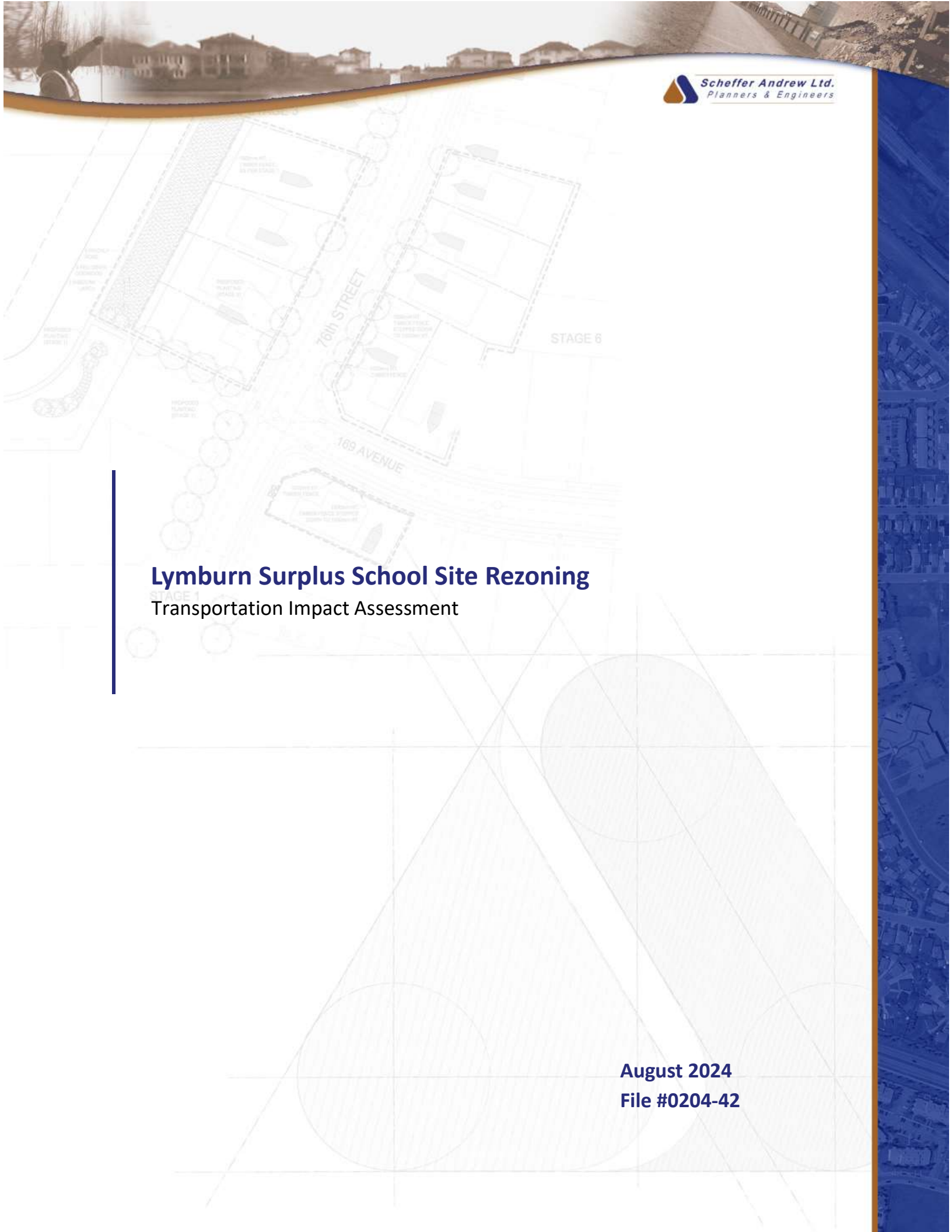




## **Lymburn Surplus School Site Rezoning**

### **Transportation Impact Assessment**

**August 2024**  
**File #0204-42**

## Contents

|          |                                                                 |           |
|----------|-----------------------------------------------------------------|-----------|
| <b>1</b> | <b>Introduction .....</b>                                       | <b>1</b>  |
| 1.1      | Proposed Development .....                                      | 1         |
| 1.2      | Study Scope .....                                               | 2         |
| 1.3      | Roadway Access .....                                            | 3         |
| <b>2</b> | <b>Existing Infrastructure &amp; Conditions .....</b>           | <b>3</b>  |
| 2.1      | Existing Road Network Conditions .....                          | 3         |
| 2.1.1    | 184 Street .....                                                | 3         |
| 2.1.2    | 72 Avenue .....                                                 | 3         |
| 2.1.3    | 185 Street .....                                                | 4         |
| 2.1.4    | 184 Street & 72 Avenue Intersection .....                       | 4         |
| 2.1.5    | 185 Street & 72 Avenue Intersection .....                       | 4         |
| 2.2      | Existing Neighbourhood Context .....                            | 4         |
| 2.3      | Existing Public Transit Conditions .....                        | 5         |
| 2.4      | Historical City of Edmonton Traffic Count Review .....          | 7         |
| 2.4.1    | 184 Street North of 73 Avenue .....                             | 7         |
| 2.4.2    | 188 Street North of 69 Avenue .....                             | 7         |
| <b>3</b> | <b>Traffic Projections .....</b>                                | <b>8</b>  |
| 3.1      | 2024 Background Traffic .....                                   | 8         |
| 3.2      | Development Traffic .....                                       | 9         |
| 3.2.1    | Trip Generation .....                                           | 9         |
| 3.2.2    | Projected Development Traffic .....                             | 11        |
| 3.3      | 2024 Combined Traffic .....                                     | 13        |
| 3.3.1    | Case 1: Minimum Built Form (72 Townhouses) .....                | 13        |
| 3.3.2    | Case 2: Maximum Built Form (230 Low-Rise Apartment Units) ..... | 13        |
| <b>4</b> | <b>Analysis .....</b>                                           | <b>13</b> |
| 4.1      | Capacity Analysis .....                                         | 14        |
| 4.1.1    | 2024 Background Traffic Analysis .....                          | 15        |
| 4.1.2    | 2024 Combined Traffic Analysis – Case 1 .....                   | 15        |
| 4.1.3    | 2024 Combined Traffic Analysis – Case 2 .....                   | 16        |
| 4.2      | Intersection Configuration Summary and Recommendations .....    | 16        |
| 4.3      | Pedestrian Network Review .....                                 | 16        |
| 4.4      | Cycling Network Review .....                                    | 17        |
| 4.5      | Public Transit Review .....                                     | 18        |
| 4.6      | Driveway Access .....                                           | 18        |
| 4.7      | Parking Review .....                                            | 18        |
| <b>5</b> | <b>Conclusions and Recommendations .....</b>                    | <b>19</b> |
| 5.1      | Summary .....                                                   | 19        |
| 5.2      | Recommendation .....                                            | 20        |
| <b>6</b> | <b>Closure .....</b>                                            | <b>21</b> |

## List of Tables

|                                                                                  |    |
|----------------------------------------------------------------------------------|----|
| Table 1 - Minimum & Maximum Built Form Trip Generation Rates.....                | 9  |
| Table 2 - Trip Generation for Proposed Site (Minimum & Maximum Built Forms)..... | 10 |
| Table 3 - Level of Service Definition.....                                       | 14 |
| Table 4 - Volume to Capacity Ratio Definition.....                               | 14 |
| Table 5 - 2024 Background Traffic Analysis .....                                 | 15 |
| Table 6 - Case 1: Minimum Built Form Combined Traffic Analysis.....              | 16 |
| Table 7 - Case 2: Maximum Built Form Combined Traffic Analysis .....             | 16 |

## List of Figures

|                                                                                   |    |
|-----------------------------------------------------------------------------------|----|
| Figure 1 - Proposed Development Location .....                                    | 1  |
| Figure 2 - Site Context.....                                                      | 2  |
| Figure 3 - Adjacent ETS Bus Day Map .....                                         | 5  |
| Figure 4 - Adjacent ETS Late Night/Owl Map.....                                   | 6  |
| Figure 5 - Nearest Bus Stop Locations .....                                       | 6  |
| Figure 6 - 184 Street north of 73 Avenue (2011) .....                             | 7  |
| Figure 7 - 188 Street north of 69 Avenue (2016) .....                             | 7  |
| Figure 8 - 2024 Background Traffic .....                                          | 8  |
| Figure 9 - Trip Assignment and Distribution of Development Traffic .....          | 11 |
| Figure 10 - Case 1: Minimum Built Form Proposed Development Traffic Volumes ..... | 12 |
| Figure 11 - Case 2: Maximum Built Form Proposed Development Traffic Volumes ..... | 12 |
| Figure 12 - Case 1: Minimum Built Form Combined Traffic.....                      | 13 |
| Figure 13 - Case 2: Maximum Built Form Combined Traffic .....                     | 13 |
| Figure 14 - Pedestrian & Cycling Network .....                                    | 17 |

## Appendices

- Appendix A - Site Rezoning Plan
- Appendix B - Traffic Count Data
- Appendix C - Traffic Analysis

## 1 Introduction

The City of Edmonton, Real Estate – Land Development group (CoE-LD) is completing assessments at surplus school sites with the intent of rezoning and acquiring development approvals for future market and affordable housing facilities. As part of the rezoning and development approval process the City has retained Scheffer Andrew Ltd. to complete a Transportation Impact Assessment (TIA) for the Lymburn surplus school site proposed rezoning.

### 1.1 Proposed Development

The Lymburn Neighbourhood is located in West Edmonton, bounded by Whitemud Drive to the north, 69 Avenue to the south, 178 Street to the east, and Anthony Henday Drive to the west. When the neighbourhood was originally planned, several sites were identified for schools.

In particular, a site adjacent to 184 Street and 72 Avenue was identified as a school site. However, the local school boards have declared this site surplus, and have identified that this site will not be required for a school in the future. As a result, the City of Edmonton is seeking to rezone and develop this parcel to provide additional housing units in the neighbourhood.

The proposed development examined in this TIA is immediately east of the existing Lymburn School in Lymburn Park.

The subject property is located northwest of the 184 Street and 72 Avenue intersection at municipal address 7204 – 184 Street NW. Lymburn Park is located north and west of the subject property. Soccer fields, baseball diamonds, an outdoor rink, and a playground are located in Lymburn Park. Lymburn School is located further west from the site along 72 Avenue.

The property is proposed to be zoned as RM h.16.0 – Medium Scale Residential.

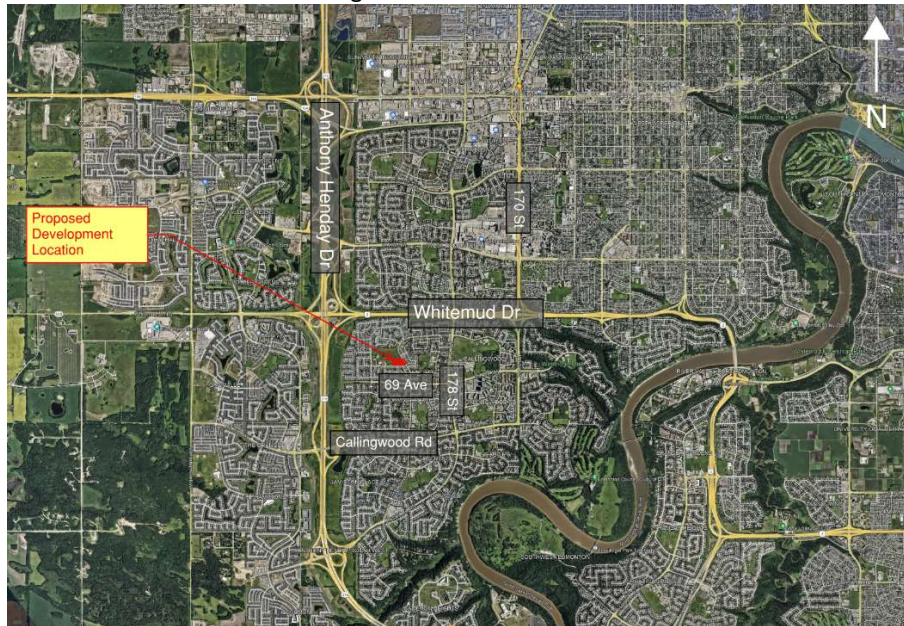
The proposed site location is identified in **Figure 1** below. The site rezoning plan is included in **Appendix A**.

Figure 1 - Proposed Development Location



Context within the City of Edmonton is provided in **Figure 2** below.

Figure 2 - Site Context



As noted above, the Lymburn surplus school site is proposed as the RM h16.0 – Medium Scale Residential Zone. The City's Land Use Bylaw identified the minimum density for this zone at 45 dwelling units per hectare. The total area of the proposed development is 1.40 ha and therefore the minimum development potential is 63 units. CoE-LD has completed a market analysis and other studies to identify a range of development concepts that are feasible for this site.

The proposed RM h16.0 zone will allow for townhouses or low rise apartments. Based on the range of built forms, COE-LD has identified a minimum development concept of 72 Townhouses and a maximum development concept of 230 Low Rise Apartment units (4 stories). At this time, a final development concept has not been developed, but the total number of units should fall within the range identified.

This TIA considers and reviews both the minimum (72) and maximum (230) proposed dwelling units to identify future transportation impacts to the surrounding neighbourhood.

## 1.2 Study Scope

Scheffer Andrew Ltd. (SAL) met with Greg Ablett and Marie Rudiak of Planning Coordination - Development Services to determine a scope for this Transportation Impact Assessment (TIA). Generally, this TIA consisted of the following tasks:

- Start-up meeting with CoE-LD.
- Scoping meeting with COE Development Services.
- Traffic Counts (48 hours), at intersection of 184 Street and 72 Avenue.
- Background information review, including site servicing study, proposed development, existing ASPs/NSPs, previous or adjacent TIAs, existing traffic volume information.
- Site review to ascertain existing vehicular, pedestrian, bicycle, and other access modes.

- Trip generation, distribution, assignment for proposed development (2 scenarios).
- Traffic volume assessment and analysis for intersection of 184 Street and 72 Avenue.
- Assessment and recommendations for vehicular, pedestrian, cycling, and transit access.
- Identification of any upgrades or improvements that will be required with site development.
- TIA report summarizing the above.
- Coordination, responses, and updates to the reports as required/requested based on LDA comments.

This study will evaluate the subject intersection under existing 2024 conditions. As such two scenarios will be evaluated:

- 2024 background traffic only.
- 2024 combined (background and development) traffic for minimum built form (Case 1).
- 2024 combined (background and development) traffic for maximum built form (Case 2).

### 1.3 Roadway Access

The proposed development is assumed to have vehicular access from 72 Avenue west of 184 Street. This location is consistent with the options discussed in the site servicing study. Scenario A in the site servicing study is the most cost effective, and places the site access directly across from the existing 185 Street and 72 Avenue intersection. This Scenario includes recommendations for relocating a fire hydrant and curb ramps. Scenario B and Scenario C are approximately 64m and 108m west of the 185 Street and 72 Avenue intersection, respectively, and require utility upgrades. Scenario D is not relevant as it is for the alternate site location.

From an intersection spacing perspective, all three site access scenarios are acceptable. For the purpose of this study, we have assumed access will be developed to 72 Avenue directly across from 185 Street (Scenario A) and the location will be confirmed through the development permit process as it will also need to consider the proposed built form and parking layout. The precise location of the site access does not have a material effect on our analysis.

## 2 Existing Infrastructure & Conditions

### 2.1 Existing Road Network Conditions

#### 2.1.1 184 Street

184 Street is a two-way undivided, paved, neighbourhood collector roadway with an approximate width of 11.5m. There is boulevard sidewalk on both sides of 184 Street with parking permitted on both sides. At its north end 184 Street transitions to 76 Avenue to the east. There is a signed school zone from 72 Avenue to approximately 50m south of 75 Avenue. The posted speed limit within the school zone is 30km/h between 7:30am and 9:00pm. Outside of these hours, and the rest of 184 Street, has the default speed limit of 40km/h.

#### 2.1.2 72 Avenue

72 Avenue is a two-way, undivided, paved local roadway. It is approximately 9m wide with monolithic sidewalks on both sides. Most of this roadway has a posted speed limit of 30km/h due to its proximity to

Lymburn School. Parking is permitted on both sides of the roadway and a drop-off/pick-up parking bay is present at the front of Lymburn School.

### **2.1.3 185 Street**

185 Street is a two-way undivided, paved, neighbourhood local roadway with an approximate width of 9m. There is monolithic sidewalk and parking permitted on both sides of 185 Street. At its north end 185 Street terminates at a stop-controlled T-intersection with 72 Avenue. At its south end 185 Street terminates at a yield-controlled T-intersection with 70 Avenue. 185 Street is within the nearby school zone approximately 25m south of 72 Avenue. The rest of the roadway is assumed at the default 40km/h speed limit.

### **2.1.4 184 Street & 72 Avenue Intersection**

The 184 Street and 72 Avenue intersection is a stop-controlled T-intersection with 72 Avenue as the minor stop-controlled roadway and 184 Street free-flow through the intersection. There is a painted crosswalk on the north approach.

There are temporary curb extensions on 184 Street on the west side north of the crosswalk and on the east side south of the crosswalk. Sightline conditions at this intersection appear to be adequate, particularly with the temporary curb extensions present. The curb extensions improve sightlines for left turn movements from 72 Avenue to 184 Street as well as for pedestrians crossing westbound across the north leg of the intersection.

### **2.1.5 185 Street & 72 Avenue Intersection**

The 185 Street and 72 Avenue intersection is a skewed stop-controlled T-intersection with 185 Street as the minor stop-controlled roadway and 72 Avenue free-flow through the intersection. The skew angle is approximately 75 degrees with a curve in 72 Avenue to the east, and the intersection is located 55m west of 186 Street. Curb ramps are provided for crossing all 3 legs of the intersection. As noted, these curb ramps are proposed to be relocated under Scenario A of the site servicing study. Sightline conditions at this intersection appear to be adequate.

## **2.2 Existing Neighbourhood Context**

The City's market analysis notes, "the Lymburn Site is located within a mature low to medium density residential neighbourhood comprised of single detached, and row housing." Specifically, the existing development directly adjacent to the proposed development is all low-density residential housing other than Lymburn School and Callingwood/Lymburn Community League that are adjacent to the same park as the proposed development. The rest of the park accommodates soccer fields, baseball diamonds, and an outdoor rink.

St. Martha school is located approximately 550m east of the proposed development.

Lymburn School is located west of the proposed development and has site access via 72 Avenue. There is a bus drop-off/pick-up parking bay as well as a loading zone along the north edge of 72 Avenue in front of the school. Based on road signage and the local road network it is anticipated that student drop-off/pick-up occurs in front of the school along both sides of 72 Avenue. At multiple locations in front of the school there are "U-turn prohibited" signs to prevent unsafe traffic movements in drop-off/pick-up areas. From

our review, U-turns shouldn't be necessary for drop-off/pick-up as the road network provides adequate access loops to the nearby major arterial roadways (69 Avenue and 178 Street).

The proposed development won't significantly impact the drop-off/pick-up conditions for Lymburn School since, as explained later in **Section 3.2.1**, the majority of the proposed development traffic is anticipated to travel towards the east and not pass in front of the school.

If there are pre-existing drop-off/pick-up issues at Lymburn School, the school could consider reaching out to parents through education and awareness program to help resolve these issues. The proposed development not expected to worsen or create any drop-off/pick-up issues that may exist.

### 2.3 Existing Public Transit Conditions

There are several bus stops near the proposed development along 188 Street, 77 Avenue, 76 Avenue, 178 Street, and 69 Avenue. These bus stops are for Routes 910X, 913, 916, 917, 918, and 923. Bus stops for Routes 910X, 916, and 917 are nearest to the proposed development (within 500m), whereas Routes 913, 918, and 923 are within 1km.

**Figure 3** shows the adjacent ETS bus day map.

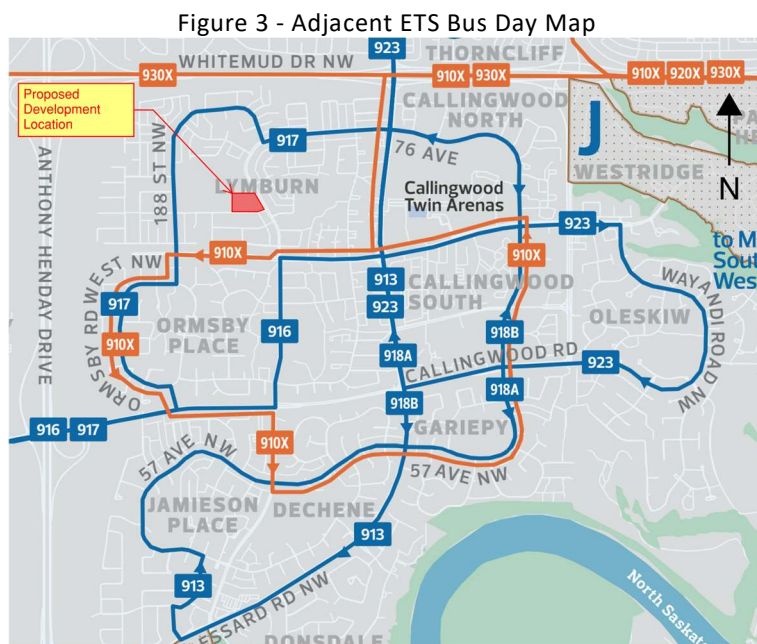


**Figure 4** shows the ETS bus late night/owl map which indicates that there are no late night/owl routes near the rezoning site. The closest of which operates on 87 Avenue.

Figure 4 - Adjacent ETS Late Night/Owl Map

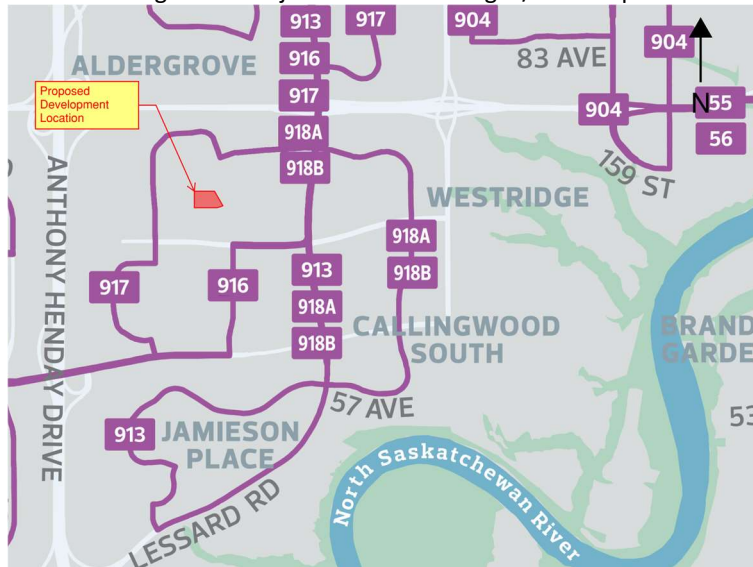


Figure 5 shows the bus stop locations nearest to the proposed development. In addition, there is a “not in service” bus stop pad located adjacent to the site on 184 Street immediately south of 73 Avenue.

Figure 5 - Nearest Bus Stop Locations



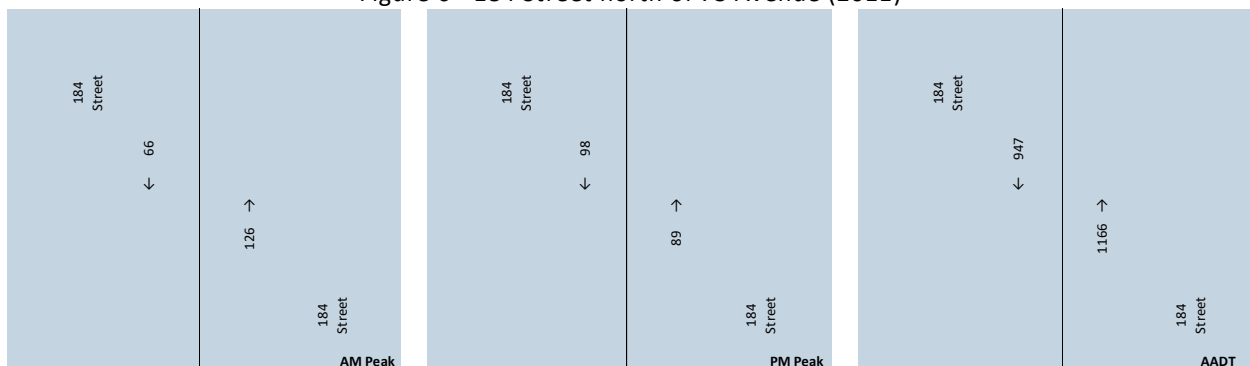
## 2.4 Historical City of Edmonton Traffic Count Review

The City of Edmonton (COE) manages a traffic count database (intersection turning movement and link volume data) for the City's roadway network. The most recent and relevant traffic count data from this COE database was reviewed and is presented in the following sections.

### 2.4.1 184 Street North of 73 Avenue

**Figure 6** shows the average AM Peak, PM Peak, and AADT link volumes for 184 Street north of 73 Avenue in 2011, extracted from the City of Edmonton traffic count database. This was a weekly traffic count; the values presented in the figure are the average of Tuesday-Thursday counts.

Figure 6 - 184 Street north of 73 Avenue (2011)

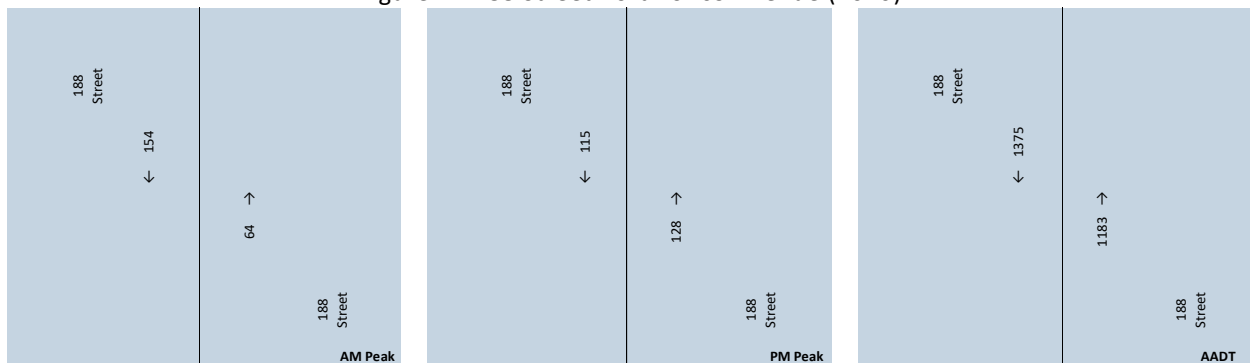


From the data above, it is noted that in 2011 184 Street had an AADT in the range of 2200 vpd north of 73 Avenue (about 160m north of the proposed development).

### 2.4.2 188 Street North of 69 Avenue

**Figure 7** shows the AM Peak, PM Peak, and AADT link volumes for 188 Street north of 69 Avenue in 2016, extracted from the City of Edmonton database.

Figure 7 - 188 Street north of 69 Avenue (2016)



From the data above, it is noted that in 2016 188 Street had an AADT in the range of 2600 vpd north of 69 Avenue, which is about 380m southwest from the proposed development.

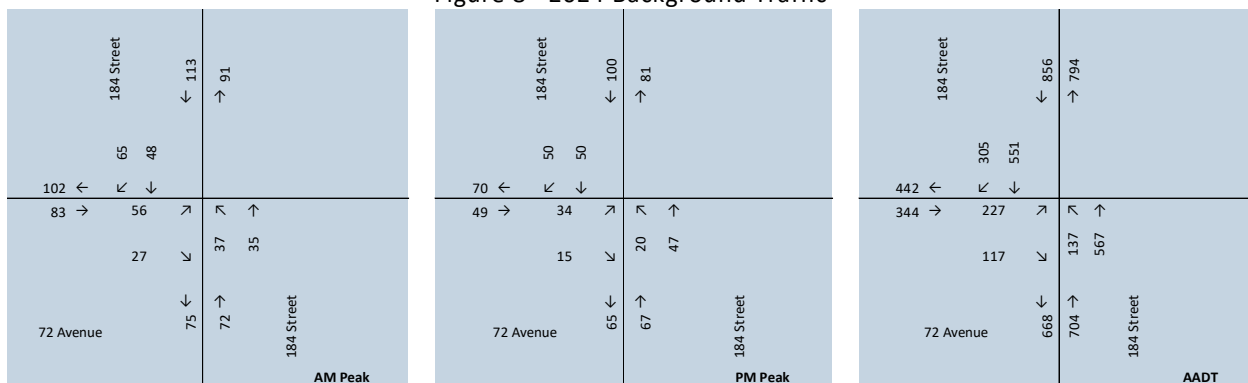
### 3 Traffic Projections

The property is proposed to be zoned as RM h.16.0 – Medium Scale Residential with a minimum density of 45 dwelling units per hectare. The City is proposing two built form cases. Case 1 is the minimum development concept of 72 Townhouses and Case 2 is the maximum development concept of 230 Low-Rise Apartment units (4 stories). The following sections present the background, development, and combined traffic for these two cases under 2024 existing conditions.

#### 3.1 2024 Background Traffic

On March 18-20, 2024, a traffic count was conducted by our project team at the intersection of 184 Street and 72 Avenue to obtain current data at the southeast corner of the proposed development. The 48-hour count was completed using video analysis. The AM Peak, PM Peak, and AADT turning diagrams for the 184 Street/72 Avenue intersection from March 18-20, 2024, are shown in **Figure 8** below. A summary of the traffic count data is included in **Appendix B**.

Figure 8 - 2024 Background Traffic



The 2024 count shows that the AADT on 184 Street is in the range of 1650 vpd, and the AADT on 72 Avenue is in the range of 790 vpd.

The subject property is at the northwest corner of this intersection with proposed site access from 72 Avenue.

The traffic count data at 72 Avenue and 184 Street, the AM peak occurs at 7:45 - 8:45am and the PM peak occurs at 2:45 - 3:45pm for the intersection of 72 Avenue and 184 Street. Based on the Lymburn School website, school begins at 8:25am and ends at 3:19pm, which both fall within the respective peak hours at the subject intersection. The ITE Trip Generation Manual has “Peak Hour of Generator” study data that estimates when the AM peak and PM peak will likely occur for different land uses. Specifically, for Land Use 221 (Multifamily Housing: Mid-Rise), it estimates that the AM peak will occur at 7:00 - 8:00 am and the PM peak will occur at 5:00 - 6:00pm. Therefore, the proposed development’s AM peak is expected to overlap slightly with the subject intersection’s AM peak and occur before the school starts while the PM peak of the proposed development is expected to occur after the subject intersection’s PM peak and after the school’s end time.

### 3.2 Development Traffic

The subject surplus school site is proposed to be rezoned as RM h16.0 Medium Scale Residential with a minimum density of 45 dwelling units per hectare. The total area is 1.40 ha. CoE-LD has identified a minimum built form of 72 townhouse units, and a maximum built form of 230 low rise apartment units (4 stories).

Trip generation was calculated for both the minimum and maximum built form scenarios (Case 1 and Case 2). Trip generation rates were sourced from *Table D.1 City of Edmonton 2013 Trip Generation Rates – Residential Land Uses* from the COE 2016 TIA guidelines. The *RF5 – Row Housing* rates were used for Case 1, and the *RA7 & RA8 – Apartment Housing* rates were used for Case 2.

The calculation of the estimated trips generated by the proposed site are described further below.

#### 3.2.1 Trip Generation

##### Trip Rates

**Table 1** below identifies the applicable trip generation rates from the COE 2016 TIA guidelines for Case 1 and Case 2 of this development.

Table 1 - Minimum & Maximum Built Form Trip Generation Rates

| Land Use                                                         | Time Period  | Rate (trips/du) | In (%) | Out (%) | Notes       |
|------------------------------------------------------------------|--------------|-----------------|--------|---------|-------------|
| Case 1: RF5 - Row Housing<br>(Minimum Built Form)                | AM Peak Hour | 0.46            | 21%    | 79%     | ITE LUC 221 |
|                                                                  | PM Peak Hour | 0.58            | 65%    | 35%     | ITE LUC 221 |
|                                                                  | Daily        | 6.59            | 50%    | 50%     | ITE LUC 221 |
| Case 2: RA7 & RA8 - Apartment<br>Housing<br>(Maximum Built Form) | AM Peak Hour | 0.34            | 17%    | 83%     | Measured    |
|                                                                  | PM Peak Hour | 0.40            | 63%    | 37%     | Measured    |
|                                                                  | Daily        | 5.81            | 50%    | 50%     | ITE LUC 230 |

Projected trips generated by the proposed development were calculated using the estimated number of dwelling units for the minimum and maximum built forms (Case 1 & Case 2), and the rates presented above.

In addition, it was determined from data presented in the 2016 Census – Population by Mode of Transportation (Neighbourhood/Ward) dataset available in the City's Open Data Portal that of the total responses received for Lymburn, that 14% fell under the walk, bicycle, and public transit categories. Therefore, a 14% mode split reduction was used to adjust the rates shown in **Table 1** above. The unadjusted and adjusted calculated trips are shown in **Table 2**.

Table 2 - Trip Generation for Proposed Site (Minimum & Maximum Built Forms)

| Trip Generation for Proposed Site (Min & Max Built Forms)             |           |       |                      |      |       |     |     |      |       |    |     |      |       |    |     |
|-----------------------------------------------------------------------|-----------|-------|----------------------|------|-------|-----|-----|------|-------|----|-----|------|-------|----|-----|
|                                                                       |           |       |                      | AADT |       |     |     | AM   |       |    |     | PM   |       |    |     |
|                                                                       | Unit Type | Units | Mode Split Reduction | Rate | Trips | In  | Out | Rate | Trips | In | Out | Rate | Trips | In | Out |
| Case 1: Townhouses (Minimum Built Form)                               | /dwelling | 72    | 0%                   | 6.59 | 474   | 237 | 237 | 0.46 | 33    | 7  | 26  | 0.58 | 42    | 27 | 15  |
| Adjusted Case 1: Townhouses (Minimum Built Form)                      | /dwelling | 72    | 14%                  | 5.67 | 408   | 204 | 204 | 0.40 | 28    | 6  | 23  | 0.50 | 36    | 23 | 13  |
| Case 2: Low Rise Apartments (4 Stories) (Maximum Built Form)          | /dwelling | 230   | 0%                   | 5.81 | 1336  | 668 | 668 | 0.34 | 78    | 13 | 65  | 0.40 | 92    | 58 | 34  |
| Adjusted Case 2: Low Rise Apartments (4 Stories) (Maximum Built Form) | /dwelling | 230   | 14%                  | 5.00 | 1149  | 575 | 575 | 0.29 | 67    | 11 | 56  | 0.34 | 79    | 50 | 29  |

Considering mode split reduction, the minimum built form (Case 1) is projected to generate an AADT of 408, an AM Peak of 28, and a PM Peak of 36. The maximum built form (Case 2) is projected to generate an AADT of 1149, an AM Peak of 67, and a PM Peak of 79.

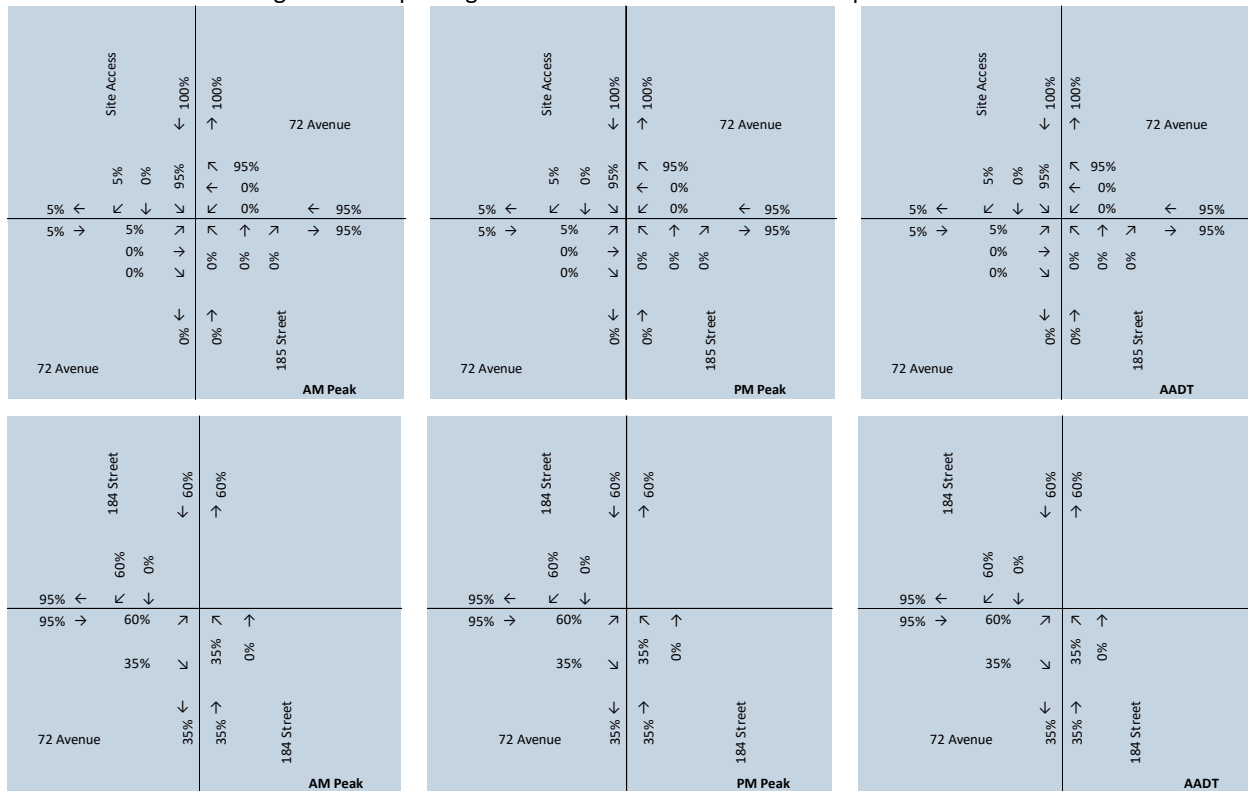
### Trip Assignment and Distribution

Trip assignment and distribution for future traffic is based on an estimate of where people will be traveling to and from when accessing the development. As the most likely route to the nearest major arterial connection is east of the proposed development at 69 Avenue or 178 Street, it is anticipated that the majority of the traffic will travel to/from the east. Therefore, it is assumed that 95% of the development traffic will use the 184 Street and 72 Avenue intersection and 5% will travel west away from the subject intersection.

The trip assignment and distribution of this 95% at the intersection of 184 Street and 72 Avenue is based on the traffic distribution observed during the 2024 traffic count as shown in **Figure 8**. It is assumed that 60% of the development traffic uses the north approach and 35% uses the south approach.

**Figure 9** presents the trip assignment and distribution assumptions of the proposed development traffic at the subject intersections.

Figure 9 - Trip Assignment and Distribution of Development Traffic



### 3.2.2 Projected Development Traffic

Using the trip assignment and distribution percentages in **Figure 9**, the proposed future site generated traffic volumes at the site access and the study intersection for the minimum and maximum built forms (Case 1 and Case 2) were calculated and summarized in **Figure 10** and **Figure 11**.

Figure 10 - Case 1: Minimum Built Form Proposed Development Traffic Volumes

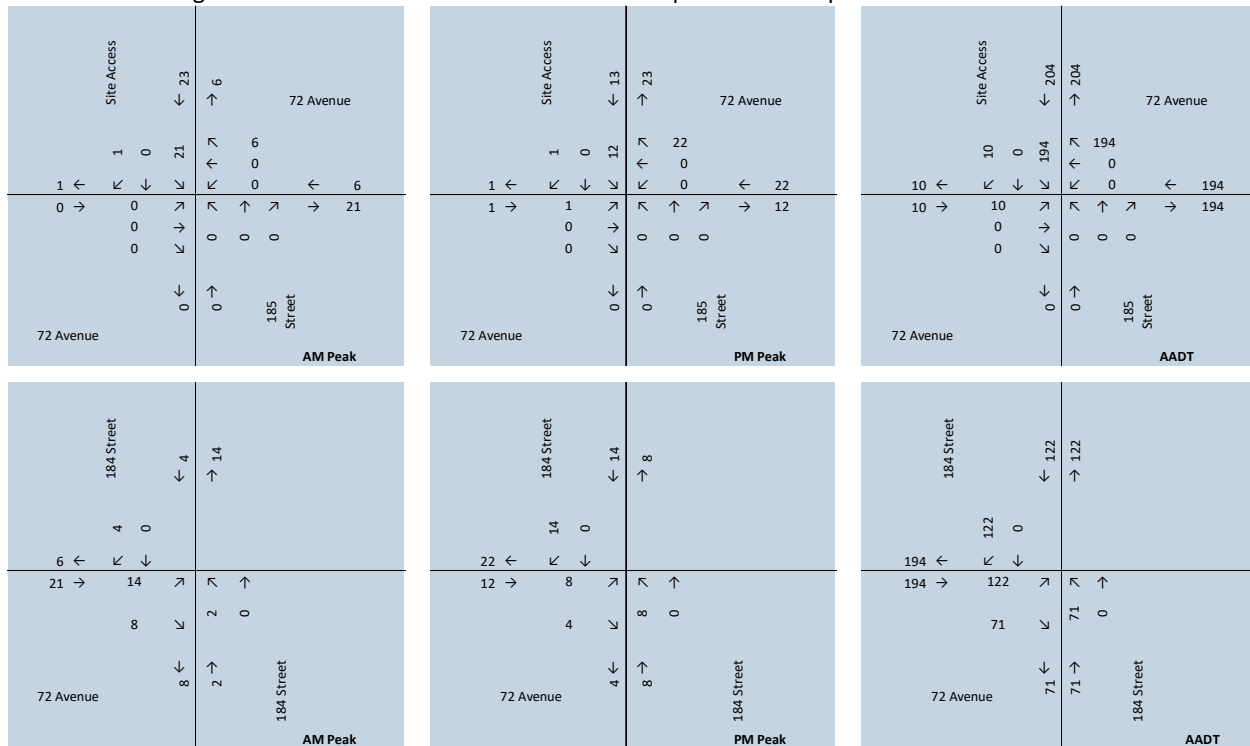
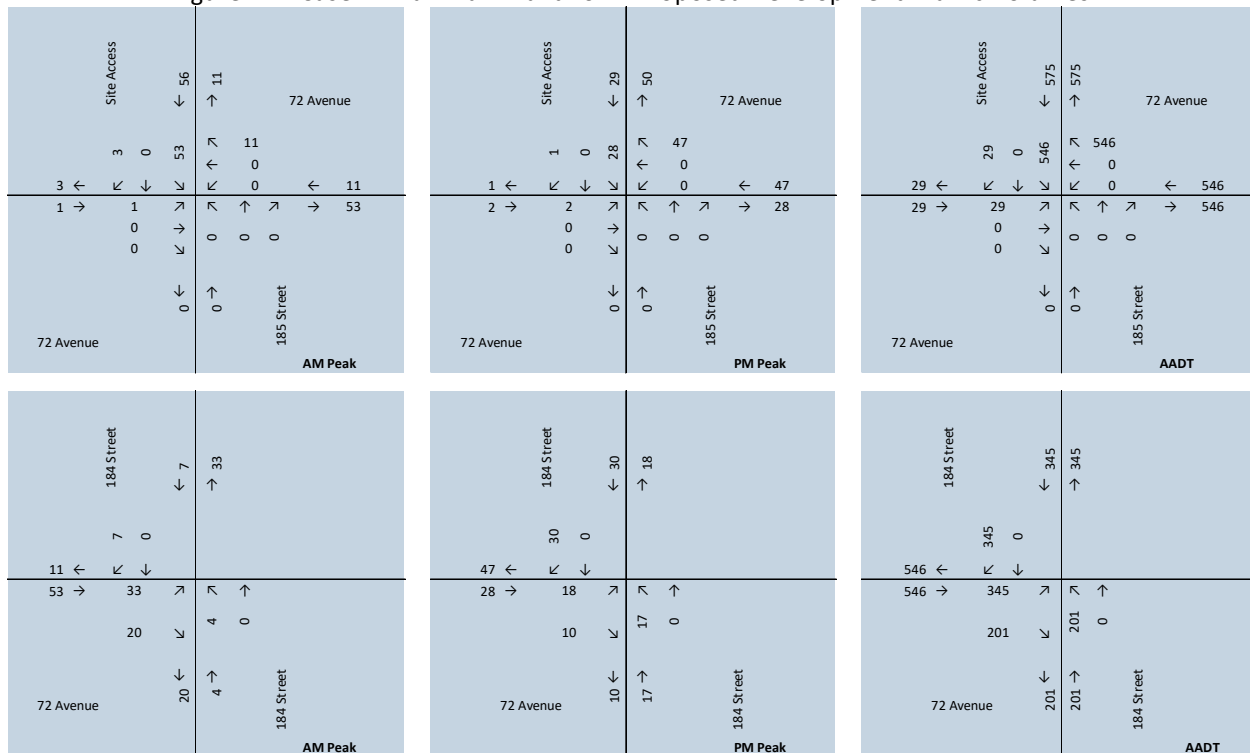


Figure 11 - Case 2: Maximum Built Form Proposed Development Traffic Volumes



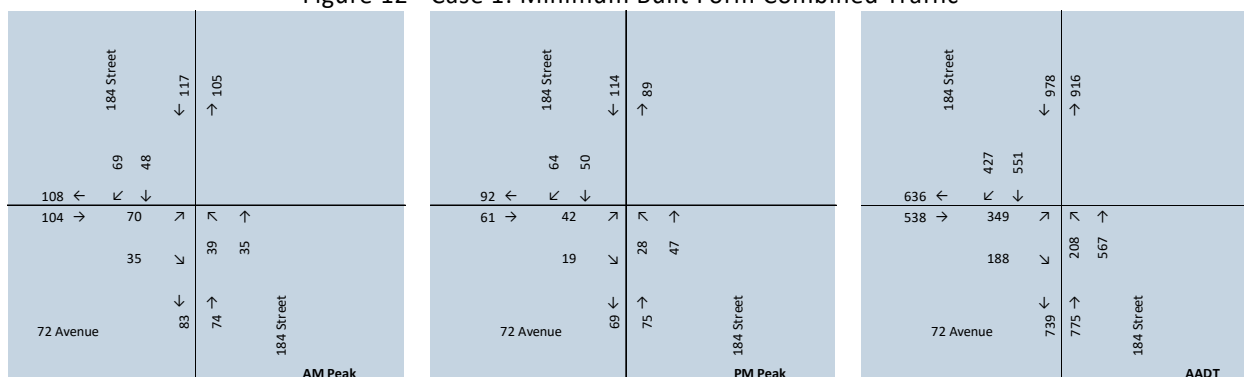
### 3.3 2024 Combined Traffic

The 2024 background and development traffic, as presented in **Sections 3.1** and **3.2** is combined in the following sections for the minimum and maximum built form cases.

#### 3.3.1 Case 1: Minimum Built Form (72 Townhouses)

The 2024 combined traffic volumes for Case 1 are the sum of the 2024 background traffic volumes and the minimum built form development concept (72 Townhouses) traffic projections. **Figure 12** presents the estimated 2024 combined traffic volumes for Case 1.

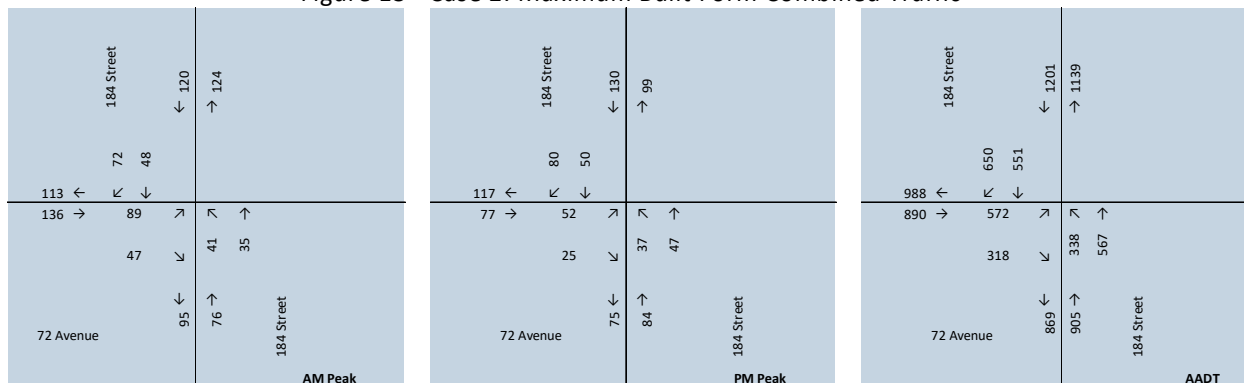
Figure 12 - Case 1: Minimum Built Form Combined Traffic



#### 3.3.2 Case 2: Maximum Built Form (230 Low-Rise Apartment Units)

The 2024 combined traffic volumes for Case 2 are the sum of the 2024 background traffic volumes and the maximum built form development concept (230 Low-Rise Apartment units) traffic projections. **Figure 13** presents the estimated 2024 combined traffic volumes for Case 2.

Figure 13 - Case 2: Maximum Built Form Combined Traffic



## 4 Analysis

A capacity analysis using the Highway Capacity Manual (HCM) methodology for the subject intersection has been completed as described in the following sections. A pedestrian network review, cycling network review, public transit review, driveway access review, and parking review have also been completed.

## 4.1 Capacity Analysis

A Highway Capacity Manual (HCM) analysis was completed. Synchro Studio was used to perform these calculations to determine intersection delays and levels of service.

Level of Service is based on the estimated average delay per vehicle for all traffic passing through an intersection. A good level of service is a result of a very low average delay; the highest level of service is identified as LOS A. A poor level of service is a result of a large average delay; typically, the lowest level of service is identified as LOS F. The level of service categories also vary depending on whether an intersection is signalized or stop- or yield- controlled. The Highway Capacity Manual justifies this difference by noting that drivers stopped at a signal light will have more tolerance for delays because their perception is that eventually they will get their turn, even with a longer wait. Poor level of service can contribute to drivers taking risks and proceeding unsafely into an intersection. **Table 3** identifies the level of service criteria for intersections.

Table 3 - Level of Service Definition

| Level of Service | Average Signalized Control Delay per Vehicle (s) | Average Stop Control Delay per Vehicle (s) |
|------------------|--------------------------------------------------|--------------------------------------------|
| A                | less than 10                                     | less than 10                               |
| B                | 10 – 20                                          | 10 – 15                                    |
| C                | 20 – 35                                          | 15 – 25                                    |
| D                | 35 – 55                                          | 25 – 35                                    |
| E                | 55 – 80                                          | 35 – 50                                    |
| F                | greater than 80                                  | greater than 50                            |

The volume-to-capacity ratio of an intersection describes the extent to which the traffic volumes can be accommodated by the theoretical physical capacity of the road configuration and traffic control. A v/c ratio less than 0.9 indicates that there is generally sufficient capacity to accommodate the traffic on the approach or at the intersection. A value between 0.9 and 1.0 suggests unstable operations and congestion may occur as volumes are nearing the theoretical capacity of the roadway. A calculated value over 1.0 indicates that volumes are theoretically exceeding capacity. **Table 4** identifies the volume-to-capacity criteria for intersections.

Table 4 - Volume to Capacity Ratio Definition

| Volume-to-Capacity Ratio | Indication                                       |
|--------------------------|--------------------------------------------------|
| less than 0.9            | sufficient intersection capacity                 |
| 0.9 to 1.0               | volumes approaching intersection capacity        |
| greater than 1.0         | volumes exceed theoretical intersection capacity |

The City of Edmonton defines short-term and long-term Volume-to-Capacity (v/c) ratio and LOS requirements in Section 3.10 of the 2016 *City of Edmonton: Transportation Impact Assessment Guidelines* (2016 COE TIA Guidelines). In the short-term the City targets roadways to have an overall LOS D or better and a v/c ratio less than 0.85. In the long-term (30 – 40 years) the City targets roadways to have an overall LOS E or better and a v/c ratio less than 0.95. Based on these City requirements, we have identified a target LOS D or better with a v/c of 0.85 or better as the short term is being examined with this analysis.

Section 3.15 of the 2016 TIA Guidelines notes an allowable 5% mode split to account for pedestrian, cycling, and transit trips. However, a vehicular trip generation estimate was completed according to data presented in the 2016 Census – Population by Mode of Transportation data set available in the City of Edmonton’s Open Data Portal. This census data estimates that 14% of people in Lymburn walk, bike, or take transit and as such a 14% mode split reduction was applied as shown in **Table 2**.

All analyses generally use typical Synchro Studio default values or as defined by the City’s TIA guidelines unless otherwise indicated. For instance, a peak hour factor of 1.0 was used, the heavy vehicle split was 3% for all movements, and a saturation flow rate of 1,900 pcu/hr/ln was used based on the 2016 COE TIA Guidelines.

The lane configuration for 184 Street was considered as one southbound lane with shared right/through movements as well as one northbound lane with shared left/through movements. Lane configuration for 72 Avenue was considered as one eastbound lane with shared left/right movements. The intersection is a stop-controlled T-intersection with 72 Avenue as the minor stop-controlled roadway and 184 Street free-flow through the intersection.

Capacity analysis was completed for existing 2024 conditions for background traffic only as well as combined (background and development) traffic for Case 1 and Case 2.

Detailed Synchro HCM analysis is provided in **Appendix C**.

#### 4.1.1 2024 Background Traffic Analysis

**Table 5** provides a summary of the HCM analysis for the 2024 Background AM and PM peak hours. This analysis identifies that the existing configuration currently operates at acceptable service levels with 2024 background traffic volumes. The eastbound, northbound, and southbound approaches operate at LOS A in both the AM and PM peak hours. This indicates that there are no operational issues with the current lane configuration and control.

Table 5 - 2024 Background Traffic Analysis

| Approach |                          | Eastbound                                                                           |    | Northbound                                                                          |    | Southbound                                                                            |    |
|----------|--------------------------|-------------------------------------------------------------------------------------|----|-------------------------------------------------------------------------------------|----|---------------------------------------------------------------------------------------|----|
| Geometry |                          |  |    |  |    |  |    |
| Control  |                          | Stop                                                                                |    | Free                                                                                |    | Free                                                                                  |    |
| AM Peak  | Movement Volume (vph)    | 56                                                                                  | 27 | 37                                                                                  | 35 | 48                                                                                    | 65 |
|          | Approach v/c             | 0.1                                                                                 |    | 0.025                                                                               |    | 0                                                                                     |    |
|          | Approach Delay (s) [LOS] | 9.8 [A]                                                                             |    | 3.9 [A]                                                                             |    | 0 [A]                                                                                 |    |
|          | Int. Delay (s) [LOS]     | 4.1 [A]                                                                             |    |                                                                                     |    |                                                                                       |    |
| PM Peak  | Movement Volume (vph)    | 34                                                                                  | 15 | 20                                                                                  | 47 | 50                                                                                    | 50 |
|          | Approach v/c             | 0.057                                                                               |    | 0.013                                                                               |    | 0                                                                                     |    |
|          | Approach Delay (s) [LOS] | 9.4 [A]                                                                             |    | 2.2 [A]                                                                             |    | 0 [A]                                                                                 |    |
|          | Int. Delay (s) [LOS]     | 2.8 [A]                                                                             |    |                                                                                     |    |                                                                                       |    |

#### 4.1.2 2024 Combined Traffic Analysis – Case 1

**Table 6** provides a summary of the HCM analysis for the 2024 combined AM and PM peak hours. This analysis identifies that the existing configuration currently operates at acceptable service levels under these conditions. The northbound and southbound approaches operate at LOS A in both the AM and PM

peak hours. The eastbound approach operates at LOS B in the AM peak and LOS A in the PM peak. This indicates that there are no operational issues with the current lane configuration and control.

Table 6 - Case 1: Minimum Built Form Combined Traffic Analysis

| Approach |                          | Eastbound                                                                         |    | Northbound                                                                        |    | Southbound                                                                        |    |
|----------|--------------------------|-----------------------------------------------------------------------------------|----|-----------------------------------------------------------------------------------|----|-----------------------------------------------------------------------------------|----|
| Geometry |                          |  |    |  |    |  |    |
| Control  |                          | Stop                                                                              |    | Free                                                                              |    | Free                                                                              |    |
| AM Peak  | Movement Volume (vph)    | 70                                                                                | 35 | 39                                                                                | 35 | 48                                                                                | 69 |
|          | Approach v/c             | 0.127                                                                             |    | 0.027                                                                             |    | 0                                                                                 |    |
|          | Approach Delay (s) [LOS] | 10 [B]                                                                            |    | 4 [A]                                                                             |    | 0 [A]                                                                             |    |
|          | Int. Delay (s) [LOS]     | 4.5 [A]                                                                           |    |                                                                                   |    |                                                                                   |    |
| PM Peak  | Movement Volume (vph)    | 42                                                                                | 19 | 28                                                                                | 47 | 50                                                                                | 64 |
|          | Approach v/c             | 0.073                                                                             |    | 0.019                                                                             |    | 0                                                                                 |    |
|          | Approach Delay (s) [LOS] | 9.6 [A]                                                                           |    | 2.8 [A]                                                                           |    | 0 [A]                                                                             |    |
|          | Int. Delay (s) [LOS]     | 3.2 [A]                                                                           |    |                                                                                   |    |                                                                                   |    |

#### 4.1.3 2024 Combined Traffic Analysis – Case 2

**Table 7** provides a summary of the HCM analysis for the 2024 combined AM and PM peak hours. This analysis identifies that the existing configuration currently operates at acceptable service levels under these conditions. The northbound and southbound approaches operate at LOS A in both the AM and PM peak hours. The eastbound approach operates at LOS B in the AM peak and LOS A in the PM peak. This indicates that there are no operational issues with the current lane configuration and control.

Table 7 - Case 2: Maximum Built Form Combined Traffic Analysis

| Approach |                          | Eastbound                                                                           |    | Northbound                                                                          |    | Southbound                                                                          |    |
|----------|--------------------------|-------------------------------------------------------------------------------------|----|-------------------------------------------------------------------------------------|----|-------------------------------------------------------------------------------------|----|
| Geometry |                          |  |    |  |    |  |    |
| Control  |                          | Stop                                                                                |    | Free                                                                                |    | Free                                                                                |    |
| AM Peak  | Movement Volume (vph)    | 89                                                                                  | 47 | 41                                                                                  | 35 | 48                                                                                  | 72 |
|          | Approach v/c             | 0.165                                                                               |    | 0.028                                                                               |    | 0                                                                                   |    |
|          | Approach Delay (s) [LOS] | 10.2 [B]                                                                            |    | 4.1 [A]                                                                             |    | 0 [A]                                                                               |    |
|          | Int. Delay (s) [LOS]     | 5.1 [A]                                                                             |    |                                                                                     |    |                                                                                     |    |
| PM Peak  | Movement Volume (vph)    | 52                                                                                  | 25 | 37                                                                                  | 47 | 50                                                                                  | 80 |
|          | Approach v/c             | 0.095                                                                               |    | 0.026                                                                               |    | 0                                                                                   |    |
|          | Approach Delay (s) [LOS] | 9.9 [A]                                                                             |    | 3.3 [A]                                                                             |    | 0 [A]                                                                               |    |
|          | Int. Delay (s) [LOS]     | 3.6 [A]                                                                             |    |                                                                                     |    |                                                                                     |    |

## 4.2 Intersection Configuration Summary and Recommendations

Based on the above capacity analysis, the existing intersection is appropriate for both background traffic and combined traffic for both cases analyzed. This illustrates that no upgrades will be required because of the proposed development.

## 4.3 Pedestrian Network Review

Monolithic sidewalks on both sides of 72 Avenue connect with boulevard sidewalks on both sides of 184 Street at the subject intersection. There is a painted crosswalk on the north leg of the intersection. As noted above, there are temporary curb extensions northwest and southeast of the marked crosswalk. These curb extensions improve sightlines for left turn movements from 72 Avenue onto 184 Street as well as for pedestrians crossing the north approach. As development generated traffic will increase volumes

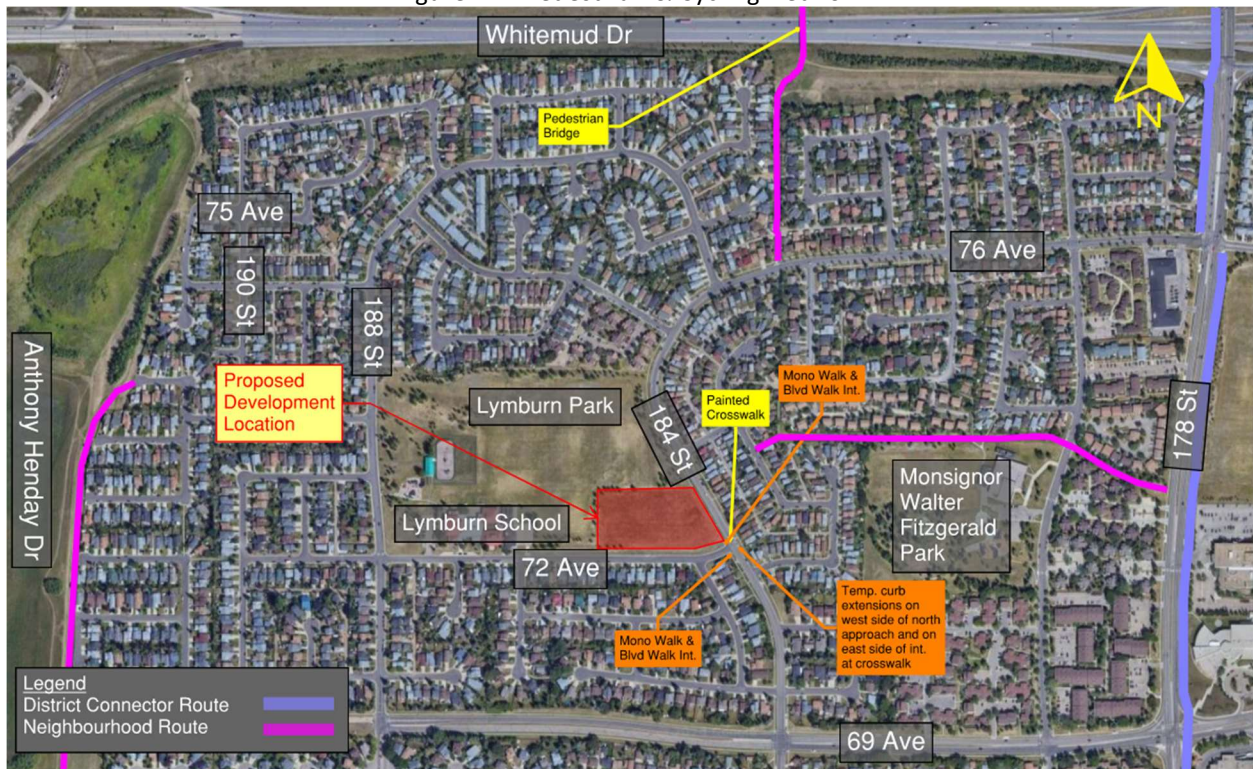
through the 72 Avenue and 184 Street intersection, the temporary curb extensions must be upgraded to permanent upon development.

The remaining pedestrian network is comprised of monolithic and boulevard sidewalks along the various roadways within the adjacent road network.

Bus stops adjacent to the proposed development are accessible via the pedestrian network.

**Figure 14** illustrates the pedestrian and cycling network adjacent to the proposed development.

Figure 14 - Pedestrian & Cycling Network



#### 4.4 Cycling Network Review

For the most part, cyclists in the immediate vicinity of the proposed development are accommodated within the local and collector roadways.

The 2020 City of Edmonton Bike Plan identifies an existing District Connector Route along the east side of 178 Street east of the proposed development. There is an existing Neighbourhood Route from the north edge of 76 Avenue to a pedestrian bridge across Whitemud Drive. There is also a Neighbourhood Connector Route from 183b Street to 178 Street along the north edge of Monsignor Walter Fitzgerald Park. There is also a Neighbourhood Route running north-south along the east edge of the Anthony Henday Drive right-of-way from 75 Avenue to Callingwood Road.

The existing neighbourhood appears to have some cyclist connectivity. Although cycling connectivity could be improved within the neighbourhood (connection between neighbourhood connector routes), none of these locations are near the proposed development. Therefore, we have not recommended any upgrades to the cycling network due to this development.

#### 4.5 Public Transit Review

Existing public transit connectivity is described in detail in **Section 2.3**. There are four bus stops within about 500m walking distance of the subject property. **Figure 5** illustrates nearby bus stops. The bus stops for Route 917 northbound/southbound are 500m west of the subject property, the stop for Route 916 eastbound is 400m southeast, and the stop for Routes 916 and 910X westbound is 500m southeast.

Because the nearest bus stops fall within the recommended average walking distance to a bus stop (600m), no changes to the transit network are recommended.

#### 4.6 Driveway Access

The proposed development is assumed to have vehicular access from 72 Avenue west of 184 Street directly across from 185 Street as discussed in Scenario A of the site servicing study. In addition, Scenario A includes recommendations for relocating a fire hydrant and curb ramps to accommodate this. However, all three access scenarios are acceptable from an intersection spacing perspective. The exact location of the access does not have a material effect on our analysis and should be determined through the development permit process.

According to the *TAC Geometric Design Guide for Canadian Roads*, 50m sightlines are to be provided for roadways with a design speed of 40km/h.

Sightlines along 72 Avenue from the subject site have been estimated to be in excess of 60m to the east (to the intersection) and in excess of 200m to the west. Therefore, sightlines for the proposed driveway access are adequate.

Driveway access from the proposed site to 72 Avenue should be stop-controlled.

#### 4.7 Parking Review

The City of Edmonton's Land Use Bylaw does not require a minimum number of off-street parking spaces for new developments. However, we anticipate that the proposed development will consider an appropriate number of off-street parking stalls in consideration of the proposed housing types. Furthermore, we also note that there are on-street parking opportunities near the site along 72 Avenue and 184 Street that could accommodate additional short-term parking for visitors and/or residents.

## 5 Conclusions and Recommendations

### 5.1 Summary

The City of Edmonton, Real Estate – Land Development group (CoE-LD) is completing assessments at surplus school sites to be rezoned and developed as future market and affordable housing facilities. As part of this process the City has retained Scheffer Andrew Ltd. to complete this Transportation Impact Assessment (TIA) for the Lymburn surplus school site.

The proposed development is located northwest of the 184 Street and 72 Avenue intersection at municipal address 7204 – 184 Street NW, adjacent to Lymburn Park.

The subject property is proposed to be zoned as RM h.16.0 – Medium Scale Residential with a total area of 1.40 ha and minimum density of 45 dwelling units per hectare. This TIA analyzes two development concept cases (minimum and maximum built forms). The minimum built form is 72 townhouses, and the maximum built form is 230 low rise apartment units (4 stories). At this time, a final development concept has not been developed, but the total number of units should fall within the range identified.

The proposed development is assumed to have vehicular access from 72 Avenue west of 184 Street directly across from 185 Street as discussed as Scenario A in the site servicing study.

Lymburn School and Callingwood/Lymburn Community League are adjacent to the same park as the proposed development. The rest of the park accommodates soccer fields, baseball diamonds, and an outdoor rink.

Several ETS bus stops for Routes 910X, 913, 916, 917, 918, and 923 are near the subject property. Bus stops for Routes 910X, 916, and 917 are within 500m, and bus stops for Routes 913, 918, and 923 are within 1km.

The most recent and relevant traffic count data (intersection turning movement and link volume data) from the City of Edmonton traffic count database was reviewed.

On March 18-20, 2024, a traffic count was conducted by our project team at the intersection of 184 Street and 72 Avenue to obtain current data at the southeast corner of the proposed development.

Trip generation for both the minimum and maximum built form scenarios (Case 1 and Case 2) were calculated using rates from *Table D.1 City of Edmonton 2013 Trip Generation Rates – Residential Land Uses* from the COE 2016 TIA guidelines. The *RF5 – Row Housing* rates were used for Case 1, and the *RA7 & RA8 – Apartment Housing* rates were used for Case 2. These trips were assigned to the subject intersection based on the 2024 camera traffic count data.

Capacity Analysis using the Highway Capacity Manual (HCM) methodology was completed for the 184 Street/72 Avenue intersection under the following conditions: 2024 background traffic, 2024 minimum built form combined traffic, and 2024 maximum built form combined traffic.

A pedestrian network review, cycling network review, public transit review, driveway access review, and parking review were completed.

## 5.2 Recommendation

The HCM capacity analysis identified that the intersection of 184 Street and 72 Avenue is expected to operate at acceptable service levels for all traffic conditions. Therefore, no improvements to the vehicular network are required to accommodate the proposed development.

A pedestrian network review illustrated that since development generated traffic will increase volumes through the 72 Avenue and 184 Street intersection, the temporary curb extensions must be upgraded to permanent upon development.

A cycling network review illustrated that no changes to the cycling network are recommended.

A public transit review illustrated that no changes to the transit network are recommended.

A driveway access review showed that sightlines from the proposed access are adequate and that the access should be stop controlled onto 72 Avenue.

A parking review noted that the City of Edmonton's Land Use Bylaw does not require a minimum number of off-street parking spaces for new developments. However, an appropriate number of off-street parking stalls are anticipated with the proposed development, and there are on-street parking opportunities near the site along 72 Avenue and 184 Street.

## 6 Closure

This Transportation Impact Assessment was prepared in support of the Lymburn surplus school site rezoning in Edmonton, Alberta to determine recommendations for multi-modal connectivity to and from the site.

Respectfully Submitted,  
Scheffer Andrew Ltd.

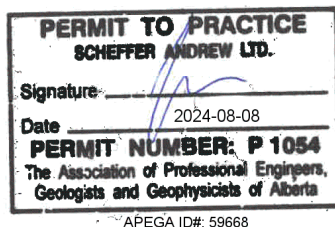


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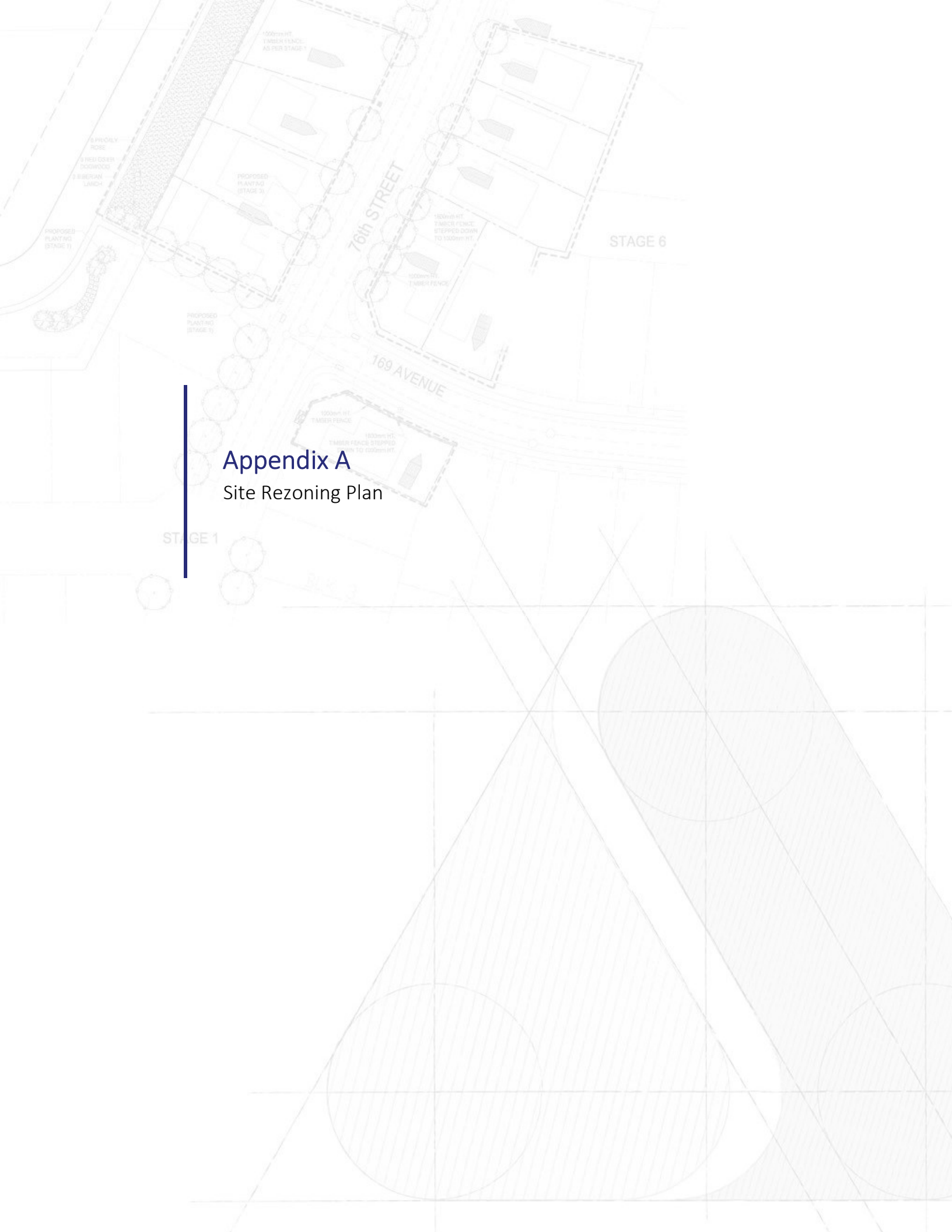


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Permit to practice:



This report was prepared by Scheffer Andrew Ltd. ("SAL") for the benefit of the client to whom it is addressed. The information and data contained herein represent SAL's best professional judgement in light of the knowledge and information available to SAL at the time of preparation. SAL accepts no liability whatsoever for any loss or damage suffered by any third party arising from their use of, or reliance upon, this report or any of its contents without the express written consent of SAL and the client



**Appendix A**  
Site Rezoning Plan

Figure 1 - Lymburn Surplus School Site Rezoning Plan



NOTE: ALL DIMENSIONS AND AREAS ARE APPROXIMATE AND MUST BE VERIFIED BY LEGAL SURVEY



**LYMBURN SURPLUS SCHOOL SITE – PROPOSED REZONING**

 FROM FD TO RM h16

LAND DEVELOPMENT PLANNING

PORTION OF PLAN 832 1754, BLOCK 42, LOT 60

FINANCIAL & CORPORATE SERVICES  
REAL ESTATE

DATE: January 22, 2024  
DRAWN BY: V.L.  
SCALE: 1:2000





Appendix B  
Traffic Count Data

| Leg Direction      | 184 Street Northbound |       |      |       |      | 184 Street Southbound |       |      |       |      | 72 Avenue Eastbound |       |    |       |      |      |
|--------------------|-----------------------|-------|------|-------|------|-----------------------|-------|------|-------|------|---------------------|-------|----|-------|------|------|
| Time               | L                     | T     | U    | App   | Ped* | T                     | R     | U    | App   | Ped* | L                   | R     | U  | App   | Ped* | Int  |
| 2024-03-18 9:00AM  | 1                     | 12    | 0    | 13    | 0    | 12                    | 5     | 0    | 17    | 4    | 6                   | 2     | 0  | 8     | 5    | 38   |
| 10:00AM            | 2                     | 14    | 0    | 16    | 0    | 25                    | 9     | 0    | 34    | 4    | 12                  | 4     | 0  | 16    | 8    | 66   |
| 11:00AM            | 16                    | 33    | 0    | 49    | 0    | 22                    | 16    | 0    | 38    | 3    | 11                  | 6     | 0  | 17    | 1    | 104  |
| 12:00PM            | 3                     | 45    | 0    | 48    | 0    | 24                    | 13    | 0    | 37    | 3    | 17                  | 5     | 0  | 22    | 3    | 107  |
| 1:00PM             | 1                     | 32    | 0    | 33    | 0    | 32                    | 13    | 0    | 45    | 6    | 10                  | 8     | 0  | 18    | 8    | 96   |
| 2:00PM             | 12                    | 33    | 0    | 45    | 3    | 30                    | 25    | 0    | 55    | 1    | 8                   | 5     | 0  | 13    | 6    | 113  |
| 3:00PM             | 18                    | 50    | 0    | 68    | 0    | 53                    | 45    | 0    | 98    | 19   | 32                  | 13    | 0  | 45    | 9    | 211  |
| 4:00PM             | 6                     | 63    | 0    | 69    | 0    | 52                    | 29    | 0    | 81    | 6    | 15                  | 9     | 0  | 24    | 6    | 174  |
| 5:00PM             | 11                    | 48    | 0    | 59    | 4    | 48                    | 26    | 0    | 74    | 7    | 7                   | 10    | 0  | 17    | 9    | 150  |
| 6:00PM             | 5                     | 46    | 0    | 51    | 3    | 47                    | 15    | 0    | 62    | 9    | 10                  | 8     | 0  | 18    | 17   | 131  |
| 7:00PM             | 4                     | 32    | 0    | 36    | 0    | 28                    | 11    | 1    | 40    | 7    | 8                   | 2     | 0  | 10    | 15   | 86   |
| 8:00PM             | 3                     | 24    | 0    | 27    | 0    | 19                    | 7     | 0    | 26    | 4    | 9                   | 2     | 0  | 11    | 2    | 64   |
| 9:00PM             | 5                     | 27    | 0    | 32    | 0    | 18                    | 11    | 0    | 29    | 2    | 6                   | 1     | 0  | 7     | 4    | 68   |
| 10:00PM            | 1                     | 13    | 0    | 14    | 0    | 8                     | 2     | 0    | 10    | 0    | 1                   | 2     | 0  | 3     | 0    | 27   |
| 11:00PM            | 0                     | 12    | 0    | 12    | 0    | 9                     | 3     | 0    | 12    | 1    | 1                   | 1     | 0  | 2     | 0    | 26   |
| 2024-03-19 12:00AM | 0                     | 3     | 1    | 4     | 0    | 6                     | 1     | 0    | 7     | 0    | 0                   | 0     | 0  | 0     | 0    | 11   |
| 1:00AM             | 0                     | 0     | 0    | 0     | 0    | 0                     | 1     | 0    | 1     | 0    | 0                   | 0     | 0  | 0     | 0    | 1    |
| 2:00AM             | 0                     | 1     | 0    | 1     | 0    | 1                     | 2     | 0    | 3     | 0    | 2                   | 0     | 0  | 2     | 0    | 6    |
| 3:00AM             | 0                     | 0     | 0    | 0     | 0    | 2                     | 1     | 0    | 3     | 0    | 0                   | 0     | 0  | 0     | 0    | 3    |
| 4:00AM             | 0                     | 1     | 0    | 1     | 0    | 6                     | 0     | 0    | 6     | 0    | 0                   | 0     | 0  | 0     | 0    | 7    |
| 5:00AM             | 0                     | 6     | 0    | 6     | 0    | 8                     | 1     | 0    | 9     | 0    | 3                   | 0     | 0  | 3     | 0    | 18   |
| 6:00AM             | 0                     | 16    | 0    | 16    | 0    | 19                    | 1     | 0    | 20    | 0    | 9                   | 4     | 0  | 13    | 0    | 49   |
| 7:00AM             | 5                     | 30    | 0    | 35    | 0    | 42                    | 11    | 0    | 53    | 3    | 12                  | 8     | 0  | 20    | 0    | 108  |
| 8:00AM             | 36                    | 37    | 0    | 73    | 0    | 49                    | 62    | 0    | 111   | 13   | 43                  | 31    | 0  | 74    | 1    | 258  |
| 9:00AM             | 3                     | 22    | 0    | 25    | 1    | 21                    | 7     | 0    | 28    | 0    | 15                  | 4     | 0  | 19    | 3    | 72   |
| 10:00AM            | 5                     | 24    | 0    | 29    | 0    | 23                    | 7     | 0    | 30    | 0    | 10                  | 7     | 0  | 17    | 1    | 76   |
| 11:00AM            | 15                    | 17    | 0    | 32    | 0    | 26                    | 14    | 2    | 42    | 0    | 10                  | 7     | 0  | 17    | 1    | 91   |
| 12:00PM            | 11                    | 27    | 0    | 38    | 0    | 24                    | 6     | 0    | 30    | 1    | 12                  | 4     | 0  | 16    | 2    | 84   |
| 1:00PM             | 3                     | 26    | 0    | 29    | 0    | 24                    | 9     | 0    | 33    | 2    | 8                   | 1     | 0  | 9     | 4    | 71   |
| 2:00PM             | 11                    | 28    | 0    | 39    | 1    | 23                    | 28    | 0    | 51    | 0    | 13                  | 4     | 0  | 17    | 4    | 107  |
| 3:00PM             | 18                    | 48    | 0    | 66    | 1    | 52                    | 45    | 0    | 97    | 20   | 35                  | 17    | 0  | 52    | 3    | 215  |
| 4:00PM             | 4                     | 54    | 0    | 58    | 0    | 42                    | 28    | 0    | 70    | 4    | 4                   | 7     | 0  | 11    | 0    | 139  |
| 5:00PM             | 2                     | 63    | 0    | 65    | 0    | 52                    | 16    | 0    | 68    | 6    | 10                  | 9     | 0  | 19    | 4    | 152  |
| 6:00PM             | 8                     | 37    | 0    | 45    | 0    | 39                    | 16    | 1    | 56    | 1    | 7                   | 3     | 0  | 10    | 2    | 111  |
| 7:00PM             | 6                     | 44    | 0    | 50    | 0    | 31                    | 13    | 1    | 45    | 1    | 4                   | 6     | 0  | 10    | 1    | 105  |
| 8:00PM             | 5                     | 23    | 0    | 28    | 0    | 16                    | 10    | 0    | 26    | 0    | 7                   | 1     | 0  | 8     | 3    | 62   |
| 9:00PM             | 2                     | 16    | 0    | 18    | 0    | 17                    | 11    | 0    | 28    | 0    | 4                   | 1     | 0  | 5     | 2    | 51   |
| 10:00PM            | 2                     | 8     | 0    | 10    | 0    | 11                    | 3     | 0    | 14    | 0    | 2                   | 1     | 0  | 3     | 1    | 27   |
| 11:00PM            | 1                     | 7     | 0    | 8     | 0    | 6                     | 3     | 0    | 9     | 0    | 2                   | 1     | 0  | 3     | 1    | 20   |
| 2024-03-20 12:00AM | 1                     | 4     | 0    | 5     | 0    | 2                     | 1     | 0    | 3     | 0    | 0                   | 2     | 0  | 2     | 0    | 10   |
| 1:00AM             | 1                     | 3     | 0    | 4     | 0    | 0                     | 1     | 0    | 1     | 0    | 1                   | 0     | 0  | 1     | 0    | 6    |
| 2:00AM             | 0                     | 3     | 0    | 3     | 0    | 2                     | 2     | 1    | 5     | 0    | 0                   | 0     | 0  | 0     | 0    | 8    |
| 3:00AM             | 0                     | 1     | 0    | 1     | 0    | 1                     | 3     | 0    | 4     | 0    | 0                   | 0     | 0  | 0     | 0    | 5    |
| 4:00AM             | 0                     | 0     | 0    | 0     | 0    | 7                     | 0     | 0    | 7     | 0    | 2                   | 0     | 0  | 2     | 0    | 9    |
| 5:00AM             | 1                     | 5     | 0    | 6     | 0    | 5                     | 0     | 0    | 5     | 0    | 3                   | 1     | 0  | 4     | 0    | 15   |
| 6:00AM             | 0                     | 21    | 0    | 21    | 2    | 19                    | 2     | 0    | 21    | 0    | 6                   | 3     | 0  | 9     | 0    | 51   |
| 7:00AM             | 9                     | 23    | 1    | 33    | 1    | 40                    | 14    | 0    | 54    | 0    | 17                  | 4     | 0  | 21    | 1    | 108  |
| 8:00AM             | 35                    | 30    | 1    | 66    | 0    | 46                    | 59    | 0    | 105   | 14   | 53                  | 27    | 0  | 80    | 1    | 251  |
| 9:00AM             | 1                     | 21    | 0    | 22    | 0    | 13                    | 2     | 0    | 15    | 1    | 6                   | 2     | 0  | 8     | 0    | 45   |
| Total              | 273                   | 1133  | 3    | 1409  | 16   | 1102                  | 610   | 6    | 1718  | 142  | 453                 | 233   | 0  | 686   | 128  | 3813 |
| % Approach         | 19.4%                 | 80.4% | 0.2% | -     | -    | 64.1%                 | 35.5% | 0.3% | -     | -    | 66.0%               | 34.0% | 0% | -     | -    | -    |
| % Total            | 7.2%                  | 29.7% | 0.1% | 37.0% | -    | 28.9%                 | 16.0% | 0.2% | 45.1% | -    | 11.9%               | 6.1%  | 0% | 18.0% | -    | -    |
| Lights             | 257                   | 1094  | 3    | 1354  | -    | 1060                  | 595   | 6    | 1661  | -    | 440                 | 225   | 0  | 665   | -    | 3680 |

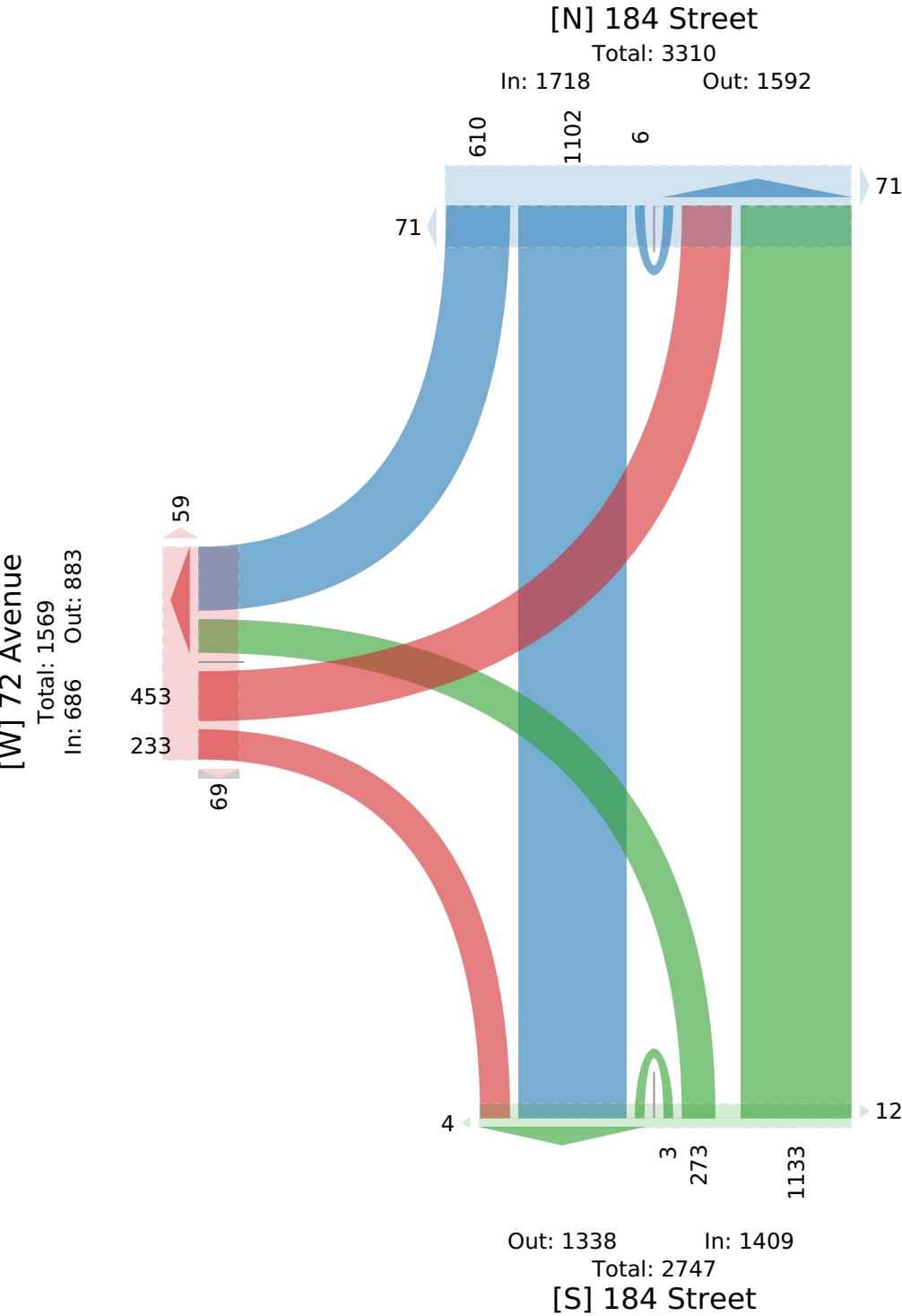
| Leg Direction               | 184 Street Northbound |       |      |              |      | 184 Street Southbound |       |      |              |       | 72 Avenue Eastbound |       |    |              |       |       |
|-----------------------------|-----------------------|-------|------|--------------|------|-----------------------|-------|------|--------------|-------|---------------------|-------|----|--------------|-------|-------|
| Time                        | L                     | T     | U    | App          | Ped* | T                     | R     | U    | App          | Ped*  | L                   | R     | U  | App          | Ped*  | Int   |
| <b>% Lights</b>             | 94.1%                 | 96.6% | 100% | <b>96.1%</b> | -    | 96.2%                 | 97.5% | 100% | <b>96.7%</b> | -     | 97.1%               | 96.6% | 0% | <b>96.9%</b> | -     | 96.5% |
| <b>Single-Unit Trucks</b>   | 3                     | 6     | 0    | <b>9</b>     | -    | 6                     | 3     | 0    | <b>9</b>     | -     | 7                   | 4     | 0  | <b>11</b>    | -     | 29    |
| <b>% Single-Unit Trucks</b> | 1.1%                  | 0.5%  | 0%   | <b>0.6%</b>  | -    | 0.5%                  | 0.5%  | 0%   | <b>0.5%</b>  | -     | 1.5%                | 1.7%  | 0% | <b>1.6%</b>  | -     | 0.8%  |
| <b>Articulated Trucks</b>   | 0                     | 0     | 0    | <b>0</b>     | -    | 0                     | 0     | 0    | <b>0</b>     | -     | 0                   | 0     | 0  | <b>0</b>     | -     | 0     |
| <b>% Articulated Trucks</b> | 0%                    | 0%    | 0%   | <b>0%</b>    | -    | 0%                    | 0%    | 0%   | <b>0%</b>    | -     | 0%                  | 0%    | 0% | <b>0%</b>    | -     | 0%    |
| <b>Buses</b>                | 13                    | 27    | 0    | <b>40</b>    | -    | 25                    | 11    | 0    | <b>36</b>    | -     | 6                   | 3     | 0  | <b>9</b>     | -     | 85    |
| <b>% Buses</b>              | 4.8%                  | 2.4%  | 0%   | <b>2.8%</b>  | -    | 2.3%                  | 1.8%  | 0%   | <b>2.1%</b>  | -     | 1.3%                | 1.3%  | 0% | <b>1.3%</b>  | -     | 2.2%  |
| <b>Bicycles on Road</b>     | 0                     | 6     | 0    | <b>6</b>     | -    | 11                    | 1     | 0    | <b>12</b>    | -     | 0                   | 1     | 0  | <b>1</b>     | -     | 19    |
| <b>% Bicycles on Road</b>   | 0%                    | 0.5%  | 0%   | <b>0.4%</b>  | -    | 1.0%                  | 0.2%  | 0%   | <b>0.7%</b>  | -     | 0%                  | 0.4%  | 0% | <b>0.1%</b>  | -     | 0.5%  |
| Pedestrians                 | -                     | -     | -    | -            | 16   | -                     | -     | -    | -            | 134   | -                   | -     | -  | -            | 125   |       |
| % Pedestrians               | -                     | -     | -    | -            | 100% | -                     | -     | -    | -            | 94.4% | -                   | -     | -  | -            | 97.7% | -     |
| Bicycles on Crosswalk       | -                     | -     | -    | -            | 0    | -                     | -     | -    | -            | 8     | -                   | -     | -  | -            | 3     |       |
| % Bicycles on Crosswalk     | -                     | -     | -    | -            | 0%   | -                     | -     | -    | -            | 5.6%  | -                   | -     | -  | -            | 2.3%  | -     |

\*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

184 Street & 72 Avenue Edmonton - TMC

Mon Mar 18, 2024  
Full Length (9:30 AM-9:30 AM (+2))  
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)  
All Movements  
ID: 1166609, Location: 53.505511, -113.640722

Provided by: Scheffer Andrew Ltd.  
#310, 4803 - 87 Street NW,  
Edmonton, AB, T6E 0V3, CA

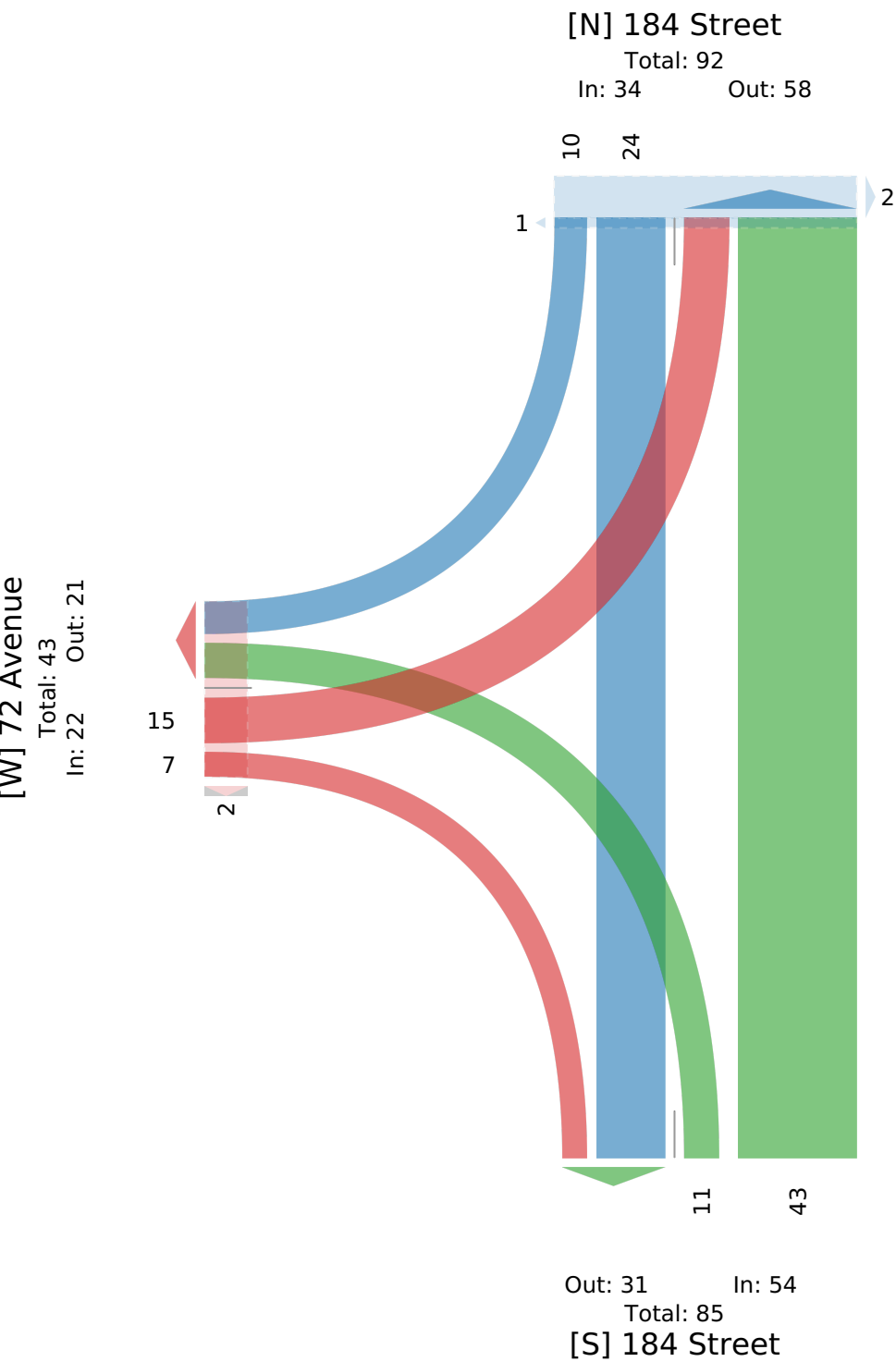


| Leg Direction           | 184 Street Northbound |       |    |       |      | 184 Street Southbound |       |    |       |      | 72 Avenue Eastbound |       |    |       |      |       |
|-------------------------|-----------------------|-------|----|-------|------|-----------------------|-------|----|-------|------|---------------------|-------|----|-------|------|-------|
| Time                    | L                     | T     | U  | App   | Ped* | T                     | R     | U  | App   | Ped* | L                   | R     | U  | App   | Ped* | Int   |
| 2024-03-18 11:30AM      | 3                     | 10    | 0  | 13    | 0    | 6                     | 0     | 0  | 6     | 1    | 5                   | 1     | 0  | 6     | 0    | 25    |
| 11:45AM                 | 5                     | 9     | 0  | 14    | 0    | 7                     | 2     | 0  | 9     | 1    | 2                   | 2     | 0  | 4     | 1    | 27    |
| 12:00PM                 | 2                     | 12    | 0  | 14    | 0    | 5                     | 5     | 0  | 10    | 0    | 2                   | 2     | 0  | 4     | 0    | 28    |
| 12:15PM                 | 1                     | 12    | 0  | 13    | 0    | 6                     | 3     | 0  | 9     | 1    | 6                   | 2     | 0  | 8     | 1    | 30    |
| Total                   | 11                    | 43    | 0  | 54    | 0    | 24                    | 10    | 0  | 34    | 3    | 15                  | 7     | 0  | 22    | 2    | 110   |
| % Approach              | 20.4%                 | 79.6% | 0% | -     | -    | 70.6%                 | 29.4% | 0% | -     | -    | 68.2%               | 31.8% | 0% | -     | -    | -     |
| % Total                 | 10.0%                 | 39.1% | 0% | 49.1% | -    | 21.8%                 | 9.1%  | 0% | 30.9% | -    | 13.6%               | 6.4%  | 0% | 20.0% | -    | -     |
| PHF                     | 0.550                 | 0.932 | -  | 0.929 | -    | 0.857                 | 0.500 | -  | 0.850 | -    | 0.625               | 0.875 | -  | 0.688 | -    | 0.931 |
| Lights                  | 10                    | 39    | 0  | 49    | -    | 24                    | 10    | 0  | 34    | -    | 15                  | 7     | 0  | 22    | -    | 105   |
| % Lights                | 90.9%                 | 90.7% | 0% | 90.7% | -    | 100%                  | 100%  | 0% | 100%  | -    | 100%                | 100%  | 0% | 100%  | -    | 95.5% |
| Single-Unit Trucks      | 0                     | 0     | 0  | 0     | -    | 0                     | 0     | 0  | 0     | -    | 0                   | 0     | 0  | 0     | -    | 0     |
| % Single-Unit Trucks    | 0%                    | 0%    | 0% | 0%    | -    | 0%                    | 0%    | 0% | 0%    | -    | 0%                  | 0%    | 0% | 0%    | -    | 0%    |
| Articulated Trucks      | 0                     | 0     | 0  | 0     | -    | 0                     | 0     | 0  | 0     | -    | 0                   | 0     | 0  | 0     | -    | 0     |
| % Articulated Trucks    | 0%                    | 0%    | 0% | 0%    | -    | 0%                    | 0%    | 0% | 0%    | -    | 0%                  | 0%    | 0% | 0%    | -    | 0%    |
| Buses                   | 1                     | 2     | 0  | 3     | -    | 0                     | 0     | 0  | 0     | -    | 0                   | 0     | 0  | 0     | -    | 3     |
| % Buses                 | 9.1%                  | 4.7%  | 0% | 5.6%  | -    | 0%                    | 0%    | 0% | 0%    | -    | 0%                  | 0%    | 0% | 0%    | -    | 2.7%  |
| Bicycles on Road        | 0                     | 2     | 0  | 2     | -    | 0                     | 0     | 0  | 0     | -    | 0                   | 0     | 0  | 0     | -    | 2     |
| % Bicycles on Road      | 0%                    | 4.7%  | 0% | 3.7%  | -    | 0%                    | 0%    | 0% | 0%    | -    | 0%                  | 0%    | 0% | 0%    | -    | 1.8%  |
| Pedestrians             | -                     | -     | -  | -     | 0    | -                     | -     | -  | -     | 3    | -                   | -     | -  | -     | 2    |       |
| % Pedestrians           | -                     | -     | -  | -     | -    | -                     | -     | -  | -     | 100% | -                   | -     | -  | -     | 100% | -     |
| Bicycles on Crosswalk   | -                     | -     | -  | -     | 0    | -                     | -     | -  | -     | 0    | -                   | -     | -  | -     | 0    |       |
| % Bicycles on Crosswalk | -                     | -     | -  | -     | -    | -                     | -     | -  | -     | 0%   | -                   | -     | -  | -     | 0%   | -     |

\* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

184 Street & 72 Avenue Edmonton - TMC  
Mon Mar 18, 2024  
Midday Peak (Mar 18 2024 11:30AM - 12:30 PM)  
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)  
All Movements  
ID: 1166609, Location: 53.505511, -113.640722

Provided by: Scheffer Andrew Ltd.  
#310, 4803 - 87 Street NW,  
Edmonton, AB, T6E 0V3, CA



| Leg Direction           | 184 Street Northbound |       |    |       |      | 184 Street Southbound |       |    |       |       | 72 Avenue Eastbound |       |    |       |      |       |
|-------------------------|-----------------------|-------|----|-------|------|-----------------------|-------|----|-------|-------|---------------------|-------|----|-------|------|-------|
| Time                    | L                     | T     | U  | App   | Ped* | T                     | R     | U  | App   | Ped*  | L                   | R     | U  | App   | Ped* | Int   |
| 2024-03-18 2:45PM       | 3                     | 11    | 0  | 14    | 1    | 12                    | 8     | 0  | 20    | 1     | 4                   | 4     | 0  | 8     | 1    | 42    |
| 3:00PM                  | 10                    | 10    | 0  | 20    | 0    | 12                    | 19    | 0  | 31    | 3     | 1                   | 2     | 0  | 3     | 1    | 54    |
| 3:15PM                  | 4                     | 13    | 0  | 17    | 0    | 11                    | 17    | 0  | 28    | 10    | 20                  | 7     | 0  | 27    | 3    | 72    |
| 3:30PM                  | 3                     | 13    | 0  | 16    | 0    | 15                    | 6     | 0  | 21    | 5     | 9                   | 2     | 0  | 11    | 2    | 48    |
| Total                   | 20                    | 47    | 0  | 67    | 1    | 50                    | 50    | 0  | 100   | 19    | 34                  | 15    | 0  | 49    | 7    | 216   |
| % Approach              | 29.9%                 | 70.1% | 0% | -     | -    | 50.0%                 | 50.0% | 0% | -     | -     | 69.4%               | 30.6% | 0% | -     | -    | -     |
| % Total                 | 9.3%                  | 21.8% | 0% | 31.0% | -    | 23.1%                 | 23.1% | 0% | 46.3% | -     | 15.7%               | 6.9%  | 0% | 22.7% | -    | -     |
| PHF                     | 0.500                 | 0.904 | -  | 0.838 | -    | 0.833                 | 0.658 | -  | 0.806 | -     | 0.425               | 0.500 | -  | 0.444 | -    | 0.747 |
| Lights                  | 18                    | 45    | 0  | 63    | -    | 48                    | 50    | 0  | 98    | -     | 34                  | 13    | 0  | 47    | -    | 208   |
| % Lights                | 90.0%                 | 95.7% | 0% | 94.0% | -    | 96.0%                 | 100%  | 0% | 98.0% | -     | 100%                | 86.7% | 0% | 95.9% | -    | 96.3% |
| Single-Unit Trucks      | 0                     | 1     | 0  | 1     | -    | 0                     | 0     | 0  | 0     | -     | 0                   | 0     | 0  | 0     | -    | 1     |
| % Single-Unit Trucks    | 0%                    | 2.1%  | 0% | 1.5%  | -    | 0%                    | 0%    | 0% | 0%    | -     | 0%                  | 0%    | 0% | 0%    | -    | 0.5%  |
| Articulated Trucks      | 0                     | 0     | 0  | 0     | -    | 0                     | 0     | 0  | 0     | -     | 0                   | 0     | 0  | 0     | -    | 0     |
| % Articulated Trucks    | 0%                    | 0%    | 0% | 0%    | -    | 0%                    | 0%    | 0% | 0%    | -     | 0%                  | 0%    | 0% | 0%    | -    | 0%    |
| Buses                   | 2                     | 1     | 0  | 3     | -    | 2                     | 0     | 0  | 2     | -     | 0                   | 1     | 0  | 1     | -    | 6     |
| % Buses                 | 10.0%                 | 2.1%  | 0% | 4.5%  | -    | 4.0%                  | 0%    | 0% | 2.0%  | -     | 0%                  | 6.7%  | 0% | 2.0%  | -    | 2.8%  |
| Bicycles on Road        | 0                     | 0     | 0  | 0     | -    | 0                     | 0     | 0  | 0     | -     | 0                   | 1     | 0  | 1     | -    | 1     |
| % Bicycles on Road      | 0%                    | 0%    | 0% | 0%    | -    | 0%                    | 0%    | 0% | 0%    | -     | 0%                  | 6.7%  | 0% | 2.0%  | -    | 0.5%  |
| Pedestrians             | -                     | -     | -  | -     | 1    | -                     | -     | -  | -     | 18    | -                   | -     | -  | -     | 7    |       |
| % Pedestrians           | -                     | -     | -  | -     | 100% | -                     | -     | -  | -     | 94.7% | -                   | -     | -  | -     | 100% | -     |
| Bicycles on Crosswalk   | -                     | -     | -  | -     | 0    | -                     | -     | -  | -     | 1     | -                   | -     | -  | -     | 0    |       |
| % Bicycles on Crosswalk | -                     | -     | -  | -     | 0%   | -                     | -     | -  | -     | 5.3%  | -                   | -     | -  | -     | 0%   | -     |

\* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

184 Street & 72 Avenue Edmonton - TMC

Mon Mar 18, 2024

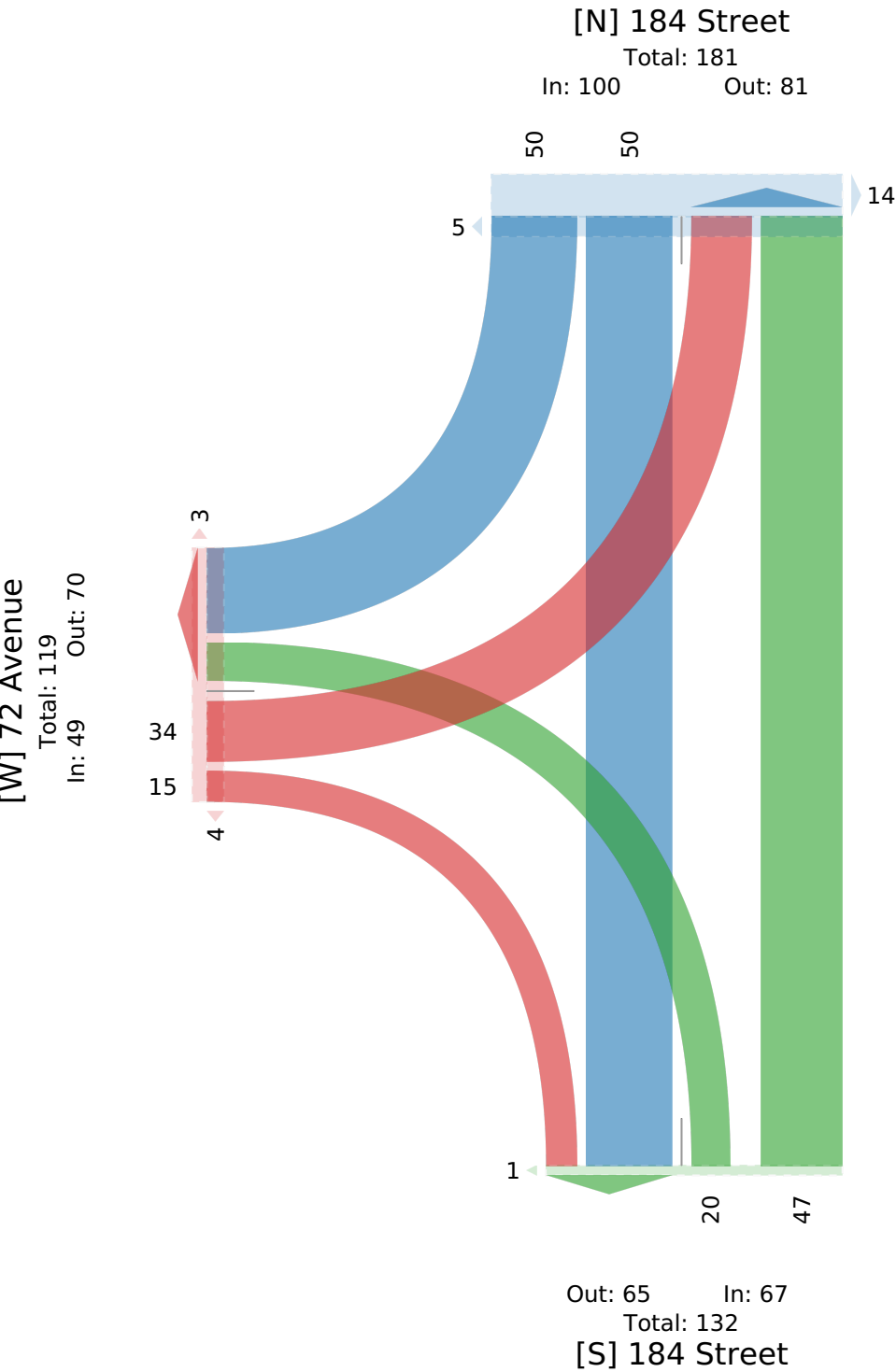
PM Peak (Mar 18 2024 2:45PM - 3:45 PM)

All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 1166609, Location: 53.505511, -113.640722

Provided by: Scheffer Andrew Ltd.  
#310, 4803 - 87 Street NW,  
Edmonton, AB, T6E 0V3, CA



# 184 Street & 72 Avenue Edmonton - TMC

Wed Mar 20, 2024

AM Peak (Mar 20 2024 7:45AM - 8:45 AM) - Overall Peak Hour

All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 1166609, Location: 53.505511, -113.640722

Provided by: Scheffer Andrew Ltd.

#310, 4803 - 87 Street NW,

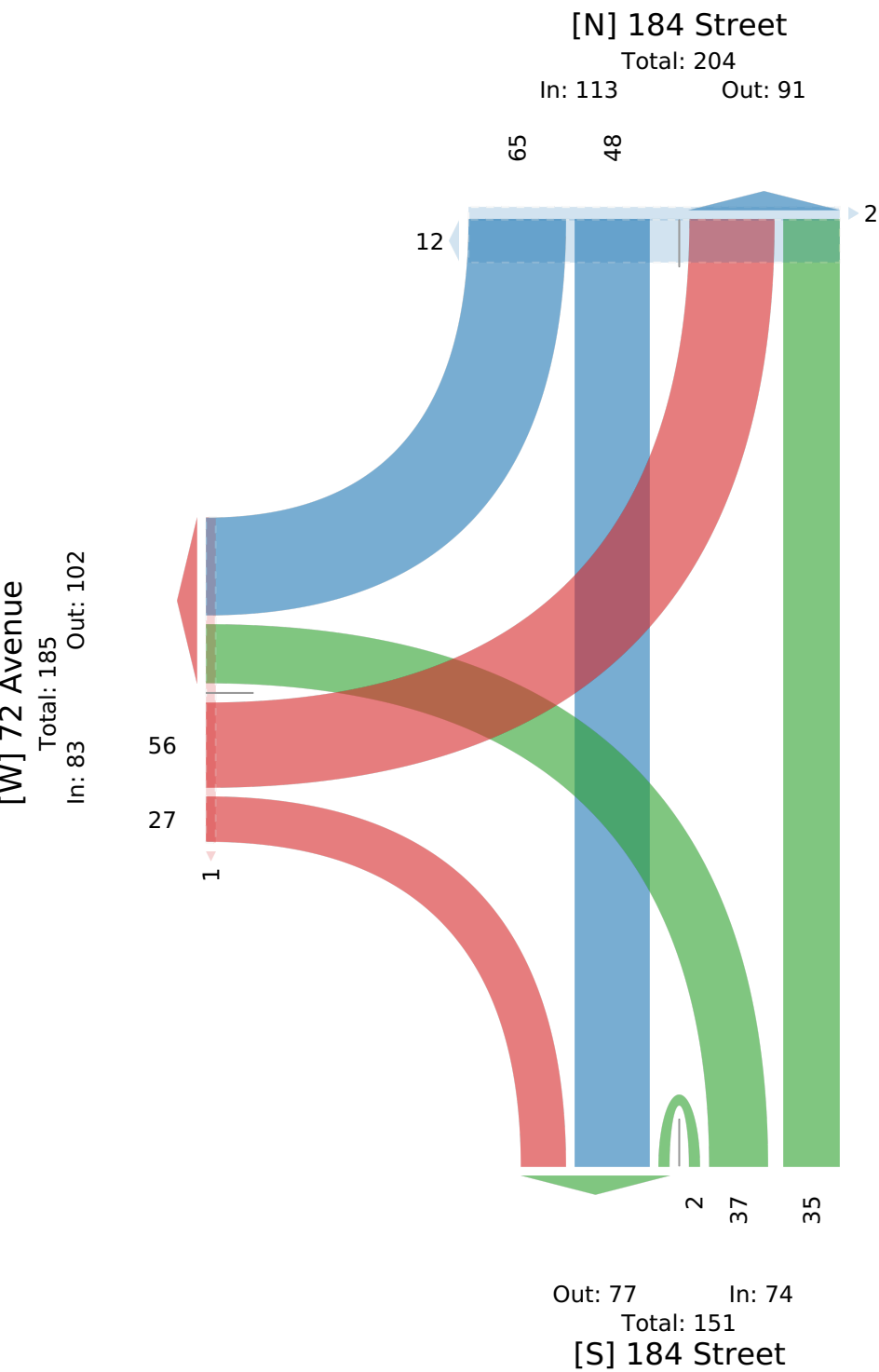
Edmonton, AB, T6E 0V3, CA

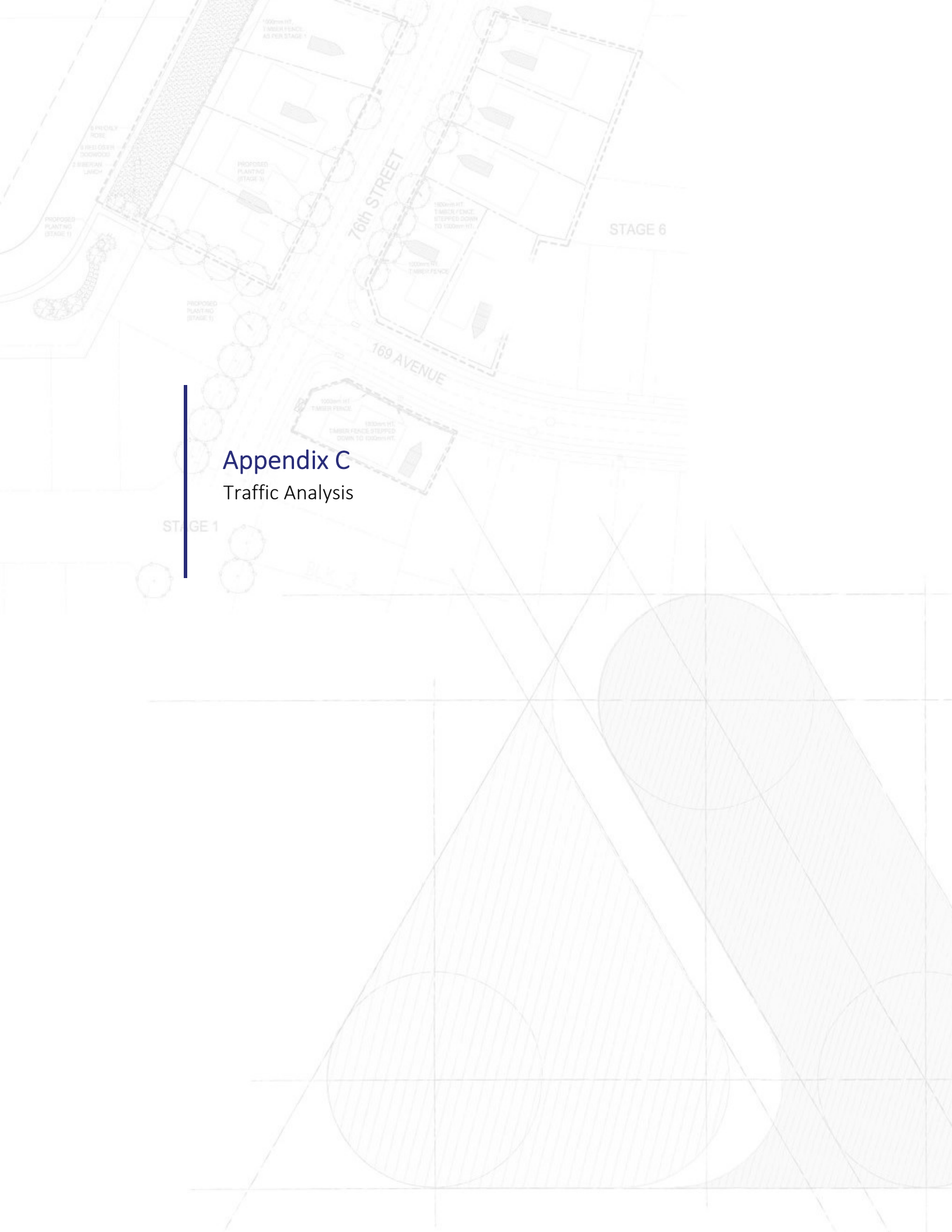
| Leg Direction                  | 184 Street Northbound |       |       |       |      |  | 184 Street Southbound |       |    |       |      |  | 72 Avenue Eastbound |       |    |       |      |     |       |
|--------------------------------|-----------------------|-------|-------|-------|------|--|-----------------------|-------|----|-------|------|--|---------------------|-------|----|-------|------|-----|-------|
| Time                           | L                     | T     | U     | App   | Ped* |  | T                     | R     | U  | App   | Ped* |  | L                   | R     | U  | App   | Ped* | Int |       |
| 2024-03-20 7:45AM              | 3                     | 11    | 1     | 15    | 0    |  | 10                    | 9     | 0  | 19    | 0    |  | 5                   | 1     | 0  | 6     | 0    |     | 40    |
| 8:00AM                         | 16                    | 8     | 0     | 24    | 0    |  | 11                    | 18    | 0  | 29    | 4    |  | 7                   | 1     | 0  | 8     | 0    |     | 61    |
| 8:15AM                         | 17                    | 7     | 0     | 24    | 0    |  | 18                    | 32    | 0  | 50    | 9    |  | 26                  | 13    | 0  | 39    | 1    |     | 113   |
| 8:30AM                         | 1                     | 9     | 1     | 11    | 0    |  | 9                     | 6     | 0  | 15    | 1    |  | 18                  | 12    | 0  | 30    | 0    |     | 56    |
| <b>Total</b>                   | 37                    | 35    | 2     | 74    | 0    |  | 48                    | 65    | 0  | 113   | 14   |  | 56                  | 27    | 0  | 83    | 1    |     | 270   |
| <b>% Approach</b>              | 50.0%                 | 47.3% | 2.7%  | -     | -    |  | 42.5%                 | 57.5% | 0% | -     | -    |  | 67.5%               | 32.5% | 0% | -     | -    |     | -     |
| <b>% Total</b>                 | 13.7%                 | 13.0% | 0.7%  | 27.4% | -    |  | 17.8%                 | 24.1% | 0% | 41.9% | -    |  | 20.7%               | 10.0% | 0% | 30.7% | -    |     | -     |
| <b>PHF</b>                     | 0.544                 | 0.795 | 0.500 | 0.771 | -    |  | 0.667                 | 0.508 | -  | 0.565 | -    |  | 0.538               | 0.519 | -  | 0.532 | -    |     | 0.597 |
| <b>Lights</b>                  | 35                    | 31    | 2     | 68    | -    |  | 45                    | 63    | 0  | 108   | -    |  | 55                  | 27    | 0  | 82    | -    |     | 258   |
| <b>% Lights</b>                | 94.6%                 | 88.6% | 100%  | 91.9% | -    |  | 93.8%                 | 96.9% | 0% | 95.6% | -    |  | 98.2%               | 100%  | 0% | 98.8% | -    |     | 95.6% |
| <b>Single-Unit Trucks</b>      | 0                     | 0     | 0     | 0     | -    |  | 0                     | 1     | 0  | 1     | -    |  | 0                   | 0     | 0  | 0     | -    |     | 1     |
| <b>% Single-Unit Trucks</b>    | 0%                    | 0%    | 0%    | 0%    | -    |  | 0%                    | 1.5%  | 0% | 0.9%  | -    |  | 0%                  | 0%    | 0% | 0%    | -    |     | 0.4%  |
| <b>Articulated Trucks</b>      | 0                     | 0     | 0     | 0     | -    |  | 0                     | 0     | 0  | 0     | -    |  | 0                   | 0     | 0  | 0     | -    |     | 0     |
| <b>% Articulated Trucks</b>    | 0%                    | 0%    | 0%    | 0%    | -    |  | 0%                    | 0%    | 0% | 0%    | -    |  | 0%                  | 0%    | 0% | 0%    | -    |     | 0%    |
| <b>Buses</b>                   | 2                     | 4     | 0     | 6     | -    |  | 3                     | 1     | 0  | 4     | -    |  | 1                   | 0     | 0  | 1     | -    |     | 11    |
| <b>% Buses</b>                 | 5.4%                  | 11.4% | 0%    | 8.1%  | -    |  | 6.3%                  | 1.5%  | 0% | 3.5%  | -    |  | 1.8%                | 0%    | 0% | 1.2%  | -    |     | 4.1%  |
| <b>Bicycles on Road</b>        | 0                     | 0     | 0     | 0     | -    |  | 0                     | 0     | 0  | 0     | -    |  | 0                   | 0     | 0  | 0     | -    |     | 0     |
| <b>% Bicycles on Road</b>      | 0%                    | 0%    | 0%    | 0%    | -    |  | 0%                    | 0%    | 0% | 0%    | -    |  | 0%                  | 0%    | 0% | 0%    | -    |     | 0%    |
| <b>Pedestrians</b>             | -                     | -     | -     | -     | 0    |  | -                     | -     | -  | -     | 14   |  | -                   | -     | -  | -     | 1    |     |       |
| <b>% Pedestrians</b>           | -                     | -     | -     | -     | -    |  | -                     | -     | -  | -     | 100% |  | -                   | -     | -  | -     | 100% |     | -     |
| <b>Bicycles on Crosswalk</b>   | -                     | -     | -     | -     | 0    |  | -                     | -     | -  | -     | 0    |  | -                   | -     | -  | -     | 0    |     |       |
| <b>% Bicycles on Crosswalk</b> | -                     | -     | -     | -     | -    |  | -                     | -     | -  | -     | 0%   |  | -                   | -     | -  | -     | 0%   |     | -     |

\* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

184 Street & 72 Avenue Edmonton - TMC  
Wed Mar 20, 2024  
AM Peak (Mar 20 2024 7:45AM - 8:45 AM) - Overall Peak Hour  
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)  
All Movements  
ID: 1166609, Location: 53.505511, -113.640722

Provided by: Scheffer Andrew Ltd.  
#310, 4803 - 87 Street NW,  
Edmonton, AB, T6E 0V3, CA





Appendix C  
Traffic Analysis

| Intersection             |                                                                                   |        |       |                                                                                   |                                                                                   |      |
|--------------------------|-----------------------------------------------------------------------------------|--------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Int Delay, s/veh         | 4.1                                                                               |        |       |                                                                                   |                                                                                   |      |
| Movement                 | EBL                                                                               | EBR    | NBL   | NBT                                                                               | SBT                                                                               | SBR  |
| Lane Configurations      |  |        |       |  |  |      |
| Traffic Vol, veh/h       | 56                                                                                | 27     | 37    | 35                                                                                | 48                                                                                | 65   |
| Future Vol, veh/h        | 56                                                                                | 27     | 37    | 35                                                                                | 48                                                                                | 65   |
| Conflicting Peds, #/hr   | 0                                                                                 | 0      | 0     | 0                                                                                 | 0                                                                                 | 0    |
| Sign Control             | Stop                                                                              | Stop   | Free  | Free                                                                              | Free                                                                              | Free |
| RT Channelized           | -                                                                                 | None   | -     | None                                                                              | -                                                                                 | None |
| Storage Length           | 0                                                                                 | -      | -     | -                                                                                 | -                                                                                 | -    |
| Veh in Median Storage, # | 0                                                                                 | -      | -     | 0                                                                                 | 0                                                                                 | -    |
| Grade, %                 | 0                                                                                 | -      | -     | 0                                                                                 | 0                                                                                 | -    |
| Peak Hour Factor         | 100                                                                               | 100    | 100   | 100                                                                               | 100                                                                               | 100  |
| Heavy Vehicles, %        | 3                                                                                 | 3      | 3     | 3                                                                                 | 3                                                                                 | 3    |
| Mvmt Flow                | 56                                                                                | 27     | 37    | 35                                                                                | 48                                                                                | 65   |
| Major/Minor              | Minor2                                                                            | Major1 |       | Major2                                                                            |                                                                                   |      |
| Conflicting Flow All     | 190                                                                               | 81     | 113   | 0                                                                                 | -                                                                                 | 0    |
| Stage 1                  | 81                                                                                | -      | -     | -                                                                                 | -                                                                                 | -    |
| Stage 2                  | 109                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Critical Hdwy            | 6.43                                                                              | 6.23   | 4.13  | -                                                                                 | -                                                                                 | -    |
| Critical Hdwy Stg 1      | 5.43                                                                              | -      | -     | -                                                                                 | -                                                                                 | -    |
| Critical Hdwy Stg 2      | 5.43                                                                              | -      | -     | -                                                                                 | -                                                                                 | -    |
| Follow-up Hdwy           | 3.527                                                                             | 3.327  | 2.227 | -                                                                                 | -                                                                                 | -    |
| Pot Cap-1 Maneuver       | 797                                                                               | 976    | 1470  | -                                                                                 | -                                                                                 | -    |
| Stage 1                  | 940                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Stage 2                  | 913                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Platoon blocked, %       |                                                                                   |        |       | -                                                                                 | -                                                                                 | -    |
| Mov Cap-1 Maneuver       | 776                                                                               | 976    | 1470  | -                                                                                 | -                                                                                 | -    |
| Mov Cap-2 Maneuver       | 776                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Stage 1                  | 916                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Stage 2                  | 913                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Approach                 | EB                                                                                | NB     |       | SB                                                                                |                                                                                   |      |
| HCM Control Delay, s     | 9.8                                                                               | 3.9    |       | 0                                                                                 |                                                                                   |      |
| HCM LOS                  | A                                                                                 |        |       |                                                                                   |                                                                                   |      |
| Minor Lane/Major Mvmt    | NBL                                                                               | NBT    | EBLn1 | SBT                                                                               | SBR                                                                               |      |
| Capacity (veh/h)         | 1470                                                                              | -      | 831   | -                                                                                 | -                                                                                 |      |
| HCM Lane V/C Ratio       | 0.025                                                                             | -      | 0.1   | -                                                                                 | -                                                                                 |      |
| HCM Control Delay (s)    | 7.5                                                                               | 0      | 9.8   | -                                                                                 | -                                                                                 |      |
| HCM Lane LOS             | A                                                                                 | A      | A     | -                                                                                 | -                                                                                 |      |
| HCM 95th %tile Q(veh)    | 0.1                                                                               | -      | 0.3   | -                                                                                 | -                                                                                 |      |

| Intersection             |                                                                                   |        |       |                                                                                   |                                                                                   |      |
|--------------------------|-----------------------------------------------------------------------------------|--------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Int Delay, s/veh         | 2.8                                                                               |        |       |                                                                                   |                                                                                   |      |
| Movement                 | EBL                                                                               | EBR    | NBL   | NBT                                                                               | SBT                                                                               | SBR  |
| Lane Configurations      |  |        |       |  |  |      |
| Traffic Vol, veh/h       | 34                                                                                | 15     | 20    | 47                                                                                | 50                                                                                | 50   |
| Future Vol, veh/h        | 34                                                                                | 15     | 20    | 47                                                                                | 50                                                                                | 50   |
| Conflicting Peds, #/hr   | 0                                                                                 | 0      | 0     | 0                                                                                 | 0                                                                                 | 0    |
| Sign Control             | Stop                                                                              | Stop   | Free  | Free                                                                              | Free                                                                              | Free |
| RT Channelized           | -                                                                                 | None   | -     | None                                                                              | -                                                                                 | None |
| Storage Length           | 0                                                                                 | -      | -     | -                                                                                 | -                                                                                 | -    |
| Veh in Median Storage, # | 0                                                                                 | -      | -     | 0                                                                                 | 0                                                                                 | -    |
| Grade, %                 | 0                                                                                 | -      | -     | 0                                                                                 | 0                                                                                 | -    |
| Peak Hour Factor         | 100                                                                               | 100    | 100   | 100                                                                               | 100                                                                               | 100  |
| Heavy Vehicles, %        | 3                                                                                 | 3      | 3     | 3                                                                                 | 3                                                                                 | 3    |
| Mvmt Flow                | 34                                                                                | 15     | 20    | 47                                                                                | 50                                                                                | 50   |
| Major/Minor              | Minor2                                                                            | Major1 |       | Major2                                                                            |                                                                                   |      |
| Conflicting Flow All     | 162                                                                               | 75     | 100   | 0                                                                                 | -                                                                                 | 0    |
| Stage 1                  | 75                                                                                | -      | -     | -                                                                                 | -                                                                                 | -    |
| Stage 2                  | 87                                                                                | -      | -     | -                                                                                 | -                                                                                 | -    |
| Critical Hdwy            | 6.43                                                                              | 6.23   | 4.13  | -                                                                                 | -                                                                                 | -    |
| Critical Hdwy Stg 1      | 5.43                                                                              | -      | -     | -                                                                                 | -                                                                                 | -    |
| Critical Hdwy Stg 2      | 5.43                                                                              | -      | -     | -                                                                                 | -                                                                                 | -    |
| Follow-up Hdwy           | 3.527                                                                             | 3.327  | 2.227 | -                                                                                 | -                                                                                 | -    |
| Pot Cap-1 Maneuver       | 826                                                                               | 984    | 1486  | -                                                                                 | -                                                                                 | -    |
| Stage 1                  | 945                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Stage 2                  | 934                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Platoon blocked, %       |                                                                                   |        |       | -                                                                                 | -                                                                                 | -    |
| Mov Cap-1 Maneuver       | 814                                                                               | 984    | 1486  | -                                                                                 | -                                                                                 | -    |
| Mov Cap-2 Maneuver       | 814                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Stage 1                  | 932                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Stage 2                  | 934                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Approach                 | EB                                                                                | NB     |       | SB                                                                                |                                                                                   |      |
| HCM Control Delay, s     | 9.4                                                                               | 2.2    |       | 0                                                                                 |                                                                                   |      |
| HCM LOS                  | A                                                                                 |        |       |                                                                                   |                                                                                   |      |
| Minor Lane/Major Mvmt    | NBL                                                                               | NBT    | EBLn1 | SBT                                                                               | SBR                                                                               |      |
| Capacity (veh/h)         | 1486                                                                              | -      | 859   | -                                                                                 | -                                                                                 |      |
| HCM Lane V/C Ratio       | 0.013                                                                             | -      | 0.057 | -                                                                                 | -                                                                                 |      |
| HCM Control Delay (s)    | 7.5                                                                               | 0      | 9.4   | -                                                                                 | -                                                                                 |      |
| HCM Lane LOS             | A                                                                                 | A      | A     | -                                                                                 | -                                                                                 |      |
| HCM 95th %tile Q(veh)    | 0                                                                                 | -      | 0.2   | -                                                                                 | -                                                                                 |      |

HCM 6th TWSC  
1: 184 Street & 72 Avenue

07-03-2024

| Intersection             |                                                                                   |        |       |                                                                                   |                                                                                   |      |
|--------------------------|-----------------------------------------------------------------------------------|--------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Int Delay, s/veh         | 4.5                                                                               |        |       |                                                                                   |                                                                                   |      |
| Movement                 | EBL                                                                               | EBR    | NBL   | NBT                                                                               | SBT                                                                               | SBR  |
| Lane Configurations      |  |        |       |  |  |      |
| Traffic Vol, veh/h       | 70                                                                                | 35     | 39    | 35                                                                                | 48                                                                                | 69   |
| Future Vol, veh/h        | 70                                                                                | 35     | 39    | 35                                                                                | 48                                                                                | 69   |
| Conflicting Peds, #/hr   | 0                                                                                 | 0      | 0     | 0                                                                                 | 0                                                                                 | 0    |
| Sign Control             | Stop                                                                              | Stop   | Free  | Free                                                                              | Free                                                                              | Free |
| RT Channelized           | -                                                                                 | None   | -     | None                                                                              | -                                                                                 | None |
| Storage Length           | 0                                                                                 | -      | -     | -                                                                                 | -                                                                                 | -    |
| Veh in Median Storage, # | 0                                                                                 | -      | -     | 0                                                                                 | 0                                                                                 | -    |
| Grade, %                 | 0                                                                                 | -      | -     | 0                                                                                 | 0                                                                                 | -    |
| Peak Hour Factor         | 100                                                                               | 100    | 100   | 100                                                                               | 100                                                                               | 100  |
| Heavy Vehicles, %        | 3                                                                                 | 3      | 3     | 3                                                                                 | 3                                                                                 | 3    |
| Mvmt Flow                | 70                                                                                | 35     | 39    | 35                                                                                | 48                                                                                | 69   |
| Major/Minor              | Minor2                                                                            | Major1 |       | Major2                                                                            |                                                                                   |      |
| Conflicting Flow All     | 196                                                                               | 83     | 117   | 0                                                                                 | -                                                                                 | 0    |
| Stage 1                  | 83                                                                                | -      | -     | -                                                                                 | -                                                                                 | -    |
| Stage 2                  | 113                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Critical Hdwy            | 6.43                                                                              | 6.23   | 4.13  | -                                                                                 | -                                                                                 | -    |
| Critical Hdwy Stg 1      | 5.43                                                                              | -      | -     | -                                                                                 | -                                                                                 | -    |
| Critical Hdwy Stg 2      | 5.43                                                                              | -      | -     | -                                                                                 | -                                                                                 | -    |
| Follow-up Hdwy           | 3.527                                                                             | 3.327  | 2.227 | -                                                                                 | -                                                                                 | -    |
| Pot Cap-1 Maneuver       | 790                                                                               | 974    | 1465  | -                                                                                 | -                                                                                 | -    |
| Stage 1                  | 938                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Stage 2                  | 909                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Platoon blocked, %       |                                                                                   |        |       | -                                                                                 | -                                                                                 | -    |
| Mov Cap-1 Maneuver       | 769                                                                               | 974    | 1465  | -                                                                                 | -                                                                                 | -    |
| Mov Cap-2 Maneuver       | 769                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Stage 1                  | 913                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Stage 2                  | 909                                                                               | -      | -     | -                                                                                 | -                                                                                 | -    |
| Approach                 | EB                                                                                | NB     |       | SB                                                                                |                                                                                   |      |
| HCM Control Delay, s     | 10                                                                                | 4      |       | 0                                                                                 |                                                                                   |      |
| HCM LOS                  | B                                                                                 |        |       |                                                                                   |                                                                                   |      |
| Minor Lane/Major Mvmt    | NBL                                                                               | NBT    | EBLn1 | SBT                                                                               | SBR                                                                               |      |
| Capacity (veh/h)         | 1465                                                                              | -      | 827   | -                                                                                 | -                                                                                 |      |
| HCM Lane V/C Ratio       | 0.027                                                                             | -      | 0.127 | -                                                                                 | -                                                                                 |      |
| HCM Control Delay (s)    | 7.5                                                                               | 0      | 10    | -                                                                                 | -                                                                                 |      |
| HCM Lane LOS             | A                                                                                 | A      | B     | -                                                                                 | -                                                                                 |      |
| HCM 95th %tile Q(veh)    | 0.1                                                                               | -      | 0.4   | -                                                                                 | -                                                                                 |      |

HCM 6th TWSC  
1: 184 Street & 72 Avenue

07-03-2024

Intersection

Int Delay, s/veh 3.2

| Movement                 | EBL                                                                               | EBR  | NBL  | NBT                                                                               | SBT                                                                               | SBR  |
|--------------------------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations      |  |      |      |  |  |      |
| Traffic Vol, veh/h       | 42                                                                                | 19   | 28   | 47                                                                                | 50                                                                                | 64   |
| Future Vol, veh/h        | 42                                                                                | 19   | 28   | 47                                                                                | 50                                                                                | 64   |
| Conflicting Peds, #/hr   | 0                                                                                 | 0    | 0    | 0                                                                                 | 0                                                                                 | 0    |
| Sign Control             | Stop                                                                              | Stop | Free | Free                                                                              | Free                                                                              | Free |
| RT Channelized           | -                                                                                 | None | -    | None                                                                              | -                                                                                 | None |
| Storage Length           | 0                                                                                 | -    | -    | -                                                                                 | -                                                                                 | -    |
| Veh in Median Storage, # | 0                                                                                 | -    | -    | 0                                                                                 | 0                                                                                 | -    |
| Grade, %                 | 0                                                                                 | -    | -    | 0                                                                                 | 0                                                                                 | -    |
| Peak Hour Factor         | 100                                                                               | 100  | 100  | 100                                                                               | 100                                                                               | 100  |
| Heavy Vehicles, %        | 3                                                                                 | 3    | 3    | 3                                                                                 | 3                                                                                 | 3    |
| Mvmt Flow                | 42                                                                                | 19   | 28   | 47                                                                                | 50                                                                                | 64   |

| Major/Minor          | Minor2 | Major1 | Major2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 185    | 82     | 114    |
| Stage 1              | 82     | -      | -      |
| Stage 2              | 103    | -      | -      |
| Critical Hdwy        | 6.43   | 6.23   | 4.13   |
| Critical Hdwy Stg 1  | 5.43   | -      | -      |
| Critical Hdwy Stg 2  | 5.43   | -      | -      |
| Follow-up Hdwy       | 3.527  | 3.327  | 2.227  |
| Pot Cap-1 Maneuver   | 802    | 975    | 1469   |
| Stage 1              | 939    | -      | -      |
| Stage 2              | 919    | -      | -      |
| Platoon blocked, %   |        |        |        |
| Mov Cap-1 Maneuver   | 786    | 975    | 1469   |
| Mov Cap-2 Maneuver   | 786    | -      | -      |
| Stage 1              | 920    | -      | -      |
| Stage 2              | 919    | -      | -      |

| Approach             | EB  | NB  | SB |
|----------------------|-----|-----|----|
| HCM Control Delay, s | 9.6 | 2.8 | 0  |
| HCM LOS              | A   |     |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 1469  | -   | 837   | -   | -   |
| HCM Lane V/C Ratio    | 0.019 | -   | 0.073 | -   | -   |
| HCM Control Delay (s) | 7.5   | 0   | 9.6   | -   | -   |
| HCM Lane LOS          | A     | A   | A     | -   | -   |
| HCM 95th %tile Q(veh) | 0.1   | -   | 0.2   | -   | -   |

HCM 6th TWSC  
1: 184 Street & 72 Avenue

07-03-2024

Intersection

Int Delay, s/veh 5.1

| Movement                 | EBL                                                                               | EBR  | NBL  | NBT                                                                               | SBT                                                                               | SBR  |
|--------------------------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations      |  |      |      |  |  |      |
| Traffic Vol, veh/h       | 89                                                                                | 47   | 41   | 35                                                                                | 48                                                                                | 72   |
| Future Vol, veh/h        | 89                                                                                | 47   | 41   | 35                                                                                | 48                                                                                | 72   |
| Conflicting Peds, #/hr   | 0                                                                                 | 0    | 0    | 0                                                                                 | 0                                                                                 | 0    |
| Sign Control             | Stop                                                                              | Stop | Free | Free                                                                              | Free                                                                              | Free |
| RT Channelized           | -                                                                                 | None | -    | None                                                                              | -                                                                                 | None |
| Storage Length           | 0                                                                                 | -    | -    | -                                                                                 | -                                                                                 | -    |
| Veh in Median Storage, # | 0                                                                                 | -    | -    | 0                                                                                 | 0                                                                                 | -    |
| Grade, %                 | 0                                                                                 | -    | -    | 0                                                                                 | 0                                                                                 | -    |
| Peak Hour Factor         | 100                                                                               | 100  | 100  | 100                                                                               | 100                                                                               | 100  |
| Heavy Vehicles, %        | 3                                                                                 | 3    | 3    | 3                                                                                 | 3                                                                                 | 3    |
| Mvmt Flow                | 89                                                                                | 47   | 41   | 35                                                                                | 48                                                                                | 72   |

| Major/Minor          | Minor2 | Major1 | Major2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 201    | 84     | 120    |
| Stage 1              | 84     | -      | -      |
| Stage 2              | 117    | -      | -      |
| Critical Hdwy        | 6.43   | 6.23   | 4.13   |
| Critical Hdwy Stg 1  | 5.43   | -      | -      |
| Critical Hdwy Stg 2  | 5.43   | -      | -      |
| Follow-up Hdwy       | 3.527  | 3.327  | 2.227  |
| Pot Cap-1 Maneuver   | 785    | 972    | 1462   |
| Stage 1              | 937    | -      | -      |
| Stage 2              | 906    | -      | -      |
| Platoon blocked, %   |        |        |        |
| Mov Cap-1 Maneuver   | 762    | 972    | 1462   |
| Mov Cap-2 Maneuver   | 762    | -      | -      |
| Stage 1              | 910    | -      | -      |
| Stage 2              | 906    | -      | -      |

| Approach             | EB   | NB  | SB |
|----------------------|------|-----|----|
| HCM Control Delay, s | 10.2 | 4.1 | 0  |
| HCM LOS              | B    |     |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 1462  | -   | 823   | -   | -   |
| HCM Lane V/C Ratio    | 0.028 | -   | 0.165 | -   | -   |
| HCM Control Delay (s) | 7.5   | 0   | 10.2  | -   | -   |
| HCM Lane LOS          | A     | A   | B     | -   | -   |
| HCM 95th %tile Q(veh) | 0.1   | -   | 0.6   | -   | -   |

HCM 6th TWSC  
1: 184 Street & 72 Avenue

07-03-2024

Intersection

Int Delay, s/veh 3.6

| Movement                 | EBL                                                                               | EBR  | NBL  | NBT                                                                               | SBT                                                                               | SBR  |
|--------------------------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations      |  |      |      |  |  |      |
| Traffic Vol, veh/h       | 52                                                                                | 25   | 37   | 47                                                                                | 50                                                                                | 80   |
| Future Vol, veh/h        | 52                                                                                | 25   | 37   | 47                                                                                | 50                                                                                | 80   |
| Conflicting Peds, #/hr   | 0                                                                                 | 0    | 0    | 0                                                                                 | 0                                                                                 | 0    |
| Sign Control             | Stop                                                                              | Stop | Free | Free                                                                              | Free                                                                              | Free |
| RT Channelized           | -                                                                                 | None | -    | None                                                                              | -                                                                                 | None |
| Storage Length           | 0                                                                                 | -    | -    | -                                                                                 | -                                                                                 | -    |
| Veh in Median Storage, # | 0                                                                                 | -    | -    | 0                                                                                 | 0                                                                                 | -    |
| Grade, %                 | 0                                                                                 | -    | -    | 0                                                                                 | 0                                                                                 | -    |
| Peak Hour Factor         | 100                                                                               | 100  | 100  | 100                                                                               | 100                                                                               | 100  |
| Heavy Vehicles, %        | 3                                                                                 | 3    | 3    | 3                                                                                 | 3                                                                                 | 3    |
| Mvmt Flow                | 52                                                                                | 25   | 37   | 47                                                                                | 50                                                                                | 80   |

| Major/Minor          | Minor2 | Major1 | Major2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 211    | 90     | 130    |
| Stage 1              | 90     | -      | -      |
| Stage 2              | 121    | -      | -      |
| Critical Hdwy        | 6.43   | 6.23   | 4.13   |
| Critical Hdwy Stg 1  | 5.43   | -      | -      |
| Critical Hdwy Stg 2  | 5.43   | -      | -      |
| Follow-up Hdwy       | 3.527  | 3.327  | 2.227  |
| Pot Cap-1 Maneuver   | 775    | 965    | 1449   |
| Stage 1              | 931    | -      | -      |
| Stage 2              | 902    | -      | -      |
| Platoon blocked, %   |        |        |        |
| Mov Cap-1 Maneuver   | 755    | 965    | 1449   |
| Mov Cap-2 Maneuver   | 755    | -      | -      |
| Stage 1              | 907    | -      | -      |
| Stage 2              | 902    | -      | -      |

| Approach             | EB  | NB  | SB |
|----------------------|-----|-----|----|
| HCM Control Delay, s | 9.9 | 3.3 | 0  |
| HCM LOS              | A   |     |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 1449  | -   | 812   | -   | -   |
| HCM Lane V/C Ratio    | 0.026 | -   | 0.095 | -   | -   |
| HCM Control Delay (s) | 7.5   | 0   | 9.9   | -   | -   |
| HCM Lane LOS          | A     | A   | A     | -   | -   |
| HCM 95th %tile Q(veh) | 0.1   | -   | 0.3   | -   | -   |