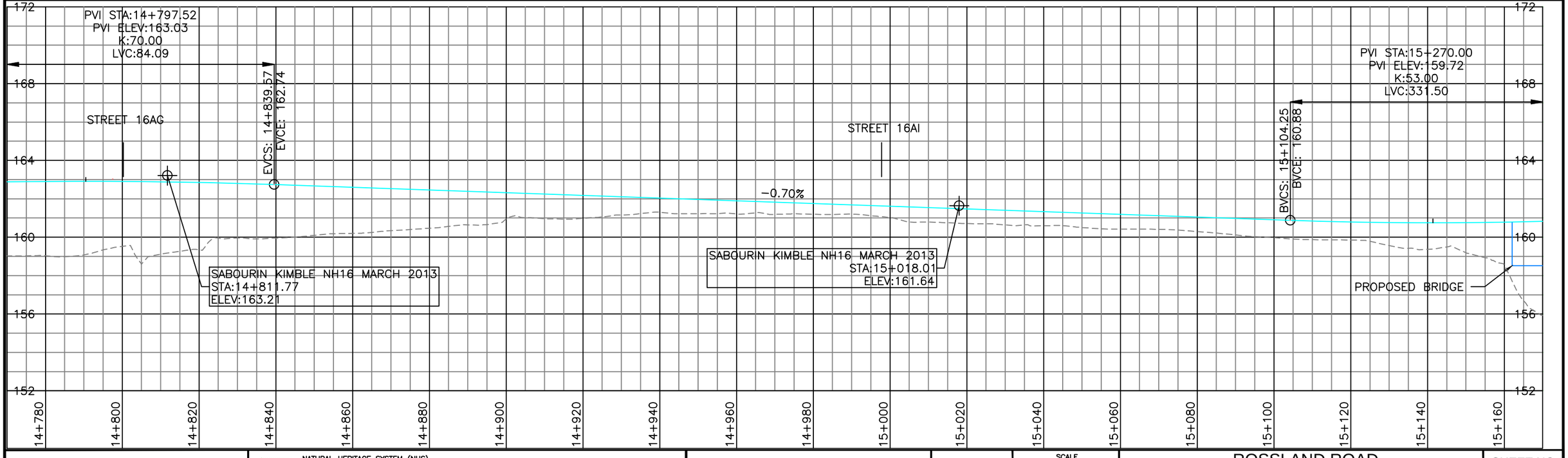
ROSSLAND ROAD EXTENSION (REGIONAL ROAD 28)

STATION 14+400 TO 14+770

SHEET NO. 13

FILENAME: C:\pwworking\pht\d0694346\HDR- PP Rossland.dwg
PLOTDATE: May 22, 2014 - 6:26pm
PLOTTED BY: mhui





CENTRAL PICKERING DEVELOPMENT PLAN
CLASS ENVIRONMENTAL ASSESSMENT
FOR REGIONAL SERVICES IN
THE CITY OF PICKERING

NATURAL HERITAGE SYSTEM (NHS)
PROPOSED RIGHT OF WAY
EXISTING RIGHT OF WAY
LIMIT OF CUT
LIMIT OF FILL
CENTRE ALIGNMENT
WATER COURSE

HDR

THE REGIONAL MUNICIPALITY OF DURHAM

MAY 22, 2014

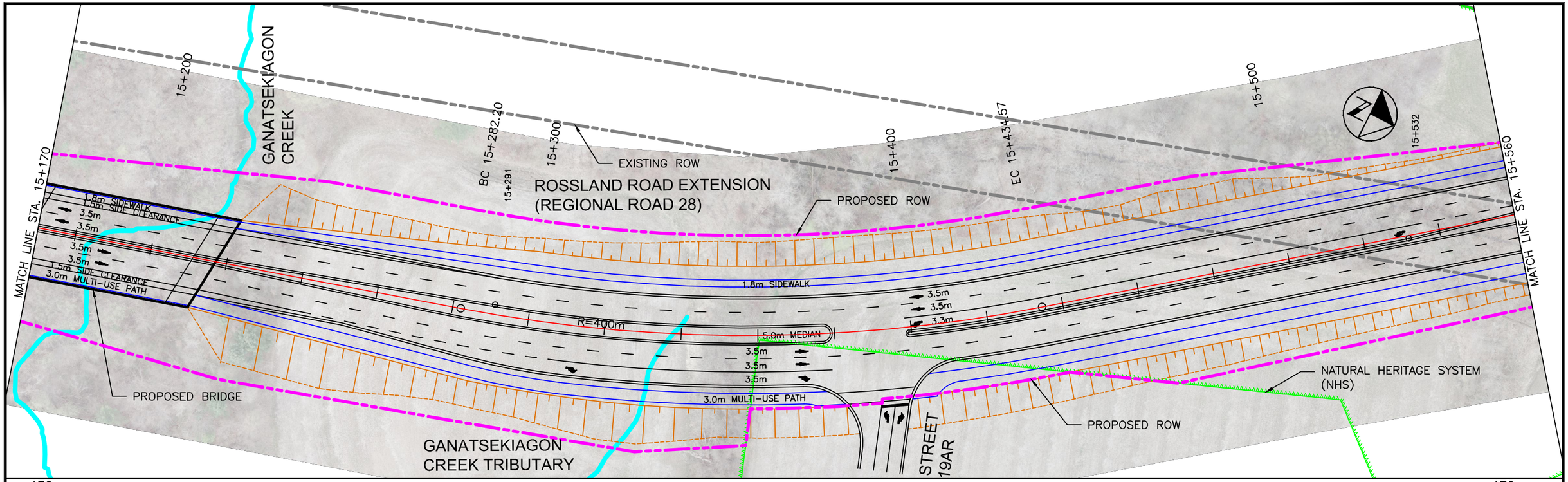
SCALE
HORIZONTAL 10m 0 10m
VERTICAL 2m 0 2m

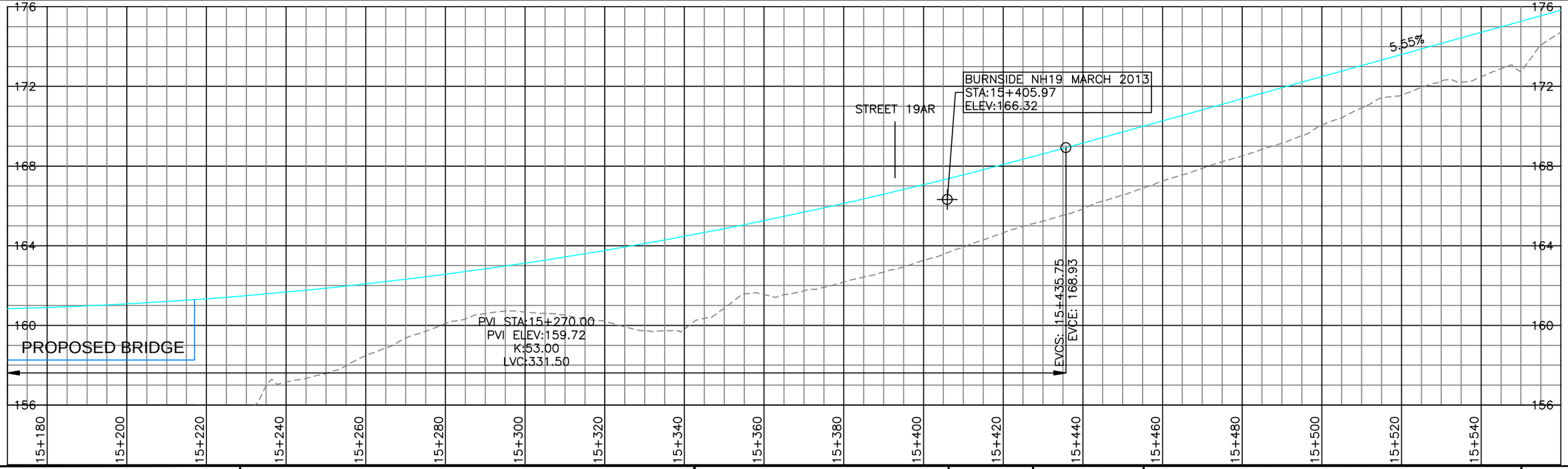
ROSSLAND ROAD EXTENSION (REGIONAL ROAD 28)

STATION 14+770 TO 15+170

SHEET NO. 14

FILENAME: C:\pwworking\pitt\d0694346\HDR- PP Rossland.dwg
PLOTDATE: May 19, 2014 - 6:09pm
PLOTTED BY: mhui





CENTRAL PICKERING DEVELOPMENT PLAN
CLASS ENVIRONMENTAL ASSESSMENT
FOR REGIONAL SERVICES IN
THE CITY OF PICKERING

NATURAL HERITAGE SYSTEM (NHS)
PROPOSED RIGHT OF WAY
EXISTING RIGHT OF WAY
LIMIT OF CUT
LIMIT OF FILL
CENTRE ALIGNMENT
WATER COURSE
EXISTING PROFILE
PROPOSED PROFILE

HDR
THE REGIONAL MUNICIPALITY OF DURHAM

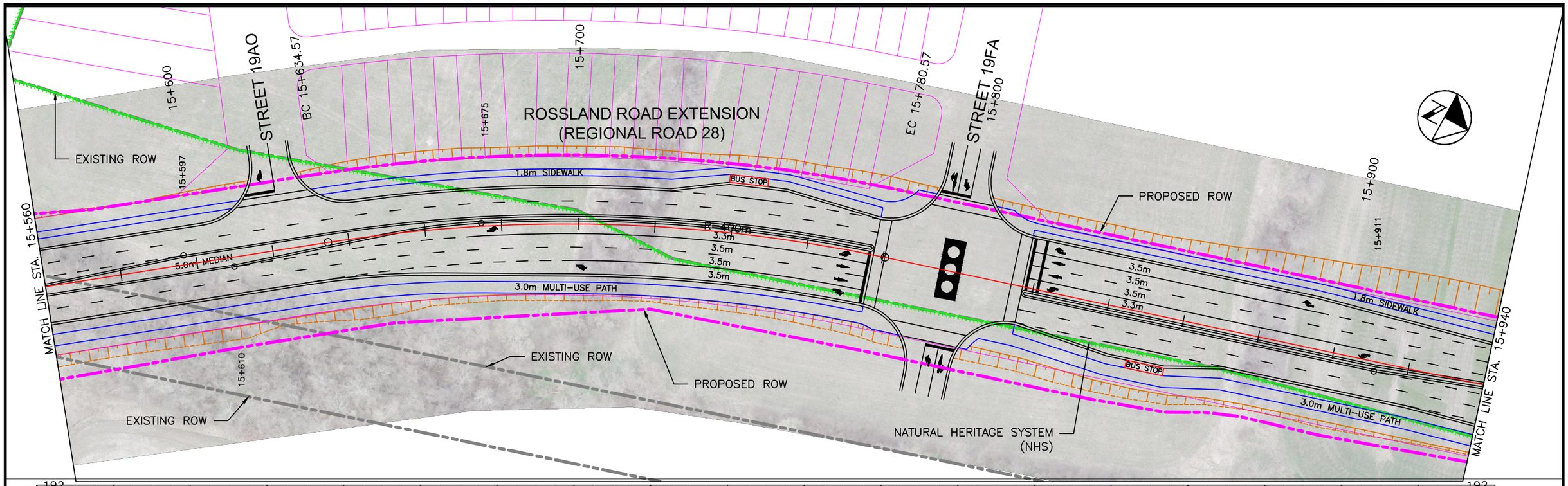
MAY 22, 2014

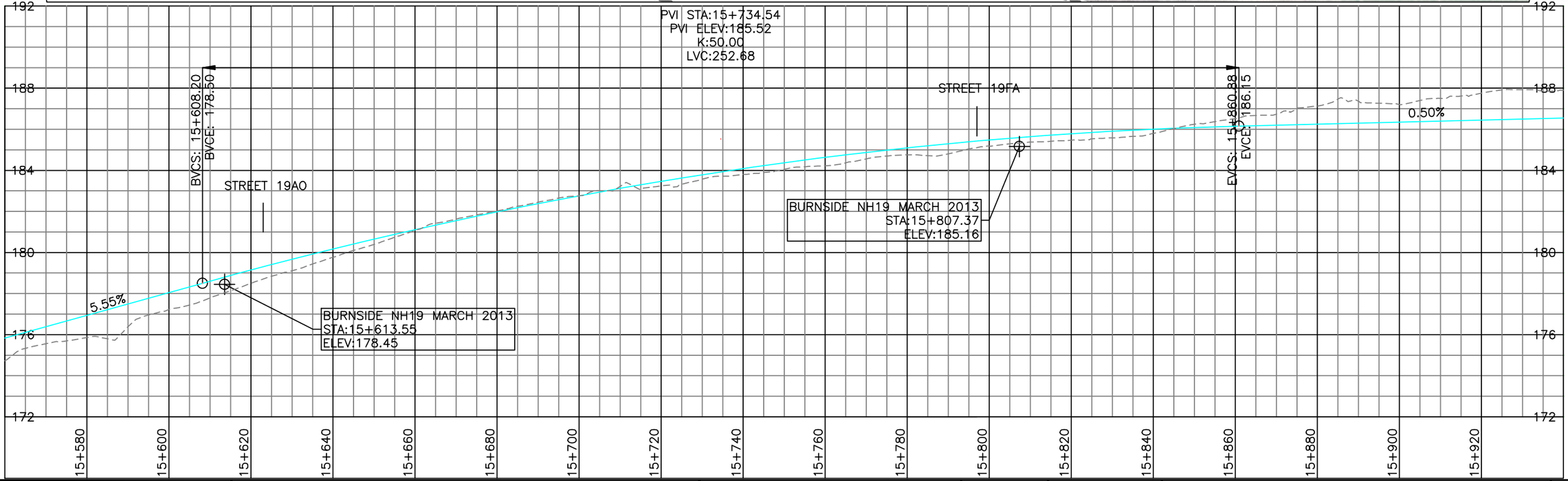
SCALE
HORIZONTAL 10m 0 10m
VERTICAL 2m 0 2m

ROSSLAND ROAD EXTENSION (REGIONAL ROAD 28)
STATION 15+170 TO 15+560

SHEET NO. 15

FILENAME: C:\pwworking\pht\d0694346\HDR- PP Rossland.dwg
PLOTDATE: May 21, 2014 - 5:44pm
PLOTTED BY: pyu





CENTRAL PICKERING DEVELOPMENT PLAN
CLASS ENVIRONMENTAL ASSESSMENT
FOR REGIONAL SERVICES IN
THE CITY OF PICKERING

NATURAL HERITAGE SYSTEM (NHS)
PROPOSED RIGHT OF WAY
EXISTING RIGHT OF WAY
LIMIT OF CUT
LIMIT OF FILL
CENTRE ALIGNMENT
WATER COURSE

HDR

THE REGIONAL MUNICIPALITY OF DURHAM

MAY 22, 2014

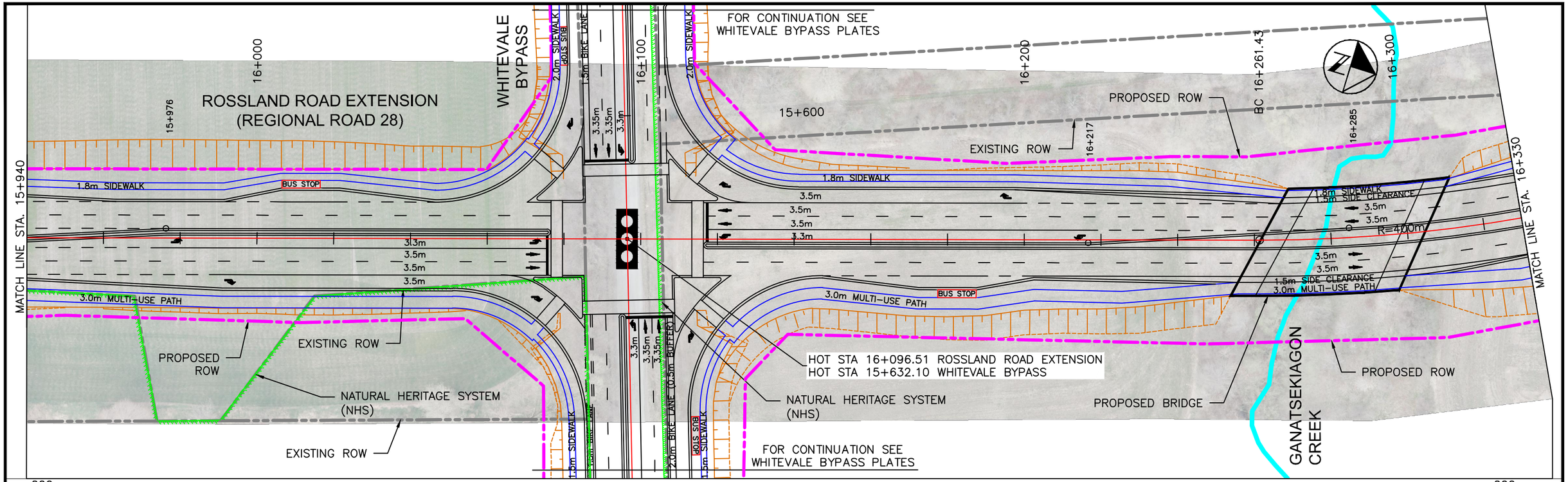
SCALE
HORIZONTAL 10m 0 10m
VERTICAL 2m 0 2m

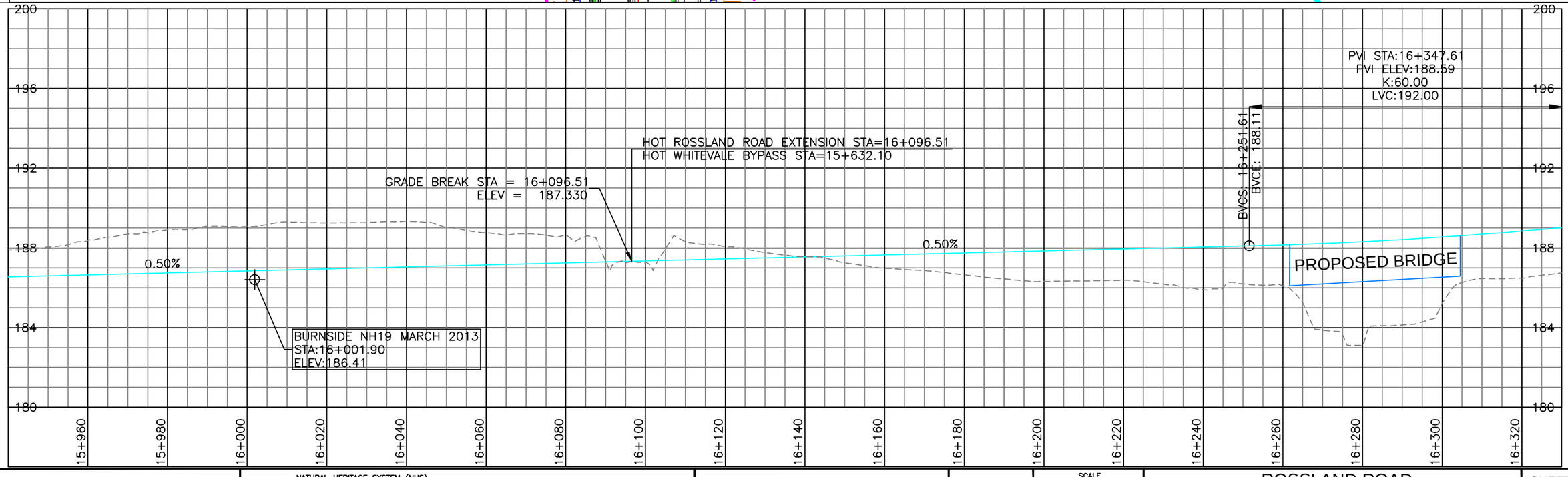
ROSSLAND ROAD EXTENSION (REGIONAL ROAD 28)

STATION 15+560 TO 15+940

SHEET NO. 16

FILENAME: C:\pwworking\pitt\d0694346\HDR- PP Rossland.dwg
PLOTDATE: May 19, 2014 - 6:14pm
PLOTTED BY: mhuI





CENTRAL PICKERING DEVELOPMENT PLAN
CLASS ENVIRONMENTAL ASSESSMENT
FOR REGIONAL SERVICES IN
THE CITY OF PICKERING

NATURAL HERITAGE SYSTEM (NHS)
PROPOSED RIGHT OF WAY
EXISTING RIGHT OF WAY
LIMIT OF CUT
LIMIT OF FILL
CENTRE ALIGNMENT
WATER COURSE

HDR

THE REGIONAL MUNICIPALITY OF DURHAM

MAY 22, 2014

SCALE
HORIZONTAL 10m 0 10m
VERTICAL 2m 0 2m

ROSSLAND ROAD EXTENSION (REGIONAL ROAD 28)
STATION 15+940 TO 16+330

SHEET NO. 17

FILENAME: C:\pwworking\qht\d0694346\HDR- PP Rossland.dwg
PLOTDATE: May 19, 2014 - 6:16pm
PLOTTED BY: mhui

Appendix E:
Signal Timing Plan

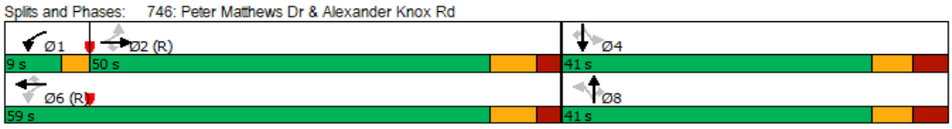
INTERSECTION SIGNAL TIMING REPORT

Location	Alexander Knox Rd @ Peter Matthews Dr				
Date	2024-06-19	**C&E No.**	57149288	**Prepared by**	M. Patel
Prepared for	BA Group				

AM Peak (5:30-9:00)

Phase Number	1	2	4	6	8
Movement	WBL	EBTL	SBTL	WBTL	NBTL
Lead/Lag	Lead	Lag			
Lead-Lag Optimize	Yes	Yes			
Recall Mode	None	C-Max	None	C-Max	None
Maximum Split (s)	9	50	41	59	41
Maximum Split (%)	9.0%	50.0%	41.0%	59.0%	41.0%
Minimum Split (s)	8	41	41	41	41
Yellow Time (s)	3	4.9	4.6	4.9	4.6
All-Red Time (s)	0	2.7	3.8	2.7	3.8
Minimum Initial (s)	5	20	8	20	8
Vehicle Extension (s)	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0
Walk Time (s)		7	7	7	7
Flash Dont Walk (s)		25	25	25	25
Intersection Summary					
Cycle Length			100		
Control Type			Actuated-Coordinated		
Natural Cycle			90		
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green					

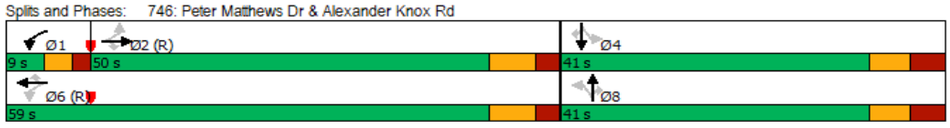
Splits and Phases: 746: Peter Matthews Dr & Alexander Knox Rd



PM Peak (14:30-20:00)

Phase Number	1	2	4	6	8
Movement	WBL	EBTL	SBTL	WBTL	NBTL
Lead/Lag	Lead	Lag			
Lead-Lag Optimize	Yes	Yes			
Recall Mode	None	C-Max	None	C-Max	None
Maximum Split (s)	9	50	41	59	41
Maximum Split (%)	9.0%	50.0%	41.0%	59.0%	41.0%
Minimum Split (s)	8	41	41	41	41
Yellow Time (s)	3	4.9	4.6	4.9	4.6
All-Red Time (s)	2	2.7	3.8	2.7	3.8
Minimum Initial (s)	3	20	8	20	8
Vehicle Extension (s)	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0
Walk Time (s)		7	7	7	7
Flash Dont Walk (s)		25	25	25	25
Intersection Summary					
Cycle Length			100		
Control Type			Actuated-Coordinated		
Natural Cycle			90		
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green					

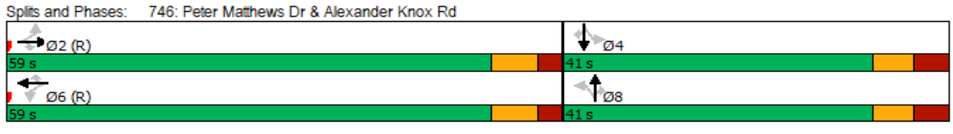
Splits and Phases: 746: Peter Matthews Dr & Alexander Knox Rd



Weekend Peak (9:00-22:00)

Phase Number	2	4	6	8
Movement	EBTL	SBTL	WBTL	NBTL
Lead/Lag				
Lead-Lag Optimize				
Recall Mode	C-Max	None	C-Max	None
Maximum Split (s)	59	41	59	41
Maximum Split (%)	59.0%	41.0%	59.0%	41.0%
Minimum Split (s)	41	41	41	41
Yellow Time (s)	4.9	4.6	4.9	4.6
All-Red Time (s)	2.7	3.8	2.7	3.8
Minimum Initial (s)	20	8	20	8
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	7	7	7	7
Flash Dont Walk (s)	25	25	25	25
Intersection Summary				
Cycle Length			100	
Control Type			Actuated-Coordinated	
Natural Cycle			85	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green				

Splits and Phases: 746: Peter Matthews Dr & Alexander Knox Rd



**Please note a concerted effort has been made to ensure the accuracy and completeness of the data provided, however, inadvertent errors or omissions can still occur. Please bring any errors or omissions to the Region's attention.*

Appendix F:
Synchro Sheets

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	402	27	152	408	54	217
v/c Ratio	0.17	0.03	0.25	0.18	0.18	0.48
Control Delay	2.3	1.0	11.2	8.6	21.3	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.3	1.0	11.2	8.6	21.3	9.4
Queue Length 50th (m)	0.9	0.0	7.5	10.0	10.8	0.0
Queue Length 95th (m)	18.0	0.3	31.5	31.7	7.2	40.8
Internal Link Dist (m)	207.0			193.2	101.9	
Turn Bay Length (m)		135.0	115.0			
Base Capacity (vph)	2320	997	610	2320	665	721
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.03	0.25	0.18	0.08	0.30

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	370	25	140	375	50	200
Future Volume (vph)	370	25	140	375	50	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.3	3.3	3.5	3.5	3.5
Total Lost time (s)	7.6	7.6	7.6	7.6	8.4	8.4
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00	0.97	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	0.99	1.00	0.99	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3500	1491	1697	3500	1725	1525
Flt Permitted	1.00	1.00	0.52	1.00	0.95	1.00
Satd. Flow (perm)	3500	1491	921	3500	1725	1525
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	402	27	152	408	54	217
RTOR Reduction (vph)	0	9	0	0	0	179
Lane Group Flow (vph)	402	18	152	408	54	38
Confl. Peds. (#/hr)		15	15		15	15
Turn Type	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases		2	6		8	8
Actuated Green, G (s)	66.3	66.3	66.3	66.3	17.7	17.7
Effective Green, g (s)	66.3	66.3	66.3	66.3	17.7	17.7
Actuated g/C Ratio	0.66	0.66	0.66	0.66	0.18	0.18
Clearance Time (s)	7.6	7.6	7.6	7.6	8.4	8.4
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2320	988	610	2320	305	269
v/s Ratio Prot	0.11			0.12		
v/s Ratio Perm		0.01	c0.17		c0.03	0.03
v/c Ratio	0.17	0.02	0.25	0.18	0.18	0.14
Uniform Delay, d1	6.4	5.7	6.8	6.4	35.0	34.7
Progression Factor	0.25	0.21	1.00	1.00	0.66	1.56
Incremental Delay, d2	0.2	0.0	1.0	0.2	0.3	0.2
Delay (s)	1.8	1.2	7.8	6.6	23.4	54.3
Level of Service	A	A	A	A	C	D
Approach Delay (s)	1.7			6.9	48.2	
Approach LOS	A			A	D	

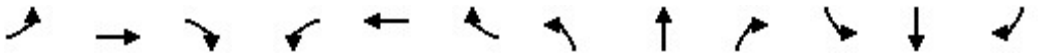
Intersection Summary			
HCM 2000 Control Delay	14.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.23		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	77.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	38	27	11	22	16	212	5	168	5
v/c Ratio	0.16	0.04	0.05	0.03	0.02	0.09	0.01	0.07	0.00
Control Delay	31.3	0.1	27.2	0.1	12.7	10.8	3.0	3.3	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.3	0.1	27.2	0.1	12.7	10.8	3.0	3.3	0.6
Queue Length 50th (m)	7.5	0.0	2.1	0.0	1.3	9.4	0.3	5.1	0.0
Queue Length 95th (m)	13.2	0.0	5.7	0.0	6.9	24.3	m1.0	9.3	m0.3
Internal Link Dist (m)		69.5		62.7		160.2		153.9	
Turn Bay Length (m)	50.0		50.0		130.0		110.0		100.0
Base Capacity (vph)	535	980	533	935	809	2490	776	2490	1054
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	0.07	0.03	0.02	0.02	0.02	0.09	0.01	0.07	0.00

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	0	25	10	0	20	15	195	0	5	155	5
Future Volume (vph)	35	0	25	10	0	20	15	195	0	5	155	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.5	3.3	3.3	3.5	3.3	3.3	3.5	3.3	3.3	3.5	3.3
Total Lost time (s)	8.4	8.4		8.4	8.4		7.6	7.6		7.6	7.6	7.6
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.97		1.00	0.97		1.00	1.00		1.00	1.00	0.95
Flpb, ped/bikes	0.99	1.00		0.99	1.00		0.98	1.00		0.98	1.00	1.00
Frt	1.00	0.85		1.00	0.85		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1687	1525		1687	1525		1673	3500		1675	3500	1458
Flt Permitted	0.74	1.00		0.74	1.00		0.65	1.00		0.62	1.00	1.00
Satd. Flow (perm)	1320	1525		1314	1525		1137	3500		1092	3500	1458
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	38	0	27	11	0	22	16	212	0	5	168	5
RTOR Reduction (vph)	0	23	0	0	18	0	0	0	0	0	0	2
Lane Group Flow (vph)	38	4	0	11	4	0	16	212	0	5	168	3
Confl. Peds. (#/hr)	15		15	15		15	15		15	15		15
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		4
Actuated Green, G (s)	16.1	16.1		16.1	16.1		67.9	67.9		67.9	67.9	67.9
Effective Green, g (s)	16.1	16.1		16.1	16.1		67.9	67.9		67.9	67.9	67.9
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.68	0.68		0.68	0.68	0.68
Clearance Time (s)	8.4	8.4		8.4	8.4		7.6	7.6		7.6	7.6	7.6
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	212	245		211	245		772	2376		741	2376	989
v/s Ratio Prot		0.00			0.00			c0.06			0.05	
v/s Ratio Perm	c0.03			0.01			0.01			0.00		0.00
v/c Ratio	0.18	0.02		0.05	0.01		0.02	0.09		0.01	0.07	0.00
Uniform Delay, d1	36.2	35.3		35.5	35.3		5.2	5.5		5.2	5.4	5.2
Progression Factor	1.00	1.00		1.00	1.00		1.25	1.34		0.29	0.40	1.00
Incremental Delay, d2	0.4	0.0		0.1	0.0		0.0	0.1		0.0	0.1	0.0
Delay (s)	36.6	35.3		35.6	35.3		6.6	7.4		1.5	2.2	5.2
Level of Service	D	D		D	D		A	A		A	A	A
Approach Delay (s)		36.1			35.4			7.4			2.3	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	11.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.11		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	73.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

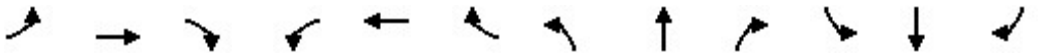
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	10	20	190	5	5	190
Future Volume (Veh/h)	10	20	190	5	5	190
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	22	207	5	5	207
Pedestrians	15		15			15
Lane Width (m)	3.3		3.4			3.4
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		1			1
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	350	134			227	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	350	134			227	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	97			100	
cM capacity (veh/h)	604	870			1323	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	33	104	104	5	5	104	104
Volume Left	11	0	0	0	5	0	0
Volume Right	22	0	0	5	0	0	0
cSH	759	1700	1700	1700	1323	1700	1700
Volume to Capacity	0.04	0.06	0.06	0.00	0.00	0.06	0.06
Queue Length 95th (m)	1.1	0.0	0.0	0.0	0.1	0.0	0.0
Control Delay (s)	10.0	0.0	0.0	0.0	7.7	0.0	0.0
Lane LOS	A				A		
Approach Delay (s)	10.0	0.0			0.2		
Approach LOS	A						

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	22.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	16	27	65	5	22	196	11	5	207	5
v/c Ratio	0.07	0.04	0.27	0.01	0.03	0.08	0.01	0.01	0.08	0.00
Control Delay	27.7	0.1	33.9	0.0	10.1	8.2	0.0	27.0	18.9	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.7	0.1	33.9	0.0	10.1	8.2	0.0	27.0	18.9	2.6
Queue Length 50th (m)	3.0	0.0	12.7	0.0	1.0	4.9	0.0	0.2	5.0	0.0
Queue Length 95th (m)	7.2	0.0	20.0	0.0	6.0	16.1	0.0	4.2	29.8	0.1
Internal Link Dist (m)		181.2		257.7		214.3			148.3	
Turn Bay Length (m)	50.0		50.0		120.0		110.0	110.0		110.0
Base Capacity (vph)	583	954	572	964	775	2473	1047	783	2473	1047
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.03	0.11	0.01	0.03	0.08	0.01	0.01	0.08	0.00

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	0	25	60	0	5	20	180	10	5	190	5
Future Volume (vph)	15	0	25	60	0	5	20	180	10	5	190	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.5	3.3	3.3	3.5	3.3	3.3	3.5	3.3	3.3	3.5	3.3
Total Lost time (s)	8.4	8.4		8.4	8.4		7.6	7.6	7.6	7.6	7.6	7.6
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.97		1.00	0.97		1.00	1.00	0.95	1.00	1.00	0.95
Flpb, ped/bikes	0.99	1.00		0.99	1.00		0.98	1.00	1.00	0.98	1.00	1.00
Frt	1.00	0.85		1.00	0.85		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1687	1525		1687	1525		1675	3500	1458	1674	3500	1458
Flt Permitted	0.75	1.00		0.74	1.00		0.62	1.00	1.00	0.63	1.00	1.00
Satd. Flow (perm)	1340	1525		1314	1525		1097	3500	1458	1108	3500	1458
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	0	27	65	0	5	22	196	11	5	207	5
RTOR Reduction (vph)	0	23	0	0	4	0	0	0	4	0	0	2
Lane Group Flow (vph)	16	4	0	65	1	0	22	196	7	5	207	3
Confl. Peds. (#/hr)	15		15	15		15	15		15	15		15
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		4
Actuated Green, G (s)	16.5	16.5		16.5	16.5		67.5	67.5	67.5	67.5	67.5	67.5
Effective Green, g (s)	16.5	16.5		16.5	16.5		67.5	67.5	67.5	67.5	67.5	67.5
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.68	0.68	0.68	0.68	0.68	0.68
Clearance Time (s)	8.4	8.4		8.4	8.4		7.6	7.6	7.6	7.6	7.6	7.6
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	221	251		216	251		740	2362	984	747	2362	984
v/s Ratio Prot		0.00			0.00			0.06			c0.06	
v/s Ratio Perm	0.01			c0.05			0.02		0.01	0.00		0.00
v/c Ratio	0.07	0.02		0.30	0.00		0.03	0.08	0.01	0.01	0.09	0.00
Uniform Delay, d1	35.3	35.0		36.7	34.9		5.4	5.6	5.3	5.3	5.6	5.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	2.54	2.31	1.00
Incremental Delay, d2	0.1	0.0		0.8	0.0		0.1	0.1	0.0	0.0	0.1	0.0
Delay (s)	35.4	35.0		37.5	34.9		5.5	5.7	5.3	13.5	13.1	5.3
Level of Service	D	C		D	C		A	A	A	B	B	A
Approach Delay (s)		35.2			37.3			5.6			12.9	
Approach LOS		D			D			A			B	

Intersection Summary			
HCM 2000 Control Delay	14.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.13		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	73.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	505	98	293	446	38	185
v/c Ratio	0.29	0.12	0.47	0.19	0.12	0.44
Control Delay	10.5	1.9	10.9	8.7	17.7	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.5	1.9	10.9	8.7	17.7	6.1
Queue Length 50th (m)	9.4	0.0	12.2	10.7	7.6	0.0
Queue Length 95th (m)	40.2	1.3	48.1	34.8	4.1	6.4
Internal Link Dist (m)	207.0			193.2	101.9	
Turn Bay Length (m)		135.0	115.0			
Base Capacity (vph)	1753	795	657	2324	552	613
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.12	0.45	0.19	0.07	0.30

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	465	90	270	410	35	170
Future Volume (vph)	465	90	270	410	35	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.3	3.3	3.5	3.5	3.5
Total Lost time (s)	7.6	7.6	5.0	7.6	8.4	8.4
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00	0.97	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3500	1491	1706	3500	1725	1525
Flt Permitted	1.00	1.00	0.42	1.00	0.95	1.00
Satd. Flow (perm)	3500	1491	746	3500	1725	1525
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	505	98	293	446	38	185
RTOR Reduction (vph)	0	49	0	0	0	152
Lane Group Flow (vph)	505	49	293	446	38	33
Confl. Peds. (#/hr)		15	15		15	15
Turn Type	NA	Perm	pm+pt	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases		2	6		8	8
Actuated Green, G (s)	50.1	50.1	66.4	66.4	17.6	17.6
Effective Green, g (s)	50.1	50.1	66.4	66.4	17.6	17.6
Actuated g/C Ratio	0.50	0.50	0.66	0.66	0.18	0.18
Clearance Time (s)	7.6	7.6	5.0	7.6	8.4	8.4
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1753	746	603	2324	303	268
v/s Ratio Prot	0.14		c0.05	0.13		
v/s Ratio Perm		0.03	c0.27		c0.02	0.02
v/c Ratio	0.29	0.07	0.49	0.19	0.13	0.12
Uniform Delay, d1	14.6	12.9	7.1	6.5	34.7	34.7
Progression Factor	0.56	0.30	1.00	1.00	0.57	0.69
Incremental Delay, d2	0.4	0.2	0.6	0.2	0.2	0.2
Delay (s)	8.5	4.0	7.7	6.7	19.9	24.3
Level of Service	A	A	A	A	B	C
Approach Delay (s)	7.8			7.1	23.5	
Approach LOS	A			A	C	

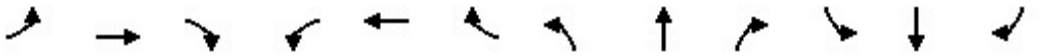
Intersection Summary			
HCM 2000 Control Delay	9.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	73.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	22	22	5	11	38	190	5	22	348	22
v/c Ratio	0.09	0.04	0.02	0.01	0.05	0.07	0.00	0.03	0.13	0.02
Control Delay	29.2	0.1	26.0	0.0	11.8	9.5	2.8	8.4	7.3	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.2	0.1	26.0	0.0	11.8	9.5	2.8	8.4	7.3	4.0
Queue Length 50th (m)	4.3	0.0	1.0	0.0	3.3	8.7	0.0	1.5	14.7	0.0
Queue Length 95th (m)	8.8	0.0	3.4	0.0	13.4	22.9	0.0	m6.0	36.7	m2.2
Internal Link Dist (m)		69.5		62.7		160.2			153.9	
Turn Bay Length (m)	50.0		50.0		130.0		110.0	110.0		100.0
Base Capacity (vph)	487	804	483	939	730	2660	1122	846	2660	1122
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.03	0.01	0.01	0.05	0.07	0.00	0.03	0.13	0.02

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	0	20	5	0	10	35	175	5	20	320	20
Future Volume (vph)	20	0	20	5	0	10	35	175	5	20	320	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.5	3.3	3.3	3.5	3.3	3.3	3.5	3.3	3.3	3.5	3.3
Total Lost time (s)	8.4	8.4		8.4	8.4		7.6	7.6	7.6	7.6	7.6	7.6
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.97		1.00	0.97		1.00	1.00	0.95	1.00	1.00	0.95
Flpb, ped/bikes	0.99	1.00		0.99	1.00		0.98	1.00	1.00	0.98	1.00	1.00
Frt	1.00	0.85		1.00	0.85		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1687	1525		1687	1525		1681	3500	1458	1674	3500	1458
Flt Permitted	0.75	1.00		0.74	1.00		0.54	1.00	1.00	0.63	1.00	1.00
Satd. Flow (perm)	1333	1525		1320	1525		961	3500	1458	1114	3500	1458
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	0	22	5	0	11	38	190	5	22	348	22
RTOR Reduction (vph)	0	19	0	0	9	0	0	0	2	0	0	7
Lane Group Flow (vph)	22	3	0	5	2	0	38	190	3	22	348	15
Confl. Peds. (#/hr)	15		15	15		15	15		15	15		15
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		4
Actuated Green, G (s)	14.4	14.4		14.4	14.4		69.6	69.6	69.6	69.6	69.6	69.6
Effective Green, g (s)	14.4	14.4		14.4	14.4		69.6	69.6	69.6	69.6	69.6	69.6
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.70	0.70	0.70	0.70	0.70	0.70
Clearance Time (s)	8.4	8.4		8.4	8.4		7.6	7.6	7.6	7.6	7.6	7.6
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	191	219		190	219		668	2436	1014	775	2436	1014
v/s Ratio Prot		0.00			0.00			0.05			c0.10	
v/s Ratio Perm	c0.02			0.00			0.04		0.00	0.02		0.01
v/c Ratio	0.12	0.01		0.03	0.01		0.06	0.08	0.00	0.03	0.14	0.02
Uniform Delay, d1	37.3	36.7		36.8	36.7		4.8	4.9	4.6	4.7	5.1	4.7
Progression Factor	1.00	1.00		1.00	1.00		1.23	1.25	1.00	0.86	0.96	1.00
Incremental Delay, d2	0.3	0.0		0.1	0.0		0.2	0.1	0.0	0.1	0.1	0.0
Delay (s)	37.5	36.7		36.8	36.7		6.1	6.2	4.6	4.1	5.1	4.7
Level of Service	D	D		D	D		A	A	A	A	A	A
Approach Delay (s)		37.1			36.7			6.1			5.0	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.14		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	73.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

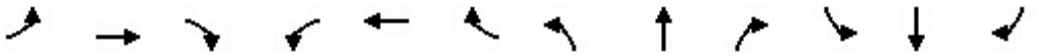
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	10	205	15	20	315
Future Volume (Veh/h)	5	10	205	15	20	315
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	11	223	16	22	342
Pedestrians	15		15			15
Lane Width (m)	3.3		3.4			3.4
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		1			1
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	468	142			254	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	468	142			254	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	99			98	
cM capacity (veh/h)	503	860			1293	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	16	112	112	16	22	171	171
Volume Left	5	0	0	0	22	0	0
Volume Right	11	0	0	16	0	0	0
cSH	704	1700	1700	1700	1293	1700	1700
Volume to Capacity	0.02	0.07	0.07	0.01	0.02	0.10	0.10
Queue Length 95th (m)	0.6	0.0	0.0	0.0	0.4	0.0	0.0
Control Delay (s)	10.2	0.0	0.0	0.0	7.8	0.0	0.0
Lane LOS	B				A		
Approach Delay (s)	10.2	0.0			0.5		
Approach LOS	B						

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	29.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	11	22	38	5	65	245	38	11	315	22
v/c Ratio	0.05	0.04	0.16	0.01	0.09	0.09	0.03	0.01	0.12	0.02
Control Delay	27.2	0.1	31.3	0.0	9.5	7.5	1.6	28.9	20.0	14.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.2	0.1	31.3	0.0	9.5	7.5	1.6	28.9	20.0	14.3
Queue Length 50th (m)	2.1	0.0	7.5	0.0	2.8	5.6	0.0	0.5	7.3	0.0
Queue Length 95th (m)	5.7	0.0	13.2	0.0	14.1	19.6	2.9	7.5	44.6	7.2
Internal Link Dist (m)		181.2		257.7		214.3			148.3	
Turn Bay Length (m)	50.0		50.0		120.0		110.0	110.0		110.0
Base Capacity (vph)	516	839	509	896	753	2658	1121	804	2658	1121
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.03	0.07	0.01	0.09	0.09	0.03	0.01	0.12	0.02

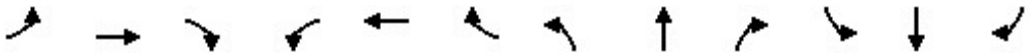
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	0	20	35	0	5	60	225	35	10	290	20
Future Volume (vph)	10	0	20	35	0	5	60	225	35	10	290	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.5	3.3	3.3	3.5	3.3	3.3	3.5	3.3	3.3	3.5	3.3
Total Lost time (s)	8.4	8.4		8.4	8.4		7.6	7.6	7.6	7.6	7.6	7.6
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.97		1.00	0.97		1.00	1.00	0.95	1.00	1.00	0.95
Flpb, ped/bikes	0.99	1.00		0.99	1.00		0.98	1.00	1.00	0.98	1.00	1.00
Frt	1.00	0.85		1.00	0.85		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1687	1525		1687	1525		1680	3500	1458	1677	3500	1458
Flt Permitted	0.75	1.00		0.74	1.00		0.56	1.00	1.00	0.60	1.00	1.00
Satd. Flow (perm)	1340	1525		1320	1525		991	3500	1458	1058	3500	1458
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	0	22	38	0	5	65	245	38	11	315	22
RTOR Reduction (vph)	0	19	0	0	4	0	0	0	12	0	0	7
Lane Group Flow (vph)	11	3	0	38	1	0	65	245	26	11	315	15
Confl. Peds. (#/hr)	15		15	15		15	15		15	15		15
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		4
Actuated Green, G (s)	14.5	14.5		14.5	14.5		69.5	69.5	69.5	69.5	69.5	69.5
Effective Green, g (s)	14.5	14.5		14.5	14.5		69.5	69.5	69.5	69.5	69.5	69.5
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.70	0.70	0.70	0.70	0.70	0.70
Clearance Time (s)	8.4	8.4		8.4	8.4		7.6	7.6	7.6	7.6	7.6	7.6
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	194	221		191	221		688	2432	1013	735	2432	1013
v/s Ratio Prot		0.00			0.00			0.07			c0.09	
v/s Ratio Perm	0.01			c0.03			0.07		0.02	0.01		0.01
v/c Ratio	0.06	0.01		0.20	0.00		0.09	0.10	0.03	0.01	0.13	0.02
Uniform Delay, d1	36.9	36.6		37.6	36.6		5.0	5.0	4.7	4.7	5.1	4.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	2.80	2.67	1.00
Incremental Delay, d2	0.1	0.0		0.5	0.0		0.3	0.1	0.0	0.0	0.1	0.0
Delay (s)	37.0	36.7		38.2	36.6		5.3	5.1	4.8	13.2	13.8	4.7
Level of Service	D	D		D	D		A	A	A	B	B	A
Approach Delay (s)		36.8			38.0			5.1			13.2	
Approach LOS		D			D			A			B	

Intersection Summary			
HCM 2000 Control Delay	11.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.14		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	15		

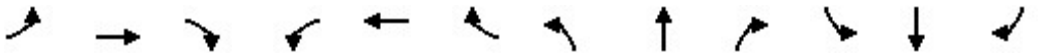
c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	120	543	16	130	592	125	5	717	65	54	321	87
v/c Ratio	0.28	0.27	0.02	0.29	0.30	0.14	0.02	0.77	0.15	0.50	0.34	0.19
Control Delay	9.1	7.3	0.2	14.4	12.2	4.7	5.8	24.4	3.3	47.2	29.8	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.1	7.3	0.2	14.4	12.2	4.7	5.8	24.4	3.3	47.2	29.8	6.5
Queue Length 50th (m)	4.6	10.9	0.0	12.8	30.8	3.1	0.8	76.4	3.4	9.3	27.6	0.0
Queue Length 95th (m)	11.8	20.4	m0.0	28.7	47.6	12.7	m0.3	8.4	0.0	21.7	36.8	10.6
Internal Link Dist (m)		207.0			193.1			123.0			170.5	
Turn Bay Length (m)	145.0		135.0	115.0		75.0	120.0		110.0	120.0		100.0
Base Capacity (vph)	428	2003	878	456	2003	891	393	1386	629	158	1386	642
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.27	0.02	0.29	0.30	0.14	0.01	0.52	0.10	0.34	0.23	0.14

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	500	15	120	545	115	5	660	60	50	295	80
Future Volume (vph)	110	500	15	120	545	115	5	660	60	50	295	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.5	3.3	3.3	3.5	3.3	3.3	3.5	3.3	3.3	3.5	3.3
Total Lost time (s)	7.6	7.6	7.6	7.6	7.6	7.6	8.4	8.4	8.4	8.4	8.4	8.4
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	0.99	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1700	3500	1491	1699	3500	1491	1695	3500	1491	1703	3500	1491
Flt Permitted	0.42	1.00	1.00	0.45	1.00	1.00	0.56	1.00	1.00	0.22	1.00	1.00
Satd. Flow (perm)	749	3500	1491	797	3500	1491	995	3500	1491	400	3500	1491
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	120	543	16	130	592	125	5	717	65	54	321	87
RTOR Reduction (vph)	0	0	7	0	0	38	0	0	48	0	0	64
Lane Group Flow (vph)	120	543	9	130	592	87	5	717	17	54	321	23
Confl. Peds. (#/hr)	15		15	15		15	15		15	15		15
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	57.2	57.2	57.2	57.2	57.2	57.2	26.8	26.8	26.8	26.8	26.8	26.8
Effective Green, g (s)	57.2	57.2	57.2	57.2	57.2	57.2	26.8	26.8	26.8	26.8	26.8	26.8
Actuated g/C Ratio	0.57	0.57	0.57	0.57	0.57	0.57	0.27	0.27	0.27	0.27	0.27	0.27
Clearance Time (s)	7.6	7.6	7.6	7.6	7.6	7.6	8.4	8.4	8.4	8.4	8.4	8.4
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	428	2002	852	455	2002	852	266	938	399	107	938	399
v/s Ratio Prot		0.16			c0.17			c0.20			0.09	
v/s Ratio Perm	0.16		0.01	0.16		0.06	0.01		0.01	0.13		0.02
v/c Ratio	0.28	0.27	0.01	0.29	0.30	0.10	0.02	0.76	0.04	0.50	0.34	0.06
Uniform Delay, d1	10.9	10.8	9.2	10.9	11.0	9.7	26.9	33.7	27.1	31.0	29.5	27.2
Progression Factor	0.58	0.60	1.00	1.00	1.00	1.00	0.24	0.56	0.41	1.00	1.00	1.00
Incremental Delay, d2	1.6	0.3	0.0	1.6	0.4	0.2	0.0	3.6	0.0	3.7	0.2	0.1
Delay (s)	7.9	6.8	9.2	12.5	11.4	10.0	6.4	22.5	11.1	34.7	29.7	27.3
Level of Service	A	A	A	B	B	A	A	C	B	C	C	C
Approach Delay (s)		7.1			11.4			21.5			29.8	
Approach LOS		A			B			C			C	

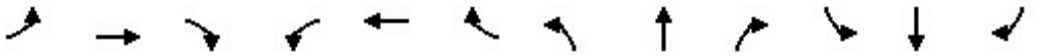
Intersection Summary			
HCM 2000 Control Delay	16.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	98.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	33	228	5	38	141	728	5	380	82
v/c Ratio	0.14	0.50	0.03	0.12	0.23	0.31	0.01	0.16	0.08
Control Delay	30.8	8.0	26.4	16.0	15.2	14.1	16.4	11.5	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.8	8.0	26.4	16.0	15.2	14.1	16.4	11.5	6.8
Queue Length 50th (m)	6.5	1.0	1.0	3.1	14.5	42.2	0.3	12.3	0.0
Queue Length 95th (m)	11.9	17.3	3.4	9.6	45.6	93.4	m2.2	33.2	8.6
Internal Link Dist (m)		69.5		62.6		160.2		132.8	
Turn Bay Length (m)	50.0		50.0		130.0		110.0		100.0
Base Capacity (vph)	514	741	347	669	618	2324	434	2324	995
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	0.06	0.31	0.01	0.06	0.23	0.31	0.01	0.16	0.08

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	5	205	5	15	20	130	670	0	5	350	75
Future Volume (vph)	30	5	205	5	15	20	130	670	0	5	350	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.5	3.3	3.3	3.5	3.3	3.3	3.5	3.3	3.3	3.5	3.3
Total Lost time (s)	8.4	8.4		8.4	8.4		7.6	7.6		7.6	7.6	7.6
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.97		1.00	0.99		1.00	1.00		1.00	1.00	0.95
Flpb, ped/bikes	0.99	1.00		0.99	1.00		0.98	1.00		0.99	1.00	1.00
Frt	1.00	0.85		1.00	0.91		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1688	1532		1694	1657		1683	3500		1694	3500	1458
Flt Permitted	0.73	1.00		0.49	1.00		0.53	1.00		0.37	1.00	1.00
Satd. Flow (perm)	1301	1532		877	1657		932	3500		654	3500	1458
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	5	223	5	16	22	141	728	0	5	380	82
RTOR Reduction (vph)	0	184	0	0	18	0	0	0	0	0	0	28
Lane Group Flow (vph)	33	44	0	5	20	0	141	728	0	5	380	54
Confl. Peds. (#/hr)	15		15	15		15	15		15	15		15
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		4
Actuated Green, G (s)	17.6	17.6		17.6	17.6		66.4	66.4		66.4	66.4	66.4
Effective Green, g (s)	17.6	17.6		17.6	17.6		66.4	66.4		66.4	66.4	66.4
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.66	0.66		0.66	0.66	0.66
Clearance Time (s)	8.4	8.4		8.4	8.4		7.6	7.6		7.6	7.6	7.6
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	228	269		154	291		618	2324		434	2324	968
v/s Ratio Prot		c0.03			0.01			c0.21			0.11	
v/s Ratio Perm	0.03			0.01			0.15			0.01		0.04
v/c Ratio	0.14	0.16		0.03	0.07		0.23	0.31		0.01	0.16	0.06
Uniform Delay, d1	34.8	35.0		34.1	34.4		6.7	7.1		5.7	6.3	5.9
Progression Factor	1.00	1.00		1.00	1.00		1.44	1.49		1.54	1.35	2.29
Incremental Delay, d2	0.3	0.3		0.1	0.1		0.8	0.3		0.0	0.1	0.1
Delay (s)	35.1	35.3		34.2	34.5		10.4	11.0		8.8	8.7	13.5
Level of Service	D	D		C	C		B	B		A	A	B
Approach Delay (s)		35.2			34.4			10.9			9.5	
Approach LOS		D			C			B			A	

Intersection Summary			
HCM 2000 Control Delay	15.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	30	770	0	15	560
Future Volume (Veh/h)	5	30	770	0	15	560
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	33	837	0	16	609
Pedestrians	15		15			15
Lane Width (m)	3.3		3.4			3.4
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		1			1
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1204	448			852	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1204	448			852	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	94			98	
cM capacity (veh/h)	169	545			774	

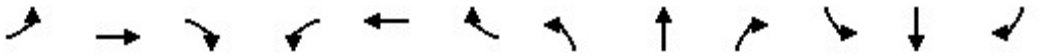
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	38	418	418	0	16	304	304
Volume Left	5	0	0	0	16	0	0
Volume Right	33	0	0	0	0	0	0
cSH	422	1700	1700	1700	774	1700	1700
Volume to Capacity	0.09	0.25	0.25	0.00	0.02	0.18	0.18
Queue Length 95th (m)	2.4	0.0	0.0	0.0	0.5	0.0	0.0
Control Delay (s)	14.4	0.0	0.0	0.0	9.8	0.0	0.0
Lane LOS	B				A		
Approach Delay (s)	14.4	0.0			0.2		
Approach LOS	B						

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	35.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	16	27	65	5	22	821	11	5	603	5
v/c Ratio	0.07	0.06	0.27	0.01	0.04	0.33	0.01	0.01	0.24	0.00
Control Delay	27.7	0.3	33.9	0.0	10.4	9.5	0.0	18.2	13.0	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.7	0.3	33.9	0.0	10.4	9.5	0.0	18.2	13.0	0.6
Queue Length 50th (m)	3.0	0.0	12.7	0.0	1.0	25.4	0.0	0.2	9.3	0.0
Queue Length 95th (m)	7.2	0.0	20.0	0.0	6.2	68.2	0.0	m2.6	67.8	m0.2
Internal Link Dist (m)		115.3		196.7		193.5			152.4	
Turn Bay Length (m)	50.0		50.0		120.0		110.0	110.0		110.0
Base Capacity (vph)	476	669	467	611	533	2473	1047	415	2473	1047
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.04	0.14	0.01	0.04	0.33	0.01	0.01	0.24	0.00

Intersection Summary

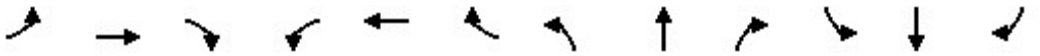
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	0	25	60	0	5	20	755	10	5	555	5
Future Volume (vph)	15	0	25	60	0	5	20	755	10	5	555	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.5	3.3	3.3	3.5	3.3	3.3	3.5	3.3	3.3	3.5	3.3
Total Lost time (s)	8.4	8.4		8.4	8.4		7.6	7.6	7.6	7.6	7.6	7.6
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.97		1.00	0.97		1.00	1.00	0.95	1.00	1.00	0.95
Flpb, ped/bikes	0.99	1.00		0.99	1.00		0.99	1.00	1.00	0.99	1.00	1.00
Frt	1.00	0.85		1.00	0.85		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1687	1525		1687	1525		1690	3500	1458	1696	3500	1458
Flt Permitted	0.75	1.00		0.74	1.00		0.42	1.00	1.00	0.33	1.00	1.00
Satd. Flow (perm)	1340	1525		1314	1525		754	3500	1458	587	3500	1458
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	0	27	65	0	5	22	821	11	5	603	5
RTOR Reduction (vph)	0	23	0	0	4	0	0	0	4	0	0	2
Lane Group Flow (vph)	16	4	0	65	1	0	22	821	7	5	603	3
Confl. Peds. (#/hr)	15		15	15		15	15		15	15		15
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		4
Actuated Green, G (s)	16.5	16.5		16.5	16.5		67.5	67.5	67.5	67.5	67.5	67.5
Effective Green, g (s)	16.5	16.5		16.5	16.5		67.5	67.5	67.5	67.5	67.5	67.5
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.68	0.68	0.68	0.68	0.68	0.68
Clearance Time (s)	8.4	8.4		8.4	8.4		7.6	7.6	7.6	7.6	7.6	7.6
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	221	251		216	251		508	2362	984	396	2362	984
v/s Ratio Prot		0.00			0.00			c0.23			0.17	
v/s Ratio Perm	0.01			c0.05			0.03		0.01	0.01		0.00
v/c Ratio	0.07	0.02		0.30	0.00		0.04	0.35	0.01	0.01	0.26	0.00
Uniform Delay, d1	35.3	35.0		36.7	34.9		5.4	6.9	5.3	5.3	6.4	5.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.68	1.49	1.00
Incremental Delay, d2	0.1	0.0		0.8	0.0		0.2	0.4	0.0	0.1	0.3	0.0
Delay (s)	35.4	35.0		37.5	34.9		5.6	7.3	5.3	9.0	9.8	5.3
Level of Service	D	C		D	C		A	A	A	A	A	A
Approach Delay (s)		35.2			37.3			7.2			9.7	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	73.4%	ICU Level of Service	D
Analysis Period (min)	15		

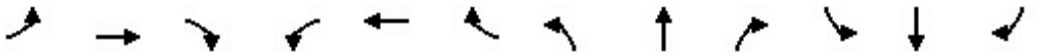
c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	125	723	38	168	609	82	16	446	120	174	864	114
v/c Ratio	0.43	0.54	0.06	0.46	0.33	0.10	0.16	0.41	0.22	0.67	0.79	0.21
Control Delay	29.1	25.6	0.7	16.4	14.9	3.6	9.7	14.5	2.2	42.6	36.6	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.1	25.6	0.7	16.4	14.9	3.6	9.7	14.5	2.2	42.6	36.6	5.3
Queue Length 50th (m)	18.1	68.4	0.0	16.4	36.3	0.0	1.5	38.5	1.3	30.3	83.0	0.0
Queue Length 95th (m)	m21.5	47.2	m0.5	30.8	53.6	7.8	1.2	7.6	0.0	52.2	99.2	11.2
Internal Link Dist (m)		207.0			193.1			123.0			170.5	
Turn Bay Length (m)	145.0		135.0	115.0		75.0	120.0		110.0	120.0		100.0
Base Capacity (vph)	288	1343	641	375	1842	823	114	1281	621	303	1281	617
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.54	0.06	0.45	0.33	0.10	0.14	0.35	0.19	0.57	0.67	0.18

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	665	35	155	560	75	15	410	110	160	795	105
Future Volume (vph)	115	665	35	155	560	75	15	410	110	160	795	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.5	3.3	3.3	3.5	3.3	3.3	3.5	3.3	3.3	3.5	3.3
Total Lost time (s)	7.6	7.6	7.6	5.0	7.6	7.6	8.4	8.4	8.4	8.4	8.4	8.4
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1700	3500	1491	1709	3500	1491	1705	3500	1491	1698	3500	1491
Flt Permitted	0.42	1.00	1.00	0.26	1.00	1.00	0.17	1.00	1.00	0.46	1.00	1.00
Satd. Flow (perm)	754	3500	1491	460	3500	1491	311	3500	1491	830	3500	1491
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	125	723	38	168	609	82	16	446	120	174	864	114
RTOR Reduction (vph)	0	0	23	0	0	39	0	0	82	0	0	78
Lane Group Flow (vph)	125	723	15	168	609	43	16	446	38	174	864	36
Confl. Peds. (#/hr)	15		15	15		15	15		15	15		15
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	38.3	38.3	38.3	52.6	52.6	52.6	31.4	31.4	31.4	31.4	31.4	31.4
Effective Green, g (s)	38.3	38.3	38.3	52.6	52.6	52.6	31.4	31.4	31.4	31.4	31.4	31.4
Actuated g/C Ratio	0.38	0.38	0.38	0.53	0.53	0.53	0.31	0.31	0.31	0.31	0.31	0.31
Clearance Time (s)	7.6	7.6	7.6	5.0	7.6	7.6	8.4	8.4	8.4	8.4	8.4	8.4
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	288	1340	571	358	1841	784	97	1099	468	260	1099	468
v/s Ratio Prot		c0.21		c0.04	0.17			0.13			c0.25	
v/s Ratio Perm	0.17		0.01	0.20		0.03	0.05		0.03	0.21		0.02
v/c Ratio	0.43	0.54	0.03	0.47	0.33	0.06	0.16	0.41	0.08	0.67	0.79	0.08
Uniform Delay, d1	22.8	24.0	19.2	13.8	13.6	11.6	24.8	27.0	24.1	29.8	31.2	24.1
Progression Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.26	0.51	0.30	1.00	1.00	1.00
Incremental Delay, d2	4.2	1.4	0.1	1.0	0.5	0.1	0.8	0.2	0.1	6.4	3.8	0.1
Delay (s)	25.9	24.3	19.3	14.7	14.1	11.7	7.3	13.9	7.4	36.2	35.0	24.2
Level of Service	C	C	B	B	B	B	A	B	A	D	D	C
Approach Delay (s)		24.3			14.0			12.4			34.1	
Approach LOS		C			B			B			C	

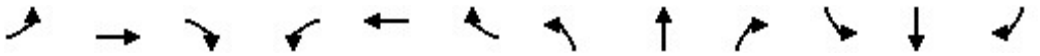
Intersection Summary			
HCM 2000 Control Delay	23.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	100.5%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	43	250	21	293	522	5	22	772	277
v/c Ratio	0.17	0.62	0.07	0.73	0.23	0.01	0.04	0.34	0.27
Control Delay	30.6	21.0	13.7	38.3	13.6	1.0	8.4	6.5	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.6	21.0	13.7	38.3	13.6	1.0	8.4	6.5	1.5
Queue Length 50th (m)	8.0	21.4	0.9	41.9	16.4	0.0	0.8	15.1	0.0
Queue Length 95th (m)	14.4	38.3	6.1	#113.8	70.1	m0.0	m2.5	36.5	9.1
Internal Link Dist (m)		69.5	62.6		160.2			132.8	
Turn Bay Length (m)	50.0			130.0		110.0	110.0		100.0
Base Capacity (vph)	430	596	532	400	2276	968	530	2276	1045
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	0.10	0.42	0.04	0.73	0.23	0.01	0.04	0.34	0.27

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	10	220	0	5	15	270	480	5	20	710	255
Future Volume (vph)	40	10	220	0	5	15	270	480	5	20	710	255
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.5	3.3	3.3	3.5	3.3	3.3	3.5	3.3	3.3	3.5	3.3
Total Lost time (s)	8.4	8.4			8.4		7.6	7.6	7.6	7.6	7.6	7.6
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.98			0.98		1.00	1.00	0.95	1.00	1.00	0.95
Flpb, ped/bikes	0.99	1.00			1.00		0.99	1.00	1.00	0.99	1.00	1.00
Frt	1.00	0.86			0.89		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1687	1539			1599		1695	3500	1458	1688	3500	1458
Flt Permitted	0.74	1.00			1.00		0.34	1.00	1.00	0.46	1.00	1.00
Satd. Flow (perm)	1321	1539			1599		615	3500	1458	815	3500	1458
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	43	11	239	0	5	16	293	522	5	22	772	277
RTOR Reduction (vph)	0	113	0	0	13	0	0	0	2	0	0	97
Lane Group Flow (vph)	43	137	0	0	8	0	293	522	3	22	772	180
Confl. Peds. (#/hr)	15		15	15		15	15		15	15		15
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			6			2	
Permitted Phases	4			8			6		6	2		2
Actuated Green, G (s)	19.0	19.0			19.0		65.0	65.0	65.0	65.0	65.0	65.0
Effective Green, g (s)	19.0	19.0			19.0		65.0	65.0	65.0	65.0	65.0	65.0
Actuated g/C Ratio	0.19	0.19			0.19		0.65	0.65	0.65	0.65	0.65	0.65
Clearance Time (s)	8.4	8.4			8.4		7.6	7.6	7.6	7.6	7.6	7.6
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	250	292			303		399	2275	947	529	2275	947
v/s Ratio Prot		c0.09			0.01			0.15			0.22	
v/s Ratio Perm	0.03						c0.48		0.00	0.03		0.12
v/c Ratio	0.17	0.47			0.03		0.73	0.23	0.00	0.04	0.34	0.19
Uniform Delay, d1	33.9	36.0			33.0		11.7	7.2	6.1	6.3	7.9	7.0
Progression Factor	1.00	1.00			1.00		1.64	1.47	1.00	0.80	0.63	0.63
Incremental Delay, d2	0.3	1.2			0.0		11.1	0.2	0.0	0.1	0.3	0.4
Delay (s)	34.2	37.2			33.0		30.3	10.8	6.1	5.2	5.3	4.8
Level of Service	C	D			C		C	B	A	A	A	A
Approach Delay (s)		36.8			33.0			17.7			5.2	
Approach LOS		D			C			B			A	

Intersection Summary			
HCM 2000 Control Delay	14.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	20	735	5	40	885
Future Volume (Veh/h)	5	20	735	5	40	885
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	22	799	5	43	962
Pedestrians	15		15			15
Lane Width (m)	3.3		3.4			3.4
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		1			1
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1396	430			819	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1396	430			819	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	96			95	
cM capacity (veh/h)	122	560			796	

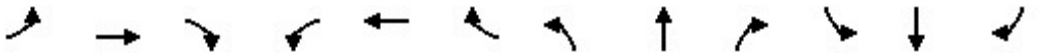
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	27	400	400	5	43	481	481
Volume Left	5	0	0	0	43	0	0
Volume Right	22	0	0	5	0	0	0
cSH	337	1700	1700	1700	796	1700	1700
Volume to Capacity	0.08	0.23	0.23	0.00	0.05	0.28	0.28
Queue Length 95th (m)	2.1	0.0	0.0	0.0	1.4	0.0	0.0
Control Delay (s)	16.6	0.0	0.0	0.0	9.8	0.0	0.0
Lane LOS	C				A		
Approach Delay (s)	16.6	0.0			0.4		
Approach LOS	C						

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	40.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	11	22	38	5	65	810	38	11	935	22
v/c Ratio	0.05	0.06	0.16	0.01	0.17	0.30	0.03	0.02	0.35	0.02
Control Delay	27.2	0.3	31.3	0.0	11.4	8.7	1.6	11.2	10.5	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.2	0.3	31.3	0.0	11.4	8.7	1.6	11.2	10.5	2.2
Queue Length 50th (m)	2.1	0.0	7.5	0.0	3.0	22.5	0.0	0.1	6.4	0.0
Queue Length 95th (m)	5.7	0.0	13.2	0.0	16.4	67.1	2.9	m3.5	108.3	m1.1
Internal Link Dist (m)		115.3		196.7		193.5			152.4	
Turn Bay Length (m)	50.0		50.0		120.0		110.0	110.0		110.0
Base Capacity (vph)	449	569	443	592	392	2658	1121	457	2658	1121
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.04	0.09	0.01	0.17	0.30	0.03	0.02	0.35	0.02

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	0	20	35	0	5	60	745	35	10	860	20
Future Volume (vph)	10	0	20	35	0	5	60	745	35	10	860	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.5	3.3	3.3	3.5	3.3	3.3	3.5	3.3	3.3	3.5	3.3
Total Lost time (s)	8.4	8.4		8.4	8.4		7.6	7.6	7.6	7.6	7.6	7.6
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.97		1.00	0.97		1.00	1.00	0.95	1.00	1.00	0.95
Flpb, ped/bikes	0.99	1.00		0.99	1.00		0.99	1.00	1.00	0.99	1.00	1.00
Frt	1.00	0.85		1.00	0.85		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1687	1525		1687	1525		1699	3500	1458	1696	3500	1458
Flt Permitted	0.75	1.00		0.74	1.00		0.29	1.00	1.00	0.34	1.00	1.00
Satd. Flow (perm)	1340	1525		1320	1525		516	3500	1458	601	3500	1458
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	0	22	38	0	5	65	810	38	11	935	22
RTOR Reduction (vph)	0	19	0	0	4	0	0	0	12	0	0	7
Lane Group Flow (vph)	11	3	0	38	1	0	65	810	26	11	935	15
Confl. Peds. (#/hr)	15		15	15		15	15		15	15		15
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			6			2	
Permitted Phases	4			8			6		6	2		2
Actuated Green, G (s)	14.5	14.5		14.5	14.5		69.5	69.5	69.5	69.5	69.5	69.5
Effective Green, g (s)	14.5	14.5		14.5	14.5		69.5	69.5	69.5	69.5	69.5	69.5
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.70	0.70	0.70	0.70	0.70	0.70
Clearance Time (s)	8.4	8.4		8.4	8.4		7.6	7.6	7.6	7.6	7.6	7.6
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	194	221		191	221		358	2432	1013	417	2432	1013
v/s Ratio Prot		0.00			0.00			0.23			c0.27	
v/s Ratio Perm	0.01			c0.03			0.13		0.02	0.02		0.01
v/c Ratio	0.06	0.01		0.20	0.00		0.18	0.33	0.03	0.03	0.38	0.02
Uniform Delay, d1	36.9	36.6		37.6	36.6		5.3	6.1	4.7	4.7	6.3	4.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.06	1.17	1.00
Incremental Delay, d2	0.1	0.0		0.5	0.0		1.1	0.4	0.0	0.1	0.4	0.0
Delay (s)	37.0	36.7		38.2	36.6		6.4	6.4	4.8	5.1	7.8	4.7
Level of Service	D	D		D	D		A	A	A	A	A	A
Approach Delay (s)		36.8			38.0			6.4			7.7	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Appendix G:
Traffic Warrant Analysis

Input Data Sheet

Analysis Sheet | Results Sheet | Proposed Collision

GO TO Justification:

What are the intersecting roadways? Peter Matthews Dr / Doverwood Ave & Northern Site Access

What is the direction of the Main Road street? North-South

When was the data collected?

Justification 1 - 4: Volume Warrants

a.- Number of lanes on the Main Road? 2 or more

b.- Number of lanes on the Minor Road? 1

c.- How many approaches? 4

d.- What is the operating environment? Urban Population >= 10,000 AND Speed < 70 km/hr

e.- What is the eight hour vehicle volume at the intersection? (Please fill in table below)

Hour Ending	Main Northbound Approach			Minor Eastbound Approach			Main Southbound Approach			Minor Westbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
8:00	7	167	0	30	0	22	2	133	2	9	0	17	
9:00	15	195	0	35	0	25	5	155	5	10	0	20	
10:00	7	114	0	6	0	4	2	90	2	2	0	3	
12:00	12	100	0	12	0	8	4	80	4	3	0	7	
13:00	10	97	1	5	0	5	6	177	6	1	0	3	
17:00	32	172	5	15	0	15	18	315	18	4	0	7	
18:00	35	175	5	20	0	20	20	320	20	5	0	10	
19:00	29	158	4	21	0	21	16	288	16	5	0	10	
Total	**147**	**1,178**	**15**	**144**	**0**	**120**	**73**	**1,558**	**73**	**39**	**0**	**77**	**0**

Justification 5: Collision Experience

Preceding Months	Number of Collisions*
1-12	
13-24	
25-36	

* Include only collisions that are susceptable to correction through the installation of traffic signal control

Justification 6: Pedestrian Volume

a.- Please fill in table below summarizing total pedestrians crossing major roadway at the intersection or in proximity to the intersection (zones). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume									
Factored 8 hour pedestrian volume	0		0		0		0		
% Assigned to crossing rate									
Net 8 Hour Pedestrian Volume at Crossing									0
Net 8 Hour Vehicular Volume on Street Being Crossed									

b.- Please fill in table below summarizing delay to pedestrians crossing major roadway at the intersection or in proximity to the intersection (zones). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume	0	0	0	0	0	0	0	0	
Total 8 hour pedestrians delayed greater than 10 seconds									
Factored volume of total pedestrians	0		0		0		0		
Factored volume of delayed pedestrians	0		0		0		0		
% Assigned to Crossing Rate	0%		0%		0%		0%		
Net 8 Hour Volume of Total Pedestrians									0
Net 8 Hour Volume of Delayed Pedestrians									0

Analysis Sheet

Input Sheet | Results Sheet | Proposed Collision

GO TO Justification:

Intersection: Peter Matthews Dr / Doverwood Ave & Northern Site Access Count Date:

Justification 1: Minimum Vehicle Volumes

Restricted Flow Urban Conditions

Justification	Guidance Approach Lanes				Percentage Warrant								Total Across	Section Percent
	1 Lanes		2 or More Lanes		Hour Ending									
Flow Condition	FREE FLOW ☐	RESTR. FLOW ☐	FREE FLOW ☐	RESTR. FLOW ☑	8:00	9:00	10:00	12:00	13:00	17:00	18:00	19:00		
1A	480	720	600	900	389	465	230	230	311	601	630	568		
	COMPLIANCE %				43	52	26	26	35	67	70	63	380	48
1B	120	170	120	170	78	90	15	30	14	41	55	57		
	COMPLIANCE %				46	53	9	18	8	24	32	34	224	28

Restricted Flow Signal Justification 1:

Both 1A and 1B 100% Fulfilled each of 8 hours — Yes ☐ No ☑

Lesser of 1A or 1B at least 80% fulfilled each of 8 hours — Yes ☐ No ☑

Justification 2: Delay to Cross Traffic

Restricted Flow Urban Conditions

Justification	Guidance Approach Lanes				Percentage Warrant								Total Across	Section Percent
	1 lanes		2 or More lanes		Hour Ending									
Flow Condition	FREE FLOW ☐	RESTR. FLOW ☐	FREE FLOW ☐	RESTR. FLOW ☑	8:00	9:00	10:00	12:00	13:00	17:00	18:00	19:00		
2A	480	720	600	900	311	375	215	200	297	560	575	511		
	COMPLIANCE %				35	42	24	22	33	62	64	57	338	42
2B	50	75	50	75	39	45	8	15	6	19	25	26		
	COMPLIANCE %				52	60	11	20	8	25	33	35	244	31

Restricted Flow Signal Justification 2:

Both 2A and 2B 100% fulfilled each of 8 hours — Yes ☐ No ☑

Lesser of 2A or 2B at least 80% fulfilled each of 8 hours — Yes ☐ No ☑

Justification 3: Combination

Combination Justification 1 and 2

	Justification Satisfied 80% or More			Two Justifications Satisfied 80% or More	
Justification 1	Minimum Vehicle Volume	YES ☐	NO ☑	YES ☐	NO ☑
Justification 2	Delay Cross Traffic	YES ☐	NO ☑		NOT JUSTIFIED

Justification 4: Four Hour Volume

Justification	Time Period	Total Volume of Both Approaches (Main) X	Heaviest Minor Approach Y (actual)	Required Value Y (warrant threshold)	Average % Compliance	Overall % Compliance
Justification 4	9:00	375	60	538	11 %	9 %
	17:00	560	30	410	7 %	
	18:00	575	40	401	10 %	
	19:00	511	42	442	10 %	

Analysis Sheet

Input Sheet | Results Sheet | Proposed Collision

GO TO Justification:

Intersection: Peter Matthews Dr / Doverwood Ave & Northern Site Access Count Date:

Justification 5: Collision Experience

Justification	Preceding Months	% Fulfillment	Overall % Compliance
Justification 5	1-12	0 %	0 %
	13-24	0 %	
	25-36	0 %	

Justification 6: Pedestrian Volume

Pedestrian Volume Analysis

8 Hour Vehicular Volume V_8		Net 8 Hour Pedestrian Volume				
		< 200	200 - 275	276 - 475	476 - 1000	>1000
Justification 6A	< 1440	Not Justified				
	1440 - 2600					
	2601 - 7000					
	> 7000					

Pedestrian Delay Analysis

Net Total 8 Hour Volume of Total Pedestrians		Net Total 8 Hour Volume of Delayed Pedestrians		
		< 75	75 - 130	> 130
Justification 6B	< 200	Not Justified		
	200 - 300			
	> 300			

Results Sheet

Input Sheet | Analysis Sheet | Proposed Collision

GO TO Justification:

Intersection: Peter Matthews Dr / Doverwood Ave & Northern Site Count Date:

Summary Results

Justification			Compliance	Signal Justified? YES	Signal Justified? NO
1. Minimum Vehicular Volume	A	Total Volume	48 %	☐	☑
	B	Crossing Volume	28 %		
2. Delay to Cross Traffic	A	Main Road	42 %	☐	☑
	B	Crossing Road	31 %		
3. Combination	A	Justificaton 1	28 %	☐	☑
	B	Justification 2	31 %		
4. 4-Hr Volume			9 %	☐	☑
5. Collision Experience			0 %	☐	☑
6. Pedestrians	A	Volume	Justification not met	☐	☑
	B	Delay	Justification not met		

Appendix H:
Agency Comments

City of PICKERING

Memo

To: Liam Crawford
Planner II

May 7, 2025

From: Richard Holborn
Director, Engineering Services

Copy: Division Head, Capital Projects & Infrastructure
Division Head, Water Resources & Development Services
Manager, Landscape & Parks Development
Manager, Transportation & Traffic
Manager, Water Resources
Supervisor, Development Approvals
Coordinator, Development Approvals

Subject: Draft Plan of Subdivision SP-2025-01 – 1st Submission
Zoning By-law Amendment Application A01/25
- TaccGate Development Inc.
- Parcel 24
File: D-4100

The Engineering Services Department has reviewed the documents submitted in support of the above applications and comment as follows:

Please ensure the next submission includes a letter re-stating the City's comment followed by an appropriate response, immediately afterwards, outlining how the proponent addressed the comment. The response must also indicate any revision that affect the overall design.

Development Services

General Comments

1. The Owner shall satisfy all requirements, financial and otherwise, of the City of Pickering. This shall include, among other matters, the execution of a subdivision agreement between the owner and the City of Pickering concerning the provision and installation of services, grading, drainage and other local services and including the following:

    a. that the Owner satisfy the Director, Engineering Services respecting a stormwater drainage and management system to service all the lands in the subdivision, and any provisions regarding easements.

b. that the Owner satisfy the Director, Engineering Services for contributions for stormwater management maintenance fees.

c. that the Owner satisfy the Director, Engineering Services respecting submission and approval of a grading control plan.

d. that the Owner satisfy the Director, Engineering Services respecting the submission and approval of a geotechnical soils analysis.

e. that the Owner satisfy the Director, Engineering Services respecting the authorization from abutting landowners for all offsite grading.

f. that the Owner satisfy the Director, Engineering Services respecting the construction of storm sewers, sidewalks and boulevard designs.

g. that the Owner satisfy the City respecting arrangements for the provision of all services required by the City.

h. that the Owner satisfy the appropriate authorities respecting arrangements for the provision of underground wiring, street lighting, cable television, natural gas and other similar services.

i. that the cost of any relocation, extension, alteration or extraordinary maintenance of existing services necessitated by this development shall be the responsibility of the Subdivider.

j. that the Owner convey to the City at no costs:

    i. any easements as required.

    ii. any reserves as required by the City.

k. that the Owner convey any easement to any utility to facilitate the installation of their services in a location(s) to the satisfaction of the City and the utility.

l. that the Owner arrange at no cost to the City any easements required on third party lands for servicing and such easements shall be in a location as determined by the City and/or the Region and are to be granted upon request at any time after draft approval.

m. that the Owner make arrangements with the City respecting a Construction Management Plan, such Plan to contain, among other things:

    i. details of erosion and sedimentation controls during all phases of construction and provide maintenance requirements to maintain these controls.

    ii. addressing the parking of vehicles and the storage of construction and building materials during servicing and house construction and ensuring that such locations will not impede the flow of traffic or emergency vehicles on either existing streets or the proposed public street.

    iii. confirmation that the City's Noise By-law will be adhered to and that all contractors, trades and suppliers are advised of this By-law.

iv. the provision of mud and dust control on all roads within and adjacent to the site.

v. type and timing of construction fencing.

vi. location of construction trailers.

vii. details of the temporary construction access.

n. that the Owner satisfy the City with respect to the provision of temporary fencing around the entire perimeter of the subject lands during construction, prior to the commencement of any works.

o. that the Owner submit a boulevard street tree planting plan to the satisfaction of the City.

p. that the Owner ensure that the engineering plans are coordinated with the streetscape/architectural control guidelines and further that the engineering plans coordinate the driveway, street hardware and street trees to ensure that conflicts do not exist, asphalt is minimized, and all objectives of the streetscape/architectural control guidelines can be achieved.

q. that the Owner satisfy the City respecting the submission of appropriate engineering drawings that detail, among other things, City services, roads, storm sewers, sidewalks, lot grading, streetlights, fencing and tree planting, and financially-secure such works.

r. that the engineering plans be coordinated with the architectural design objectives.

2. Fencing will be required for lots and blocks, adjacent to, or backing onto, erosion hazard and/or unstable slope areas, backing on to Open Space Lands, and as per the Noise Attenuation Report.

3. The owner shall agree in the Subdivision Agreement:

   a. to commit to provide appropriate information to all perspective buyers of lots adjacent to the publicly owned natural heritage system through all agreements for purchase and sale, sales information and community maps to ensure that the landowners are well informed that private use and/or access to the open space blocks shall not be permitted and reflect the intent of the following:

      "The open space (NHS) adjacent to the subject property is considered to be a part of the publicly owned natural heritage system and will be maintained for environmental protection. Please note that uses such as private picnics, barbeque or garden areas; and/or dumping of refuse (i.e. grass/garden clippings, household compostable goods, garbage, etc.) are not permitted on these lands."

4. The City of Pickering's Fill & Topsoil Disturbance By-law prohibits soil disturbance, removal or importation of material to the site unless a permit has been issued. No on-site works, including vegetation removal, prior to Draft Plan Approval is permitted.

5. That the owner, through the approval of the Utility Coordination Plan for the location(s), is to enter into an agreement with Canada Post Corporation for the provision of community mailboxes including technical specifications and financial terms.

6. That the Owner satisfy the City of Pickering with regards to the Development Services Engineering Review Fee, Residential Lot Grading Review Fee, and Development Services Inspection Fees.

7. As per the Development Services User Fee Schedule, provide the payment in the amount of $8,275.00 for the review of the Functional Servicing and Stormwater Management Report (FSSR).

8. Confirm all proposed construction works, including restoration requirements, within the Peter Matthews Drive right-of-way, are to the satisfaction of the Region of Durham. Provide a copy to the City of Pickering.

9. A License agreement will be required from Infrastructure Ontario (IO) for any works within their lands. Provide a copy with the detailed design.

10. The land (Street C) between Street A and Peter Matthews Drive is designated as a future road and will be conveyed to the City. This land must be obtained from IO to facilitate the development of Street C.

11. Include a Key Plan on all drawings.

12. Provide a storm sewer with 1.5m offset from the centreline of the road when there are only two pipes (i.e., only storm and sanity sewers). Update all drawings as required.

13. One new City of Pickering Benchmark will be required to be established within this subdivision.

14. Additional comments will be provided with the detailed design submissions.

Draft Plan of Subdivision

15. Coordinate the plan with the Lot Siting Plan and the Functional Grading and Servicing Plan, and make any necessary revisions based on the comments below.

Lot Plan & Lot Siting Plan

16. Development Services has no comments on the Lot Plan & Siting Plan.

Functional Servicing and Stormwater Management Report (FSSR)

17. Phased erosion and sediment control plans will be required for each phase of construction (earthworks, site servicing, and building construction) with the detailed design.

Functional Grading & Servicing Plan (GR-1 & SP-1)

18. Provide the City of Pickering benchmark that was used to obtain the topographical information on the Functional Grading and Servicing Plans.

19. Provide spot elevations for the buffer zone area.

20. Provide the slopes with direction of flow for the proposed bioswales.

21. A 1.2m black vinyl coated chain-link fence is required where lots are within 40m of a significant wetland feature within the NHS.

22. All pedestrian crossings should be at stop-controlled intersections. The location of the crossing at Lot 26 will be reviewed during the detailed design.

SWMF Pond 25 – Plan View (SWMF-1)

23. Development Services has no comments on the SWMF Pond 25 – Plan View.

SWMF Pond 25 – Cross Sections (SWMF-2)

24. Development Services has no comments on the SWMF Pond 25 – Cross Sections.

Geotechnical Investigation

25. The Geotechnical Investigation is marked “DRAFT”. Provide the final report with the detailed design.

Hydrogeological Investigation

26. Confirm whether construction dewatering for linear servicing and SWMF construction occurs separately or concurrently and update the report to determine whether an Environmental Activity and Sector Registry (EASR) registration or a Permit to Take Water (PTTW) will be required from the Ministry of Environment, Conservation and Parks (MECP).

27. Ensure the Hydrogeological Investigation is sealed (signed and dated) in accordance with PEO guidelines.

28. The Hydrogeological Investigation is marked “DRAFT”. Provide the final report with the detailed design.

Phase One Environmental Site Assessment

29. Sections 8.1 and 8.2 of the Phase One Environmental Site Assessment recommend that a Phase Two Environmental Site Assessment (Phase Two ESA) and a Record of Site Condition (RSC) be completed. Provide a copy of each assessment with the next submission.

Environmental Noise Assessment

30. Development Services has no comments on the Environmental Noise Assessment.

Archaeological Assessments

31. Development Services has no comments on the Archaeological Assessments.

Traffic Sensitivity Analysis

32. Development Services has no comments on the Traffic Sensitivity Analysis.

Water Resources Comments

1. Please be advised that this application has been reviewed for the functional design of the proposed subdivision. Detailed review of elements such as the storm sewer sizing, control structures, and other details of the stormwater management facility (SWMF) design shall be deferred to the detailed design stage.

2. The location of the SWMF outfall must be walked in-field to determine the most suitable location. The proponent shall arrange a site meeting with City staff, and other stakeholders, prior to approval of the functional design. The proponent shall have the proposed outfall location staked in-field prior to the site walk.

3. The City does not support the proposal to capture and convey 100-year clean woodlot water flows to the SWMF. The woodlot flows shall be captured and piped to the east limit of the site, at the Street A and Street B intersection.

4. The requirement to provide roadside bioswales adjacent to the NHS is not technically feasible due to implementation and interaction the with woodlot drainage as per the previous comment. Revise the design accordingly.

5. The target release rates have been overestimated based on the total tributary drainage area used. Based on pre-development conditions, 7.31 ha of external and subdivision drainage (ID 1-PRE) is within DCHU Catchment # 35. Since SWMF#25 discharges to the Ganatsekiagon Creek East Branch, i.e., to Catchment # 35, area from other areas cannot be used to determine the targets. Furthermore, the post-development uncontrolled areas within 1-PRE shall be excluded from the area used to calculate the targets. Revise the design accordingly.

6. Update the Pre-Development Storm Drainage Area Plan Figure DAP-1 by hatching the areas within DCHU Catchments 34 and 35 in separate contrasting colours. Show and label the portion of uncontrolled area and hatch. Update the Legend as required. Refer to attached Pre-Development Plan (RJB) as an example.

7. Update the Post-Development Storm Drainage Area Plan Figure DAP-2 as follows:

    a. Move the “Drainage Areas To Determine Target Flow Rate” note/summary to the Pre-Development DAP-1 Figure.

---

b. The total post-development drainage area to SWMF#25 must be shown and summarized.

c. Clearly differentiate between Major and Minor areas by contrasting hatching.

d. Summarize and label the amount of uncontrolled drainage.

8. The Post-Development Imperviousness calculations, provided in Appendix B for Area A-26 have not considered lots with uncontrolled rear discharge i.e., 1 – 26, 34 – 37, and 47 – 51, resulting in underestimated imperviousness levels. Update Figure IMP-1 to account for rear uncontrolled discharge drainage scenarios and the corresponding imperviousness calculations. Furthermore, the Block 83 shall not be considered "Open Space" and revised to reflect actual imperviousness. This comment is applicable to the SWMF design, VO model, overland flow calculations, storm sewer sizing, and all other imperviousness-related design calculations.

9. To confirm whether major system flows can be conveyed overland, and, in support of the Appendix C calculations, the following must be provided:

   a. Revised geometry of Block 83 based on 4m width and barrier curb on either side.

   b. Analysis of the 15.35m ROW at lots 33 and 34.

   c. Cross-sections, showing maximum flow depth, of the 17m/15.35m ROW, and Block 83.

10. The Street C culvert shall be sized using culvert sizing methods as opposed to storm sewer sizing using Manning's Equation. Furthermore, in accordance with Section 6.2.3 of the SWM Design Guidelines, runoff coefficient adjustments must be applied to the flow calculation.

11. Provide a stamped, signed, and dated copy of the Hydrogeological Investigation by a Professional Engineer or Professional Geoscientist. The report dated September 29, 2020 by Golder is unsealed and in draft format which is not acceptable and cannot be relied on in support of the functional design.

12. ICDs and sump pumps shall not be permitted to alleviate 100-year HGL issues. Revise the House Foundation Drainage discussion in Section 7.1.2 of the FSSR.

13. Remove reference to "roof drainage" when labelling the proposed LID which is proposed to be supplied by the SWMF and not a separate RDC system.

14. Show and label the groundwater levels on all details, sections, and profiles related to the SWMFs or LIDs.

VO

15. The time to peak (Tp) for IDs EXT-1 and EXT-2 shall be calculated as 0.67xTc (time of concentration) in accordance with the VO Reference Manual. Revise the model and the Time of Lag Calculation provided in Appendix B.

16. The DUHYD command which splits the minor system flow from ID A-3 (Peter Matthews Drive) to SWMF#25 has been overestimated and shall be based on the peak flow from the 10-year storm event which is approximately 57 l/s. Review and revise the “CINLET” flowrate.

17. Be advised that the SWMF hydrology and storage volume requirements cannot be confirmed prior to addressing the previous and ensuing comments which effect the model.

SWMF

18. The perpendicular alignment of inlet HW not acceptable and must be oriented along the length to maximize sediment settling/dispersion.

19. To allow for future heavy equipment access-to/maneuvering within the main cell, the bottom width shall be a minimum of 5m. Revise the configuration accordingly.

20. A stage-volume table is required from the bottom of pond to the NWL to confirm the forebay and main cell volumes. The table shall split the forebay and main cell volumes into separate columns.

21. Provide 10-year sediment accumulation calculations to confirm that the forebay has adequate volume.

22. Reduce the berm height by setting the top of pond elevation to 0.5m above the 100-year HWL. The spillway crest shall be set at the 100-year HWL at a maximum flow depth of 20cm, with 30cm of available freeboard, in accordance with City Std. P-1000.

23. The proposed location of the emergency spillway within the berm is not ideal and shall be relocated to the north-eastern portion of the SWMF.

24. As outlined in the City’s comment letter for the Neighbourhood Functional Servicing Report for Seaton Neighbourhood (NFSSR) 16 (September 30, 2013), there are serious concerns with the known presence of a high groundwater table within the development area and SWMF blocks. Discussion regarding the need for pond liners should be broadened to include consideration of the implications of not having a liner on operations and maintenance - specifically, if high groundwater will make pond cleanouts more difficult. The City's preference at this stage would be that a liner is required wherever the groundwater table is above the pond bottom.

25. Updated Geotechnical/Hydrogeological Reports are required in support of the proposed SMWF and LID design. Additional boreholes/monitoring wells should be placed at the southeast portion of the pond berm and at the LID.

26. Access is required to all infrastructure including the outfall HW and the proposed infiltration gallery. Extend the access road as required.

27. Provide a north arrow on Figure SWMF-1

Considerations for Detailed Design

28. The City requires easements over the entire length of the natural channel, access roads, outfalls, LIDs, and all other infrastructure located outside of the development limits on Provincial lands.

29. The outfall channel design details must be provided. The proposed outfall must be adequately protected from erosive forces to prevent scouring and undermining. The design of the outfall must incorporate flow dispersion and erosion protection via control measures such as a plunge pool.

30. Please be advised that rip-rap shall not be accepted for erosion protection at spillways and overland flow routes. Please revise to match City Standards i.e., topsoil and sod over cellular confinement system.

31. Updated SWMF Geotechnical Report must be submitted in support of the detailed design. Since the SWMF berm exceeds 2.0m in height, Section 5.4.7 of the City's SWM Design Guidelines must consider, but not be limited to, the following: liner installation for seepage control and applying the Table 8 Load Cases.

32. Relocate the outfall HW at an elevation along outfall channel where the pond can be drained by gravity.

33. Provide 100-year inlet capacity calculations, assuming 50% blockage, at the DICB capturing external woodlot flows.

34. The amount of permanent pool volume provided significantly exceeds the required volume to achieve 80% TSS removal (MOE) which is not acceptable. The City understands the 3m deep redside dace criteria, however, request that half of the main cell be 3m deep at the outlet/bottom draw, while the remainder is 2m deep to reduce the volume.

Capital Projects

General Comments

1. Ensure that roads where the sidewalk switches sides are designed with the controlled intersections.

Transportation & Traffic Comments

General Comments

1. Provide sightline review calculations for the intersection of Street A and Street B.

---

2. Confirm whether the angle of intersection between Street A and B complies with the Transportation Association (TAC) guidelines.

3. Provide an AutoTurn diagram for emergency and waste collection vehicles.

Traffic Impact Study

4. In Section 1.5 of the report, confirm the posted speed limit on Alexander Knox Road, as 1.5m on-street bike lanes are proposed.

5. Table 5 shows that the northbound right-turn movement at the intersection of Peter Matthews Drive and Alexander Knox Road will have a Level of Service (LOS) of F during both the AM and PM peak hours in the interim condition. Provide an explanation for why the northbound right-turn movement would operate poorly in the interim and improve slightly in the ultimate scenario.

6. On drawing TC-02, a pedestrian crossover (PXO) is proposed at an angle, located at a 90-degree bend and sharp corner. Confirm that the proposed location does not impact driver's sightline or reduce pedestrian visibility. Additionally, confirm whether the PXO is designed in accordance with the Ontario Traffic Manual Bool 15.

7. On drawing TC-02, include the length of the dragon's teeth marking for the proposed pedestrian crossover located at the corner/bend on Street A. Confirm whether this length complies with the requirements of the TAC Guide.

8. On drawing TC-02, provide a flashing beacon for the PXO signs, as pedestrians are forced to cross at this location due to the sidewalk switching sides.

9. On drawings TC-01 and TC-02, label the widths of the proposed pedestrian crossings and confirm that they meet the requirements of the TAC Guide.

10. On drawings TC-01 and TC-02, label the curb radius dimensions at all intersection locations, including the 90 degrees bend within the subdivision.

Landscape & Parks Development Comments

1. Provide the landscape drawings with the next submission.

Richard Holb

PH:jl

Attachments: 2025 User Fee Schedule
Pre-Development Plan

City of PICKERING

City Development Department

Sent by Email

June 18, 2025

Vince Figliomeni
TACC Developments Inc.
2472 Kingston Road
Toronto, ON M1N 1V4

Subject: Zoning By-law Amendment Application A 01/25
Draft Plan of Subdivision SP-2025-01
Taccgate Developments Inc.
Part of Lot 22, Concession 4
City of Pickering

The purpose of this letter is to summarize the comments received to date regarding Zoning By-law Amendment Application A 01/25 and Draft Plan of Subdivision Application SP-2025-01. The applications propose to rezone the lands to facilitate a residential subdivision on the lands located on the east side of Peter Matthews Drive, south of Alexander Knox Road, within the Wilson Meadows Neighbourhood.

Materials and studies submitted in support of the applications have been circulated to internal departments and external agencies for comments. A Statutory Public Meeting was held April 22, 2025. Below are comments and concerns identified by the City Development Department.

City Development Department

The City Development Department has reviewed the submitted plans and supporting documents and provides the following comments:

Site Design

The applicant is seeking to rezone the property from an Agriculture zone to appropriate residential zone categories to facilitate the proposed development, consisting of 76 lots for detached dwellings, 5 blocks containing 28 townhouse units, a stormwater management block, three public open space blocks and new public streets. The applicant identified four lots requiring site-specific zoning exceptions:

- Two of the proposed lots are shallow with wide frontages. The applicant is seeking a zoning amendment to allow reduced minimum rear yard setbacks, as the lots provide larger side yards.

- Two lots backing onto Peter Matthews Drive are currently required by Zoning By-law 8149/24 to treat that side as the front lot line. The applicant is requesting a zoning modification to allow the lots to instead front onto Street B.

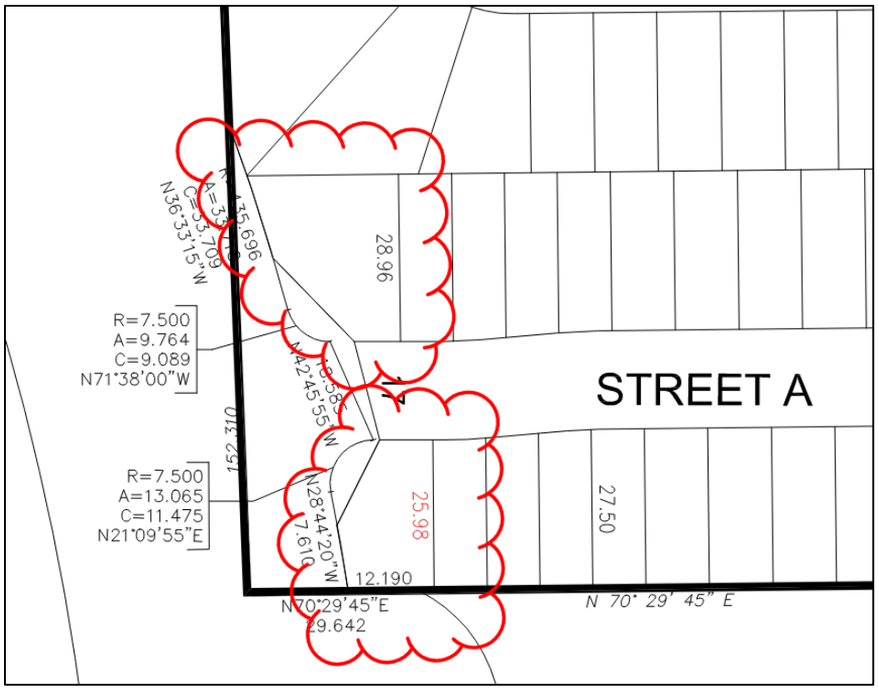
City Development staff support the proposed residential subdivision as it conforms to the vision and policies within the Official Plan and Wilson Meadows Neighbourhood Plan. However, there are several technical matters to be addressed with the next submission. A redline markup of the submitted draft plan is attached to this letter for reference.

Lot Siting Plan Details

A Lot Siting Plan has been submitted to demonstrate that certain irregular lots can accommodate appropriately sized dwellings and meet the City's zoning requirements. However, the dimensions are shown in small font that overlaps some of the lot boundaries, making them difficult to read and verify. With the next submission, please revise the plan to clearly show all measurements.

Lot Siting Plan Details - Proposed Dwellings near the Peter Matthews Intersection

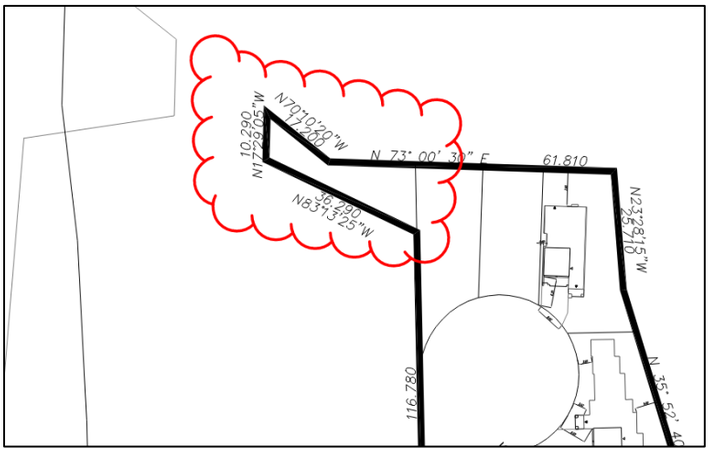
There are two lots that are next to the daylight triangles along Peter Matthews Drive, shown in red below:



Please show where the driveways will be located on these lots and ensure they do not have any operational conflict with the intersection.

Open Space Blocks

The applicant is proposing three public parkland blocks. Further discussion is required for the northernmost open space block, shown in red below:



Staff are unable to recommend municipal ownership of the proposed open space block, as the site is not adjacent to any municipal owned lands, does not have a road frontage, and does not have maintenance access. Additionally, given the parcel's size and configuration, it is not suitable for active parkland. Staff recommend that the applicant propose an alternative use for the block or explore transferring the lands to another owner.

Trailhead Connection

It is understood that the applicant met with the City on May 29, 2025. At that meeting, Engineering staff advised the applicant that a trailhead connection on this site would not be feasible, due to steep slope conditions of the valleylands to the east. Engineering has indicated that the Seaton trail network is being adjusted to go south and cross the valleylands where the slope is more favourable. A multi-use pathway will connect to the subject lands through Peter Matthews Drive and no trailhead will be required on the subject lands. Engineering will obtain trail connections at other locations throughout Seaton. Please advise how the open space in the east will be used, since it is no longer being used as a trailhead.

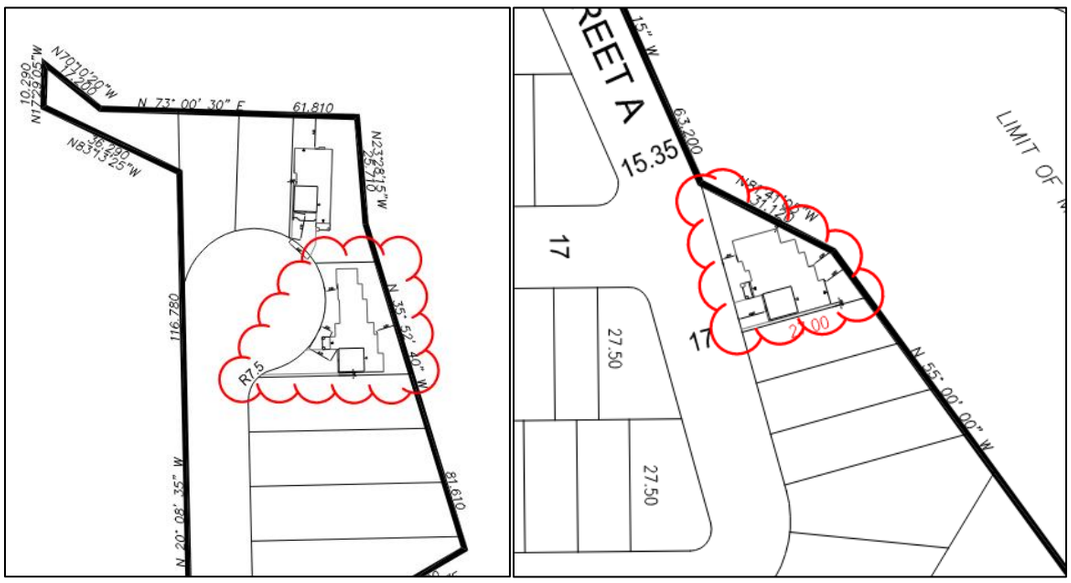
Zoning Standards

The submitted Draft Zoning By-law Amendment (the “draft by-law”) references the former Seaton Zoning By-law 7364/14. On December 16, 2024, the City of Pickering adopted Consolidated Zoning By-law 8149/24, revoking the former zoning by-law. The draft by-law must be updated to reference the new by-law, its relevant sections, and apply zoning codes that are consistent with the Seaton zoning codes outlined in Section 14. For example, the requested zoning for the detached dwellings would be the Seaton Low Density Type 1 “SLD1” Zone, rather than former “LD1” Zone. Please refer to the attached comments from the Zoning & Administration section for more details.

In addition to the above changes, please revise the draft by-law to incorporate the following changes:

Irregular Lots

The submitted draft by-law includes a site-specific amendment to reduce the required rear yard setback for certain irregular shaped lots. In the SLD1 Zone, lots are required a minimum rear yard setback of 6 metres. The provided draft by-law changes the requirement to 1.2 metres for two irregular shaped lots. Please revise the required rear yard setback to 5.0 metres. This provision should apply to the following lots, shown in red below:



Through Lots

Zoning By-law 8149/24 states that a lot with frontages along to opposite streets is considered a “through lot”. Additionally, it states that whichever street is widest should be considered the front of the lot (i.e. Peter Matthews Drive). There are two lots on the draft plan that are considered through lots, identified in red below:

The draft by-law includes multiple provisions that are intended to allow the dwellings to face towards Street B. Staff recommend removing those provisions, instead adding a provision that defines Street B as the front lot line for through lots. This keeps all the dwellings along Street B consistent and reduces the need for multiple site-specific amendments.

Public Comments/Concerns

No written or verbal comments were received from area residents regarding the applications. At the Statutory Public Meeting, the chair emphasized that the nearby future development west of Peter Matthews Drive will include community and commercial uses beneficial to current and future residents. The applicant, who owns this adjacent development, has been notified to prioritize its timely delivery and ensure coordination between the developments to provide nearby services for area residents.

Comments from Internal Departments and External Agencies

Staff from internal departments and external agencies have provided comments in relation to the subject applications, which are attached for review and follow-up:

- City of Pickering, Engineering Services, dated May 7, 2025
- City of Pickering, Zoning & Administration, dated May 8, 2025
- City of Pickering, Sustainability, dated May 6, 2025
- Region of Durham, Community Growth & Economic Development and Works Departments, dated June 16, 2025
- Durham Region Transit, dated March 20, 2025
- Toronto and Region Conservation Authority, dated April 16, 2025
- Durham District School Board, dated January 29, 2025
- Durham Catholic District School Board, dated June 12, 2025
- Elexicon, dated February 7, 2025
- Bell Canada, dated January 30, 2025
- Rogers, dated April 4, 2025
- Canada Post, dated June 16, 2025

Conclusion

With the second submission, please provide the following materials:

- **Cover Letter** (digital)
- **Matrix** (digital) providing a written response to all comments received from agencies, departments, and the City Development Department
- **Revised Lot Siting Plan** (digital), showing clear dimensions
- **Revised Draft Zoning By-law and Schedule** (digital), referencing Consolidated Zoning By-law 8149/24

For further information or clarification, please contact me at 905.420.4660, extension 1126.

Yours truly

Liam Crawford

Liam Crawford
Planner II

LC:nr
/CityDevDept/D3200/2025/SP-2025-01, A 01-25, Parcel 24/11. Status Letter/A 01-25 Status Letter.docx

Attachments
City of Pickering, Engineering Services Comments
City of Pickering, Zoning & Administration Comments
Region of Durham Comments
Durham Region Transit Comments
Toronto and Region Conservation Authority Comments
Durham District School Board
Durham Catholic District School Board
Elexicon Comments
Rogers Comments
Bell Canada Comments
Canada Post Comments

Copy: Division Head, Development Review & Urban Design
Principal Planner, Strategic Initiatives