



# 11810-11838 90 AVENUE, DELTA

Transportation Impact Study (TIS)



Jason Yuen & Caytlin Kopeck, EIT  
Transportation Engineer-in-Training  
Author

Andres Baez, P.Eng  
Regional Lead Transportation  
Reviewer

Prepared For: SYNC (90 ND) Holdings Inc.  
Date: October 22, 2025  
Our File No: 4007.B01

**WATT** VANCOUVER  
380 – 825 Homer Street  
Vancouver, BC V6B 2W2  
778-309-1253



## TABLE OF CONTENTS

|     |                                                    |    |
|-----|----------------------------------------------------|----|
| 1.0 | INTRODUCTION.....                                  | 5  |
| 1.1 | The Site Today .....                               | 5  |
| 1.2 | Proposed Development.....                          | 7  |
| 1.3 | This Report .....                                  | 7  |
| 2.0 | TRANSPORTATION CONTEXT .....                       | 8  |
| 2.1 | Road Network .....                                 | 8  |
| 2.2 | Study Intersections .....                          | 8  |
| 2.3 | Transit Network.....                               | 10 |
| 2.4 | Cycling Network .....                              | 11 |
| 2.5 | Pedestrian Environment.....                        | 11 |
| 3.0 | PROPOSED DEVELOPMENT .....                         | 13 |
| 4.0 | TRAFFIC VOLUMES .....                              | 14 |
| 4.1 | Traffic Analysis Scenarios and Design Periods..... | 14 |
| 4.2 | Existing Traffic .....                             | 14 |
| 4.3 | Background Traffic Volumes.....                    | 16 |
| 4.4 | Site Traffic Volumes.....                          | 20 |
| 4.5 | Post-Development Traffic Volumes .....             | 23 |
| 5.0 | TRAFFIC OPERATIONS ANALYSIS.....                   | 27 |
| 5.1 | Methodology.....                                   | 27 |
| 5.2 | Input and Calibration Parameters.....              | 27 |
| 5.3 | Existing (2025) Traffic Conditions.....            | 28 |
| 5.4 | Opening Day (2029) Traffic Conditions .....        | 29 |
| 5.5 | 5-Year Post Build (2034) Traffic Conditions .....  | 30 |
| 5.6 | 10-Year Post Build (2039) Traffic Conditions.....  | 32 |
| 6.0 | SITE ACCESS REVIEW .....                           | 34 |



|             |                                         |           |
|-------------|-----------------------------------------|-----------|
| <b>7.0</b>  | <b>PARKING AND LOADING REVIEW .....</b> | <b>34</b> |
| <b>8.0</b>  | <b>ON-SITE CIRCULATION .....</b>        | <b>35</b> |
| <b>9.0</b>  | <b>CONCLUSIONS.....</b>                 | <b>36</b> |
| <b>10.0</b> | <b>RECOMMENDATIONS .....</b>            | <b>37</b> |

## **APPENDICES**

|                   |                                                                      |
|-------------------|----------------------------------------------------------------------|
| <b>Appendix A</b> | Site Plan                                                            |
| <b>Appendix B</b> | LOS Background                                                       |
| <b>Appendix C</b> | Preliminary Traffic Impact Review – Acknowledgement and Consent Form |
| <b>Appendix D</b> | Swept Path Analysis                                                  |



## FIGURES

|                                                                     |    |
|---------------------------------------------------------------------|----|
| Figure 1 – Site Location .....                                      | 6  |
| Figure 2 – Existing Road Network.....                               | 9  |
| Figure 3 - Existing Cycling Network.....                            | 12 |
| Figure 4 – Existing Traffic Volumes .....                           | 15 |
| Figure 5 – Opening Day Background Traffic Volumes .....             | 17 |
| Figure 6 - 2034 Horizon Year Background Traffic Volumes .....       | 18 |
| Figure 7 - 2039 Horizon Year Background Traffic Volumes .....       | 19 |
| Figure 8 – Site Traffic Volumes .....                               | 22 |
| Figure 9 – Opening Day Post-Development Traffic Volumes .....       | 24 |
| Figure 10 - 2034 Horizon Year Post-Development Traffic Volumes..... | 25 |
| Figure 11 - 2039 Horizon Year Post-Development Traffic Volumes..... | 26 |



## TABLES

|                                                             |    |
|-------------------------------------------------------------|----|
| Table 1 - Existing Transit Services.....                    | 10 |
| Table 2 - Development Program .....                         | 13 |
| Table 3 - Trip Generation Rates.....                        | 20 |
| Table 4 - Total Vehicle Trips .....                         | 20 |
| Table 5 – Trip Distribution .....                           | 21 |
| Table 6 – Existing (2025) Traffic Operations.....           | 28 |
| Table 7 – Opening Day (2029) Traffic Operations.....        | 29 |
| Table 8 – 5-Year Post-Build (2034) Traffic Operations ..... | 31 |
| Table 9 – 10-Year Post-Build (2039) Traffic Operations..... | 33 |
| Table 10 - Parking & Loading Requirements .....             | 35 |



## 1.0 INTRODUCTION

WATT Consulting Group (WATT) was retained by SYNC (90 ND) Holdings Inc. to prepare a Transportation Impact Study (TIS) for 11810-11838 90 Avenue in Delta, BC for the City of Delta (City).

The TIS forms part of the development permit application and reviews all transportation related impacts with the proposed development and recommends any mitigation measures, if needed, to address the impacts.

### 1.1 The Site Today

The development site is bounded by 90 Avenue to the north, townhouses and a parcel of undeveloped land to the south, and single-family houses to the east and west.

The development site joins five existing lots. 11810 90 Avenue is currently a RS1 Zone (Single Detached Residential 1 Zone) and is occupied with a single-family house. 11818-11828 90 Avenue are currently a RD3 Zone (Duplex / Single Detached Residential 3 Zone) and are occupied with single-family house or duplex. 11838 90 Avenue is currently a CD414 Zone (Comprehensive Development Zone No. 414). The site location and lot layout are illustrated in **Figure 1**.



Figure 1 – Site Location



## 1.2 Proposed Development

The proposed rezoning includes 270 residential units across two six-story buildings. The full build out of the site and occupancy is expected to be in 2029.

The proposed vehicle access is off 90 Avenue between the two buildings, approximately at the middle of the site.

## 1.3 This Report

This report is provided as part of the rezoning application being submitted to the City of Delta. The contents of this report is based on the agreed upon Terms of Reference established with the City of Delta. The report contains the following:

- An overview of the transportation context in the vicinity of the site, including vehicular, pedestrian, cycling, and transit facilities, and area travel characteristics.
- An overview of the proposed development program.
- An assessment of the existing traffic activity patterns and volumes in the study area during the weekday morning and afternoon peak periods.
- An assessment of the trip generation and assignment characteristics of the proposed development.
- A review of vehicular traffic operations at intersections in the area under existing (2025), opening year (2029), five-year planning horizon (2034), and ten-year planning (2039) conditions, including an assessment of the operational impacts of the proposed development.
- A review of proposed vehicular site access and their sightlines and spacing considerations.
- A review of loading and waste collection vehicle operations.
- A review of parking requirements under the City's Zoning Bylaw.



## 2.0 TRANSPORTATION CONTEXT

### 2.1 Road Network

The existing road network, lane configuration, and intersection control are illustrated in **Figure 2**. The study area consists of three roadways.

**Scott Road / 120 Street** is a north-south arterial road that borders the City of Surrey. It is a key corridor spine that extends from King George Boulevard in the north to New McLellan Road in the south. In the study area, Scott Road / 120 Street has a four-lane cross-section north of 90 Avenue, with two through lanes in each direction. South of 90 Avenue, Scott Road / 120 Street has a five-lane cross-section, with the addition of a reserved bus lane in the southbound direction. Cycling facilities and on-street parking are not available. Sidewalks are on both sides of the road.

**90 Avenue** is an east-west local road under the jurisdiction of the City of Delta. This section of 90 Avenue extends from 112 Street in the west, to Scott Road / 120 Street in the east. 90 Avenue has a two-lane cross-section, with one lane in each direction. Cycling facilities are not available. Curbside parking is available on both sides of the road. There are sidewalks on both sides of the road with existing gaps.

**116 Street** is a north-south collector road under the jurisdiction of the City of Delta. 116 Street extends from a cul-de-sac north of Bailey Crescent in the north, to Cory Drive in the south. In the study area, 116 Street has a two-lane cross-section, with one lane in each direction. 116 Street is designated as a shared-street bike route and features signage and pavement markings. Curbside parking is available on both sides of the road. There are sidewalks on both sides of the road.

### 2.2 Study Intersections

The study area consists of two intersections.

**90 Avenue & Scott Road / 120 Street** is a signalized four-legged intersection. Two lanes and a dedicated left turn lane are available for the northbound and southbound approaches. The left turn lane for the northbound approach also allows for U-turn movements based on existing signage. A dedicated right turn lane is available for the southbound approach, except through movements are allowed for buses continuing onto the southbound reserved bus lane south of the intersection. The eastbound approach has a shared left-through lane and a dedicated right turn lane. Westbound approach has a single shared lane for all movements. Marked pedestrian crossings are available on all four legs.

**90 Avenue & 116 Street** is a four-legged intersection with pedestrian- and cyclist-actuated signal for northbound and southbound approaches and stop control for eastbound and westbound approaches. All approaches have a single shared lane for all movements. Marked pedestrian crossings are available on all four legs.

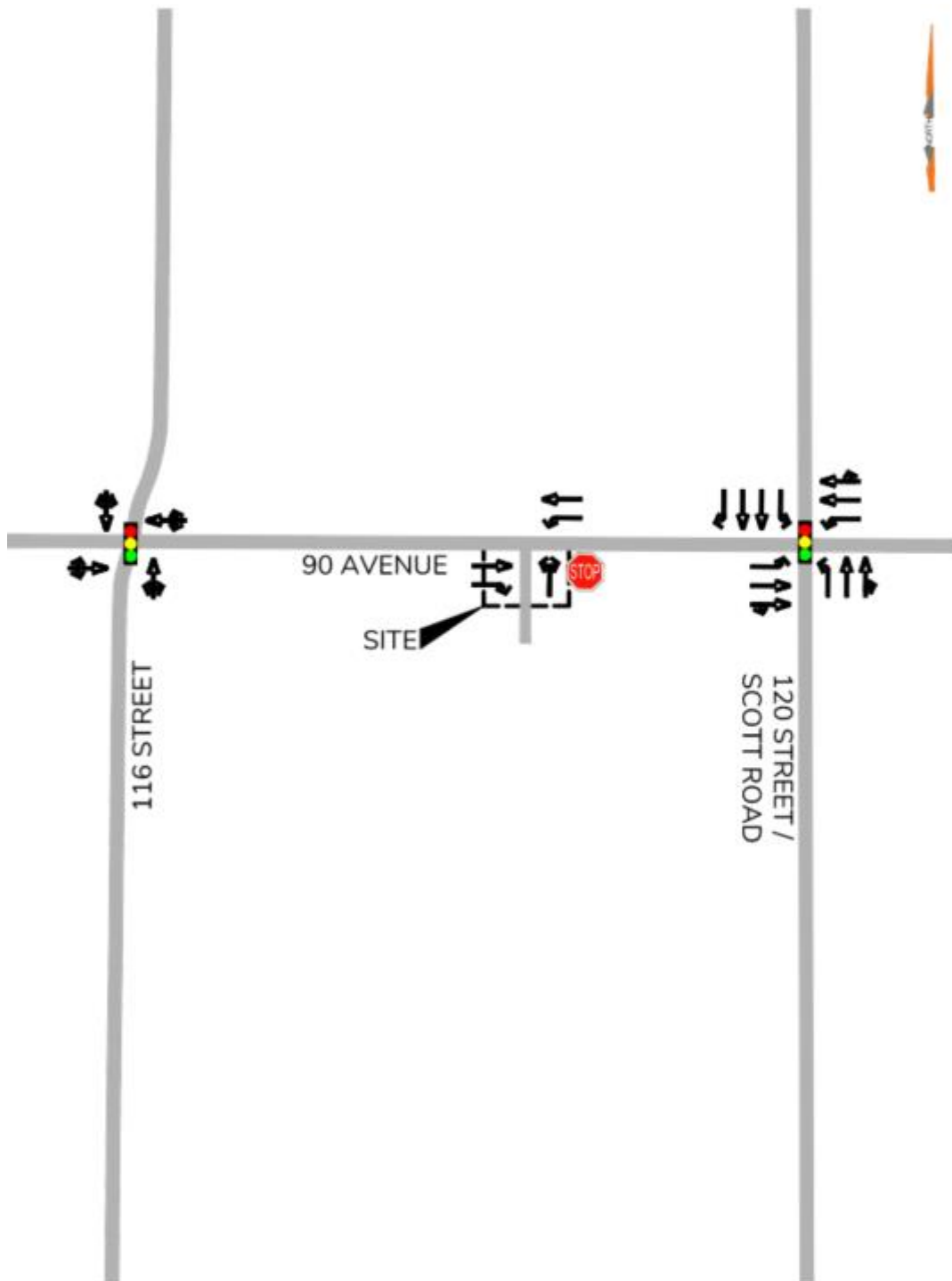


Figure 2 – Existing Road Network



2.3 Transit Network

**Table 1** summarizes the transit routes in the site vicinity. The study area is served by six bus routes, including a high-frequency / high-capacity rapid bus line (R6 Rapid Bus), which provide connections to key employment, institutional, transit exchanges and recreational locations such as South Westminster industrial area, Kwantlen Polytechnic University, Simon Fraser University, Scott Road Station, Surrey Central Station, Scottsdale, Newton Exchange, North Delta Recreational Centre, and Central City Shopping Centre. There are existing bus stops on Scott Road / 120 Street at 90 Avenue and on 116 Street at 90 Avenue, which are 350 metres (i.e. a 5-minute walk) and 500 metres (i.e. a 7-minute walk) away from the site. The R6 RapidBus stops at Scott Road / 120 Street at 92 Avenue, providing high-frequency bus service along the Scott Road / 120 Street corridor every 7.5 minutes during peak hours and 15 minutes during off-peak on regular weekdays.

Table 1 - Existing Transit Services

| Route                                                            | Direction   | Walking Distance | Service Frequency (Peak Hours) |
|------------------------------------------------------------------|-------------|------------------|--------------------------------|
| R6 RapidBus – Scott Road to Scott Road Station / Newton Exchange | North/South | 700 m            | 7.5 min                        |
| 314 – Surrey Central Station / Sunbury                           | East/West   | 350 m            | 30 min                         |
| 316 – Surrey Central Station / Scottsdale                        | North/South | 500 m            | 20 min                         |
| 319 – Scott Road Station / Newton Exchange / Scottsdale          | North/South | 350 m            | 10 min                         |
| 329 – Surrey Central Station / Scottsdale                        | North/South | 350 m            | 60 min                         |
| 391* – Scottsdale / Scott Road Station                           | North/South | 500 m            | 30 min                         |

\*Peak hour service only



## 2.4 Cycling Network

The existing area cycling network is illustrated in **Figure 3**. The site is close to the network of cycling routes in the City of Delta.

116 Street and 92 Avenue, which is approximately 450 metres west of the site and 750 metres north of the site respectively, is part of the on-street bike route. 116 Street is designated as a shared lane and has pavement markings and signage. 116 Street connects to various bike routes to the north and south. Although 90 Avenue is not part of the cycling network, cyclist-actuated signal is available at 116 Street. 92 Avenue has painted on-street bike lanes that are separated from vehicle traffic with pavement markings. To the west, the 92 Avenue bike lanes connect to 114 Street and 116 Street, which are also on-street bike lanes. Nordel Way, which is approximately 800 metres south of the site, is part of the off-street bike route as a Multi-Use Pathway (MUP). These bike lanes connect users to areas across the City.

According to the Delta Cycling Master Plan, protected bike lanes are planned on Scott Road / 120 Street, which is also part of TransLink's Major Bikeway Network (MBN). The MBN will provide safer and comfortable cycling facilities connecting Urban Centres and major destinations across Metro Vancouver. The improvement would allow for additional cycling connections in the region, and a better riding experience for cyclists of different ages and abilities.

## 2.5 Pedestrian Environment

Sidewalks are available on both sides of Scott Road / 120 Street and 116 Street. Sidewalk is on at least one side of 90 Avenue with existing gaps along both the north and south side of the road. Crosswalks are located on all legs of 90 Avenue & Scott Road / 120 Street and 90 Avenue & 116 Street. A pedestrian-actuated signal is available at 90 Avenue & 116 Street for crossing 116 Street, providing a safer pedestrian environment. The development should provide sidewalk along the site's frontage to address existing gaps within the network.



Source: Adapted from the City of Delta Cycling Master Plan (2022)

Figure 3 - Existing Cycling Network



### 3.0 PROPOSED DEVELOPMENT

The architectural and landscape site plans are provided in **Appendix A**. The transportation-related elements of the proposed site plan are summarized in **Table 2**.

Table 2 - Development Program

| Site Element      | Details                                                                                                                                                |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Residential       | 270 residential units across two six-story buildings. The units are a mix of studios, 1-bedrooms, and 2-bedrooms.                                      |
| Vehicle Parking   | A total of 330 vehicle parking spaces, including 303 spaces for residents and 27 spaces for residential visitors.                                      |
| Vehicular Access  | Access to the underground parking is proposed on 90 Avenue.                                                                                            |
| Bicycle Parking   | A total of 275 bicycle parking spaces, including 270 spaces for residents across six bike rooms and 5 spaces for residential visitors.                 |
| Cyclist Access    | Bicycle parking spaces are proposed to be located underground. Cyclists can use the vehicular access to access the underground bicycle parking.        |
| Loading           | One loading space is proposed on-site with access on 90 Avenue, located adjacent to the underground parking access, between Building 1 and Building 2. |
| Pedestrian Access | The pedestrian accesses to the two buildings are located at-grade with lobby accesses on 90 Avenue.                                                    |



## 4.0 TRAFFIC VOLUMES

### 4.1 Traffic Analysis Scenarios and Design Periods

Vehicle traffic operational analysis has been undertaken for the weekday morning (AM) and afternoon (PM) peak hour under the following conditions:

- **Existing traffic:** traffic activity under current conditions.
- **Background traffic:** traffic activity levels in the future, which includes allowances for corridor growth and other background developments.
- **Post-development traffic:** traffic activity levels in the future with the site redeveloped and projected site-generated traffic added to the road network.

Traffic operations are discussed in the following sections for these scenarios:

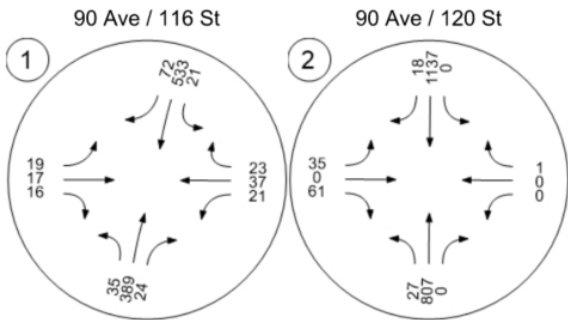
- 2025: Existing Conditions
- 2029: Opening Day, background and post-development conditions
- 2034: Five-year horizon after opening day, background and post-development conditions
- 2039: Ten-year horizon after opening day, background and post-development conditions

### 4.2 Existing Traffic

Turning movement volumes were collected on Thursday June 5<sup>th</sup>, 2025, between 6:00AM and 9:00AM to identify the AM peak hour, and 3:00PM to 6:00PM to identify the PM peak hour at the study intersections. The AM and PM peak hours were found to be between 8:00AM and 9:00AM, and 4:00PM and 5:00PM respectively. The existing traffic volumes for the weekday AM and PM peak hour are illustrated in **Figure 4**.



AM Peak Hour



PM Peak Hour

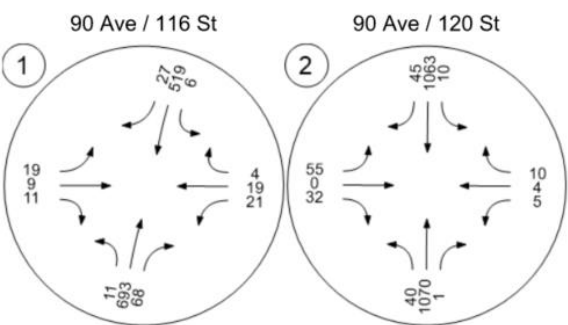


Figure 4 – Existing Traffic Volumes



### 4.3 Background Traffic Volumes

#### 4.3.1 Corridor Growth

Corridor growth for all study roads was forecast using a +2.0% annual linear growth rate applied to the existing 2025 volumes to all the horizon years. The growth rate will cover the general increase of background traffic due to the growth in the region.

#### 4.3.2 Background Developments

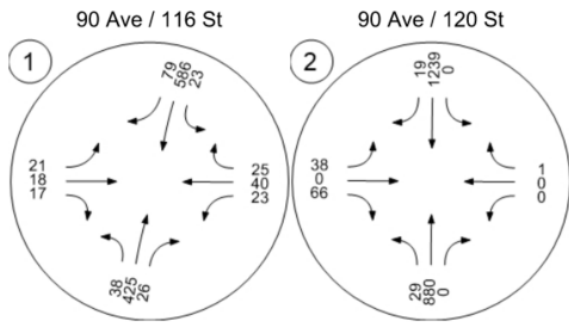
Any traffic growth due to adjacent redevelopments are included as contributors to background traffic volumes. For this study, the site generated traffic volumes from the multi-family residential development at 11944 92 Avenue is included, as requested by the City. The site-generated traffic volumes from this site were distributed to the study area road network as background traffic based on the TIS completed for the site and the existing traffic patterns at the study intersections.

#### 4.3.3 Background Traffic Volumes

Background traffic volumes are the sum of the existing traffic volumes, corridor growth, and the site generated traffic from background developments. Background traffic volumes for the 2029 opening day, 2034 five-year horizon year, and 2039 ten-year horizon year are illustrated in **Figure 5**, **Figure 6**, and **Figure 7** respectively.



AM Peak Hour



PM Peak Hour

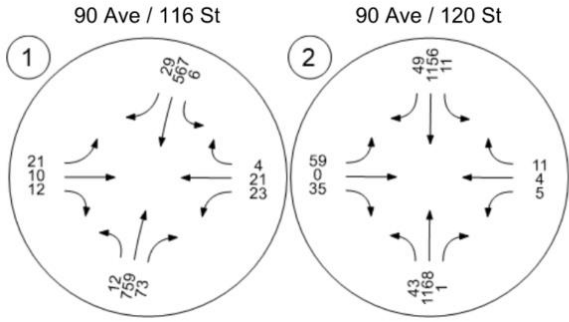
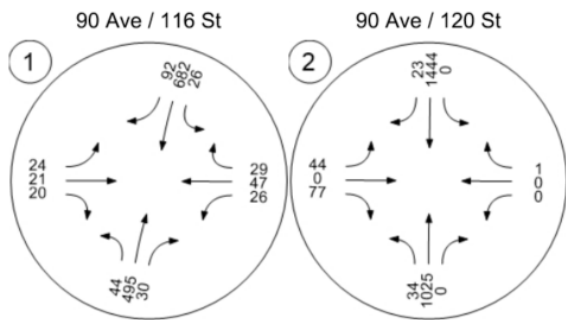


Figure 5 – Opening Day Background Traffic Volumes



AM Peak Hour



PM Peak Hour

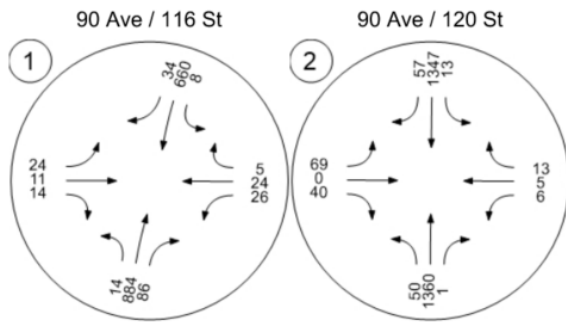
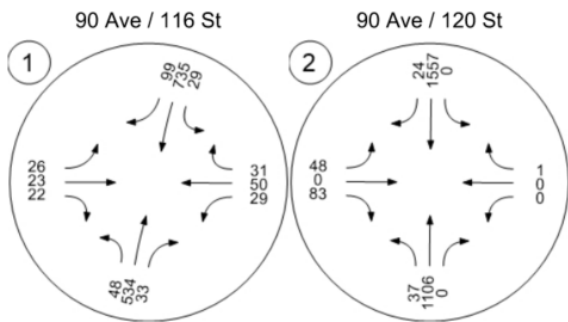


Figure 6 - 2034 Horizon Year Background Traffic Volumes



AM Peak Hour



PM Peak Hour

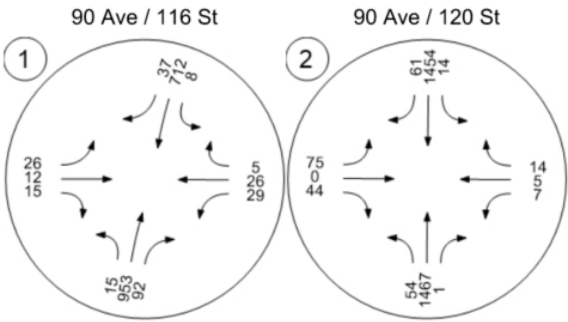


Figure 7 - 2039 Horizon Year Background Traffic Volumes



4.4 Site Traffic Volumes

The weekday peak hour trip generation rates are obtained from Institute of Transportation Engineers (ITE) Trip Generation Manual 11<sup>th</sup> Edition. The trip generation rates are summarized in **Table 3**.

Table 3 - Trip Generation Rates

| Land Use    | Trip Generation Source                   | Setting                 | Units          | Trip Type | Weekday AM Peak Hour Trips |     |     | Weekday PM Peak Hour Trips |     |     |
|-------------|------------------------------------------|-------------------------|----------------|-----------|----------------------------|-----|-----|----------------------------|-----|-----|
|             |                                          |                         |                |           | Rate                       | In  | Out | Rate                       | In  | Out |
| Residential | ITE 221: Multi-family Housing (Mid-Rise) | General Urban/ Suburban | Dwelling Units | Vehicles  | 0.37                       | 23% | 77% | 0.39                       | 61% | 39% |

Based on the vehicle trip generation rates above, the total vehicle trips expected to be generated by the proposed development are summarized in **Table 4**.

Table 4 - Total Vehicle Trips

| Land Use    | Trip Generation Source                   | Setting                 | Quantity | Trip Type | Weekday AM Peak Hour Trips |    |     | Weekday PM Peak Hour Trips |    |     |
|-------------|------------------------------------------|-------------------------|----------|-----------|----------------------------|----|-----|----------------------------|----|-----|
|             |                                          |                         |          |           | Total                      | In | Out | Total                      | In | Out |
| Residential | ITE 221: Multi-family Housing (Mid-Rise) | General Urban/ Suburban | 270      | Vehicles  | 100                        | 23 | 77  | 105                        | 64 | 41  |

The proposed development is expected to generate a total of 100 vehicle trips in the AM peak hour and 105 vehicle trips in the PM peak hour. This is a worst-case scenario with no reductions included for potential active transportation or transit trip reduction.



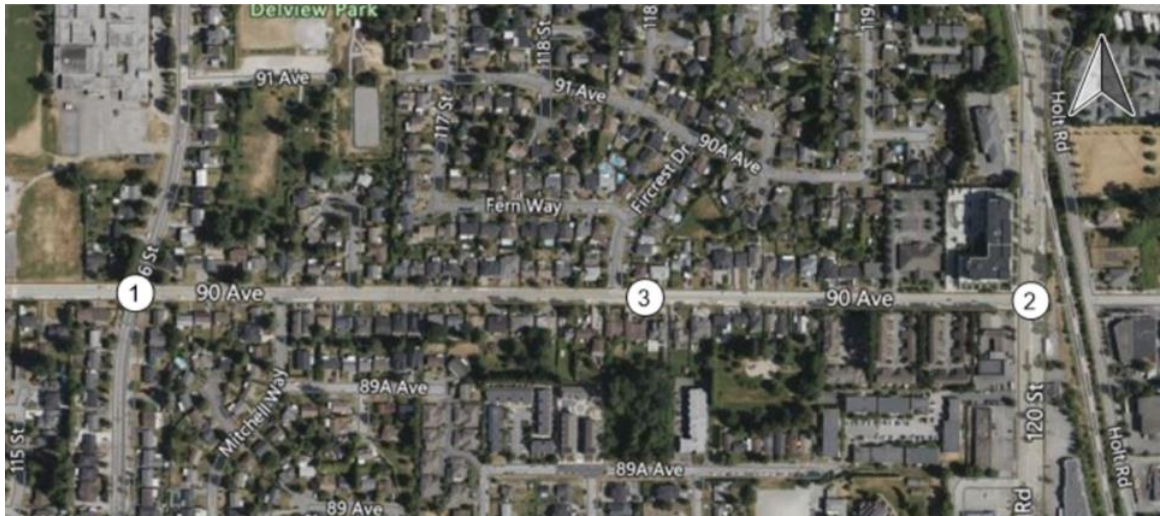
#### 4.4.1 Trip Distribution and Assignment

The trip distribution patterns for site-generated traffic were established based on existing traffic patterns at each intersection.

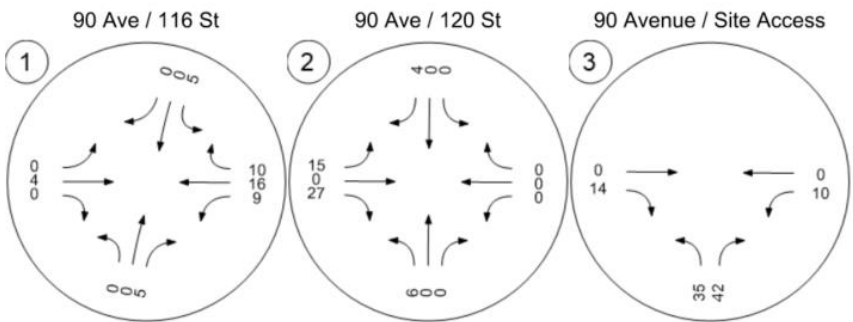
The trip distribution of inbound and outbound traffic adopted for the proposed development is summarized in **Table 5**. The net new site traffic volumes assigned to the area road network are illustrated in **Figure 8**.

**Table 5 – Trip Distribution**

| Route                   | From /To | AM Peak Hour |          | PM Peak Hour |          |
|-------------------------|----------|--------------|----------|--------------|----------|
|                         |          | Inbound      | Outbound | Inbound      | Outbound |
| Scott Road / 120 Street | North    | 17%          | 20%      | 27%          | 42%      |
|                         | South    | 25%          | 34%      | 24%          | 24%      |
| 116 Street              | North    | 20%          | 13%      | 4%           | 3%       |
|                         | South    | 22%          | 12%      | 40%          | 16%      |
| 90 Avenue               | West     | 16%          | 21%      | 5%           | 15%      |
| Total                   |          | 100%         | 100%     | 100%         | 100%     |



AM Peak Hour



PM Peak Hour

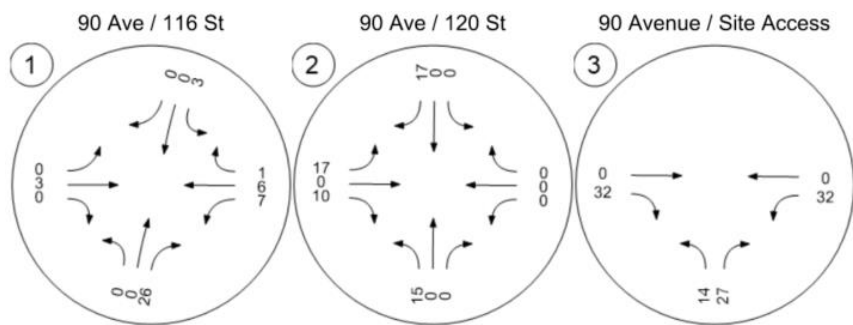
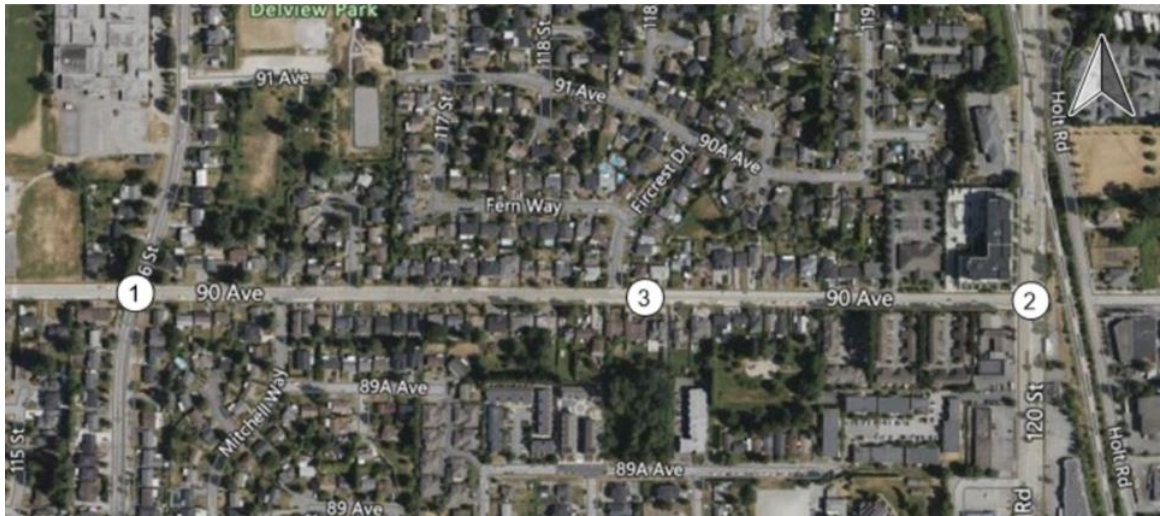


Figure 8 – Site Traffic Volumes

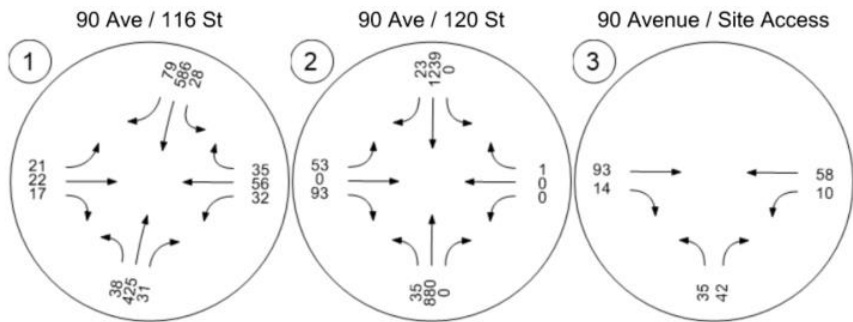


#### 4.5 Post-Development Traffic Volumes

Post-development traffic volumes are the sum of the background traffic volumes and net new site traffic volumes. Post-development traffic volumes for opening day (2029), five-year horizon (2034), and ten-year horizon (2039) are illustrated in **Figure 9**, **Figure 10**, and **Figure 11** respectively.



### AM Peak Hour



### PM Peak Hour

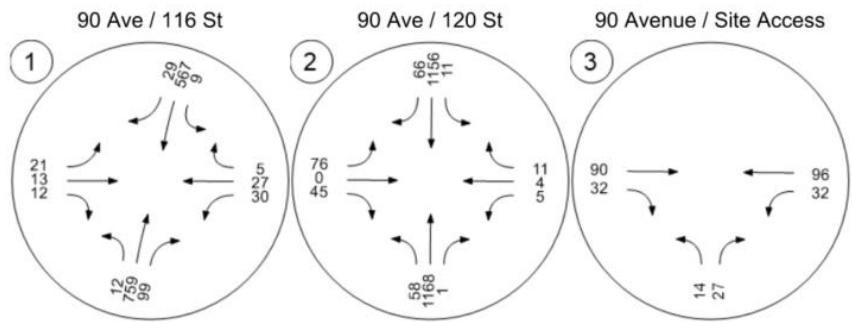
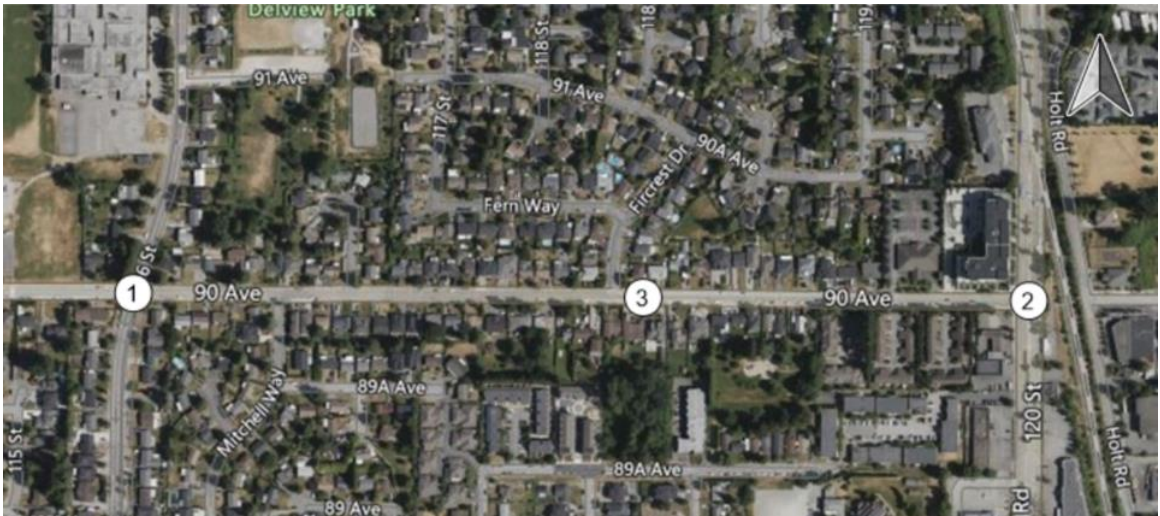
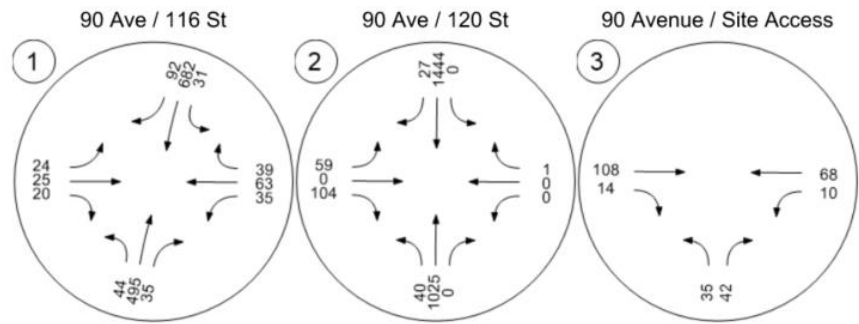


Figure 9 – Opening Day Post-Development Traffic Volumes



AM Peak Hour



PM Peak Hour

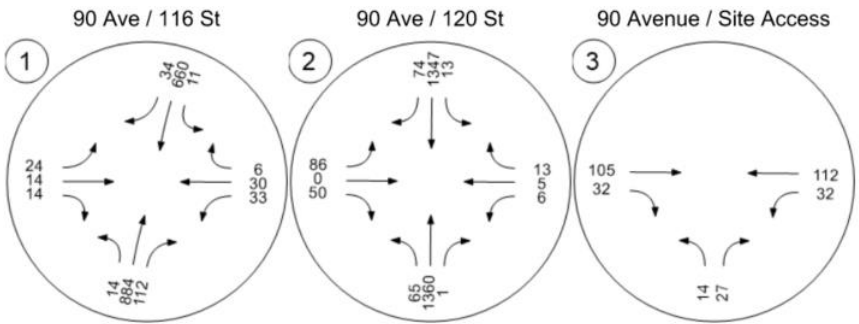
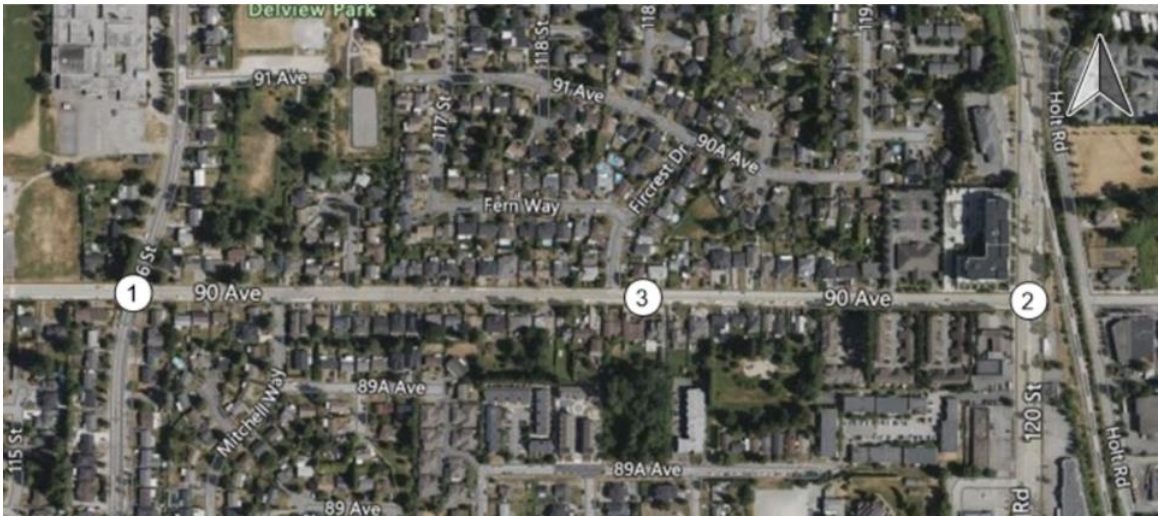
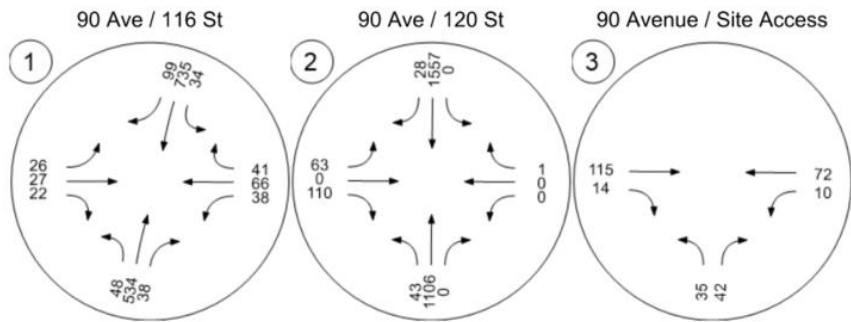


Figure 10 - 2034 Horizon Year Post-Development Traffic Volumes



### AM Peak Hour



### PM Peak Hour

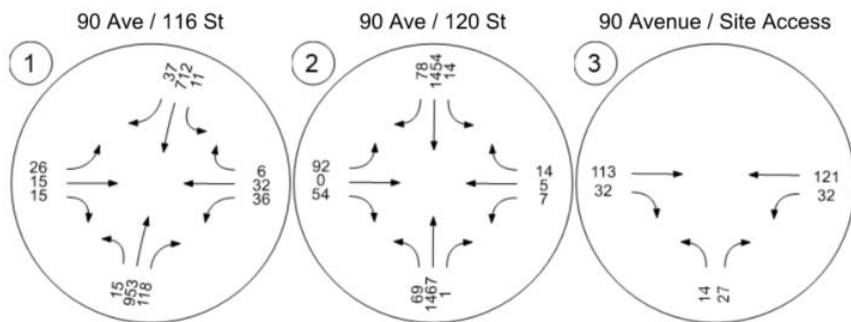


Figure 11 - 2039 Horizon Year Post-Development Traffic Volumes



## 5.0 TRAFFIC OPERATIONS ANALYSIS

### 5.1 Methodology

Analysis of vehicular traffic conditions at the study area intersections was undertaken using VISTRO. VISTRO is a traffic modelling software that provides analysis of traffic conditions based on Highway Capacity Manual sixth edition evaluation methodology. A detailed description is provided in **Appendix B**.

### 5.2 Input and Calibration Parameters

#### Heavy Vehicle

Heavy vehicle percentages incorporated into the analysis were based on information provided as part of the intersection turning movement counts.

#### Signal Timings

Signal timing at all signalized intersections were established based on signal timing sheets provided by the City.

#### Peak Hour Factor

Peak hour factors (PHF) incorporated into the analysis were calculated from the intersection turning movement counts.

#### Lane Configuration

Lane configuration mirrored existing conditions for all scenarios within the report.



### 5.3 Existing (2025) Traffic Conditions

Traffic analysis results under existing conditions in 2025 are summarized in **Table 6**.

At Scott Road & 90 Avenue, all movements operate with LOS C or better during both peak hours. There are no queueing issues for any of the movements.

At 116 Street & 90 Avenue, all movements operate with LOS B or better during both peak hours. Due to high volumes along the northbound travel lane during the PM peak hour, there is a queue of 75m. The northbound queue will extend past several driveways but overall does not cause any significant issues.

No mitigations are required upon existing conditions.

**Table 6 – Existing (2025) Traffic Operations**

| Intersection                                                | Key Movement | LOS         | V/C Ratio | Delay (s)   | Queue (m) | Storage (m) |
|-------------------------------------------------------------|--------------|-------------|-----------|-------------|-----------|-------------|
| <b>Scott Road / 120 Street &amp; 90 Avenue (Signalized)</b> | NBL          | 0.35 (0.38) | C (C)     | 28.1 (25.7) | 5 (5)     | 75          |
|                                                             | NBT          | 0.43 (0.6)  | A (B)     | 8.4 (10.5)  | 30 (50)   |             |
|                                                             | NBR          | 0.43 (0.6)  | A (B)     | 8.4 (10.5)  | 30 (50)   |             |
|                                                             | SBL          | 0 (0.31)    | A (C)     | 0 (30.4)    | 0 (0)     | 60          |
|                                                             | SBT          | 0.69 (0.68) | B (B)     | 11.8 (12.1) | 60 (55)   |             |
|                                                             | SBR          | 0.03 (0.07) | A (A)     | 7.4 (8.2)   | 0 (5)     | 30          |
|                                                             | EBL/T        | 0.12 (0.17) | C (C)     | 21.6 (20.9) | 5 (10)    |             |
|                                                             | EBR          | 0.33 (0.17) | C (C)     | 23.2 (20.9) | 10 (5)    | 30          |
| <b>116 Street &amp; 90 Avenue (Signalized)</b>              | NB           | 0.53 (0.84) | A (B)     | 8 (14.2)    | 25 (75)   |             |
|                                                             | SB           | 0.74 (0.59) | B (A)     | 10.4 (7.9)  | 45 (35)   |             |
|                                                             | EB           | 0.07 (0.06) | A (A)     | 6.6 (8.9)   | 5 (5)     |             |
|                                                             | WB           | 0.11 (0.07) | A (A)     | 6.7 (8.9)   | 5 (5)     |             |

Notes: XX (XX) = AM (PM); 95<sup>th</sup> percentile queue lengths are rounded to the nearest 5 metres.



5.4 Opening Day (2029) Traffic Conditions

Traffic analysis results under opening day (2029) are summarized in **Table 7**.

At Scott Road & 90 Avenue, all movements operate with LOS C or better during both peak hours under background conditions. There are no significant queueing issues. Upon full-build out of the development, the additional development traffic does not cause any changes to LOS or any changes to queueing over 5m difference.

At 116 Street & 90 Avenue, all movements operate with LOS B or better during both peak hours under background conditions. The northbound queue reaches 95m during the PM peak hour. The addition of development traffic results in minimal changes to LOS, with only the northbound movement decreasing from LOS B to C during the PM peak hour. Queueing remains similar, with any changes within 10m (approximately 1-2 car lengths).

No mitigations are required for the 2029 background or post-development conditions.

Table 7 – Opening Day (2029) Traffic Operations

| Intersection                                     | Key Movement | Background  |           |             |           | Post Development |           |             |           | Storage (m) |
|--------------------------------------------------|--------------|-------------|-----------|-------------|-----------|------------------|-----------|-------------|-----------|-------------|
|                                                  |              | LOS         | V/C Ratio | Delay (s)   | Queue (m) | LOS              | V/C Ratio | Delay (s)   | Queue (m) |             |
| Scott Road / 120 Street & 90 Avenue (Signalized) | NBL          | 0.37 (0.4)  | C (C)     | 30.4 (27.8) | 5 (10)    | 0.39 (0.45)      | C (C)     | 30.8 (28.4) | 10 (10)   | 75          |
|                                                  | NBT          | 0.44 (0.62) | A (B)     | 8.2 (10.5)  | 35 (55)   | 0.44 (0.61)      | A (B)     | 8.3 (10.6)  | 40 (60)   |             |
|                                                  | NBR          | 0.44 (0.62) | A (B)     | 8.2 (10.5)  | 35 (55)   | 0.44 (0.61)      | A (B)     | 8.3 (10.6)  | 40 (60)   |             |
|                                                  | SBL          | 0 (0.31)    | A (C)     | 0 (32.2)    | 0 (5)     | 0 (0.31)         | A (C)     | 0 (33.3)    | 0 (5)     | 60          |
|                                                  | SBT          | 0.71 (0.7)  | B (B)     | 12 (12.3)   | 70 (60)   | 0.72 (0.71)      | B (B)     | 12.5 (13)   | 70 (65)   |             |
|                                                  | SBR          | 0.03 (0.07) | A (A)     | 7.2 (8)     | 0 (5)     | 0.03 (0.09)      | A (A)     | 7.6 (8.6)   | 0 (5)     | 30          |
|                                                  | EBL/T        | 0.13 (0.19) | C (C)     | 23.9 (22.9) | 5 (10)    | 0.18 (0.27)      | C (C)     | 24.5 (24.5) | 10 (15)   |             |
|                                                  | EBR          | 0.36 (0.19) | C (C)     | 25.7 (22.9) | 15 (5)    | 0.48 (0.23)      | C (C)     | 27.3 (23.8) | 20 (10)   | 30          |
| 116 Street & 90 Avenue (Signalized)              | NB           | 0.56 (0.89) | A (B)     | 7.9 (19)    | 30 (95)   | 0.56 (0.93)      | A (C)     | 7.9 (22.9)  | 30 (110)  |             |
|                                                  | SB           | 0.78 (0.63) | B (A)     | 11.7 (8.5)  | 55 (45)   | 0.79 (0.64)      | B (A)     | 11.9 (8.6)  | 55 (45)   |             |
|                                                  | EB           | 0.08 (0.07) | A (A)     | 7.4 (9.5)   | 5 (5)     | 0.09 (0.08)      | A (A)     | 7.6 (9.5)   | 5 (5)     |             |
|                                                  | WB           | 0.12 (0.08) | A (A)     | 7.6 (9.5)   | 5 (5)     | 0.17 (0.1)       | A (A)     | 7.9 (9.6)   | 10 (5)    |             |

Notes: XX (XX) = AM (PM); 95<sup>th</sup> percentile queue lengths are rounded to the nearest 5 metres.



## 5.5 5-Year Post Build (2034) Traffic Conditions

Traffic analysis results under the 5-year post build (2034) conditions are summarized in **Table 8**.

At Scott Road & 90 Avenue, all movements operate with LOS D or better during both peak hours under background conditions. The northbound through and right movements forecast queues up to 70m during the PM peak hour. The southbound through movement forecasts queues up to 90m during both peak hours. Signal timing optimization was tested and does not significantly mitigate queuing, but should be pursued routinely by the City regardless. Overall, these queues do not cause major issues within the network as they do not back up to subsequent intersections and clear from the intersection relatively fast given these movements have delay times of 12 seconds or less. The additional development traffic causes the northbound left movement to decrease from LOS C to D during both peak hours due to the addition of several seconds. Queuing remains similar to background conditions with a maximum increase of 15m (approximately 2 vehicle lengths) for any movement.

At 116 Street & 90 Avenue, all movements operate with LOS B or better during both peak hours under background conditions, except for the northbound left which operates with LOS F during the PM peak hour. The LOS F is the result of a capacity issue within the network (v/c ratio over 0.95). The northbound left queuing reaches 200m during the PM peak hour. The southbound approach queue reaches 80m during the AM peak hour. The addition of development traffic does not result in changes to LOS and changes to queuing are minimal.

Several mitigation measures were tested including adjusting half signal timing, addition of right or left turn lanes along the southbound and northbound approaches, and implementation of a full signal. Adjustment to the half signal timing to include additional maximum green time for the northbound and southbound approach was sufficient and decreased the northbound queue to 100m and improves all movements LOS to B. This would allow more green time for the northbound and southbound traffic even if the signal is triggered by the pedestrians or cyclists. By 2034 the City should update the half signal timing to include more time for the northbound and southbound approaches for both peak hours at this intersection to minimize queuing issues.



Table 8 – 5-Year Post-Build (2034) Traffic Operations

| Intersection                                     | Key Movement | Background  |           |             |           | Post Development |           |             |           | Storage (m) |
|--------------------------------------------------|--------------|-------------|-----------|-------------|-----------|------------------|-----------|-------------|-----------|-------------|
|                                                  |              | LOS         | V/C Ratio | Delay (s)   | Queue (m) | LOS              | V/C Ratio | Delay (s)   | Queue (m) |             |
| Scott Road / 120 Street & 90 Avenue (Signalized) | NBL          | 0.4 (0.45)  | C (C)     | 34.9 (32.4) | 10 (10)   | 0.42 (0.53)      | D (D)     | 35.4 (35.8) | 10 (15)   | 75          |
|                                                  | NBT          | 0.47 (0.66) | A (B)     | 7.9 (10.7)  | 45 (70)   | 0.47 (0.68)      | A (B)     | 8.1 (12.7)  | 50 (85)   |             |
|                                                  | NBR          | 0.47 (0.66) | A (B)     | 7.9 (10.7)  | 45 (70)   | 0.47 (0.68)      | A (B)     | 8.1 (12.7)  | 50 (85)   |             |
|                                                  | SBL          | 0 (0.32)    | A (D)     | 0 (36.3)    | 0 (5)     | 0 (0.33)         | A (D)     | 0 (39.6)    | 0 (5)     | 60          |
|                                                  | SBT          | 0.76 (0.74) | B (B)     | 12.6 (12.8) | 90 (80)   | 0.77 (0.77)      | B (B)     | 13.3 (15.4) | 95 (95)   |             |
|                                                  | SBR          | 0.03 (0.07) | A (A)     | 6.9 (7.6)   | 0 (5)     | 0.03 (0.1)       | A (A)     | 7.2 (9.3)   | 0 (10)    | 30          |
|                                                  | EBL/T        | 0.17 (0.27) | C (C)     | 28.4 (28.1) | 10 (15)   | 0.22 (0.4)       | C (C)     | 28.9 (30.5) | 15 (20)   |             |
|                                                  | EBR          | 0.45 (0.23) | C (C)     | 31.1 (27.3) | 20 (10)   | 0.56 (0.21)      | C (C)     | 32.9 (27)   | 25 (10)   | 30          |
| 116 Street & 90 Avenue (Signalized)              | NB           | 0.63 (1.04) | A (F)     | 8.5 (50.1)  | 40 (200)  | 0.63 (1.07)      | A (F)     | 8.5 (60.6)  | 40 (230)  |             |
|                                                  | SB           | 0.85 (0.74) | B (B)     | 15.7 (10.7) | 80 (60)   | 0.86 (0.74)      | B (B)     | 16.1 (10.8) | 80 (60)   |             |
|                                                  | EB           | 0.1 (0.08)  | A (A)     | 9 (9.5)     | 5 (5)     | 0.11 (0.09)      | A (A)     | 9 (9.5)     | 5 (5)     |             |
|                                                  | WB           | 0.16 (0.09) | A (A)     | 9.2 (9.5)   | 10 (5)    | 0.21 (0.11)      | A (A)     | 9.5 (9.6)   | 10 (5)    |             |

Notes: XX (XX) = AM (PM); 95<sup>th</sup> percentile queue lengths are rounded to the nearest 5 metres.



## 5.6 10-Year Post Build (2039) Traffic Conditions

Traffic analysis results under the 10-year post building (2039) conditions are summarized in **Table 9**.

At Scott Road & 90 Avenue, all movements operate with LOS D or better during both peak hours under background conditions. The northbound through and right movements forecast queues up to 80m during the PM peak hour. The southbound through movement forecasts queues up to 100m during both peak hours. Signal timing optimization was tested and does not significantly mitigate queuing, but should be pursued routinely by the City regardless. Overall, these queues do not cause major issues within the network as they do not back up to subsequent intersections and clear from the intersection relatively fast given these movements have delay times of 13 seconds or less. The additional development traffic causes the northbound left movement to decrease from LOS C to D during the PM peak hour due to the addition of several seconds. Queuing remains similar to background conditions with a maximum increase of 20m (approximately 3 vehicle lengths) for any movement.

At 116 Street & 90 Avenue, all movements operate with LOS B or better during both peak hours under background conditions, except for the northbound left which operates with LOS F during the PM peak hour. The LOS F is the result of a capacity issue within the network (v/c ratio over 0.95). The northbound left queuing reaches 290m during the PM peak hour, without any half signal adjustments. The southbound approach queue reaches 100m during the AM peak hour. The addition of development traffic does not result in changes to LOS and changes to queuing are minimal. If half signal timing adjustments are pursued, all movements will operate with LOS B or better during all peak hours, the northbound queue will be 135m during the PM peak hour, and the southbound queue will decrease to 70m and 60m during the AM and PM peak hours, respectively. The City could incorporate a right turn lane at the northbound approach to decrease queuing more, as the addition of a right turn lane will bring the forecast queue to 95m during the PM peak hour. To mitigate long queues more, the City should work to facilitate modal shift toward active modes and transit in the long-term to decrease capacity throughout the network.



Table 9 – 10-Year Post-Build (2039) Traffic Operations

| Intersection                                     | Key Movement | Background  |           |             |           | Post Development |           |             |           | Storage (m) |
|--------------------------------------------------|--------------|-------------|-----------|-------------|-----------|------------------|-----------|-------------|-----------|-------------|
|                                                  |              | LOS         | V/C Ratio | Delay (s)   | Queue (m) | LOS              | V/C Ratio | Delay (s)   | Queue (m) |             |
| Scott Road / 120 Street & 90 Avenue (Signalized) | NBL          | 0.41 (0.47) | D (C)     | 36.7 (34.8) | 10 (15)   | 0.44 (0.57)      | D (D)     | 37.5 (39.8) | 10 (20)   | 75          |
|                                                  | NBT          | 0.5 (0.68)  | A (B)     | 7.9 (11.3)  | 55 (80)   | 0.5 (0.72)       | A (B)     | 8.4 (14.9)  | 55 (105)  |             |
|                                                  | NBR          | 0.5 (0.68)  | A (B)     | 7.9 (11.3)  | 55 (80)   | 0.5 (0.72)       | A (B)     | 8.4 (14.9)  | 55 (105)  |             |
|                                                  | SBL          | 0 (0.33)    | A (D)     | 0 (38.3)    | 0 (5)     | 0 (0.34)         | A (D)     | 0 (42.8)    | 0 (5)     | 60          |
|                                                  | SBT          | 0.8 (0.76)  | B (B)     | 13.4 (13.3) | 100 (90)  | 0.81 (0.81)      | B (B)     | 14.5 (17.3) | 110 (115) |             |
|                                                  | SBR          | 0.03 (0.07) | A (A)     | 6.8 (7.5)   | 0 (5)     | 0.03 (0.1)       | A (A)     | 7.3 (9.8)   | 0 (10)    | 30          |
|                                                  | EBL/T        | 0.2 (0.32)  | C (C)     | 30.3 (30.8) | 10 (15)   | 0.24 (0.44)      | C (C)     | 30.6 (33.1) | 15 (25)   |             |
|                                                  | EBR          | 0.49 (0.25) | C (C)     | 33.5 (29.6) | 20 (10)   | 0.58 (0.21)      | C (C)     | 34.8 (28.5) | 30 (15)   | 30          |
| 116 Street & 90 Avenue (Signalized)              | NB           | 0.68 (1.12) | A (F)     | 9.4 (77.5)  | 45 (290)  | 0.69 (1.15)      | A (F)     | 9.5 (90.2)  | 45 (330)  |             |
|                                                  | SB           | 0.91 (0.79) | C (B)     | 21.2 (12.6) | 100 (70)  | 0.92 (0.8)       | C (B)     | 21.9 (12.8) | 100 (70)  |             |
|                                                  | EB           | 0.11 (0.09) | A (A)     | 9.2 (9.5)   | 5 (5)     | 0.12 (0.09)      | A (A)     | 9.2 (9.5)   | 5 (5)     |             |
|                                                  | WB           | 0.17 (0.1)  | A (A)     | 9.5 (9.6)   | 10 (5)    | 0.22 (0.12)      | A (A)     | 9.7 (9.7)   | 10 (5)    |             |

Notes: XX (XX) = AM (PM); 95<sup>th</sup> percentile queue lengths are rounded to the nearest 5 metres.



## 6.0 SITE ACCESS REVIEW

Access to the site is provided from a driveway that connects the site to 90 Avenue. The Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (2017) provides recommendations for sightlines and safety.

For this evaluation, the site access assumes a stop-controlled driveway with full movements permitted and a passenger car as the design vehicle. A design speed of 50km/h is assumed on 90 Avenue. Drivers exiting the access should be provided with an intersection sight distance of 105m along 90 Avenue from east to west. This requirement is met in both directions. Drivers along 90 Avenue should be provided with 65m stopping sight distance which is met in both directions.

The TAC Geometric Design Guide provides suggested minimum corner clearances for residential driveways on local roads and adjacent intersections to be 8 meters for unsignalized intersections. This requirement is met.

There are no operational issues at the subject site access. It will operate with LOS A for all movements and has no forecast queuing issues.

## 7.0 PARKING AND LOADING REVIEW

The onsite vehicle parking, bicycle parking, and loading supply for the proposed development is reviewed by comparing to the *Delta Zoning Bylaw No. 7600, 2017*.

**Table 10** summarizes the vehicle parking, bicycle parking, and loading requirements. The vehicle parking requirement is calculated according to Schedule A of *Delta Zoning Bylaw No. 7600, 2017 Amendment (City-Wide Parking Update) Bylaw No. 8455, 2024* adopted by the council on March 3<sup>rd</sup>, 2025. As per section 3(c) of the bylaw, since the proposed development is located within the Scott Road Corridor, the required minimum number of parking spaces shall be reduced by 20%.



**Table 10 - Parking & Loading Requirements**

| Land Use                       | Bylaw Reference             | Requirement | Proposed |
|--------------------------------|-----------------------------|-------------|----------|
| Vehicle Parking                |                             |             |          |
| Apartment building - Residents | Zoning Bylaw, Section 8.4.2 | 216         | 303      |
| Apartment building - Visitor   |                             | 22          | 27       |
| Bicycle Parking                |                             |             |          |
| Apartment building - Residents | Zoning Bylaw, Section 8.6.1 | 270         | 270      |
| Apartment building - Visitor   |                             | 10          | 5        |
| Loading                        |                             |             |          |
| Residential                    | Zoning Bylaw, Section 9.2.1 | 2           | 1        |

The proposed vehicle parking provision for residents and visitors exceeds the bylaw requirement. The proposed bicycle parking provision for residents meets the bylaw requirement. However, the bicycle parking provision for visitors falls short of the bylaw requirement by five (5) spaces. The proposed loading provision falls short of the bylaw requirements by one (1) space.

## 8.0 ON-SITE CIRCULATION

Swept path analysis was conducted to confirm on-site circulation of vehicles and maneuverability. A TAC Passenger Car (P-Car) design vehicle was used to check for functionality within the drive aisle for the underground parkade and access on 90 Avenue. A TAC Standard Unit Truck (SU-9) design vehicle was used to check for functionality of loading and waste collection truck operations and movements. The swept path analysis for the proposed development can be found in **Appendix D**.



## 9.0 CONCLUSIONS

The proposed development consists of 270 multi-family residential dwelling units across two six-story buildings. The development is expected to generate 100 vehicles during the AM peak hour and 105 vehicles during the PM peak hour.

There are gaps within the pedestrian network along 90 Avenue which the City should endeavor to improve. The developer should provide sidewalk along the development frontage or monies towards upgrades to improve gaps along 90 Avenue. 120 Street / Scott Road and 116 Street both have continuous sidewalks and there is sufficient pedestrian accommodation at intersections including crosswalks and pedestrian signals. The Delta Cycling Master Plan and TransLink's MBN plan to upgrade 116 Street and Scott Road / 120 Street with protected bike lanes. The site is well-served by transit, with existing bus stops within 350 metres providing bus connections to various areas in Delta, Surrey, and New Westminster.

As requested by the City, the trips generated from the 11944 92 Avenue development are included as part of the background traffic.

The 90 Avenue & 120 Street / Scott Road intersection operates with LOS D or better for all background horizon years during both peak hours. As traffic grows throughout the years, long queues up to 100m develop for the northbound through, northbound right, and southbound through movements. It is recommended that the City of Delta pursue routine signal timing optimization to improve operations and queuing over the years. Overall, the long queues that are forecast don't cause significant issues within the network and are short in duration. The City should look to improve modal shift towards transit and active modes to lessen congestion within the network. The addition of the development traffic resulted in minimal changes to LOS and queuing.

The 90 Avenue & 116 Street intersection operates with LOS B or better until 2034, where the northbound movement reaches a LOS F during the PM peak hour. At this point, long queues up to 200m are forecast for the northbound movement due to capacity issues along the corridor. To mitigate this the City should increase signal timing for the northbound / southbound movements during both peak hours. In 2039 the northbound queue increases to 290m if no signal timing changes are pursued. If signal timing changes are pursued the northbound queue will only reach a forecasted 135m and all movements will operate with LOS B or better. The City can also consider implementing a northbound right lane to further increase capacity at the intersection and decrease northbound queuing. The addition of the development traffic resulted in minimal changes to LOS and queuing.



The Site access at 90 Avenue has no operational or sightline issues and meets the TAC recommended spacing measurements.

The site satisfies the minimum required supply for off-street vehicle parking. However, the site is short by five bicycle spaces and one loading space. It is recommended that the visitor bicycle supply is met by the developer.

## 10.0 RECOMMENDATIONS

It is recommended that the City considers:

1. Routinely optimize signal timing at 90 Avenue & 120 Street / Scott Road
2. Update half signal timing at 90 Avenue & 116 Street to increase northbound / southbound signal timing by 2034

It is recommended that the Applicant:

1. Provide sidewalk along the development frontage
2. Meet, at least, the minimum bicycle parking supply for visitors as per the bylaw



## APPENDIX A: SITE PLAN

**PRELIMINARY APPLICATION**



**APARTMENT DEVELOPMENT**  
11810, 18, 20, 24, 28, 38-90th AVE  
DELTA, BC

DRAWING LIST

- COVER SHEET

A-0.1
- LOCATION MAP & TEAM

A-0.2
- PROJECT SUMMARY

A-0.3
- TOPOGRAPHICAL SURVEY

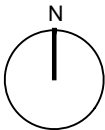
A-0.4
- BASE PLAN

A-0.5
- SITE PLAN

A-1.0
- FLOOR PLANS

A-2.0-2.4

LOCATION



PROJECT TEAM

**ARCHITECT - PARAMORPH ARCHITECTURE INC.**  
308 - 9639 137A Street  
Surrey, BC V3T 0M1  
(604) 608-0161  
info@paramorph.com

**CIVIL -**

**SURVEYOR - SOUTH FRASER LAND SURVEYING**  
202 - 19292 60th AVENUE  
SURREY, B.C. V3S 3M2  
604-599-1886  
info@southfrasersurvey.ca

**ARBORIST -**



308 - 9639 137A Street, Surrey BC V3T 0M1  
604-608-0161 | www.paramorph.com

**Notes**  
This drawing, as an instrument of service, is the property of the Architect and may not be reproduced without their permission and unless the reproduction carries their name. All design and other information shown on this drawing are for the use on the specified project only and shall not be used otherwise without written permission of the Architect. Written dimension shall have precedence over scaled dimensions.

|  |  |
|--|--|
|  |  |
|  |  |
|  |  |
|  |  |

|            |                         |
|------------|-------------------------|
| 2025-03-28 | Preliminary Application |
| Date       | Description             |

Issues / Revisions

Seal

Project Title  
**APARTMENT DEVELOPMENT**

Project Address  
**11810,18,20,24,28,38-90th AVE  
DELTA,  
BRITISH COLUMBIA**

|                  |                         |
|------------------|-------------------------|
| Drawn By<br>GC   | Date<br>2025-03-01      |
| Checked By<br>PV | Project ID<br>DE06_2502 |

Sheet Title  
**LOCATION MAP & TEAM**

Scale

Sheet No.

**A-0.2**

March 28, 2025

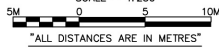
| OFF STREET<br>PARKING | PARKING REQUIREMENTS BREAKDOWN (BLDG- 1 & 2) |              |                         |                 |                               |
|-----------------------|----------------------------------------------|--------------|-------------------------|-----------------|-------------------------------|
|                       |                                              | NO. OF UNITS | PERMITTED / UNIT        | REQUIRED STALLS | PROVIDED (@Parkade Lvl-1 & 2) |
|                       | STUDIO, 1BR,2BR                              | 270          | 1.0/UNIT                | 270             | 303                           |
|                       | VISITOR'S                                    | 270          | 0.1/UNIT                | 27              | 27                            |
|                       | TOTAL                                        |              |                         | 297             | 330                           |
|                       | SMALL CAR                                    |              | 50% OF REQUIRED PARKING | 148.5 SAY 149   | 16                            |
|                       | BICYCLE PARKING(RESIDENTIAL)                 | 270          | 1 / Unit + 5 Visitor    | 275             | 275                           |

|                      |                                   |       |        |             |
|----------------------|-----------------------------------|-------|--------|-------------|
| AMENITY CALCULATIONS | AMENITIES (BLDG- 1 & 2)           |       |        |             |
|                      | INDOOR AMENITY                    | Sq.m. | Sq.ft. | REMARKS     |
|                      | REQUIRED                          | 270   | 2,905  | 1 Sq.m/UNIT |
|                      | PROPOSED( @MAIN LEVEL)            | 278   | 2,987  |             |
|                      | OUTDOOR AMENITY                   | Sq.m. | Sq.ft. | REMARKS     |
|                      | REQUIRED                          | 1,620 | 17,431 | 6 Sq.m/UNIT |
|                      | PROPOSED (@MAIN LEVEL & ROOF LVL) | 1,627 | 17,502 |             |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| <div><div><div>PM</div><div>A</div></div><div>ParaMorph<br/>Architecture Inc</div><div>308 - 9639 137A Street, Surrey BC V3T 0M1<br/>604-608-0161   www.paramorph.com</div></div>                                                                                                                                                                                                                                                                    |                         |
| <p>Notes</p> <p>This drawing, as an instrument of service, is the property of the Architect and may not be reproduced without their permission and unless the reproduction carries their name. All design and other information shown on this drawing are for the use on the specified project only and shall not be used otherwise without written permission of the Architect. Written dimension shall have precedence over scaled dimensions.</p> |                         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                         |
| 2025-03-28                                                                                                                                                                                                                                                                                                                                                                                                                                           | Preliminary Application |
| Date                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Description             |
| Issues / Revisions                                                                                                                                                                                                                                                                                                                                                                                                                                   |                         |
| Seal                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                         |
| Project Title                                                                                                                                                                                                                                                                                                                                                                                                                                        |                         |
| APARTMENT<br>DEVELOPMENT                                                                                                                                                                                                                                                                                                                                                                                                                             |                         |
| Project Address                                                                                                                                                                                                                                                                                                                                                                                                                                      |                         |
| 11810,18,20,24,28,38-90th AVE<br>DELTA,<br>BRITISH COLUMBIA                                                                                                                                                                                                                                                                                                                                                                                          |                         |
| Drawn By<br>GC                                                                                                                                                                                                                                                                                                                                                                                                                                       | Date<br>2025-03-01      |
| Checked By<br>PV                                                                                                                                                                                                                                                                                                                                                                                                                                     | Project ID<br>DE06_2502 |
| Sheet Title                                                                                                                                                                                                                                                                                                                                                                                                                                          |                         |
| PROGRAM<br>SUMMARY                                                                                                                                                                                                                                                                                                                                                                                                                                   |                         |
| Scale                                                                                                                                                                                                                                                                                                                                                                                                                                                |                         |
| Sheet No.                                                                                                                                                                                                                                                                                                                                                                                                                                            |                         |
| A-0.3                                                                                                                                                                                                                                                                                                                                                                                                                                                |                         |

B.C. LAND SURVEYOR'S PLAN SHOWING TOPOGRAPHIC SURVEY ON  
LOTS 1 & 2 PLAN 17033 AND LOT 88 EXCEPT:  
FIRSTLY: THE WEST 132 FEET, SECONDLY: PART SUBDIVIDED BY PLAN 17033,  
THIRDLY: PARCEL "A" (REFERENCE PLAN 16302), PLAN 1133  
LOT 550 PLAN 54633 AND STRATA LOTS 1 & 2 STRATA PLAN NWS1118  
ALL IN SECTION 36 TOWNSHIP 4 NEW WESTMINSTER DISTRICT

CITY OF DELTA



The intended plot size of this plan is 914mm (36") in width  
by 610mm (24") in height (Architectural D size) when plotted at a scale of 1:250

|                                                           |
|-----------------------------------------------------------|
| P.I.D. 012-005-452 (Rem LOT 88)                           |
| SUBJECT PROPERTY MAY BE AFFECTED BY<br>COVENANT CA3914608 |
| CWC ADDRESS: #11824 90th AVENUE                           |

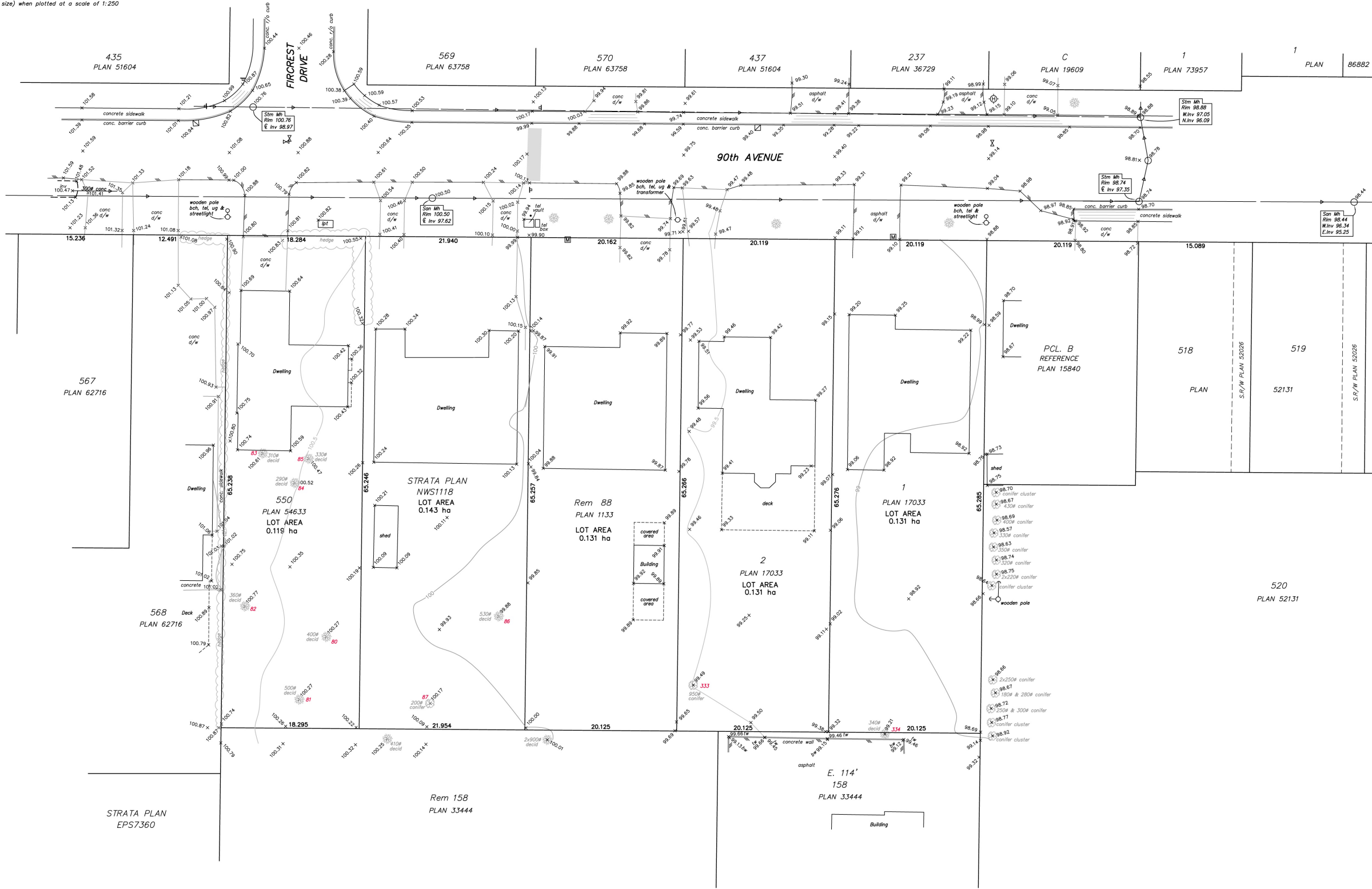
|                                 |
|---------------------------------|
| P.I.D. 010-271-872 (LOT 1)      |
| CWC ADDRESS: #11838 90th AVENUE |

|                                 |
|---------------------------------|
| P.I.D. 010-271-899 (LOT 2)      |
| CWC ADDRESS: #11828 90th AVENUE |

|                                 |
|---------------------------------|
| P.I.D. 005-280-486 (LOT 550)    |
| CWC ADDRESS: #11810 90th AVENUE |

|                                   |
|-----------------------------------|
| P.I.D. 001-648-357 (STRATA LOT 1) |
| CWC ADDRESS: #11818 90th AVENUE   |

|                                   |
|-----------------------------------|
| P.I.D. 001-648-357 (STRATA LOT 2) |
| CWC ADDRESS: #11820 90th AVENUE   |



NOTE:  
Elevations shown are in METRES and  
derived from GEODETIC DATUM(CVD28GVRD2018).

B.M.  
Monument #82H5678 -  
90th Avenue & Fircrest Drive  
GEODETIC ELEV. 100.896m(CVD28GVRD2018)

NOTE: LOT DIMENSIONS FROM FIELD SURVEY

CONTOURS ARE AT 0.5m INTERVALS

SOUTH FRASER LAND SURVEYING LTD.  
#202 - 19292 60th AVENUE  
SURREY, B.C. V3S 3M2  
604-599-1886  
241548ELV

This document shows the relative location  
of the surveyed structures and features  
with respect to the boundaries of the  
parcel described above. This document  
shall not be used to define property lines  
or property corners.

This plan was prepared for  
the exclusive use of our client.  
The signatory accepts no responsibility  
or liability for any damages that may be  
suffered by a third party as a result of  
reproduction, transmission or alteration to  
this document without consent of the signatory.

\* THIS DOCUMENT IS NOT VALID \*  
UNLESS ORIGINALLY SIGNED AND SEALED

ADDITIONAL TOPOGRAPHY ADDED JANUARY 23 2025  
© All rights reserved. No person may copy,  
reproduce, transmit or alter this document in whole  
or in part without the consent of the signatory

Certified correct this 9th day of OCTOBER 2024.

GENE PAUL NIKULA BCL5(803)

241548ELV

Notes  
This drawing, as an instrument of service, is the  
property of the Architect and may not be reproduced  
without their permission and unless the reproduction  
carries their name. All design and other information  
shown on this drawing are for the use on the specified  
project only and shall not be used otherwise without  
written permission of the Architect. Written dimension  
shall have precedence over scaled dimensions.

|            |                         |
|------------|-------------------------|
|            |                         |
|            |                         |
|            |                         |
|            |                         |
| 2025-03-28 | Preliminary Application |
| Date       | Description             |

Issues / Revisions

Seal

Project Title

APARTMENT  
DEVELOPMENT

Project Address

11810,18,20,24,28,38-90th AVE  
DELTA,  
BRITISH COLUMBIA

Drawn By

Date

2025-03-01

Checked By

Project ID

DE06\_2502

Sheet Title

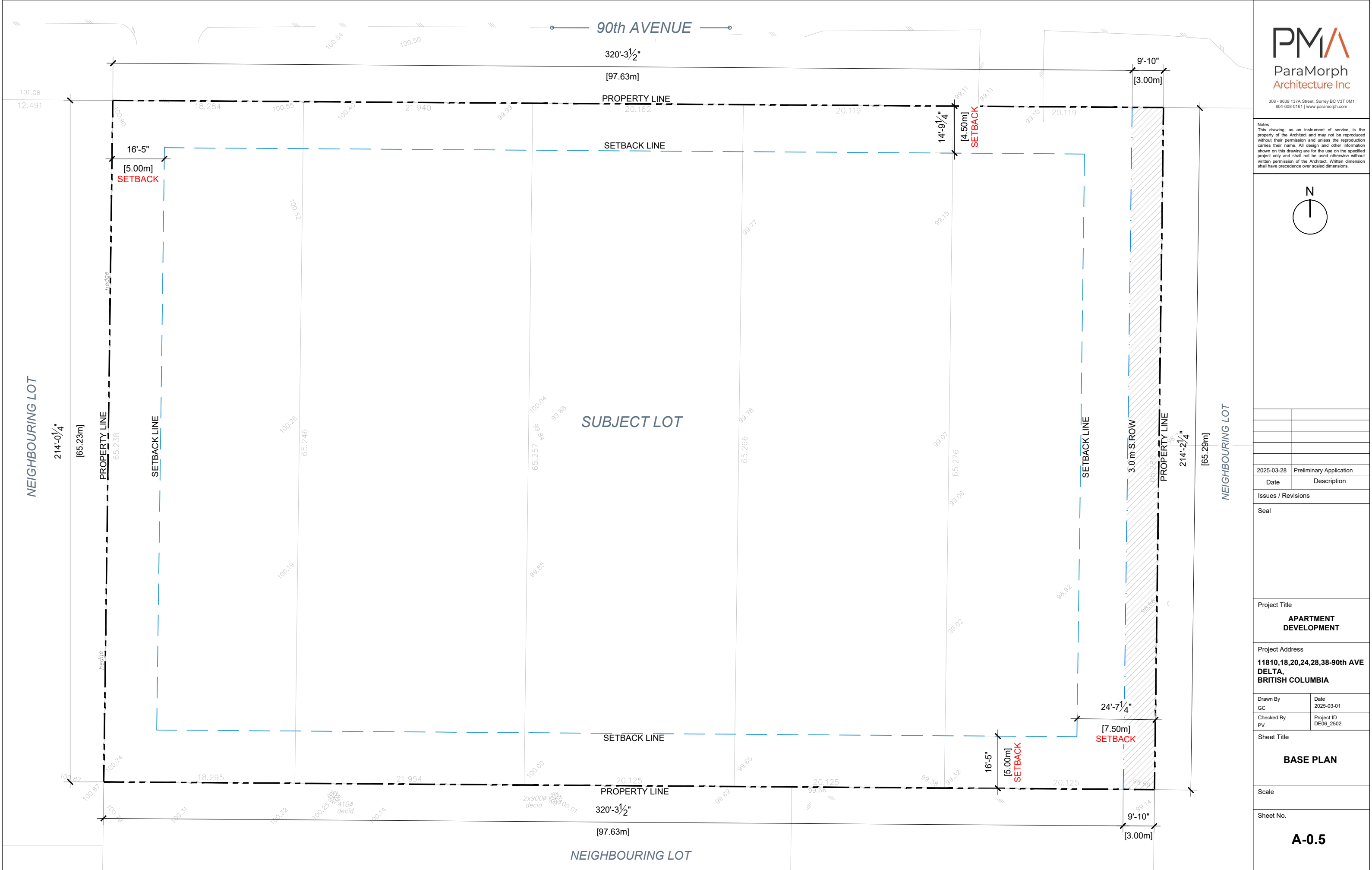
TOPOGRAPHICAL  
SURVEY

Scale

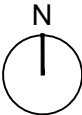
Sheet No.

A-0.4

March 28, 2025



Notes  
This drawing, as an instrument of service, is the property of the Architect and may not be reproduced without their permission and unless the reproduction carries their name. All design and other information shown on this drawing are for the use on the specified project only and shall not be used otherwise without written permission of the Architect. Written dimension shall have precedence over scaled dimensions.



|                    |                         |
|--------------------|-------------------------|
|                    |                         |
|                    |                         |
|                    |                         |
|                    |                         |
| 2025-03-28         | Preliminary Application |
| Date               | Description             |
| Issues / Revisions |                         |

Seal

Project Title  
**APARTMENT DEVELOPMENT**

Project Address  
**11810,18,20,24,28,38-90th AVE  
DELTA,  
BRITISH COLUMBIA**

|                  |                         |
|------------------|-------------------------|
| Drawn By<br>GC   | Date<br>2025-03-01      |
| Checked By<br>PV | Project ID<br>DE06_2502 |

Sheet Title  
**BASE PLAN**

Scale

Sheet No.  
**A-0.5**



Notes  
This drawing, as an instrument of service, is the property of the Architect and may not be reproduced without their permission and unless the reproduction carries their name. All design and other information shown on this drawing are for the use on the specified project only and shall not be used otherwise without written permission of the Architect. Written dimension shall have precedence over scaled dimensions.



|                    |                         |
|--------------------|-------------------------|
|                    |                         |
|                    |                         |
|                    |                         |
| 2025-03-28         | Preliminary Application |
| Date               | Description             |
| Issues / Revisions |                         |
| Seal               |                         |

Project Title  
**APARTMENT DEVELOPMENT**

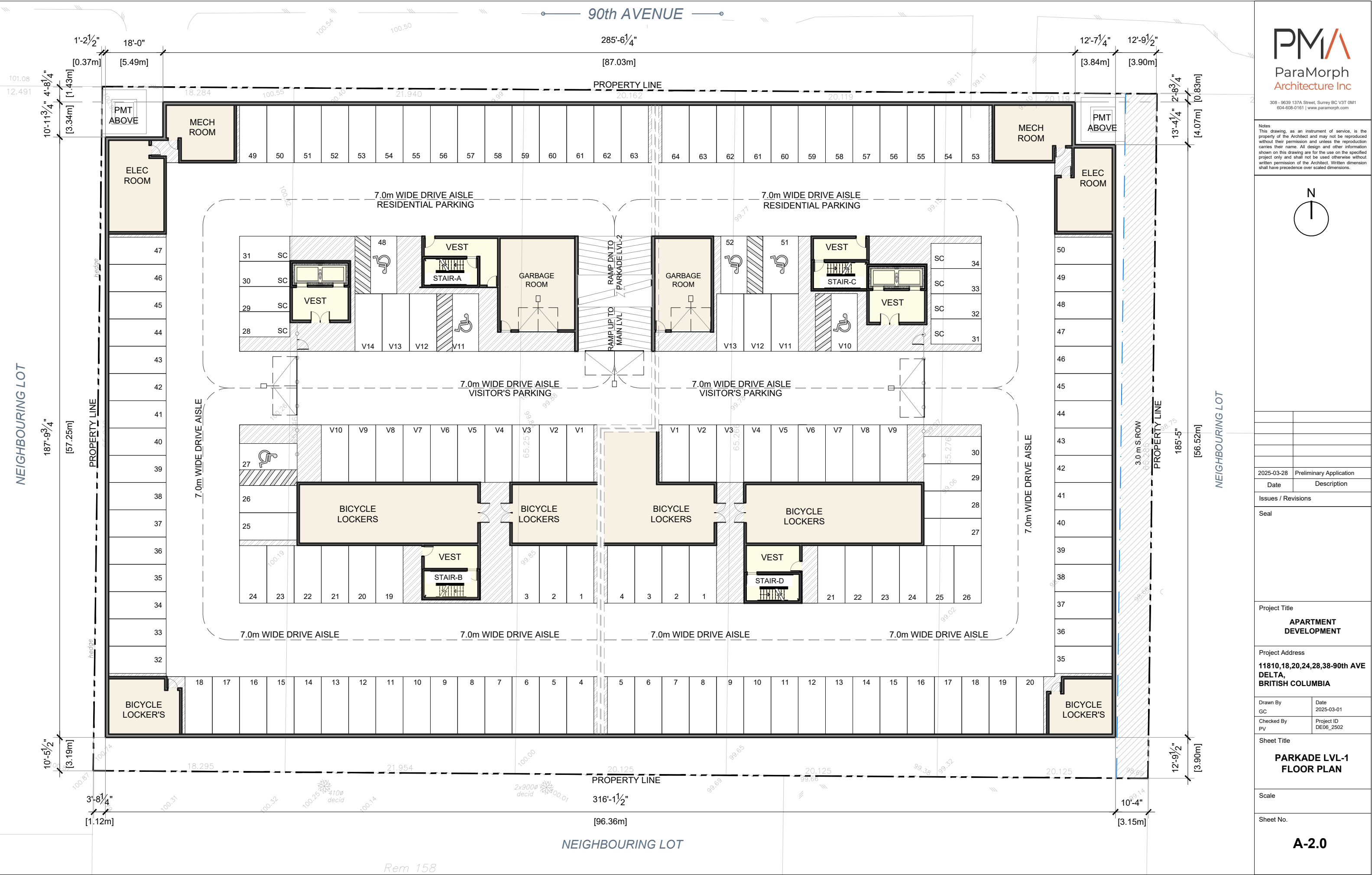
Project Address  
**11810, 18, 20, 24, 28, 38-90th AVE  
DELTA,  
BRITISH COLUMBIA**

|                  |                         |
|------------------|-------------------------|
| Drawn By<br>GC   | Date<br>2025-03-01      |
| Checked By<br>PV | Project ID<br>DE06_2502 |

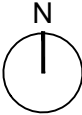
Sheet Title  
**SITE PLAN**

Scale

Sheet No.  
**A-1.0**



Notes  
This drawing, as an instrument of service, is the property of the Architect and may not be reproduced without their permission and unless the reproduction carries their name. All design and other information shown on this drawing are for the use on the specified project only and shall not be used otherwise without written permission of the Architect. Written dimension shall have precedence over scaled dimensions.



|            |                         |
|------------|-------------------------|
| 2025-03-28 | Preliminary Application |
| Date       | Description             |

Issues / Revisions

Seal

Project Title  
**APARTMENT  
DEVELOPMENT**

Project Address  
**11810,18,20,24,28,38-90th AVE  
DELTA,  
BRITISH COLUMBIA**

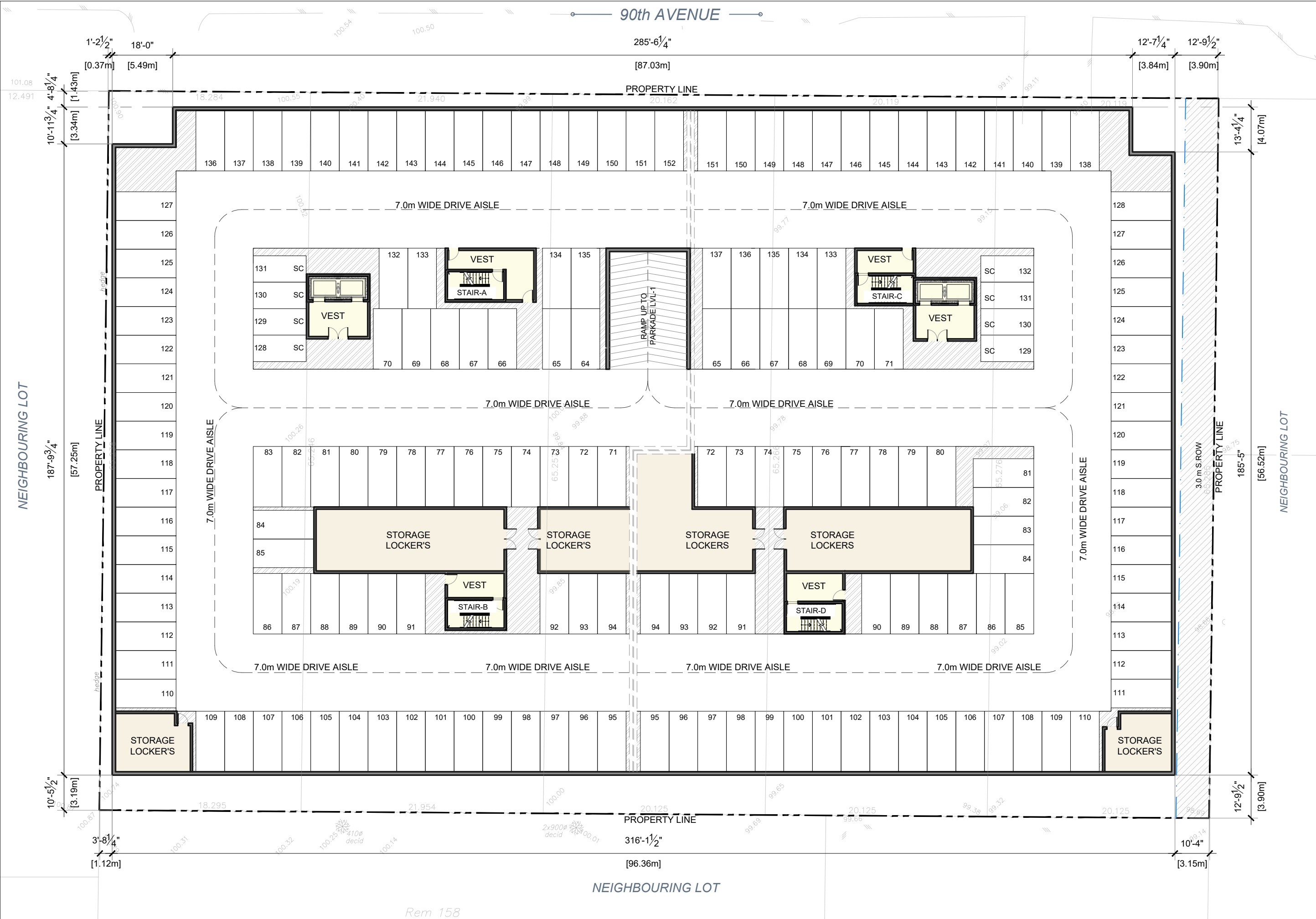
|                  |                         |
|------------------|-------------------------|
| Drawn By<br>GC   | Date<br>2025-03-01      |
| Checked By<br>PV | Project ID<br>DE06_2502 |

Sheet Title  
**PARKADE LVL-1  
FLOOR PLAN**

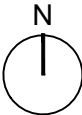
Scale

Sheet No.

**A-2.0**



Notes  
This drawing, as an instrument of service, is the property of the Architect and may not be reproduced without their permission and unless the reproduction carries their name. All design and other information shown on this drawing are for the use on the specified project only and shall not be used otherwise without written permission of the Architect. Written dimension shall have precedence over scaled dimensions.



|            |                         |
|------------|-------------------------|
|            |                         |
|            |                         |
|            |                         |
|            |                         |
| 2025-03-28 | Preliminary Application |
| Date       | Description             |

Issues / Revisions

Seal

Project Title  
**APARTMENT  
DEVELOPMENT**

Project Address  
**11810,18,20,24,28,38-90th AVE  
DELTA,  
BRITISH COLUMBIA**

|                  |                         |
|------------------|-------------------------|
| Drawn By<br>GC   | Date<br>2025-03-01      |
| Checked By<br>PV | Project ID<br>DE06_2502 |

Sheet Title  
**PARKADE LVL-2  
FLOOR PLAN**

Scale

Sheet No.  
**A-2.1**

Notes  
This drawing, as an instrument of service, is the property of the Architect and may not be reproduced without their permission and unless the reproduction carries their name. All design and other information shown on this drawing are for the use on the specified project only and shall not be used otherwise without written permission of the Architect. Written dimension shall have precedence over scaled dimensions.



|                    |                         |
|--------------------|-------------------------|
|                    |                         |
|                    |                         |
|                    |                         |
| 2025-03-28         | Preliminary Application |
| Date               | Description             |
| Issues / Revisions |                         |
| Seal               |                         |

Project Title  
**APARTMENT  
DEVELOPMENT**

Project Address  
**11810,18,20,24,28,38-90th AVE  
DELTA,  
BRITISH COLUMBIA**

|                  |                         |
|------------------|-------------------------|
| Drawn By<br>GC   | Date<br>2025-03-01      |
| Checked By<br>PV | Project ID<br>DE06_2502 |

Sheet Title  
**SECOND  
FLOOR PLAN**

Scale

Sheet No.  
**A-2.2**



Notes  
This drawing, as an instrument of service, is the property of the Architect and may not be reproduced without their permission and unless the reproduction carries their name. All design and other information shown on this drawing are for the use on the specified project only and shall not be used otherwise without written permission of the Architect. Written dimension shall have precedence over scaled dimensions.



|            |                         |
|------------|-------------------------|
| 2025-03-28 | Preliminary Application |
| Date       | Description             |

Issues / Revisions

Seal

Project Title  
**APARTMENT  
DEVELOPMENT**

Project Address  
**11810,18,20,24,28,38-90th AVE  
DELTA,  
BRITISH COLUMBIA**

|                  |                         |
|------------------|-------------------------|
| Drawn By<br>GC   | Date<br>2025-03-01      |
| Checked By<br>PV | Project ID<br>DE06_2502 |

Sheet Title  
**THIRD TO SIXTH  
FLOOR PLAN**

Scale

Sheet No.

**A-2.3**







## APPENDIX B: LOS BACKGROUND



## Levels of Service

Traffic operations are typically described in terms of levels of service, which rates the amount of delay per vehicle for each movement and the entire intersection. Levels of service range from LOS A (representing best operations) to LOS E/F (LOS E being poor operations and LOS F being unpredictable/disruptive operations). LOS E/F are generally unacceptable levels of service under normal everyday conditions. A LOS C or better is considered acceptable operations, while D is considered to be on the threshold between acceptable and unacceptable operations. Operations will typically need to operate at LOS C or better for through movements and LOS E or better for other traffic movements with lower order roads.

The hierarchy of criteria for grading an intersection or movement not only includes delay times, but also takes into account traffic control type (stop signs or traffic signal). For example, if a vehicle is delayed for 19 seconds at an unsignalized intersection, it is considered to have an average operation, and would therefore be graded as an LOS C. However, at a signalized intersection, a 19 second delay would be considered a good operation and therefore it would be given an LOS B. The table below indicates the range of delay for LOS for signalized and unsignalized intersections.

**Table B1 – LOS Criteria by Intersection Traffic Control**

| Level of Service<br>(LOS) | Unsignalized Intersection<br>Average Vehicle Delay<br>(sec/veh) | Signalized Intersection<br>Average Vehicle Delay<br>(sec/veh) |
|---------------------------|-----------------------------------------------------------------|---------------------------------------------------------------|
| A                         | 0 – 10                                                          | 0 – 10                                                        |
| B                         | > 10 – 15                                                       | > 10 – 20                                                     |
| C                         | > 15 – 25                                                       | > 20 – 35                                                     |
| D                         | > 25 – 35                                                       | > 35 – 55                                                     |
| E                         | > 35 – 50                                                       | > 55 – 80                                                     |
| F                         | > 50                                                            | > 80                                                          |



## **APPENDIX C: PRELIMINARY TRAFFIC IMPACT REVIEW – ACKNOWLEDGEMENT AND CONSENT FORM**

# Form AB – Preliminary Traffic Impact Review Acknowledgement and Consent Form



This submission form should be completed by a professional engineer in good standing with Engineers and Geoscientists BC and accompany the Preliminary Traffic Impact Review. Applicants are encouraged to discuss the requirements relating to their proposal with the Development Department prior to submitting an application and ensuring their consulting engineer is aware of or familiar with the minimum standards.

**Note:** The Preliminary Traffic Impact Review will determine whether a Traffic Impact Study is required to analyze the effects of new development on the local transportation network considering the scale of land use change and the capacity of existing infrastructure to handle future traffic volumes.

**☒ Please check off which of the following has been included in the Preliminary Traffic Impact Review:**

- ☐ Brief description of the proposal including reference to matters which will influence traffic volumes (e.g., increase in density, additional vehicle parking, container storage / warehousing capacity increase, etc.);
- ☐ Anticipated number of vehicle trips determined through the use of the most current edition of the Institute of Transportation Engineers (ITE) *Trip Generation Manual*. If no ITE rates exist for the type of development proposed, the City will consider traffic counts from similar uses, within similar contexts in the Lower Mainland;
- ☐ Reference to the adequacy of sightlines as they relate to ingress and egress to the subject property(ies), considering the design speed of the road(s) providing access to the site and the potential for obstructions;
- ☐ Internal site operation diagram which demonstrates vehicle flow / movement throughout the development. Note this may include a swept path analysis which clearly illustrates vehicle maneuverability within constrained portions of the site (e.g., at the terminus of laneways, driveway accesses, etc.); and
- ☐ Confirmation that the development will not result in any vehicle queuing within the municipal boulevard.

**☒ If a Traffic Impact Study has been requested, please check off which of the following has been included in the Study:**

| Overview of Development and Transportation Network                                                                                                                                                                                                        |                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| ▪ Describe the development proposal including reference to any land use change and factors which may affect vehicle and pedestrian volumes observed within the transportation network                                                                     | <input checked="" type="checkbox"/> |
| ▪ Provide a context map of the subject property(ies) and the abutting road network (approx. scale 1:1500)                                                                                                                                                 | <input checked="" type="checkbox"/> |
| ▪ Provide a broader area map illustrating roads, by classification, signalized intersections, pedestrian connections, bus stops and other related transportation network features within 1.5 km of the site, or as directed by the Engineering Department | <input type="checkbox"/>            |

| Site Layout and Access                                                                                                                                                                                                         |                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| ▪ Provide a detailed site plan illustrating vehicle drive aisles and access to the public road network.                                                                                                                        | <input checked="" type="checkbox"/> |
| ▪ Ensure the site plan is compliant with applicable zoning provisions, development standards, and building code requirements. Where standards are not met, identify the relief that may be required in support of the project. | <input checked="" type="checkbox"/> |
| ▪ Include a summary of required and proposed parking, as outlined in the City's Zoning Bylaw                                                                                                                                   | <input checked="" type="checkbox"/> |
| ▪ Illustrate sight distances entering / exiting the site considering existing obstructions and the geometric design of the abutting road network                                                                               | <input checked="" type="checkbox"/> |
| ▪ Demonstrate on-site circulation of vehicles and pedestrians, including a swath analysis where vehicle maneuverability may be constrained; reference to ICBC on-site parking guidelines may be advantageous                   | <input checked="" type="checkbox"/> |
| ▪ Review parking requirements, i.e. patrons/visitors, employees, loading, etc.                                                                                                                                                 | <input checked="" type="checkbox"/> |



Application Centre, Development Department

Contact Us: 604-946-3380 or [Development@delta.ca](mailto:Development@delta.ca)

June 2023

Page 1 of 3

| Description of Existing Transportation Network Conditions                                                                                                                                                                 |                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| ▪ Describe the transportation network which serves the development including reference to intersection geometrics, road rights-of-way, traffic control measures at intersections, transit routes / bus stops, and related | <input checked="" type="checkbox"/> |
| ▪ Provide a quantified summary of average daily traffic (ADT), AM and PM peak hour turning movements, and levels of service within the transportation network serving the development site                                | <input checked="" type="checkbox"/> |
| ▪ Determine existing queue lengths at controlled intersections which may be impacted by the development                                                                                                                   | <input checked="" type="checkbox"/> |

| Description of Future Transportation Network Conditions                                                                                                                                                                                                                                                                                                                                                              |                                     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| ▪ Identify other projects / proposals within the transportation network servicing the site subject and determine the volume of traffic that may be generated by each over a 5 and 10 year planning horizon; identify all assumptions made in determining base and future traffic volumes                                                                                                                             | <input checked="" type="checkbox"/> |
| ▪ Provide a quantified summary of average daily traffic (ADT), AM and PM peak hour turning movements, and levels of service resulting from the development and other projects / proposals within the transportation network serving the development site; if relevant, show impact of traffic levels generated through development phases in addition to the cumulative impact of traffic within the overall network | <input checked="" type="checkbox"/> |
| ▪ Determine future queue lengths at controlled intersections which may be impacted by the development                                                                                                                                                                                                                                                                                                                | <input checked="" type="checkbox"/> |

| Recommendations                                                                                                                                                                                                                                                                                                                     |                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| ▪ Identify the need for infrastructure improvements necessary to maintain an acceptable level of service at controlled intersections as well as any other improvements required to address existing deficiencies and / or to support the effective operation of the development (e.g., road widening, pedestrian connections, etc.) | <input checked="" type="checkbox"/> |
| ▪ Distinguish between short-term improvements and long-term improvements required to support the project                                                                                                                                                                                                                            | <input checked="" type="checkbox"/> |
| ▪ The report must be sealed and signed by a Professional Engineer registered in the Province of BC                                                                                                                                                                                                                                  | <input checked="" type="checkbox"/> |

If any of the above has not been included, please explain below:

Outline of transportation features in the vicinity of the site provided in report text and individual context maps by mode

---



---



---



---



### Acknowledgement and Consent Form

When drawings, documents or reports are submitted to the City of Delta as part of the application process, the owner/author of these submissions (e.g., surveyors, consultants, etc.) must acknowledge they have met the minimum submission requirements and consent in writing to allow their work to be reproduced (e.g., photocopied, scanned, etc.) by the City of Delta and the Land Title Office.

1. The undersigned warrants that they are the owner(s) (the “Owner”) of the copyright for the Preliminary Traffic Impact Review or the Traffic Impact Study (the “Work”) prepared for:

11810-11838 90 Avenue

SITE ADDRESS

SYNC (90 ND) Holdings Inc

CLIENT NAME

2. The Owner acknowledges and consents to the reproduction of the Work by the City of Delta for the purpose of inclusion of the Work in Council reports and/or information packages prepared for any Public Hearing held pursuant to requirements of the *Local Government Act*, as amended, or any bylaw or policy of the City of Delta, and to the provision of copies to interested members of the public prior to or at the Public Hearing.
3. The Owner also acknowledges and consents to the reproduction of the Work and attachment of the reproduction to any document where such document may be required for filing in the Land Title Office.
4. The Owner understands it may, in writing, request the City of Delta that any reproductions made of the Work be stamped that it not be further reproduced or used without permission of the author.
5. The Owner also acknowledges and understands that the Work may also be made subject of a request under the *Freedom of Information and Protection of Privacy Act*, as amended, and that the reproduction by the City of Delta of the Work pursuant to such a request is not a breach of copyright.



ENGINEER SIGNATURE

2025-10-22

DATE

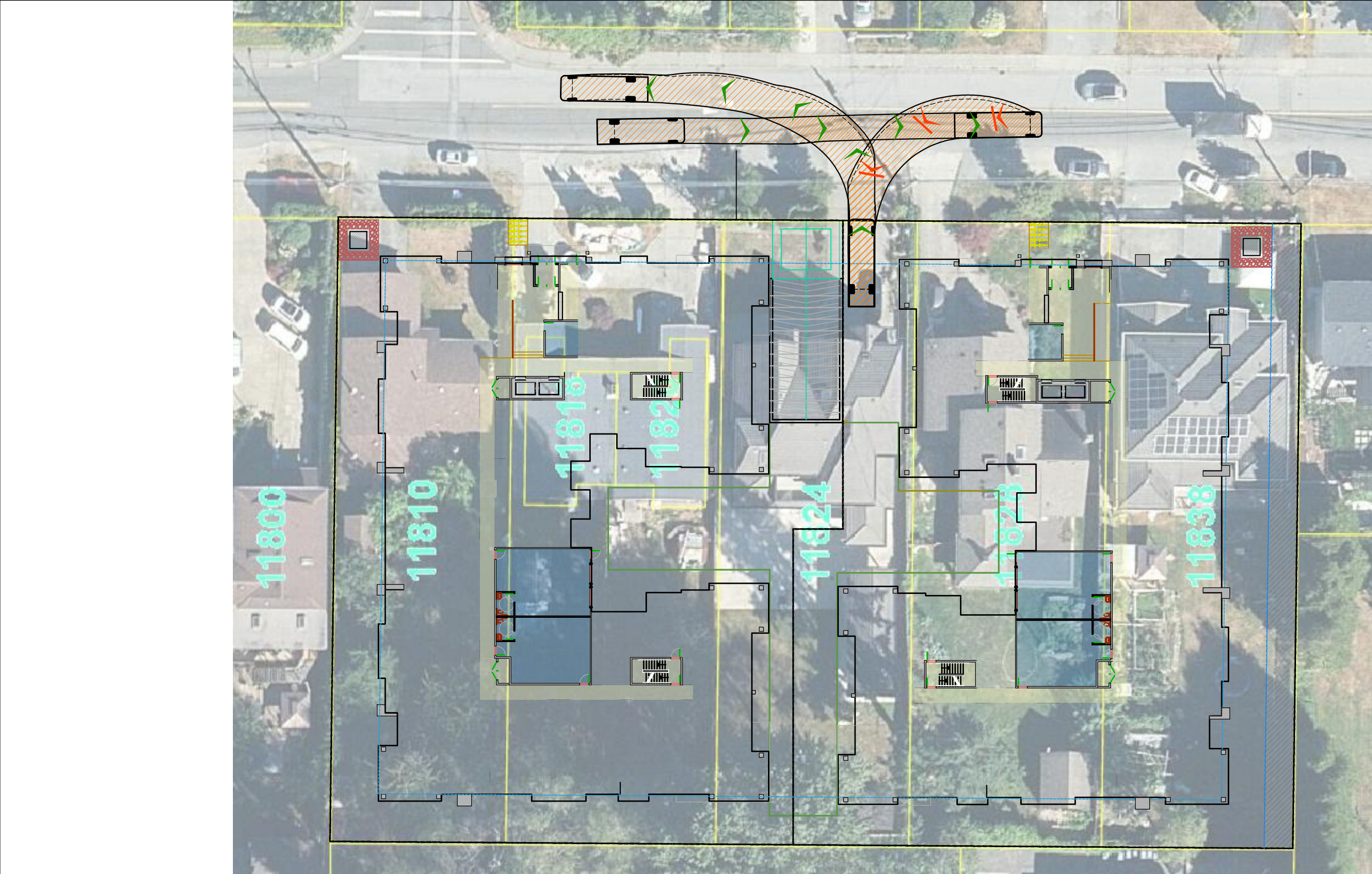
Andres Baez

ENGINEER NAME (Please Print)





## APPENDIX D: SWEPT PATH ANALYSIS



LEGEND:

SU9 - Single Unit or Bus  
Overall Length  
Overall Width  
Overall Body Height  
Min Body Ground Clearance  
Track Width  
Lock-to-lock time  
Curb to Curb Turning Radius

PERMIT TO PRACTICE:

THESE DESIGN DOCUMENTS ARE PREPARED SOLELY FOR THE USE BY THE PARTY WITH WHOM THE DESIGN PROFESSIONAL HAS ENTERED INTO A CONTRACT, AND THERE ARE NO REPRESENTATIONS OF ANY KIND MADE BY THE DESIGN PROFESSIONAL TO ANY PARTY WITH WHOM THE DESIGN PROFESSIONAL HAS NOT ENTERED INTO CONTRACT.

SEAL:

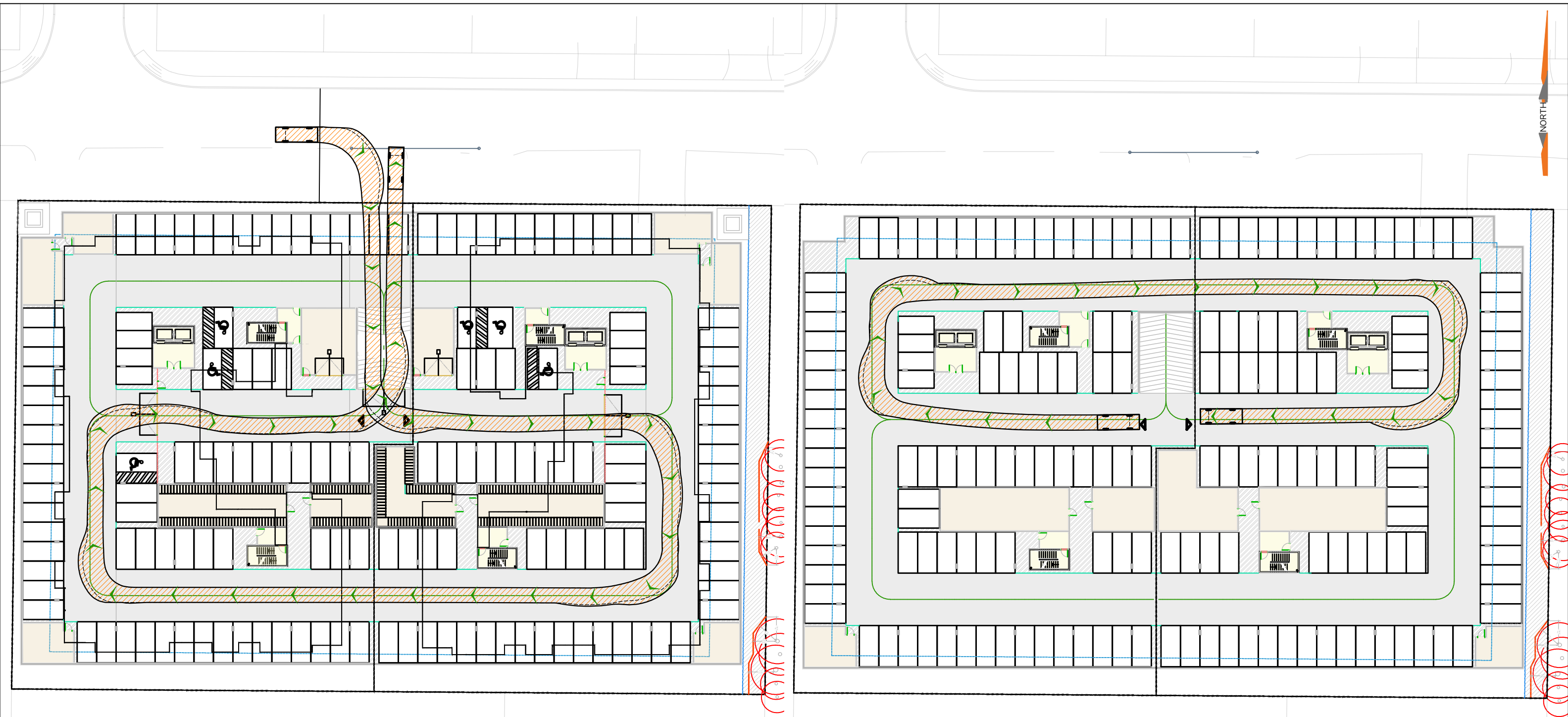
| REVISIONS |                  |            |
|-----------|------------------|------------|
| 0         | ISSUED TO CLIENT | 2025-07-15 |
| 1         |                  |            |
| 2         |                  |            |
| 3         |                  |            |
| 4         |                  |            |
| 5         |                  |            |
| 6         |                  |            |
| 7         |                  |            |

### 11810-11838 90 Avenue TIA Swept Path Analysis SU9 Loading

|                       |                         |                |
|-----------------------|-------------------------|----------------|
| DRAWING NO:<br>DWG-01 | SCALE:<br>1:400         | DRAWN:<br>CK   |
| DESIGN SPEED:<br>-    | DESIGN VEHICLE:<br>SU-9 | CHECKED:<br>AB |

WATT Consulting Group  
WATTCONSULTINGGROUP.COM

PROJECT NO: 4007.B01



Parkade Level 1

Parkade Level 2

LEGEND:

P - Passenger Car  
Overall Length 5.600m  
Overall Width 2.000m  
Overall Body Height 1.555m  
Min Body Ground Clearance 0.340m  
Track Width 2.000m  
Lock-to-lock time 4.00s  
Curb to Curb Turning Radius 6.300m

PERMIT TO PRACTICE:

THESE DESIGN DOCUMENTS ARE PREPARED SOLELY FOR THE USE BY THE PARTY WITH WHOM THE DESIGN PROFESSIONAL HAS ENTERED INTO A CONTRACT, AND THERE ARE NO REPRESENTATIONS OF ANY KIND MADE BY THE DESIGN PROFESSIONAL TO ANY PARTY WITH WHOM THE DESIGN PROFESSIONAL HAS NOT ENTERED INTO CONTRACT.

SEAL:

| REVISIONS |                  |            |
|-----------|------------------|------------|
| 0         | ISSUED TO CLIENT | 2025-07-15 |
| 1         |                  |            |
| 2         |                  |            |
| 3         |                  |            |
| 4         |                  |            |
| 5         |                  |            |
| 6         |                  |            |
| 7         |                  |            |

PROJECT NAME

118010-11838 90 Avenue TIA

Swept Path Analysis

|               |                 |          |
|---------------|-----------------|----------|
| DRAWING NO:   | SCALE:          | DRAWN:   |
| DWG-02        | 1:500           | CK       |
| DESIGN SPEED: | DESIGN VEHICLE: | CHECKED: |
| -             | PASSENGER CAR   | AB       |

WATT Consulting Group

WATTCONSULTINGGROUP.COM

PROJECT NO: 4007.B01