Smart Homes Ottawa Inc.

EFI

ENGINEERING
ARCHITECTURE
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Traffic Impact Study

Residential Development

Lot 20 Con 3, Montague, Ontario

Prepared by EFI Engineering

August 2024

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1.0 INTRODUCTION

EFI Engineering was commissioned to undertake a comprehensive Traffic Impact Study (TIS) to assess the potential impacts of a proposed subdivision at Lot 20 Concession 3, Montague. The development, spearheaded by Smart Homes Ottawa Inc., aims to introduce 42 single family detached housing units with an access points on Matheson Drive and Rosedale Road. This TIS examines the implications of this development on the existing traffic network, evaluates the capacity of key intersections, and provides recommendations to mitigate any adverse impacts presented by newly generated traffic.

Located directly East of the intersection of Matheson Drive and Rosedale Road, the subject site is approximately 5 km from Smith Falls, 11km from Merrickville and 15km from the boundary of Ottawa. Figure 1 and Figure 2 below, illustrate the location of the subject site within the broader context of the region's road network.

1.1 Purpose of the Study

The primary objective of this TIS is to quantify the additional traffic generated by the proposed development and determine its impact on the surrounding road network. This includes assessing the capacity and level of service (LOS) of nearby intersections, evaluating the effectiveness of existing traffic control measures, and identifying necessary infrastructure improvements or adjustments to accommodate the projected traffic volumes.

1.2 Scope of the Study

This study encompasses an extensive analysis of the transportation infrastructure surrounding the subject site. The study area includes two key intersections that are critical to maintaining efficient traffic flow in the Montague region:

- Matheson Drive and Rosedale Road
- Roger Stevens Drive and Rosedale Road

Each intersection was analyzed under current conditions as well as under projected future scenarios.

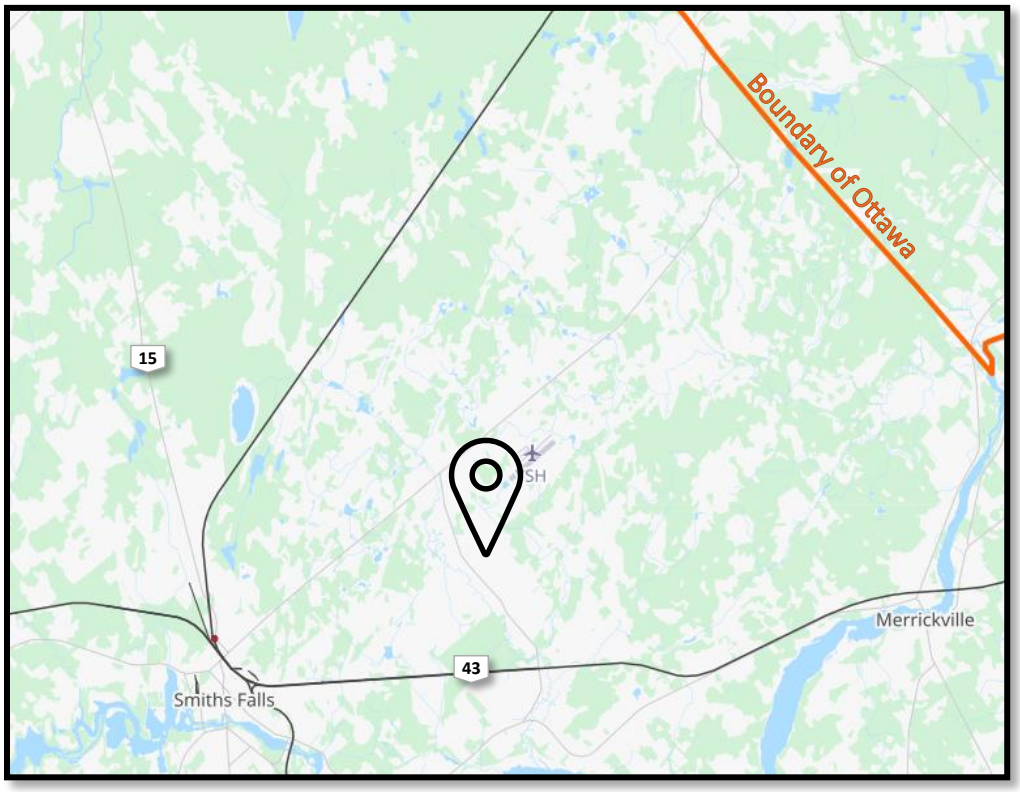

Figure 1: Subject Site Regional Location

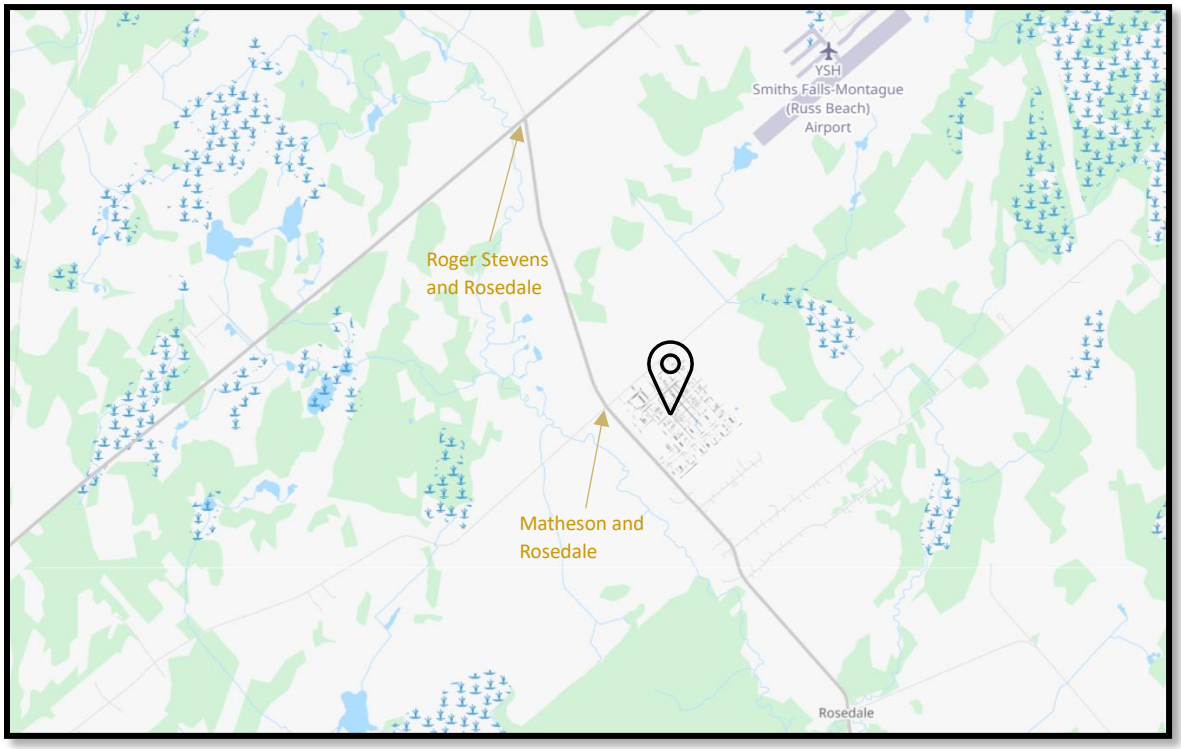

Figure 2: Subject Site and Key Intersections

2.0 ADJACENT ROADS AND INTERSECTIONS

2.1 Existing Conditions

The development is situated in the Southern portion of the Montague Township approximately 5km from Smith Falls, 11km from Merrickville and 15km from the boundary of Ottawa. Furthermore, access to Highway 15 and 43 can be achieved using Roger Stevens Drive and Rosedale Road respectively. Access to the aforementioned Points of Interest (POI) and Highways emphasizes the utility of the site location and the necessity for adequate operation of the intersections covered in this study. Summary of proximate intersections and roads is available in table 1 below.

Table 1: Nearby roads and intersections.

Intersection	Description
Matheson and Rosedale (Point 1)	▪ Controlled by a Two Way Stop Control (TWSC) ▪ Major Street (Rosedale) travels North and South with stop signs located on East and Westbound approaches (Matheson) ▪ Matheson Drive facilitates access to the Northeast side of Smith Falls ▪ Rosedale Facilitates access to Highway 43 and subsequently Merrickville. ▪ All approaches contain no designated turn lanes.
Roger Stevens and Rosedale (Point 2)	▪ Regulated by Two Way Stop Control (TWSC) ▪ Major Street (Roger Stevens) travels East and West with Stop signs located on the North and Southbound approaches (Rosedale). ▪ Roger Stevens Drive Facilitates access to both Smith Falls and Ottawa. ▪ Eastbound approach contains designated right turning lane.

Figure 3 below illustrates the location of the POI's with relation to the proposed development site.

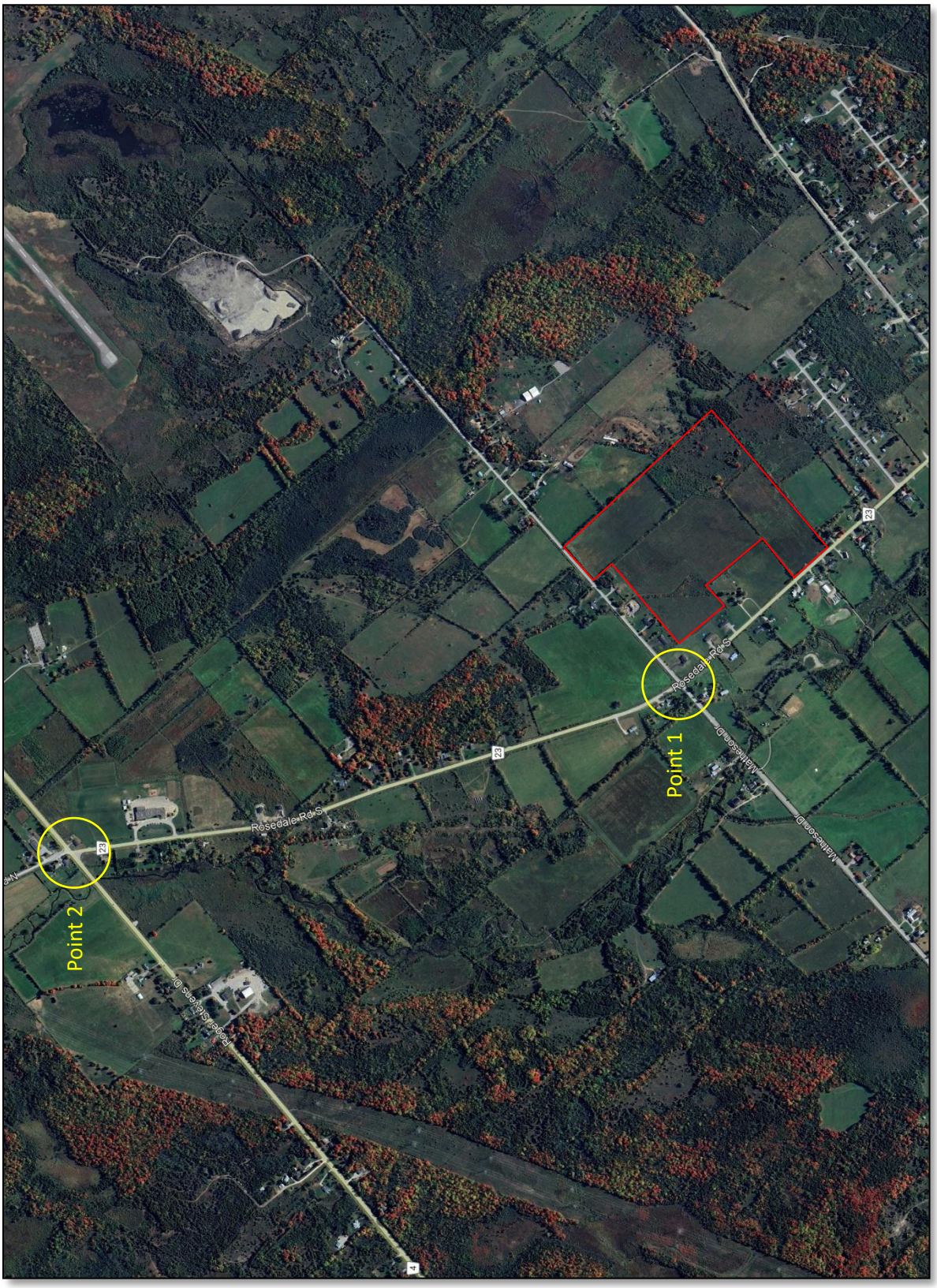

Figure 3. Points of Interest (POI's) with respect to the proposed development site.

3.0 PROPOSED DEVELOPMENT

The proposed development is located at Lot 20 Concession 3 and represents a significant addition to the Township of Montague. The development will front both Rosedale Road South and Matheson Drive and thus include access point on both. Although not required to accommodate the increase to local traffic, a right turn lane will be added to the Rosedale Road South access point, at the request of Montague Township. Right-turn lane specifications can be observed in Civil Drawing C107, titled "Grading & Servicing Plan 5."

All parking is to be contained within the private residents with street and public parking not present or accounted for. The development comprises 42 Single family detached dwelling units with space for future additions. Currently, no future additions have been planned and thus are not included in this report.

Figure 4. Site Plan overlay of proposed subdivision.

3.1 Current Traffic Demand

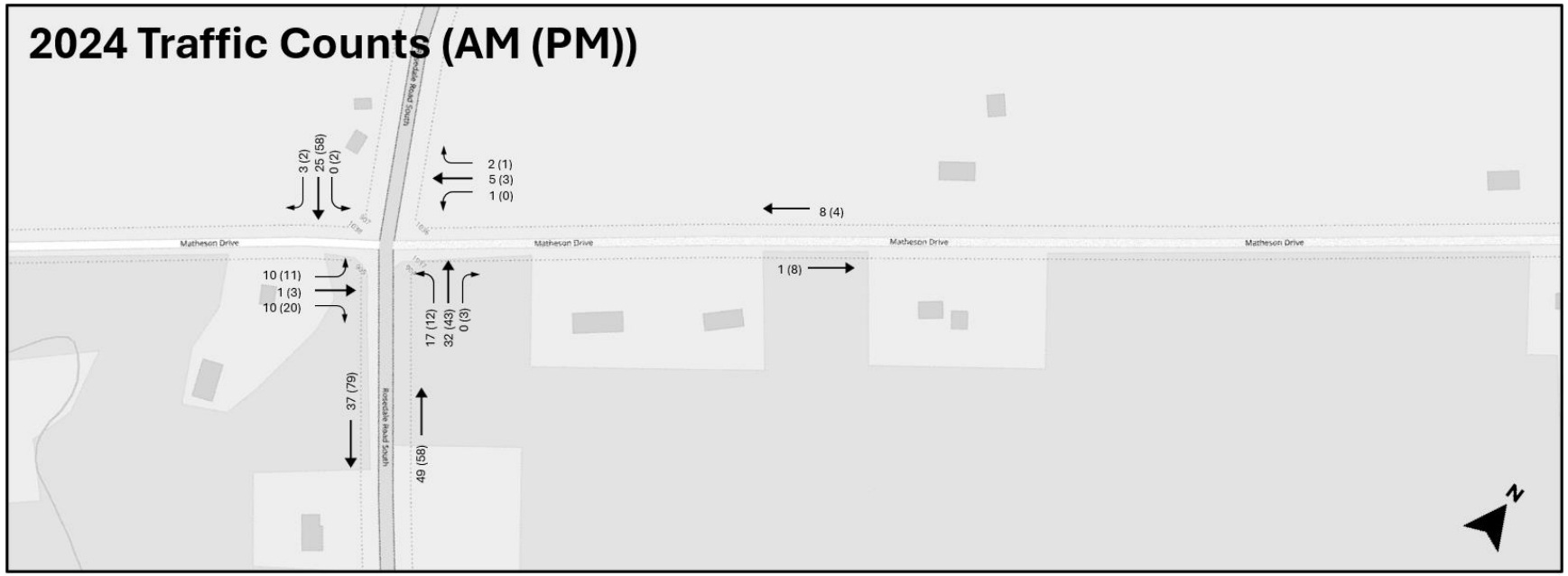

Figure 5. Current Traffic distribution and demand at point 1.

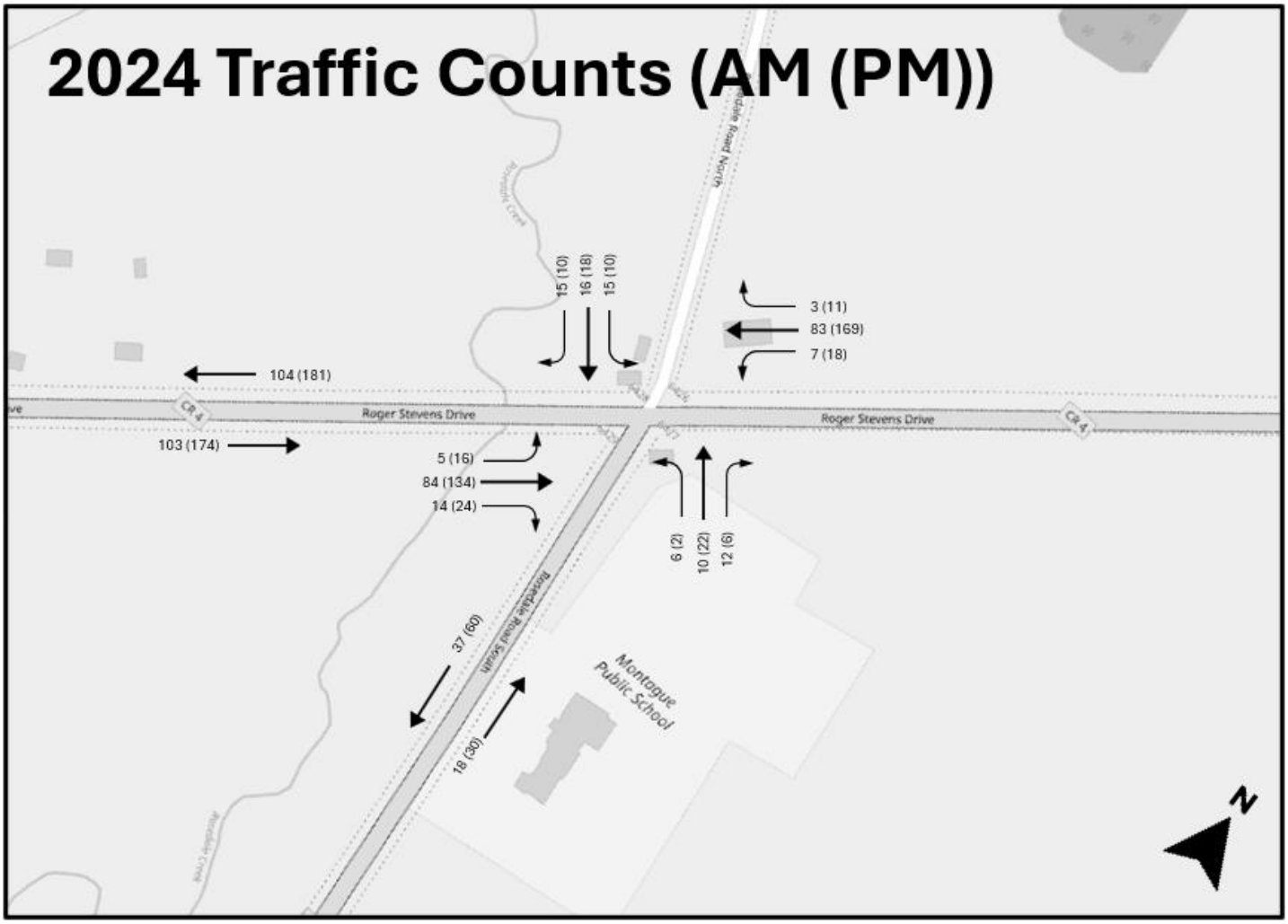

Figure 6. Current Traffic distribution and demand at point 2.

4.0 METHDOLOGY

4.1 Approach and Tools

This Traffic Impact Study (TIS) was conducted using a structured methodology designed to accurately assess the potential traffic impacts of the proposed Subdivision at Lot 20, Concession 3. The study utilized a combination of field data collection, predictive modeling, and analytical techniques. Key tools and methodologies employed in this study include:

- **Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition:** This manual was the primary reference for estimating the number of trips generated by the proposed development, ensuring that projections align with industry standards.
- **Highway Capacity Software (HCS):** Version 8.3 was used to model the performance of the key intersections within the study area. HCS is based on the procedures outlined in the Highway Capacity Manual (HCM) and provides a robust framework for evaluating intersection capacity and Level of Service (LOS).

4.2 Data Sources

The data used in this study was obtained from a variety of reliable sources to ensure accuracy and relevance:

- **Traffic Counts:** Manual traffic counts were conducted at the two key intersections during weekday peak AM and PM periods. These counts were taken at 15-minute intervals over a two-hour and 15-minute period, capturing the highest traffic volumes.
- **Road Network Information:** Details about the road network, including lane configurations, speed limits, and signage, were gathered through site visits and consultations with local authorities.

4.3 Assumptions and Constraints

Several key assumptions and constraints were applied in the study to ensure that the analysis was grounded in realistic expectations:

- **Traffic Growth Rate:** Regional population growth trends as derived from Canadian Census data (Statistics Canada) are 4.1% for the period of 2016 to 2021. Annualized, the data results in a growth of 0.82%/year; a conservative annual population growth rate of 0.9%/year was applied across the study period. When applied to a 10-year and 15-year growth period, the growth factors were determined to be 1.094 and 1.144 respectively.
- **Peak Hour Focus:** The analysis concentrated on peak hour conditions (AM and PM), which represent the worst-case scenario for traffic congestion. This approach ensures that the study captures the maximum potential impact of the development.

Table 2: Critical assumptions used in HCS Intersection Models.

Critical Assumptions		
Category	**Input**	**Reason**
Base Saturation Flow	1750 veh/hr	HCS suggests a base saturation flow of 1750 Passenger Cars, per Hour, Per Lane (pcphpl) for any region with a population less than 250,000.
Analysis Duration	1hr	Used to establish the effects of the proposed development on the current peak hour traffic.
Stored Passenger Car Length	7.6 meters	HCS default value
Stored Heavy Vehicle Length	13.7 meters	HCS default value

4.4 Trip Generation

The projected trip generation for the proposed subdivision at Lot 20, Concession 3 was calculated using the ITE Trip Generation Manual, 11th Edition. The land use code ITE Code 210 (Single-Family Detached Housing) was applied based on the nature of the development.

These estimates reflect the expected vehicle movements generated by the development during peak traffic periods.

Table 3: Estimated Trip Generation.

Estimated Trip Generation				
Calculation	**Weekday AM Peak Hour**		**Weekday PM Peak Hour**	
Directional Distribution	26% Entering	74% Exiting	63% Entering	37% Exiting
Fitted Curve Equation per ITE	Ln(T)=0.91Ln(x) + 0.12		Ln(T)=0.94Ln(x) + 0.27	
Calculated Trip Rate	0.93 Trips/Dwelling Unit		0.95 Trips/Dwelling Unit	
Peak Hour Trips/Hour	39 Trips/Hour		40 Trips/hour	
Site Trips	**Enter**	**Exit**	**Enter**	**Exit**
	10	29	25	15

4.5 Trip Distribution and Assignment

The trips generated by the proposed development were distributed across the surrounding road network based on existing traffic patterns, anticipated travel routes, and proximity to key destinations. The following considerations were central to the trip distribution analysis:

- **Directionality:** The distribution of trips were established using current and the likely travel directions with respect to major thoroughfares, nearby Towns and other Points of Interest. Instances related to erroneous events (exit and immediate re-entry, U-turns, etc.) were exempt from this study.

- **Road Hierarchy:** The distribution took into account the hierarchy of roads within the study area, with arterial street like Rosedale Road expected to carry the majority of the development's traffic.
- **Intersection Analysis:** The impact of the distributed trips was analyzed at each key intersection to determine how the additional traffic would affect overall performance.

Distribution Results:

- **Rosedale Road (Southbound):** 47.32% of trips
- **Rosedale Road (Northbound):** 46.98% of trips
- **Matheson Road (Westbound):** 3.68% of trips
- **Matheson Road (Eastbound):** 2.02% of trips

Total distribution percentages reflect the anticipated flow of traffic in direct correlation to the proposed development and account for both the AM and PM peak traffic. Therefore, the traffic observed along Roger Stevens Drive was not taken into account. A majority of vehicles were observed utilizing Rosedale Road to access regional and local destinations with the remaining vehicles traveling along Matheson drive in minimal amounts.

5.0 TRAFFIC IMPACT

This section provides a detailed analysis of the generated traffic and the impact on each key intersection, combining both existing conditions and the projected future conditions. For each intersection, current traffic volumes, control measures, and Level of Service (LOS), were examined, followed by the anticipated changes with the development in place. Furthermore, 10- and 15-year outlooks were analyzed to ensure the subdivision positively impacts the surrounding area for the foreseeable future.

5.1 Generated Traffic Maps

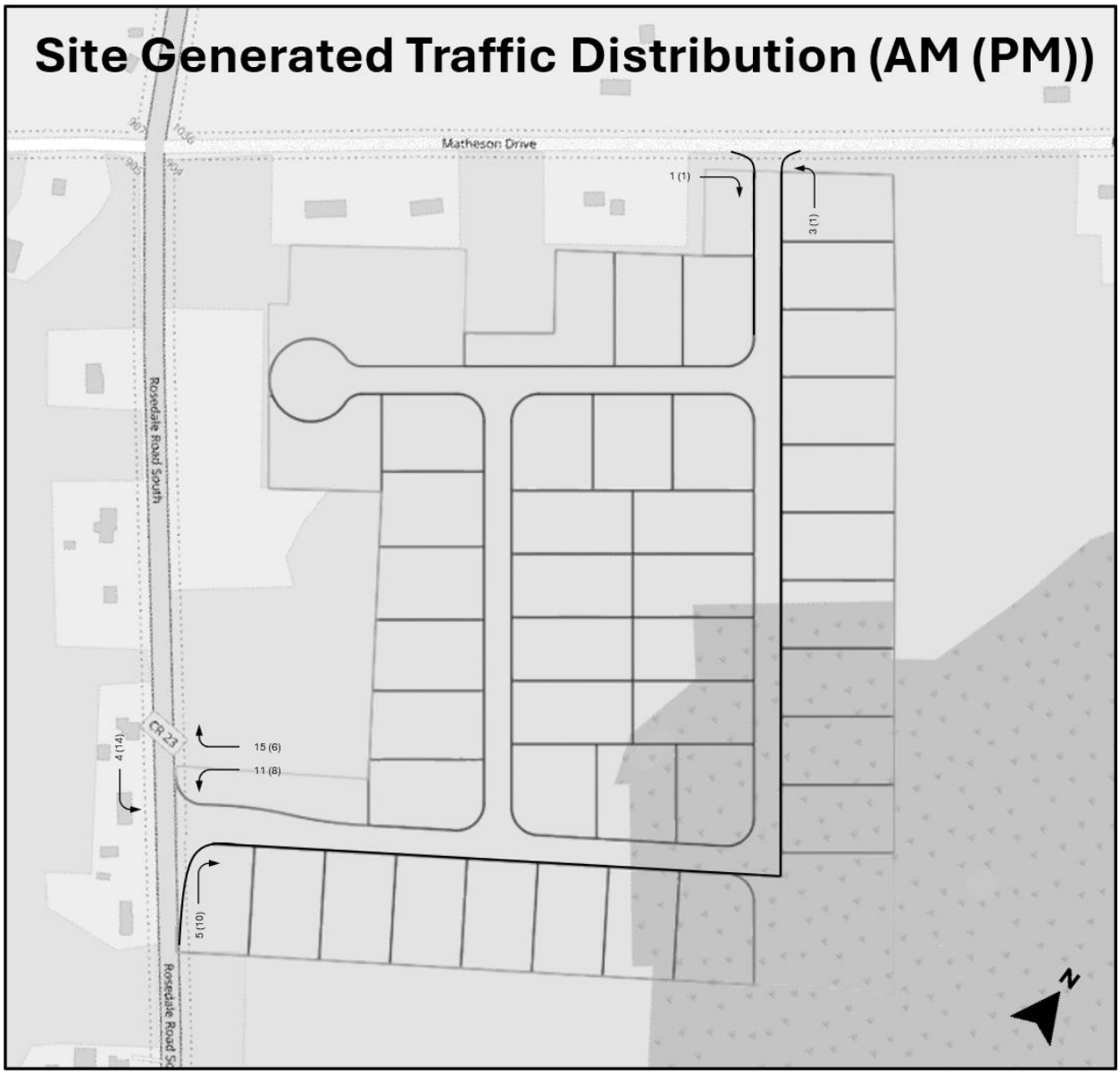

Figure 7. Peak AM and PM Site generated traffic distribution for Rosedale Road and Matheson Drive Access points.

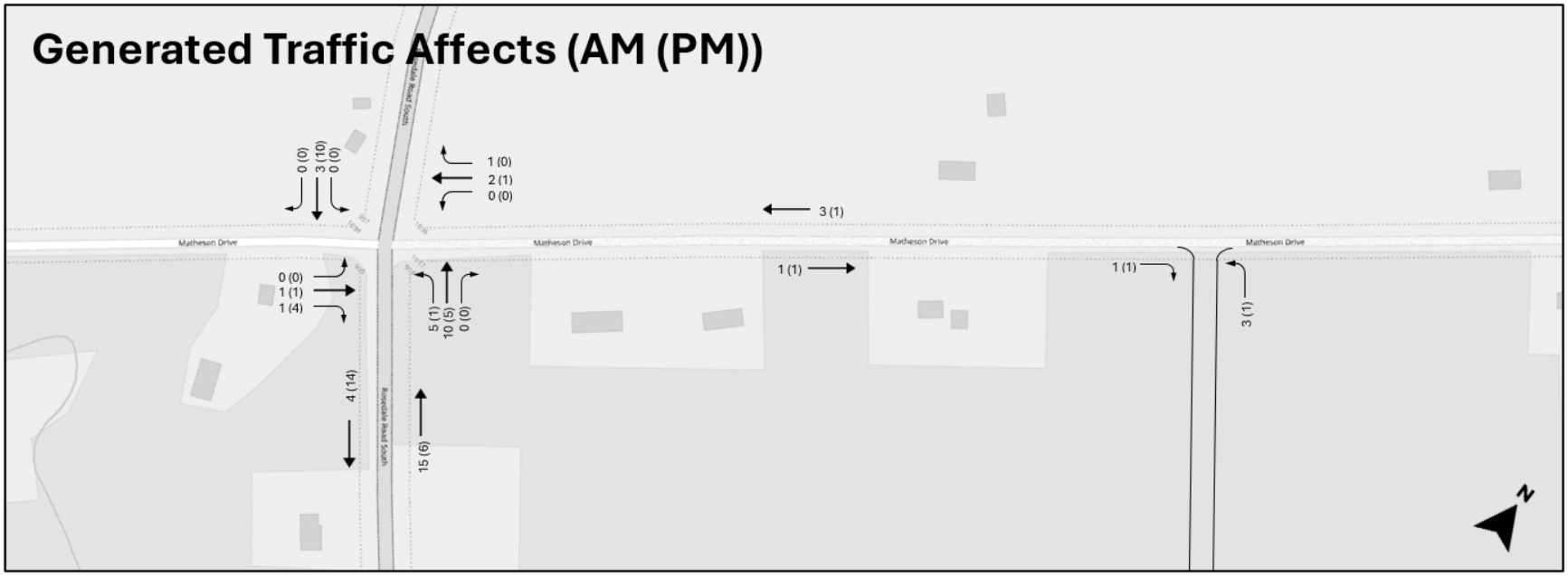

Figure 8. Expected generated traffic affects on point 1.

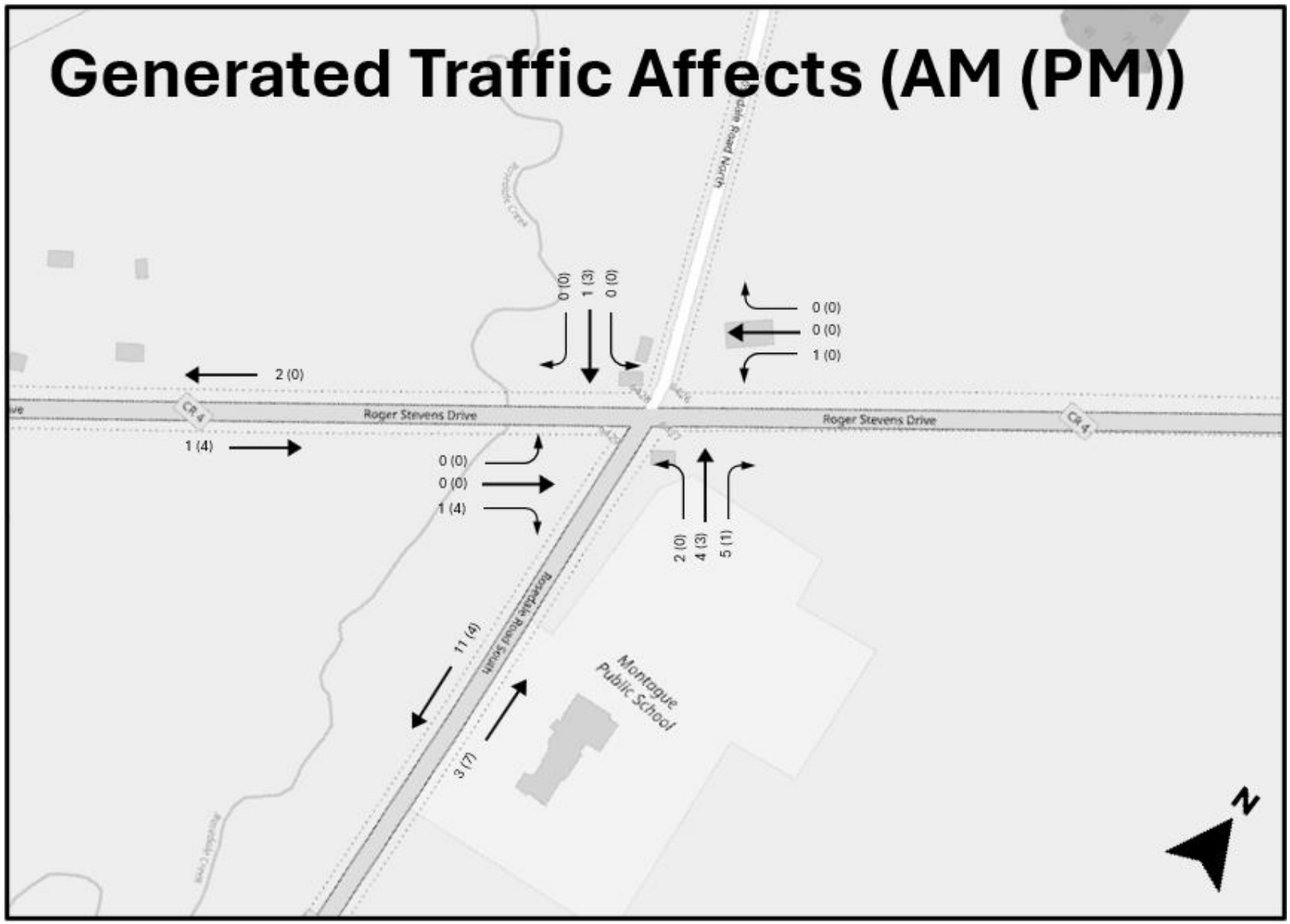

Figure 9. Expected generated traffic affects on point 2.

5.2 Total Traffic Counts (Point 1)

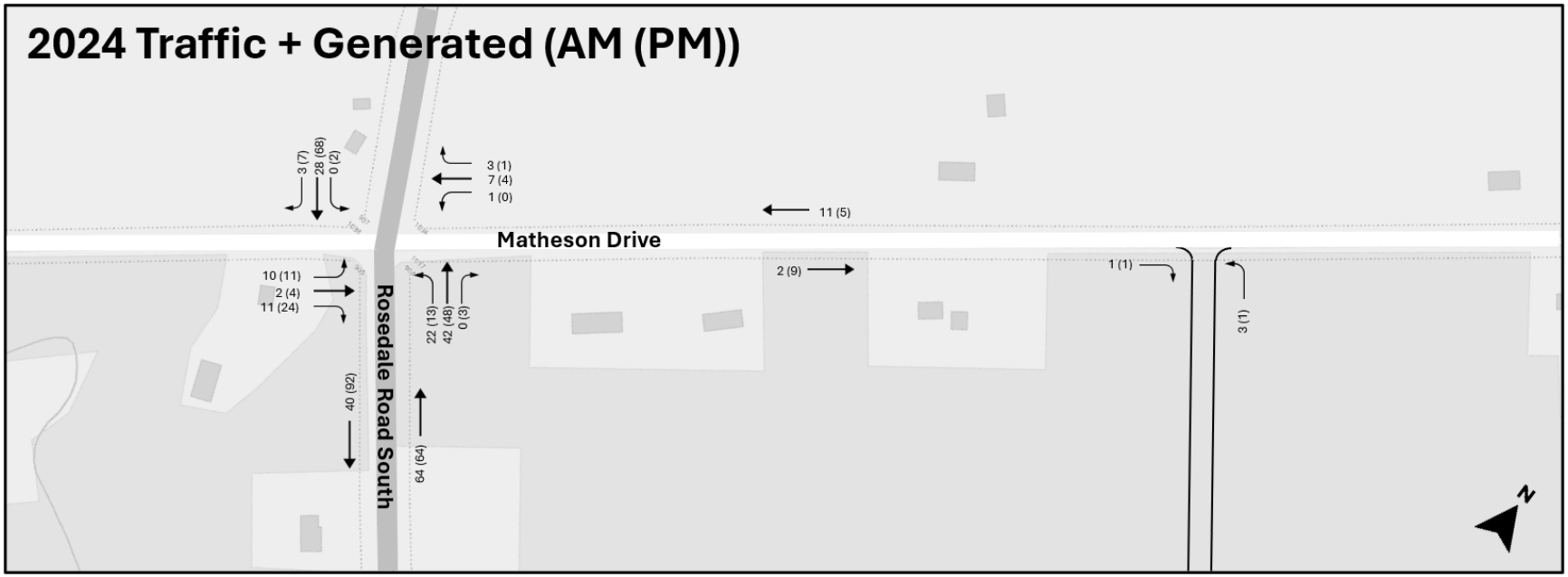

Figure 10. Expected traffic addition affects at the Matheson Drive access and Point 1.

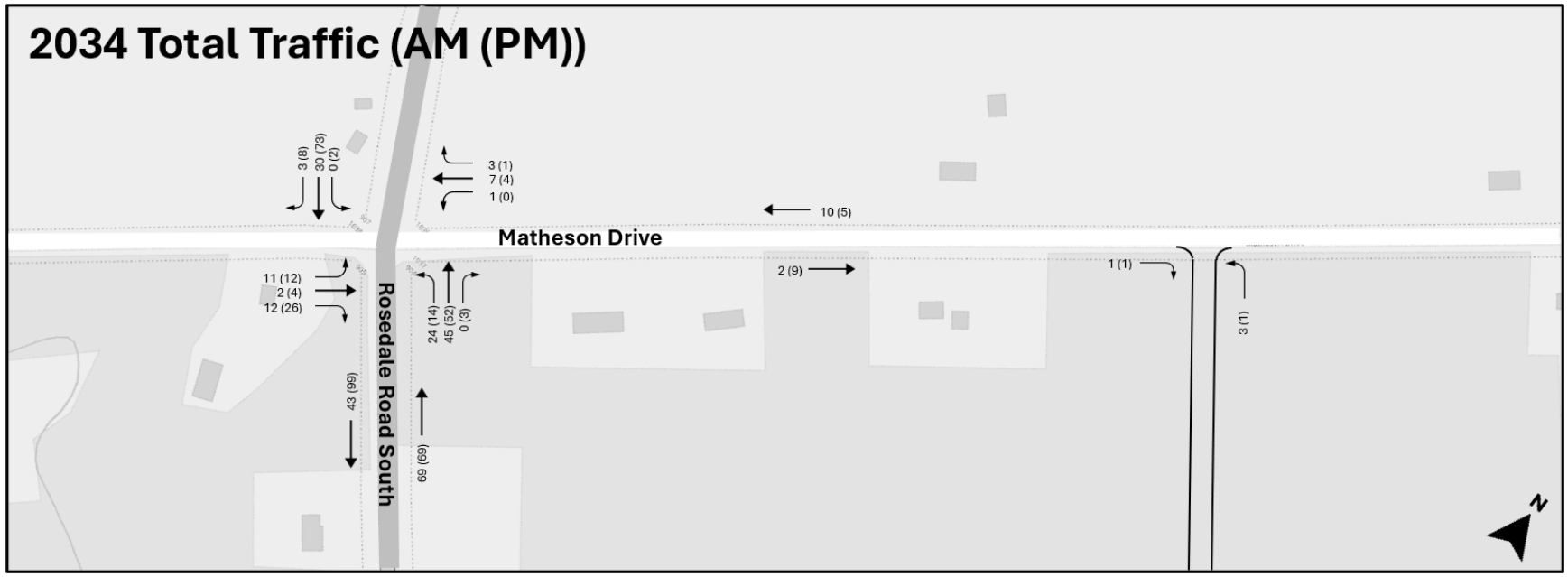

Figure 11. Expected total traffic at the Matheson Drive access and Point 1 in the year 2034.

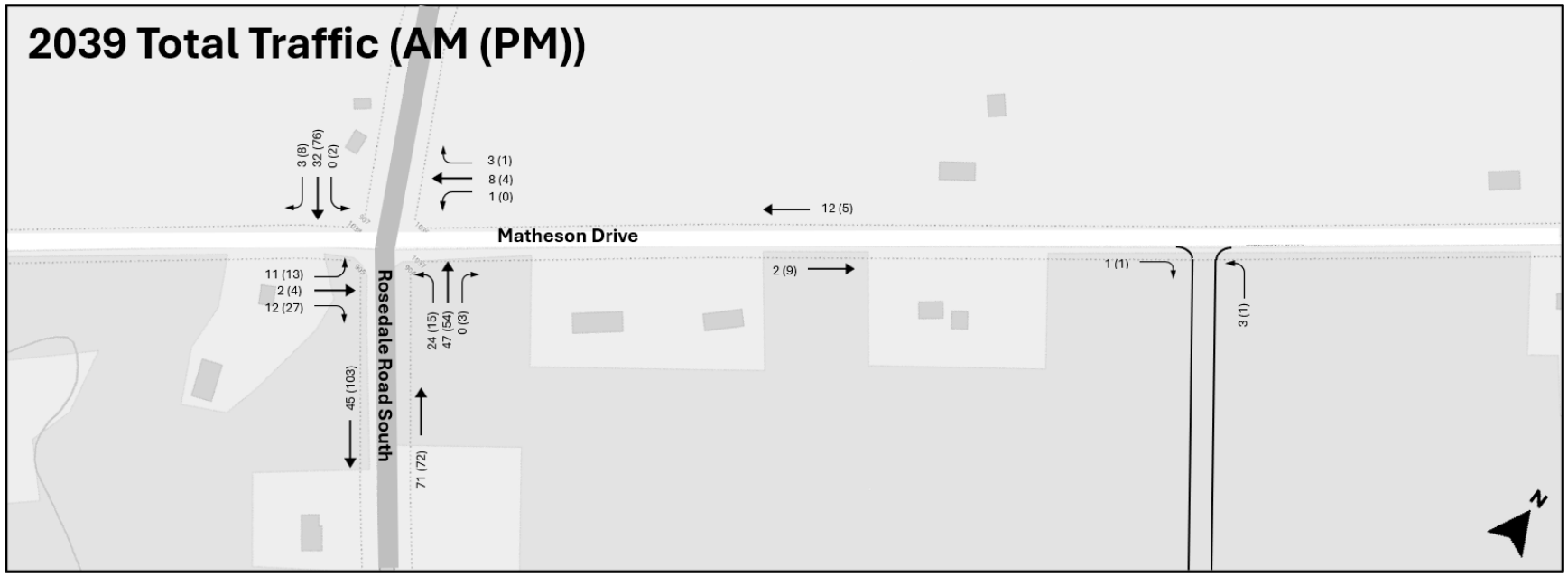

Figure 12. Expected total traffic at the Matheson Drive access and Point 1 in the year 2039.

5.3 Total Traffic Counts (Point 2)

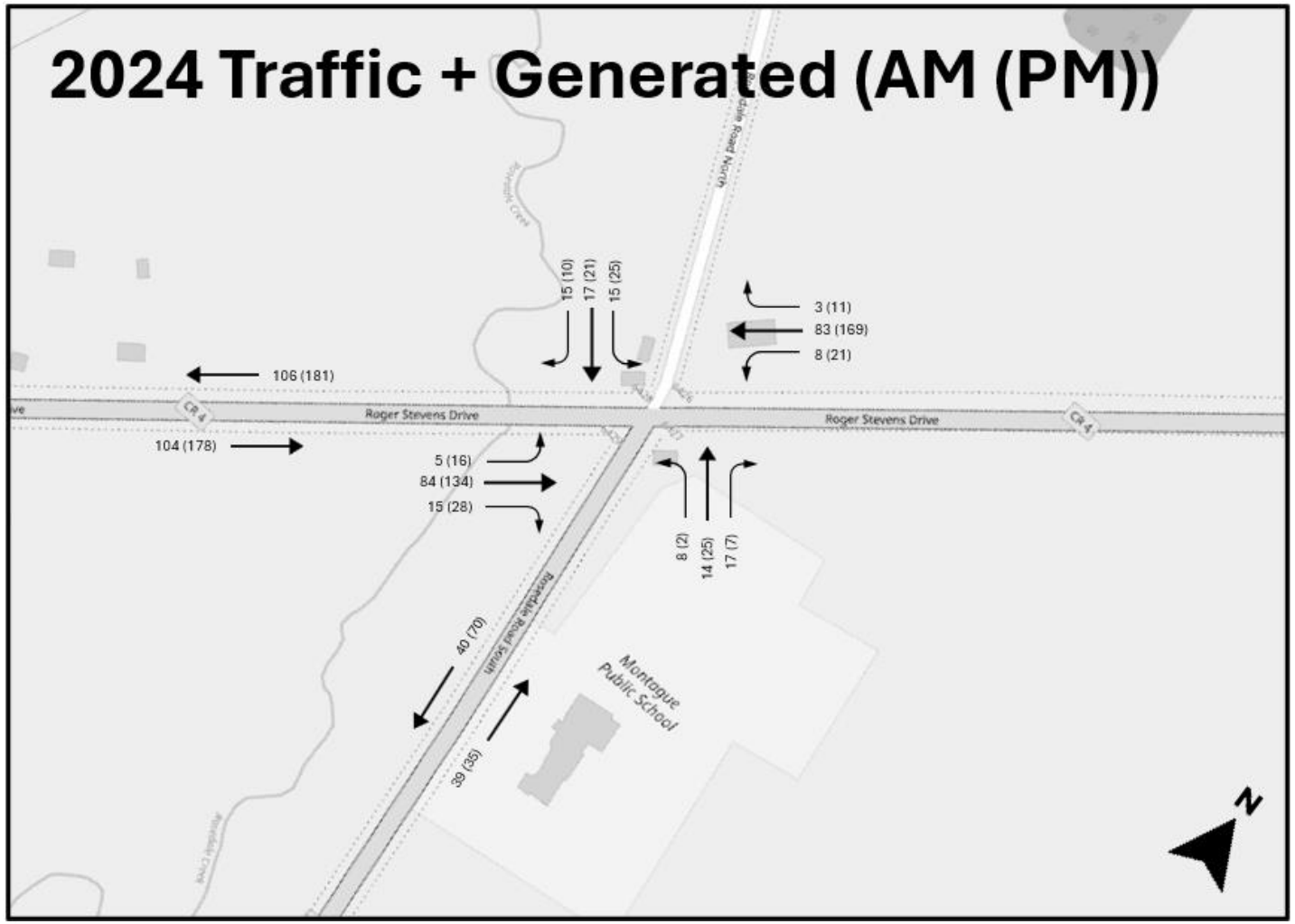

Figure 13. Expected traffic addition affects at Point 2.

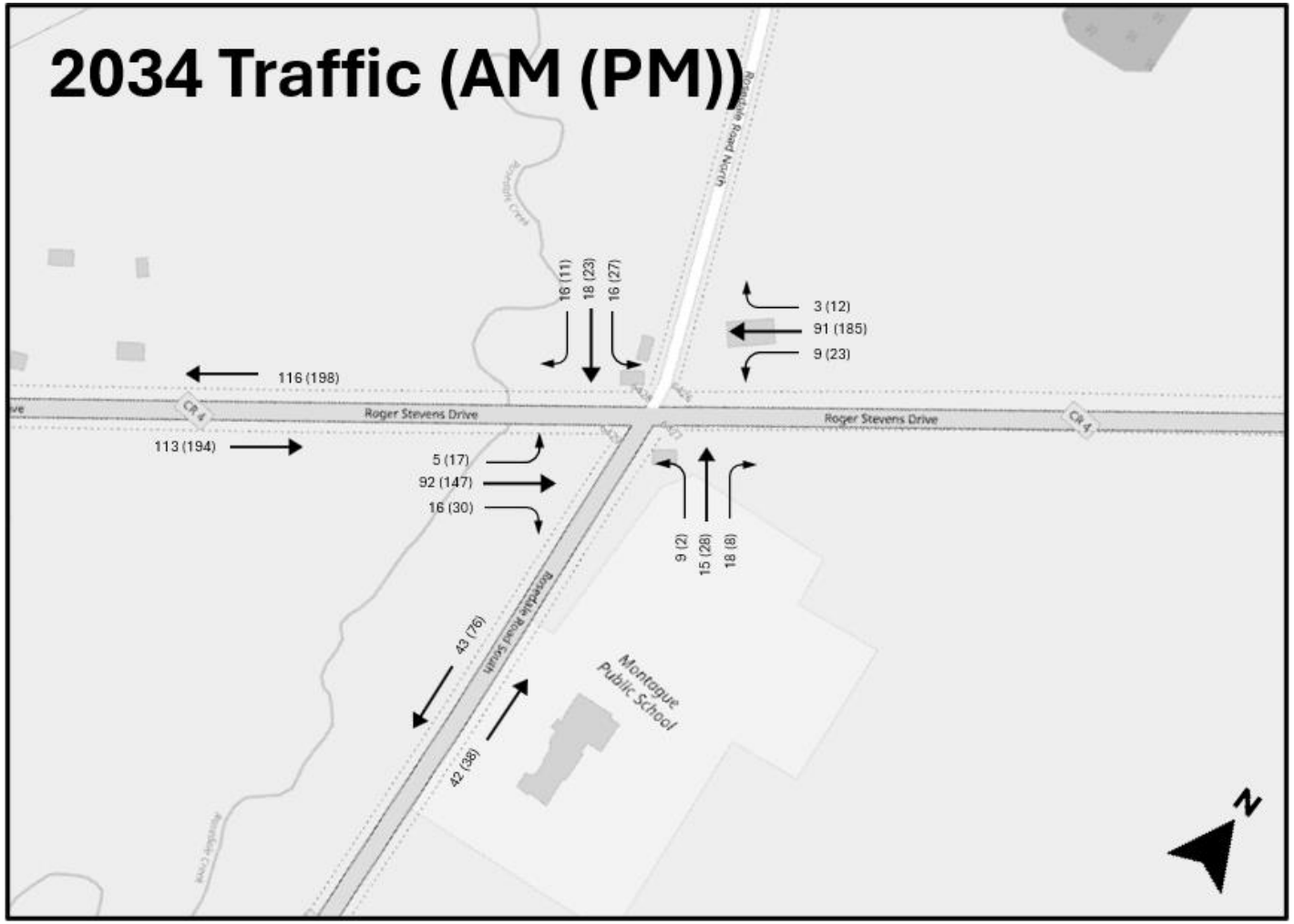

Figure 14. Expected total traffic at Point 2 in the year 2034.

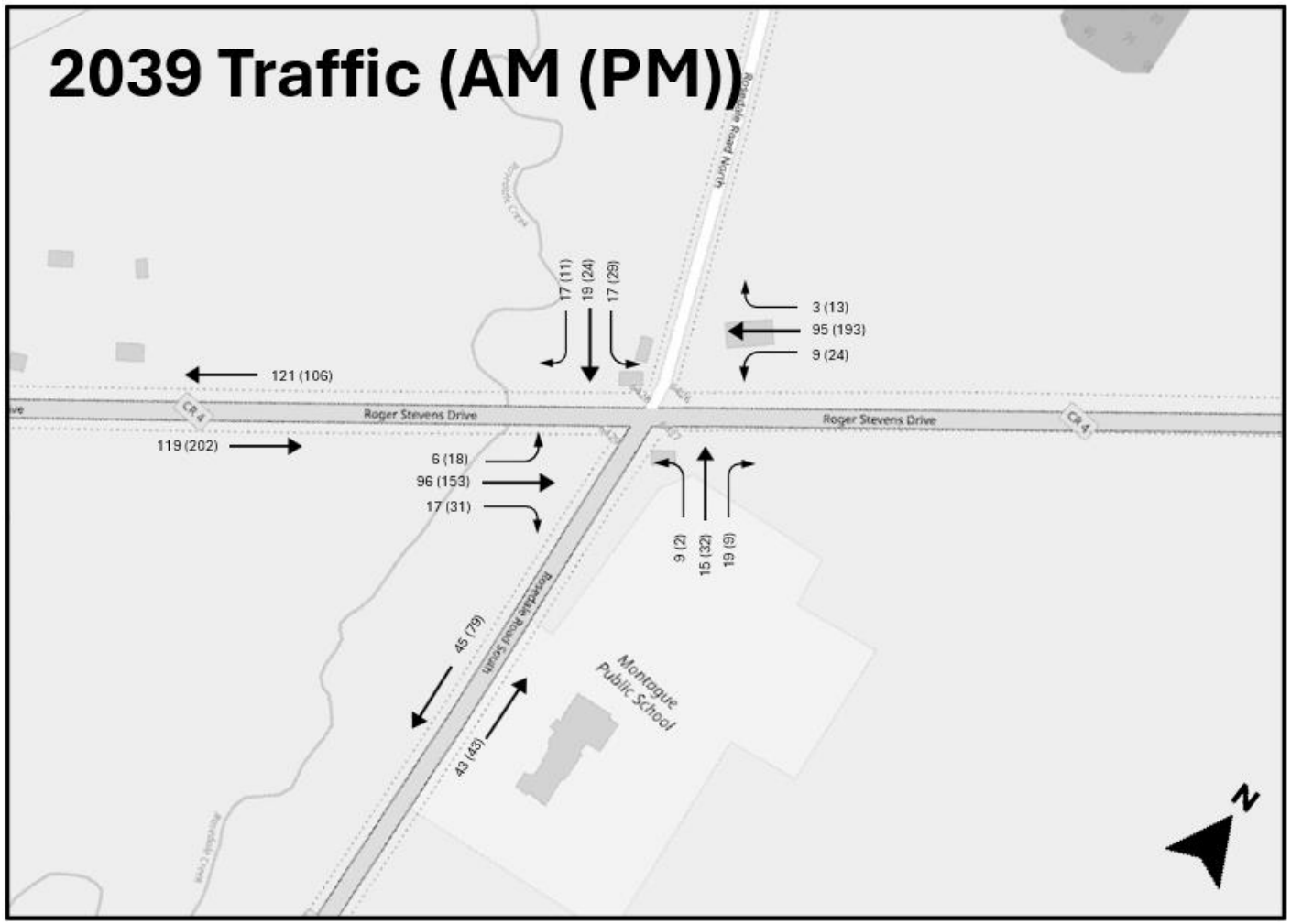

Figure 15. Expected total traffic at Point 2 in the year 2039.

5.4 Analysis of Point 1

Existing Conditions:

- **Intersection Overview:**
  The intersection of Matheson Drive and Rosedale Road is a Two-Way Stop-Controlled (TWSC) junction, with Rosedale Road acting as the primary street and Matheson Drive providing access to Smith Falls.

Figure 16: Matheson Drive (East/West) and Rosedale Road (North/South) (Point 1).

- **Traffic Control Measures:**
  The intersection is currently managed by two stop signs on Matheson Drive. Rosedale Road has no traffic controls at this intersection, allowing for free-flowing traffic. The existing setup is adequate for current traffic volumes and presents no major delays at any approach.

Table 4. Operational metrics from the Analysis of the Matheson Drive and Rosedale Road Intersection (Point 1).

Level of Service – Matheson Drive and Rosedale Road Intersection - Analysis Point 1				
Intersection Approach	Peak AM Weekday Current, 2024, 2034, 2039		Peak PM Weekday Current, 2024, 2034, 2039	
	LOS	Control Delay (s)	LOS	Control Delay (s)
Northbound (All)	A, A, A, A	2.6, 2.6, 2.6, 2.6	A, A, A, A	1.6, 1.6, 1.6, 1.6
Southbound (All)	A, A, A, A	0.0, 0.0, 0.0, 0.0	A, A, A, A	0.2, 0.2,0.2, 0.2
Eastbound (All)	A, A, A, A	9.0, 9.1, 9.2, 9.2	A, A, A, A	9.3, 9.4, 9.5, 9.5
Westbound (All)	A, A, A, A	9.4, 9.5, 9.6, 9.6	A, A, A, B	9.7, 9.9, 10.0, 10.0

Projected Impact with Development:

- **Anticipated LOS Change:**
  No change from current LOS is anticipated in Point 1 in the years 2024 and 2034, and 2039 (AM). A minimal change of LOS to "B" in the westbound approach was observed in the 2039 PM peak.

- **Recommended Mitigation:**
  No recommended changes are required as the determining LOS of the intersection has not exceeded an LOS "D".

- **Conclusion**:
  Point 1 is anticipated to maintain adequate functionality throughout the duration explored in this study.

5.5 Analysis of Point 2.

Existing Conditions:

- **Intersection Overview:**
  Roger Stevens Drive and Rosedale Road intersect at a Two-Way Stop-Controlled (TWSC) junction with Roger Stevens offering access to both Smith Falls and Ottawa.

Figure 17: Intersection of Roger Stevens Drive (East/West) and Rosedale Road (North/South) (point 2).

- **Traffic Control Measures:**
  The TWSC system effectively manages traffic allowing for free flow of traffic in the East and West bound directions while mitigating the approach delay experienced by Rosedale approaches.

Table 5. Operational metrics from the Analysis of the Roger Stevens Drive and Rosedale Road Intersection (Point 2).

Level of Service – Roger Stevens Drive and Rosedale Road Intersection – Analysis Point 2				
Intersection Approach	Peak AM Weekday Current, 2024, 2034, 2039		Peak PM Weekday Current, 2024, 2034, 2039	
	LOS	Control Delay (s)	LOS	Control Delay (s)
Northbound (All)	A, A, B, B	9.8, 9.9, 10.0, 10.1	B, B, B, B	11.9, 12.0, 12.5, 12.8
Southbound (All)	B, B, B, B	10.1, 10.1, 10.3, 10.4	B, B, B, B	12.8, 13.0, 13.8, 14.3
Eastbound (All)	A, A, A, A	0.4, 0.4, 0.3, 0.4	A, A, A, A	0.8, 0.8, 0.7, 0.8
Westbound (All)	A, A, A, A	0.6, 0.7, 0.7, 0.7	A, A, A, A	0.9, 1.0, 1.0, 1.0

Projected Impact with Development:

- **Anticipated LOS:**
  The only change to LOS can be observed in the Northbound approach in the years 2034 (AM) and 2039 (AM) from LOS “A” to “B”.

- **Recommended Mitigation:**
  No recommended changes are required as the determining LOS of the intersection has not exceeded an LOS "D".
- **Conclusion:**
  Point 2 is anticipated to maintain adequate functionality throughout the duration explored in this study.

6.0 CONCLUSION AND RECOMMENDATIONS

6.1 Summary of Findings

The Traffic Impact Study for the proposed development at Lot 20 Concession 3 has provided a thorough assessment of the potential effects on the surrounding road network. The study's key findings are as follows:

- **Trip Generation:** The proposed development is expected to generate a manageable increase in traffic, with 39 trips per hour during the AM peak and 40 trips per hour during the PM peak. These trips will primarily impact Rosedale, with minimal secondary effects on Matheson Drive, and tertiary affects to Roger Stevens Drive.
- **Intersection Performance:** All intersections within the study area are projected to continue operating within acceptable levels of service (LOS) through 2039 with minimal to non-existent changes to current LOS ratings.

6.2 Conclusion

The proposed development at Lot 20 Concession 3 is expected to have a minimal impact on the surrounding road network. Furthermore, infrastructure changes will not be required to effectively accommodate the generated traffic of Lot 20 Concession 3. Although not required, as mentioned in section 3, Montague Township has requested the inclusion of a right turn lane on the Rosedale Road South access. The requested right-turn lane is indicated on Civil Drawing C107, titled "Grading & Servicing Plan 5."

This Traffic Impact Study concludes that the proposed development can be integrated into the Montague Township transportation network with minimal disruptions ensuring that the development will contribute positively to the Rural environment.

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Mario Castillo

Mario Castillo, P. Eng.
CEO & President

APPENDIX A: TRAFFIC COUNTS

Matheson Drive and Rosedale (Point 1) Traffic Counts

AM																	
Cars																	
Streets	Rosedale Road				Rosedale Road				Matheson Drive				Matheson Drive				
Direction	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
7:30 - 7:45	2	8	0	10	0	4	1	5	3	0	3	6	0	1	1	2	23
7:45 - 8:00	5	3	0	8	0	9	1	10	2	0	4	6	0	2	0	2	26
8:00 - 8:15	6	12	0	18	0	5	0	5	3	0	1	4	0	1	0	1	28
8:15 -8:30	3	7	0	10	0	3	1	4	2	1	2	5	1	1	1	3	22
8:30 - 8:45	5	6	1	12	0	0	0	0	1	0	1	2	0	0	1	1	15
8:45 - 9:00	2	9	0	11	0	7	1	8	0	0	4	4	0	1	0	1	24
9:00 - 9:15	4	3	0	7	1	4	1	6	2	2	1	5	2	1	0	3	21
9:15 - 9:30	1	10	0	11	0	5	1	6	2	0	2	4	0	1	1	2	23
9:30 - 9:45	1	3	1	5	0	1	1	2	2	1	1	4	1	1	0	2	13
Total	29	61	2	92	1	38	7	46	17	4	19	40	4	9	4	17	195

Bicycles																	
Direction	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
7:30 - 7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 - 8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 - 8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 -8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 - 8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 - 9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 - 9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 - 9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 - 9:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Light Trucks																	
Direction	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
7:30 - 7:45	1	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	2
7:45 - 8:00	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	2
8:00 - 8:15	0	1	0	1	0	2	0	2	0	0	0	0	0	0	0	0	3
8:15 -8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 - 8:45	0	1	0	1	0	0	0	0	0	0	1	1	0	0	0	0	2
8:45 - 9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 - 9:15	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
9:15 - 9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 - 9:45	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	1	4	0	5	0	4	0	4	0	0	2	2	0	0	0	0	11

Heavy Trucks																	
Direction	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
7:30 - 7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 - 8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 - 8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 -8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 - 8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 - 9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 - 9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 - 9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 - 9:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Pedestrians					
Direction	Northbound	Southbound	Eastbound	Westbound	
Start Time	Total	Total	Total	Total	Total All
7:30 - 7:45	0	0	0	0	0
7:45 - 8:00	0	0	0	0	0
8:00 - 8:15	0	0	0	0	0
8:15 -8:30	0	0	0	0	0
8:30 - 8:45	0	0	0	0	0
8:45 - 9:00	0	0	0	0	0
9:00 - 9:15	0	1	0	0	1
9:15 - 9:30	0	0	0	0	0
9:30 - 9:45	0	0	0	0	0
Total	0	1	0	0	1

PM																	
Cars																	
Streets	Rosedale Road				Rosedale Road				Matheson Drive				Matheson Drive				
Direction	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
3:45 - 4:00	3	6	0	9	1	4	3	8	3	2	5	10	0	0	0	0	27
4:00 - 4:15	4	8	1	13	0	15	1	16	4	1	8	13	0	0	0	0	42
4:15 - 4:30	1	5	1	7	0	8	2	10	1	0	3	4	0	0	1	1	22
4:30 - 4:45	6	15	0	21	2	14	1	17	2	0	6	8	0	0	0	0	46
4:45 - 5:00	0	11	1	12	0	17	2	19	2	2	3	7	0	3	0	3	41
5:00 - 5:15	5	4	0	9	1	9	5	15	0	1	5	6	0	1	0	1	31
5:15 - 5:30	4	2	0	6	0	7	0	7	3	1	6	10	0	0	0	0	23
5:30 - 5:45	5	6	0	11	0	13	4	17	0	2	3	5	0	0	0	0	33
5:45 - 6:00	4	8	1	13	2	9	3	14	3	0	6	9	0	0	0	0	36
Total	32	65	4	101	6	96	21	123	18	9	45	72	0	4	1	5	301

Bicycles																	
Direction	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
3:45 - 4:00	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
4:00 - 4:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 - 4:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 - 4:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 - 5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 - 5:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 - 5:30	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
5:30 - 5:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 - 6:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	3	0	3	0	0	0	0	1	0	0	1	0	0	0	0	4

Light Trucks																	
Direction	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
3:45 - 4:00	0	1	0	1	0	0	0	0	0	0	2	2	0	0	0	0	3
4:00 - 4:15	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
4:15 - 4:30	1	1	0	2	0	1	0	1	1	0	0	1	0	0	0	0	4
4:30 - 4:45	0	1	0	1	0	2	0	2	0	0	0	0	0	0	0	0	3
4:45 - 5:00	0	0	0	0	0	1	1	2	1	0	0	1	0	0	0	0	3
5:00 - 5:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 - 5:30	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
5:30 - 5:45	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
5:45 - 6:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	5	0	6	0	4	1	5	3	0	3	6	0	0	0	0	17

Heavy Trucks																	
Direction	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
3:45 - 4:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 - 4:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 - 4:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 - 4:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 - 5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 - 5:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 - 5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 - 5:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 - 6:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Pedestrians					
Direction	Northbound	Southbound	Eastbound	Westbound	
Start Time	Total	Total	Total	Total	Total All
3:45 - 4:00	0	0	0	0	0
4:00 - 4:15	0	0	0	0	0
4:15 - 4:30	0	0	0	0	0
4:30 - 4:45	0	0	0	0	0
4:45 - 5:00	0	0	0	0	0
5:00 - 5:15	0	0	0	0	0
5:15 - 5:30	0	0	0	0	0
5:30 - 5:45	0	0	0	0	0
5:45 - 6:00	0	0	0	0	0
Total	0	0	0	0	0

Roger Stevens Drive and Rosedale Road (Point 2) Traffic Counts

AM																	
Cars																	
Streets	Rosedale Road				Rosedale Road				Matheson Drive				Matheson Drive				
Direction	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
7:30 - 7:45	1	0	1	2	1	1	4	6	0	14	4	18	1	10	1	12	38
7:45 - 8:00	1	2	3	6	3	1	3	7	0	20	2	22	0	10	0	10	45
8:00 - 8:15	0	3	1	4	3	2	0	5	1	9	2	12	2	16	0	18	39
8:15 -8:30	3	2	3	8	1	6	5	12	1	15	2	18	0	16	1	17	55
8:30 - 8:45	1	2	0	3	4	3	2	9	0	9	4	13	2	20	0	22	47
8:45 - 9:00	0	2	3	5	4	1	1	6	1	24	1	26	0	18	0	18	55
9:00 - 9:15	0	3	1	4	1	6	1	8	0	14	3	17	1	20	0	21	50
9:15 - 9:30	2	1	0	3	5	4	3	12	1	10	1	12	0	13	1	14	41
9:30 - 9:45	0	0	0	0	0	0	0	0	0	4	1	5	1	3	0	4	9
Total	8	15	12	35	22	24	19	65	4	119	20	143	7	126	3	136	379

Bicycles																	
Direction	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
7:30 - 7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 - 8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 - 8:15	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
8:15 -8:30	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
8:30 - 8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 - 9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 - 9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 - 9:30	0	0	0	0	0	1	0	1	0	1	0	1	0	0	0	0	2
9:30 - 9:45	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
Total	0	2	0	2	0	2	0	2	0	1	0	1	0	0	0	0	5

Light Trucks																	
Direction	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
7:30 - 7:45	0	2	2	4	3	2	1	6	0	9	2	11	0	7	0	7	28
7:45 - 8:00	0	1	0	1	3	0	1	4	3	9	1	13	2	10	0	12	30
8:00 - 8:15	0	0	1	1	1	2	0	3	0	2	1	3	1	5	1	7	14
8:15 -8:30	1	0	1	2	0	2	1	3	0	6	0	6	1	9	0	10	21
8:30 - 8:45	0	0	0	0	1	1	0	2	1	7	0	8	0	6	0	6	16
8:45 - 9:00	0	0	2	2	1	0	1	2	1	5	0	6	0	4	0	4	14
9:00 - 9:15	0	1	2	3	1	0	0	1	1	8	0	9	1	11	0	12	25
9:15 - 9:30	0	2	1	3	1	1	0	2	2	8	1	11	0	13	0	13	29
9:30 - 9:45	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
Total	1	6	9	16	11	8	4	23	8	55	5	68	5	65	1	71	178

Heavy Trucks																	
Direction	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
7:30 - 7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 - 8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 - 8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 -8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 - 8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 - 9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 - 9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 - 9:30	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
9:30 - 9:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1

Pedestrians					
Direction	Northbound	Southbound	Eastbound	Westbound	
Start Time	Total	Total	Total	Total	Total All
7:30 - 7:45	0	0	0	0	0
7:45 - 8:00	0	0	0	0	0
8:00 - 8:15	0	0	0	0	0
8:15 -8:30	0	0	0	0	0
8:30 - 8:45	0	0	0	0	0
8:45 - 9:00	0	0	0	0	0
9:00 - 9:15	0	0	0	0	0
9:15 - 9:30	0	0	0	0	0
9:30 - 9:45	0	0	0	0	0
Total	0	0	0	0	0

PM																	
Cars																	
Streets	Rosedale Road				Rosedale Road				Matheson Drive				Matheson Drive				
Direction	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
3:45 - 4:00	0	3	1	4	5	3	0	8	0	10	4	14	1	29	1	31	57
4:00 - 4:15	0	4	0	4	1	6	1	8	3	17	2	22	2	30	1	33	67
4:15 - 4:30	0	4	1	5	6	5	3	14	0	23	5	28	4	30	0	34	81
4:30 - 4:45	0	5	1	6	5	2	3	10	4	29	8	41	7	29	0	36	93
4:45 - 5:00	1	3	1	5	11	0	1	12	3	23	1	27	1	35	6	42	86
5:00 - 5:15	0	1	0	1	0	0	2	2	1	30	1	32	4	30	1	35	70
5:15 - 5:30	0	1	1	2	4	4	1	9	1	24	1	26	3	26	0	29	66
5:30 - 5:45	1	3	1	5	0	6	4	10	2	26	1	29	2	23	1	26	70
5:45 - 6:00	1	1	2	4	2	1	1	4	0	10	1	11	2	18	3	23	42
Total	3	29	10	42	39	31	18	88	15	212	26	253	29	280	14	323	706

Bicycles																	
Direction	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
3:45 - 4:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 - 4:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 - 4:30	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
4:30 - 4:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 - 5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 - 5:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 - 5:30	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
5:30 - 5:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 - 6:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	1	1	0	0	0	0	0	0	0	0	1	0	0	1	2

Light Trucks																	
Direction	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
3:45 - 4:00	0	1	0	1	1	2	1	4	1	9	1	11	2	11	0	13	29
4:00 - 4:15	0	3	3	6	0	2	2	4	1	10	3	14	3	12	1	16	40
4:15 - 4:30	1	1	1	3	0	1	0	1	2	14	1	17	1	10	0	11	32
4:30 - 4:45	0	2	1	3	1	2	1	4	1	10	3	14	1	12	1	14	35
4:45 - 5:00	0	1	1	2	1	1	0	2	2	8	1	11	2	14	2	18	33
5:00 - 5:15	0	2	0	2	0	1	1	2	1	10	3	14	0	9	1	10	28
5:15 - 5:30	0	1	0	1	2	0	1	3	3	10	3	16	3	9	1	13	33
5:30 - 5:45	0	0	0	0	1	0	0	1	0	11	0	11	1	10	0	11	23
5:45 - 6:00	0	0	2	2	0	0	0	0	0	7	0	7	3	6	0	9	18
Total	1	11	8	20	6	9	6	21	11	89	15	115	16	93	6	115	271

Heavy Trucks																	
Direction	Northbound				Southbound				Eastbound				Westbound				
Start Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Total All
3:45 - 4:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 - 4:15	0	0	0	0	0	1	0	1	0	1	0	1	0	0	0	0	2
4:15 - 4:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 - 4:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 - 5:00	0	0	0	0	0	0	0	0	0	1	0	1	0	1	1	2	3
5:00 - 5:15	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
5:15 - 5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 - 5:45	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
5:45 - 6:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	1	0	1	0	3	0	3	1	3	1	5	9

Pedestrians					
Direction	Northbound	Southbound	Eastbound	Westbound	
Start Time	Total	Total	Total	Total	Total All
3:45 - 4:00	0	0	0	0	0
4:00 - 4:15	0	0	0	0	0
4:15 - 4:30	0	0	0	0	0
4:30 - 4:45	0	0	0	0	0
4:45 - 5:00	0	0	0	0	0
5:00 - 5:15	0	0	0	0	0
5:15 - 5:30	0	0	0	0	0
5:30 - 5:45	0	0	0	0	0
5:45 - 6:00	0	0	0	0	0
Total	0	0	0	0	0

APPENDIX B: OPERATIONAL ANALYSIS WORK SHEETS

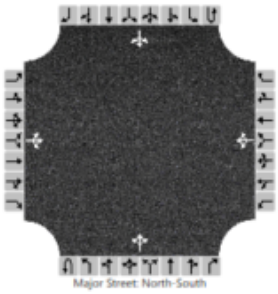
Matheson Drive and Rosedale Road (Point 1)

Existing 2024 Weekday AM Peak Hour Analysis

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	Landon Kyle	Intersection	Matheson and Rosedale
Agency/Co.	EFI Engineering	Jurisdiction	Montague
Date Performed	8/19/2024	East/West Street	Matheson Drive
Analysis Year	2024	North/South Street	Rosedale Road
Time Analyzed	7:30am - 8:30am	Peak Hour Factor	0.85
Intersection Orientation	North-South	Analysis Time Period (hrs)	1.00
Project Description	23-7213 Rosedale and Matheson		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		10	1	10		1	5	2		17	32	0		0	25	3
Percent Heavy Vehicles (%)		0	0	0		0	0	0		0				0		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.50	6.20		7.10	6.50	6.20		4.10				4.10		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30		3.50	4.00	3.30		2.20				2.20		

Delay, Queue Length, and Level of Service

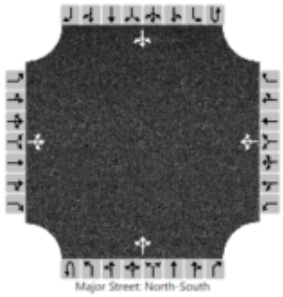
Flow Rate, v (veh/h)			25				9			20				0		
Capacity, c (veh/h)			929				836			1592				1586		
v/c Ratio			0.03				0.01			0.01				0.00		
95% Queue Length, Q_{95} (veh)			0.1				0.0			0.0				0.0		
95% Queue Length, Q_{95} (m)			0.76				0.00									
Control Delay (s/veh)			9.0				9.4			7.3	0.1	0.1		7.3	0.0	0.0
Level of Service (LOS)			A				A			A	A	A		A	A	A
Approach Delay (s/veh)	9.0				9.4				2.6				0.0			
Approach LOS	A				A				A				A			

Existing 2024 Weekday PM Peak Hour Traffic Analysis

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	Landon Kyle	Intersection	Matheson and Rosedale
Agency/Co.	EFI Engineering	Jurisdiction	Montague
Date Performed	8/19/2024	East/West Street	Matheson Drive
Analysis Year	2024	North/South Street	Rosedale Road
Time Analyzed	4:00pm - 5:00pm	Peak Hour Factor	0.80
Intersection Orientation	North-South	Analysis Time Period (hrs)	1.00
Project Description	23-7213 Rosedale and Matheson		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		11	3	20		0	3	1		12	43	3		2	58	2
Percent Heavy Vehicles (%)		0	0	0		0	0	0		0				0		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.50	6.20		7.10	6.50	6.20		4.10				4.10		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30		3.50	4.00	3.30		2.20				2.20		

Delay, Queue Length, and Level of Service

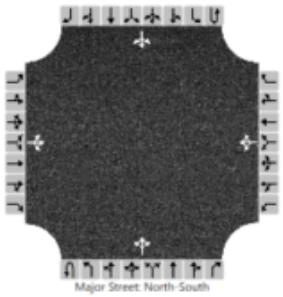
Flow Rate, v (veh/h)			43				5			15				3		
Capacity, c (veh/h)			889				778			1537				1560		
v/c Ratio			0.05				0.01			0.01				0.00		
95% Queue Length, Q_{95} (veh)			0.2				0.0			0.0				0.0		
95% Queue Length, Q_{95} (m)			1.52				0.00									
Control Delay (s/veh)			9.3				9.7			7.4	0.1	0.1		7.3	0.0	0.0
Level of Service (LOS)			A				A			A	A	A		A	A	A
Approach Delay (s/veh)		9.3				9.7				1.6				0.2		
Approach LOS		A				A				A				A		

Existing + Generated 2024 Weekday AM Peak Hour Traffic Analysis

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	Landon Kyle	Intersection	Matheson and Rosedale
Agency/Co.	EFI Engineering	Jurisdiction	Montague
Date Performed	8/19/2024	East/West Street	Matheson Drive
Analysis Year	2024	North/South Street	Rosedale Road
Time Analyzed	7:30am - 8:30am	Peak Hour Factor	0.85
Intersection Orientation	North-South	Analysis Time Period (hrs)	1.00
Project Description	23-7213 Rosedale and Matheson		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		10	2	11		1	7	3		22	42	0		0	28	3
Percent Heavy Vehicles (%)		0	0	0		0	0	0		0				0		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.50	6.20		7.10	6.50	6.20		4.10				4.10		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30		3.50	4.00	3.30		2.20				2.20		

Delay, Queue Length, and Level of Service

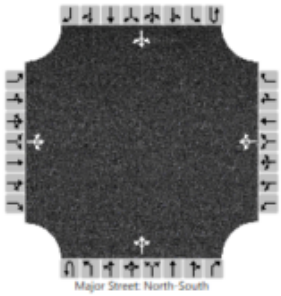
Flow Rate, v (veh/h)			27				13			26				0		
Capacity, c (veh/h)			898				810			1587				1570		
v/c Ratio			0.03				0.02			0.02				0.00		
95% Queue Length, Q_{95} (veh)			0.1				0.0			0.0				0.0		
95% Queue Length, Q_{95} (m)			0.76				0.00									
Control Delay (s/veh)			9.1				9.5			7.3	0.1	0.1		7.3	0.0	0.0
Level of Service (LOS)			A				A			A	A	A		A	A	A
Approach Delay (s/veh)		9.1				9.5				2.6				0.0		
Approach LOS		A				A				A				A		

Existing + Generated 2024 Weekday PM Peak Hour Traffic Analysis

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	Landon Kyle	Intersection	Matheson and Rosedale
Agency/Co.	EFI Engineering	Jurisdiction	Montague
Date Performed	8/19/2024	East/West Street	Matheson Drive
Analysis Year	2024	North/South Street	Rosedale Road
Time Analyzed	4:00pm - 5:00pm	Peak Hour Factor	0.80
Intersection Orientation	North-South	Analysis Time Period (hrs)	1.00
Project Description	23-7213 Rosedale and Matheson		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		11	4	24		0	4	1		13	48	3		2	68	7
Percent Heavy Vehicles (%)		0	0	0		0	0	0		0				0		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.50	6.20		7.10	6.50	6.20		4.10				4.10		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30		3.50	4.00	3.30		2.20				2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			49				6			16				3		
Capacity, c (veh/h)			868				743			1513				1552		
v/c Ratio			0.06				0.01			0.01				0.00		
95% Queue Length, Q_{95} (veh)			0.2				0.0			0.0				0.0		
95% Queue Length, Q_{95} (m)			1.52				0.00									
Control Delay (s/veh)			9.4				9.9			7.4	0.1	0.1		7.3	0.0	0.0
Level of Service (LOS)			A				A			A	A	A		A	A	A
Approach Delay (s/veh)		9.4				9.9				1.6				0.2		
Approach LOS		A				A				A				A		

Projected 2034 Weekday AM Peak Hour Traffic Analysis

HCS Two-Way Stop-Control Report

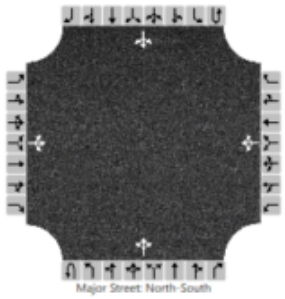
General Information

Analyst	Landon Kyle
Agency/Co.	EFI Engineering
Date Performed	8/19/2024
Analysis Year	2034
Time Analyzed	7:30am - 8:30am
Intersection Orientation	North-South
Project Description	23-7213 Rosedale and Matheson

Site Information

Intersection	Matheson and Rosedale
Jurisdiction	Montague
East/West Street	Matheson Drive
North/South Street	Rosedale Road
Peak Hour Factor	0.85
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		11	2	12		1	7	3		24	45	0		0	30	3
Percent Heavy Vehicles (%)		0	0	0		0	0	0		0				0		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.50	6.20		7.10	6.50	6.20		4.10				4.10		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30		3.50	4.00	3.30		2.20				2.20		

Delay, Queue Length, and Level of Service

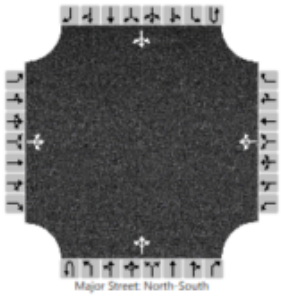
Flow Rate, v (veh/h)			29				13			28				0		
Capacity, c (veh/h)			889				800			1584				1566		
v/c Ratio			0.03				0.02			0.02				0.00		
95% Queue Length, Q_{95} (veh)			0.1				0.0			0.1				0.0		
95% Queue Length, Q_{95} (m)			0.76				0.00									
Control Delay (s/veh)			9.2				9.6			7.3	0.1	0.1		7.3	0.0	0.0
Level of Service (LOS)			A				A			A	A	A		A	A	A
Approach Delay (s/veh)		9.2				9.6				2.6				0.0		
Approach LOS		A				A				A				A		

Projected 2034 Weekday PM Peak Hour Traffic Analysis

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	Landon Kyle	Intersection	Matheson and Rosedale
Agency/Co.	EFI Engineering	Jurisdiction	Montague
Date Performed	8/19/2024	East/West Street	Matheson Drive
Analysis Year	2034	North/South Street	Rosedale Road
Time Analyzed	4:00pm - 5:00pm	Peak Hour Factor	0.80
Intersection Orientation	North-South	Analysis Time Period (hrs)	1.00
Project Description	23-7213 Rosedale and Matheson		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		12	4	26		0	4	1		14	52	3		2	73	8
Percent Heavy Vehicles (%)		0	0	0		0	0	0		0				0		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.50	6.20		7.10	6.50	6.20		4.10				4.10		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30		3.50	4.00	3.30		2.20				2.20		

Delay, Queue Length, and Level of Service

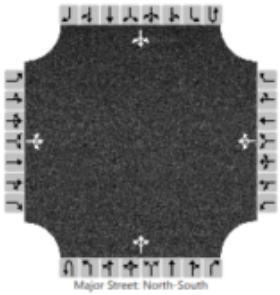
Flow Rate, v (veh/h)			53				6			18				3		
Capacity, c (veh/h)			857				729			1504				1545		
v/c Ratio			0.06				0.01			0.01				0.00		
95% Queue Length, Q_{95} (veh)			0.2				0.0			0.0				0.0		
95% Queue Length, Q_{95} (m)			1.52				0.00									
Control Delay (s/veh)			9.5				10.0			7.4	0.1	0.1		7.3	0.0	0.0
Level of Service (LOS)			A				A			A	A	A		A	A	A
Approach Delay (s/veh)	9.5				10.0				1.6				0.2			
Approach LOS	A				A				A				A			

Projected 2039 Weekday AM Peak Hour Traffic Analysis

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	Landon Kyle	Intersection	Matheson and Rosedale
Agency/Co.	EFI Engineering	Jurisdiction	Montague
Date Performed	8/19/2024	East/West Street	Matheson Drive
Analysis Year	2039	North/South Street	Rosedale Road
Time Analyzed	7:30am - 8:30am	Peak Hour Factor	0.85
Intersection Orientation	North-South	Analysis Time Period (hrs)	1.00
Project Description	23-7213 Rosedale and Matheson		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		11	2	12		1	8	3		24	47	0		0	32	3
Percent Heavy Vehicles (%)		0	0	0		0	0	0		0				0		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.50	6.20		7.10	6.50	6.20		4.10				4.10		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30		3.50	4.00	3.30		2.20				2.20		

Delay, Queue Length, and Level of Service

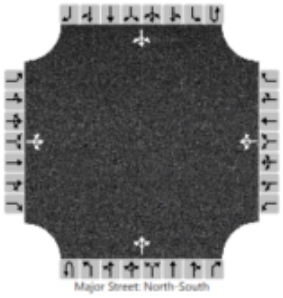
Flow Rate, v (veh/h)			29				14			28				0		
Capacity, c (veh/h)			883				789			1581				1563		
v/c Ratio			0.03				0.02			0.02				0.00		
95% Queue Length, Q_{95} (veh)			0.1				0.1			0.1				0.0		
95% Queue Length, Q_{95} (m)			0.76				0.76									
Control Delay (s/veh)			9.2				9.6			7.3	0.1	0.1		7.3	0.0	0.0
Level of Service (LOS)			A				A			A	A	A		A	A	A
Approach Delay (s/veh)		9.2				9.6				2.6				0.0		
Approach LOS		A				A				A				A		

Projected 2039 Weekday PM Peak Hour Traffic Analysis

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	Landon Kyle	Intersection	Matheson and Rosedale
Agency/Co.	EFI Engineering	Jurisdiction	Montague
Date Performed	8/19/2024	East/West Street	Matheson Drive
Analysis Year	2039	North/South Street	Rosedale Road
Time Analyzed	4:00pm - 5:00pm	Peak Hour Factor	0.80
Intersection Orientation	North-South	Analysis Time Period (hrs)	1.00
Project Description	23-7213 Rosedale and Matheson		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		13	4	27		0	4	1		15	54	3		2	76	8
Percent Heavy Vehicles (%)		0	0	0		0	0	0		0				0		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.50	6.20		7.10	6.50	6.20		4.10				4.10		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30		3.50	4.00	3.30		2.20				2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			55				6			19				3		
Capacity, c (veh/h)			849				721			1499				1542		
v/c Ratio			0.06				0.01			0.01				0.00		
95% Queue Length, Q_{95} (veh)			0.2				0.0			0.0				0.0		
95% Queue Length, Q_{95} (m)			1.52				0.00									
Control Delay (s/veh)			9.5				10.0			7.4	0.1	0.1		7.3	0.0	0.0
Level of Service (LOS)			A				B			A	A	A		A	A	A
Approach Delay (s/veh)		9.5				10.0				1.6				0.2		
Approach LOS		A				B				A				A		

Roger Stevens Drive and Rosedale Road (Point 2)
Existing 2024 Weekday AM Peak Hour Analysis

HCS Two-Way Stop-Control Report

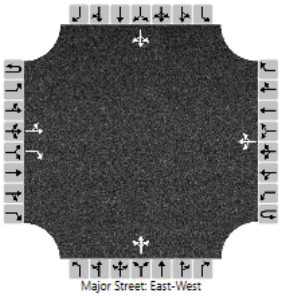
General Information

Analyst	Landon Kyle
Agency/Co.	EFI Engineering
Date Performed	8/19/2024
Analysis Year	2024
Time Analyzed	8:15am - 9:15am
Intersection Orientation	East-West
Project Description	23-7213 Rosedale and Matheson

Site Information

Intersection	Roger Stevens and Rosedale
Jurisdiction	Montague
East/West Street	Roger Stevens
North/South Street	Rosedale Road
Peak Hour Factor	0.93
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	1	0		0	1	0		0	1	0
Configuration		LT		R			LTR				LTR				LTR	
Volume (veh/h)		5	84	14		7	83	3		6	10	12		15	16	15
Percent Heavy Vehicles (%)		0				0				0	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized		No														
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.10				4.10				7.10	6.50	6.20		7.10	6.50	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.50	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		5				8					30				49	
Capacity, c (veh/h)		1515				1499					781				761	
v/c Ratio		0.00				0.01					0.04				0.06	
95% Queue Length, Q_{95} (veh)		0.0				0.0					0.1				0.2	
95% Queue Length, Q_{95} (m)		0.00									0.76				1.52	
Control Delay (s/veh)		7.4	0.0			7.4	0.0	0.0			9.8				10.1	
Level of Service (LOS)		A	A			A	A	A			A				B	
Approach Delay (s/veh)		0.4				0.6				9.8				10.1		
Approach LOS		A				A				A				B		

Existing 2024 Weekday PM Peak Hour Traffic Analysis

HCS Two-Way Stop-Control Report

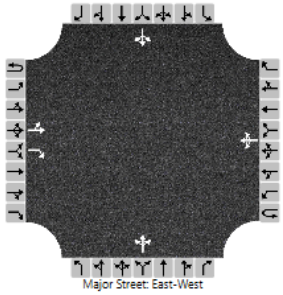
General Information

Analyst	Landon Kyle
Agency/Co.	EFI Engineering
Date Performed	8/19/2024
Analysis Year	2024
Time Analyzed	4:00pm - 5:00pm
Intersection Orientation	East-West
Project Description	23-7213 Rosedale and Matheson

Site Information

Intersection	Roger Stevens and Rosedale
Jurisdiction	Montague
East/West Street	Roger Stevens
North/South Street	Rosedale Road
Peak Hour Factor	0.91
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	1	0		0	1	0		0	1	0
Configuration		LT		R			LTR				LTR				LTR	
Volume (veh/h)		16	134	24		21	172	11		2	23	9		25	19	11
Percent Heavy Vehicles (%)		2				1				0	0	0		0	7	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized		No														
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.12				4.11				7.10	6.50	6.20		7.10	6.57	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.22				2.21				3.50	4.00	3.30		3.50	4.06	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		18				23					37				60	
Capacity, c (veh/h)		1371				1409					560				522	
v/c Ratio		0.01				0.02					0.07				0.12	
95% Queue Length, Q_{95} (veh)		0.0				0.0					0.2				0.4	
95% Queue Length, Q_{95} (m)		0.00									1.52				3.11	
Control Delay (s/veh)		7.7	0.1			7.6	0.1	0.1			11.9				12.8	
Level of Service (LOS)		A	A			A	A	A			B				B	
Approach Delay (s/veh)		0.8				0.9				11.9				12.8		
Approach LOS		A				A				B				B		

Existing + Generated 2024 Weekday AM Peak Hour Traffic Analysis

HCS Two-Way Stop-Control Report

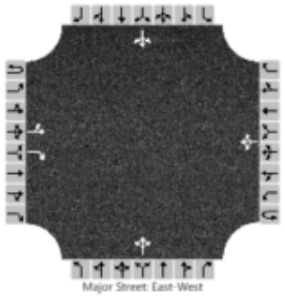
General Information

Analyst	Landon Kyle
Agency/Co.	EFI Engineering
Date Performed	8/19/2024
Analysis Year	2024
Time Analyzed	8:15am - 9:15am
Intersection Orientation	East-West
Project Description	23-7213 Rosedale and Matheson

Site Information

Intersection	Roger Stevens and Rosedale
Jurisdiction	Montague
East/West Street	Roger Stevens
North/South Street	Rosedale Road
Peak Hour Factor	0.93
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	1	0		0	1	0		0	1	0
Configuration		LT		R			LTR				LTR				LTR	
Volume (veh/h)		5	84	15		8	83	3		8	14	17		15	17	15
Percent Heavy Vehicles (%)		0				0				0	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized		No														
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.10				4.10				7.10	6.50	6.20		7.10	6.50	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.50	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		5				9					42				51	
Capacity, c (veh/h)		1515				1497					780				751	
v/c Ratio		0.00				0.01					0.05				0.07	
95% Queue Length, Q_{95} (veh)		0.0				0.0					0.2				0.2	
95% Queue Length, Q_{95} (m)		0.00									1.52				1.52	
Control Delay (s/veh)		7.4	0.0			7.4	0.0	0.0			9.9				10.1	
Level of Service (LOS)		A	A			A	A	A			A				B	
Approach Delay (s/veh)		0.4				0.7				9.9				10.1		
Approach LOS		A				A				A				B		

Existing + Generated 2024 Weekday PM Peak Hour Traffic Analysis

HCS Two-Way Stop-Control Report

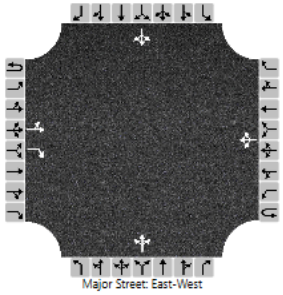
General Information

Analyst	Landon Kyle
Agency/Co.	EFI Engineering
Date Performed	8/19/2024
Analysis Year	2024
Time Analyzed	4:00pm - 5:00pm
Intersection Orientation	East-West
Project Description	23-7213 Rosedale and Matheson

Site Information

Intersection	Roger Stevens and Rosedale
Jurisdiction	Montague
East/West Street	Roger Stevens
North/South Street	Rosedale Road
Peak Hour Factor	0.91
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	1	0		0	1	0		0	1	0
Configuration		LT		R			LTR				LTR				LTR	
Volume (veh/h)		16	134	28		24	172	11		2	26	10		25	19	11
Percent Heavy Vehicles (%)		2				1				0	0	0		0	7	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized		No														
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.12				4.11				7.10	6.50	6.20		7.10	6.57	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.22				2.21				3.50	4.00	3.30		3.50	4.06	3.30

Delay, Queue Length, and Level of Service

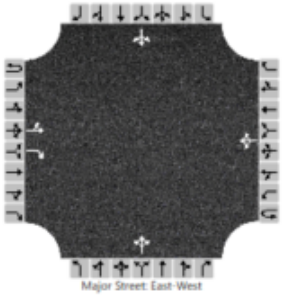
Flow Rate, v (veh/h)		18				26					42				60	
Capacity, c (veh/h)		1371				1404					553				512	
v/c Ratio		0.01				0.02					0.08				0.12	
95% Queue Length, Q_{95} (veh)		0.0				0.1					0.2				0.4	
95% Queue Length, Q_{95} (m)		0.00									1.52				3.11	
Control Delay (s/veh)		7.7	0.1			7.6	0.2	0.2			12.0				13.0	
Level of Service (LOS)		A	A			A	A	A			B				B	
Approach Delay (s/veh)		0.8				1.0				12.0				13.0		
Approach LOS		A				A				B				B		

Projected 2034 Weekday AM Peak Hour Traffic Analysis

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	Landon Kyle	Intersection	Roger Stevens and Rosedale
Agency/Co.	EFI Engineering	Jurisdiction	Montague
Date Performed	8/19/2024	East/West Street	Roger Stevens Drive
Analysis Year	2034	North/South Street	Rosedale Road
Time Analyzed	8:15am - 9:15am	Peak Hour Factor	0.93
Intersection Orientation	East-West	Analysis Time Period (hrs)	1.00
Project Description	23-7213 Rosedale and Matheson		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	1	0		0	1	0		0	1	0
Configuration		LT		R			LTR				LTR				LTR	
Volume (veh/h)		5	92	16		9	91	3		9	15	18		16	18	16
Percent Heavy Vehicles (%)		0				0				0	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized		No														
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.10				4.10				7.10	6.50	6.20		7.10	6.50	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.50	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		5				10					45				54	
Capacity, c (veh/h)		1504				1485					760				732	
v/c Ratio		0.00				0.01					0.06				0.07	
95% Queue Length, Q_{95} (veh)		0.0				0.0					0.2				0.2	
95% Queue Length, Q_{95} (m)		0.00									1.52				1.52	
Control Delay (s/veh)		7.4	0.0			7.4	0.1	0.1			10.0				10.3	
Level of Service (LOS)		A	A			A	A	A			B				B	
Approach Delay (s/veh)		0.3				0.7				10.0				10.3		
Approach LOS		A				A				B				B		

Projected 2034 Weekday PM Peak Hour Traffic Analysis

HCS Two-Way Stop-Control Report

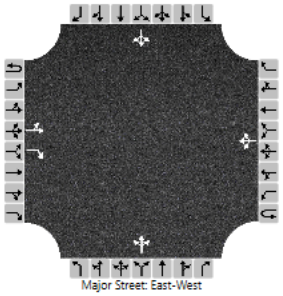
General Information

Analyst	Landon Kyle
Agency/Co.	EFI Engineering
Date Performed	8/19/2024
Analysis Year	2034
Time Analyzed	4:00pm - 5:00pm
Intersection Orientation	East-West
Project Description	23-7213 Rosedale and Matheson

Site Information

Intersection	Roger Stevens and Rosedale
Jurisdiction	Montague
East/West Street	Roger Stevens
North/South Street	Rosedale Road
Peak Hour Factor	0.91
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	1	0		0	1	0		0	1	0
Configuration		LT		R			LTR				LTR				LTR	
Volume (veh/h)		17	147	30		26	188	12		2	28	11		27	24	12
Percent Heavy Vehicles (%)		2				1				0	0	0		0	7	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized		No														
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.12				4.11				7.10	6.50	6.20		7.10	6.57	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.22				2.21				3.50	4.00	3.30		3.50	4.06	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		19				29					45				69	
Capacity, c (veh/h)		1350				1385					526				479	
v/c Ratio		0.01				0.02					0.09				0.14	
95% Queue Length, Q_{95} (veh)		0.0				0.1					0.3				0.5	
95% Queue Length, Q_{95} (m)		0.00									2.29				3.89	
Control Delay (s/veh)		7.7	0.1			7.7	0.2	0.2			12.5				13.8	
Level of Service (LOS)		A	A			A	A	A			B				B	
Approach Delay (s/veh)		0.7				1.0				12.5				13.8		
Approach LOS		A				A				B				B		

Projected 2039 Weekday AM Peak Hour Traffic Analysis

HCS Two-Way Stop-Control Report

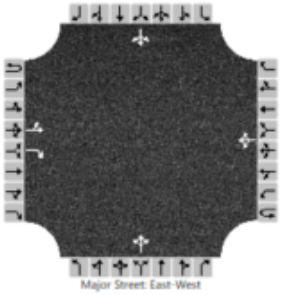
General Information

Analyst	Landon Kyle
Agency/Co.	EFI Engineering
Date Performed	8/19/2024
Analysis Year	2039
Time Analyzed	8:15am - 9:15am
Intersection Orientation	East-West
Project Description	23-7213 Rosedale and Matheson

Site Information

Intersection	Roger Stevens and Rosedale
Jurisdiction	Montague
East/West Street	Roger Stevens
North/South Street	Rosedale Road
Peak Hour Factor	0.93
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	1	0		0	1	0		0	1	0
Configuration		LT		R			LTR				LTR				LTR	
Volume (veh/h)		6	96	17		9	95	3		9	15	19		17	19	17
Percent Heavy Vehicles (%)		0				0				0	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized		No														
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.10				4.10				7.10	6.50	6.20		7.10	6.50	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.50	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		6				10					46				57	
Capacity, c (veh/h)		1499				1478					753				722	
v/c Ratio		0.00				0.01					0.06				0.08	
95% Queue Length, Q_{95} (veh)		0.0				0.0					0.2				0.3	
95% Queue Length, Q_{95} (m)		0.00									1.52				2.29	
Control Delay (s/veh)		7.4	0.0			7.5	0.1	0.1			10.1				10.4	
Level of Service (LOS)		A	A			A	A	A			B				B	
Approach Delay (s/veh)		0.4				0.7				10.1				10.4		
Approach LOS		A				A				B				B		

Projected 2039 Weekday PM Peak Hour Traffic Analysis

HCS Two-Way Stop-Control Report

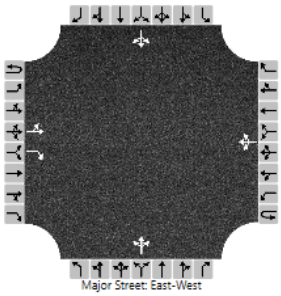
General Information

Analyst	Landon Kyle
Agency/Co.	EFI Engineering
Date Performed	8/19/2024
Analysis Year	2039
Time Analyzed	4:00pm - 5:00pm
Intersection Orientation	East-West
Project Description	23-7213 Rosedale and Matheson

Site Information

Intersection	Rogerstevens and Rosedale
Jurisdiction	Montague
East/West Street	Roger Stevens
North/South Street	Rosedale Road
Peak Hour Factor	0.91
Analysis Time Period (hrs)	1.00

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	1	0		0	1	0		0	1	0
Configuration		LT		R			LTR				LTR				LTR	
Volume (veh/h)		18	153	31		27	197	13		3	30	12		29	25	13
Percent Heavy Vehicles (%)		2				1				0	0	0		0	7	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized		No														
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.12				4.11				7.10	6.50	6.20		7.10	6.57	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.22				2.21				3.50	4.00	3.30		3.50	4.06	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		20				30					49				74	
Capacity, c (veh/h)		1337				1376					510				462	
v/c Ratio		0.01				0.02					0.10				0.16	
95% Queue Length, Q_{95} (veh)		0.0				0.1					0.3				0.6	
95% Queue Length, Q_{95} (m)		0.00									2.29				4.67	
Control Delay (s/veh)		7.7	0.1			7.7	0.2	0.2			12.8				14.3	
Level of Service (LOS)		A	A			A	A	A			B				B	
Approach Delay (s/veh)		0.8				1.0				12.8				14.3		
Approach LOS		A				A				B				B		