



April 24, 2015

JDE Project 1427

Pine Valley Developments

c/o MHBC Planning
113 Collier Street
Barrie, Ontario L4M 1H2

**RE: Traffic Impact Study Addendum
Pine Valley Development, Town of Wasaga Beach**

This letter was prepared by **JD Northcote Engineering Inc.** [JD Engineering] for the account of **Pine Valley Developments** [Developer].

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1.0 BACKGROUND

JD Engineering prepared a traffic impact study for the proposed Pine Valley Development (dated November 3rd, 2014) [TIS]. A comment received during the Public Meeting for the above-noted development identified a concern that the traffic counts used in the study did not capture the impact of the traffic generated by the Worsely Elementary School on 40th Street. In order to address this comment, additional traffic counts were completed on April 7th, 2015 (attached in the **Appendix**). These counts were used to complete a supplementary Synchro analysis for the 2025 Horizon Year with Full Development. Section 2 below is an update to Section 6.2 in the TIS.

A second comment was also raised at the Public Meeting regarding a scenario where traffic generated along 41st Street would be rerouted to the signalized intersection of 42nd Street / Mosley Street to avoid long delays for the northbound left turn movement at the 41st Street / Mosley Street intersection. The analysis below includes additional review and consideration regarding this scenario.

2.0 2025 HORIZON YEAR LOS WITH FULL DEVELOPMENT

The 2025 horizon year was evaluated to determine how the study area would function five years following build-out of the proposed development. In this scenario, existing intersection geometry and traffic control have been utilized for this scenario. Proposed intersections on 41st Street South have been assumed to be unsignalized intersections with one-way stop control for vehicles exiting the subject site.



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The results of the LOS analysis under projected (2025) and proposed traffic volumes during the AM and PM peak hour can be found below in **Table 11**. Detailed output of the Synchro analysis can be found in the **Appendix**.

Table 1 – Projected (2025) and Proposed LOS

Location (E-W Street / N-S Street)	Weekday AM Peak Hour			Weekday PM Peak Hour		
	V/C	Delay (s)	LOS	V/C	Delay (s)	LOS
Mosley Street / 41 st Street South	-	0.8	A	-	0.6	A
NB	0.16	15.4	C	0.12	17.7	C
Mosley Street / 41 st Street North	-	0.1	A	-	0.1	A
SB	0.01	17.0	C	0.01	22.4	C
41 st Street South / North Access	-	1.0	A	-	0.6	A
WB	0.01	8.6	A	0.01	8.6	A
41 st Street South / North Access	-	2.4	A	-	2.2	A
WB	0.02	8.7	A	0.01	8.8	A

The results of the LOS analysis indicate that all intersection in the study area will operate at a good LOS for all turning movements.

An analysis of the left and right turn movements was completed using the methodology outlined in Section 3.2. Based on this criterion, neither right nor left turn storage lanes are warranted at any intersections in the study area. Based on MTO GDSOH Figure EB-2, the traffic volumes at 41st Street South is marginally over the threshold to warrant a left turn lane. Since the operating speed for through traffic on Mosley Street is relatively low (posted speed limit 50km/h) and the warrants are only marginally met, a left turn storage lane is not recommended on Mosley Street at 41st Street South.

As noted above, a raised concrete island is recommended for the east approach at the 41st Street South / North Access intersection. This island will deter left turn ingress and egress movements at the North Access.

The proposed RIRO North Access will operate efficiently using unsignalized control with one-way stop control for westbound traffic at 41st Street South. One lane for egress right turn traffic and one lane for ingress right turn traffic for the west leg of the intersection will provide the necessary capacity for the proposed development.

The South Access will operate efficiently using unsignalized control with one-way stop control for westbound traffic at 41st Street South. One lane for egress traffic and one lane for ingress traffic for the west leg of the intersection will provide the necessary capacity for the proposed development.

A review of the warrants for traffic signals at the 41st Street South / Mosley Street has been completed for the total (2025) with Subject Site condition, according to the procedures outlined in the Ontario Traffic Manual [OTM] Book 12 Traffic Signal Justification. Based on this analysis, traffic signals are not warranted at either of these intersections. Traffic Signal Justification tables can be found in the **Appendix**.

The northbound turning movements at the intersection of 41st Street / Mosley Street are anticipated to be operating with a good LOS and an average control delay of 15 and 18 seconds during the AM and PM peak hour respectively. This level of control delay would not typically trigger drivers to reroute through a residential area to the signalized intersection of 42nd Street / Mosley Street.

It is our understanding that there is concern that the rerouting is an existing issue. The analysis of the existing traffic conditions, completed in the original TIS, indicates that the LOS and control delay for northbound turning movements at the intersection of 41st Street / Mosley Street are operating within a range which would not typically trigger drivers to reroute through a residential area to a signalized intersection. Based on our review of the local road network, it is our expectation that traffic generated by existing development south of Cardinal Way may select to use the 42nd Street / Mosley Street intersection over the 41st Street / Mosley Street intersection when the travel time to reach the respective intersections is comparable. It is our expectation that this could explain the additional traffic observed at the 42nd Street / Mosley Street intersection and not necessarily a rerouting of traffic generated by the existing residential units adjacent to the subject site.

The delay for northbound turning movements at the intersection of 41st Street / Mosley Street is mainly a function of the traffic volumes on Mosley Street. Since the volume of traffic generated by the proposed development has negligible impact on the projected traffic volume on Mosley Street, the proposed development will not have a significant impact on the control delay for northbound movements at the 41st Street / Mosley Street intersection. Consequently, the proposed development is not anticipated to impact the existing traffic distribution within the surrounding area.

No additional improvements are recommended at the existing or proposed intersections.

We trust that you find this letter satisfies your requirements.

Yours truly,
JD Northcote Engineering Inc.



John Northcote, P.Eng.
President

Appendix

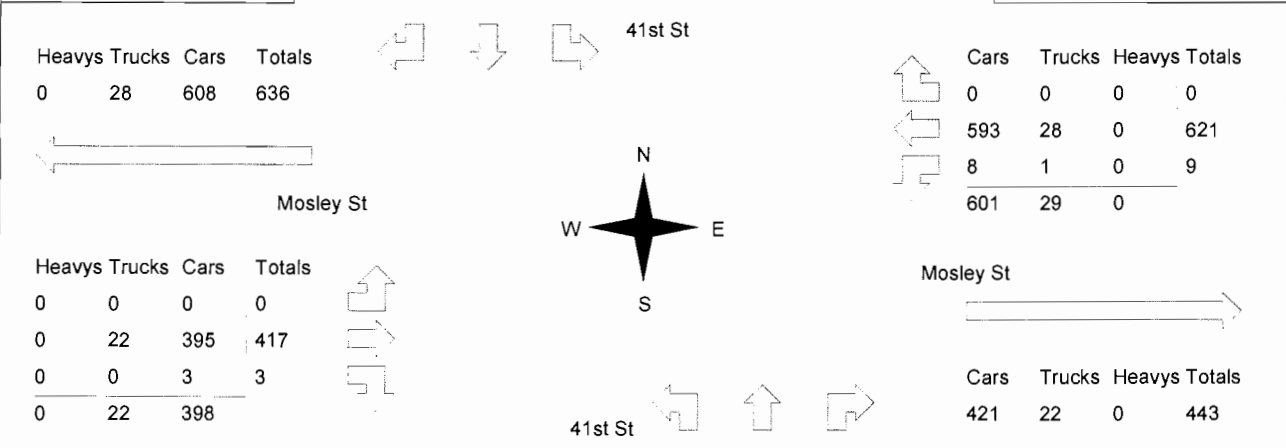
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Morning Peak Diagram	Specified Period From: 7:00:00 To: 10:00:00	One Hour Peak From: 7:15:00 To: 8:15:00
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Municipality: Wasaga Beach Site #: 1508500001 Intersection: Mosley St & 41st St TFR File #: 6 Count date: 7-Apr-15	Weather conditions: Person(s) who counted:
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** Non-Signalized Intersection **	Major Road: Mosley St runs W/E
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North Leg Total: 5 North Entering: 5 North Peds: 3 Peds Cross: ∞	<table style="width: 100%; border-collapse: collapse;"> <tr><td>Heavys</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Cars</td><td>2</td><td>0</td><td>3</td><td>5</td></tr> <tr><td>Totals</td><td>2</td><td>0</td><td>3</td><td></td></tr> </table>	Heavys	0	0	0	0	Trucks	0	0	0	0	Cars	2	0	3	5	Totals	2	0	3		↑	<table style="width: 100%; border-collapse: collapse;"> <tr><td>Heavys</td><td>0</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Cars</td><td>0</td></tr> <tr><td>Totals</td><td>0</td></tr> </table>	Heavys	0	Trucks	0	Cars	0	Totals	0	East Leg Total: 1073 East Entering: 630 East Peds: 0 Peds Cross: ∞
Heavys	0	0	0	0																												
Trucks	0	0	0	0																												
Cars	2	0	3	5																												
Totals	2	0	3																													
Heavys	0																															
Trucks	0																															
Cars	0																															
Totals	0																															



Peds Cross: ∞ West Peds: 2 West Entering: 420 West Leg Total: 1056	<table style="width: 100%; border-collapse: collapse;"> <tr><td>Cars</td><td>11</td></tr> <tr><td>Trucks</td><td>1</td></tr> <tr><td>Heavys</td><td>0</td></tr> <tr><td>Totals</td><td>12</td></tr> </table>	Cars	11	Trucks	1	Heavys	0	Totals	12	↓	<table style="width: 100%; border-collapse: collapse;"> <tr><td>Cars</td><td>13</td><td>0</td><td>23</td><td>36</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Heavys</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Totals</td><td>13</td><td>0</td><td>23</td><td></td></tr> </table>	Cars	13	0	23	36	Trucks	0	0	0	0	Heavys	0	0	0	0	Totals	13	0	23		Peds Cross: ∞ South Peds: 11 South Entering: 36 South Leg Total: 48
Cars	11																															
Trucks	1																															
Heavys	0																															
Totals	12																															
Cars	13	0	23	36																												
Trucks	0	0	0	0																												
Heavys	0	0	0	0																												
Totals	13	0	23																													

Comments

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Afternoon Peak Diagram

Specified Period

From: 14:00:00
To: 19:00:00

One Hour Peak

From: 14:15:00
To: 15:15:00

Municipality: Wasaga Beach
Site #: 1508500001
Intersection: Mosley St & 41st St
TFR File #: 6
Count date: 7-Apr-15

Weather conditions:

Person(s) who counted:

** Non-Signalized Intersection **

Major Road: Mosley St runs W/E

North Leg Total: 12
North Entering: 3
North Peds: 3
Peds Cross: ∞

Heavys	0	0	0	0
Trucks	0	0	0	0
Cars	0	0	3	3
Totals	0	0	3	



Heavys 0
Trucks 0
Cars 9
Totals 9

East Leg Total: 1302
East Entering: 557
East Peds: 5
Peds Cross: ∞

Heavys	Trucks	Cars	Totals
0	16	532	548



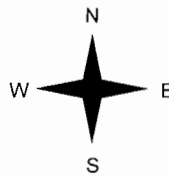
41st St

Cars	Trucks	Heavys	Totals
3	0	0	3
526	16	0	542
12	0	0	12
541	16	0	

Heavys	Trucks	Cars	Totals
0	0	6	6
0	25	697	722
0	0	12	12
0	25	715	



Mosley St



Mosley St

Cars	Trucks	Heavys	Totals
717	28	0	745

Peds Cross: ∞
West Peds: 0
West Entering: 740
West Leg Total: 1288

Cars	24
Trucks	0
Heavys	0
Totals	24



Cars	6	0	17	23
Trucks	0	0	3	3
Heavys	0	0	0	0
Totals	6	0	20	

Peds Cross: ∞
South Peds: 6
South Entering: 26
South Leg Total: 50

Comments

Ontario Traffic Inc

Total Count Diagram

Municipality: Wasaga Beach
Site #: 1508500001
Intersection: Mosley St & 41st St
TFR File #: 6
Count date: 7-Apr-15

Weather conditions:

Person(s) who counted:

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

Major Road: Mosley St runs W/E

North Leg Total: 58 North Entering: 37 North Peds: 35 Peds Cross: ∞	<table style="width: 100%; border-collapse: collapse;"> <tr><td>Heavys</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Cars</td><td>20</td><td>0</td><td>17</td><td>37</td></tr> <tr><td>Totals</td><td>20</td><td>0</td><td>17</td><td></td></tr> </table>	Heavys	0	0	0	0	Trucks	0	0	0	0	Cars	20	0	17	37	Totals	20	0	17		<table style="width: 100%; border-collapse: collapse;"> <tr><td>Heavys</td><td>0</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Cars</td><td>21</td></tr> <tr><td>Totals</td><td>21</td></tr> </table>	Heavys	0	Trucks	0	Cars	21	Totals	21	East Leg Total: 8545 East Entering: 4294 East Peds: 14 Peds Cross: ∞
Heavys	0	0	0	0																											
Trucks	0	0	0	0																											
Cars	20	0	17	37																											
Totals	20	0	17																												
Heavys	0																														
Trucks	0																														
Cars	21																														
Totals	21																														
<table style="width: 100%; border-collapse: collapse;"> <tr><th>Heavys</th><th>Trucks</th><th>Cars</th><th>Totals</th></tr> <tr><td>0</td><td>119</td><td>4159</td><td>4278</td></tr> </table>	Heavys	Trucks	Cars	Totals	0	119	4159	4278		<table style="width: 100%; border-collapse: collapse;"> <tr><th>Cars</th><th>Trucks</th><th>Heavys</th><th>Totals</th></tr> <tr><td>9</td><td>0</td><td>0</td><td>9</td></tr> <tr><td>4084</td><td>118</td><td>0</td><td>4202</td></tr> <tr><td>78</td><td>5</td><td>0</td><td>83</td></tr> <tr><td>4171</td><td>123</td><td>0</td><td></td></tr> </table>	Cars	Trucks	Heavys	Totals	9	0	0	9	4084	118	0	4202	78	5	0	83	4171	123	0		
Heavys	Trucks	Cars	Totals																												
0	119	4159	4278																												
Cars	Trucks	Heavys	Totals																												
9	0	0	9																												
4084	118	0	4202																												
78	5	0	83																												
4171	123	0																													
<table style="width: 100%; border-collapse: collapse;"> <tr><th>Heavys</th><th>Trucks</th><th>Cars</th><th>Totals</th></tr> <tr><td>0</td><td>0</td><td>12</td><td>12</td></tr> <tr><td>0</td><td>125</td><td>3995</td><td>4120</td></tr> <tr><td>0</td><td>0</td><td>63</td><td>63</td></tr> <tr><td>0</td><td>125</td><td>4070</td><td></td></tr> </table>	Heavys	Trucks	Cars	Totals	0	0	12	12	0	125	3995	4120	0	0	63	63	0	125	4070			<table style="width: 100%; border-collapse: collapse;"> <tr><th>Cars</th><th>Trucks</th><th>Heavys</th><th>Totals</th></tr> <tr><td>4123</td><td>128</td><td>0</td><td>4251</td></tr> </table>	Cars	Trucks	Heavys	Totals	4123	128	0	4251	
Heavys	Trucks	Cars	Totals																												
0	0	12	12																												
0	125	3995	4120																												
0	0	63	63																												
0	125	4070																													
Cars	Trucks	Heavys	Totals																												
4123	128	0	4251																												
Peds Cross: ∞ West Peds: 11 West Entering: 4195 West Leg Total: 8473	<table style="width: 100%; border-collapse: collapse;"> <tr><td>Cars</td><td>141</td></tr> <tr><td>Trucks</td><td>5</td></tr> <tr><td>Heavys</td><td>0</td></tr> <tr><td>Totals</td><td>146</td></tr> </table>	Cars	141	Trucks	5	Heavys	0	Totals	146	<table style="width: 100%; border-collapse: collapse;"> <tr><td>Cars</td><td>55</td><td>0</td><td>111</td><td>166</td></tr> <tr><td>Trucks</td><td>1</td><td>0</td><td>3</td><td>4</td></tr> <tr><td>Heavys</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Totals</td><td>56</td><td>0</td><td>114</td><td></td></tr> </table>	Cars	55	0	111	166	Trucks	1	0	3	4	Heavys	0	0	0	0	Totals	56	0	114		Peds Cross: ∞ South Peds: 84 South Entering: 170 South Leg Total: 316
Cars	141																														
Trucks	5																														
Heavys	0																														
Totals	146																														
Cars	55	0	111	166																											
Trucks	1	0	3	4																											
Heavys	0	0	0	0																											
Totals	56	0	114																												

Comments

Pine Valley Development
1: 41st Street South & Mosley Street

Projected (2025) and Proposed AM Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↘	
Volume (veh/h)	466	5	11	696	26	33
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	507	5	12	757	28	36
Pedestrians	2				12	
Lane Width (m)	3.5				3.5	
Walking Speed (m/s)	1.2				1.2	
Percent Blockage	0				1	
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			524		925	268
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			524		925	268
tC, single (s)			4.3		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.3
p0 queue free %			99		89	95
cM capacity (veh/h)			969		265	729
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	338	174	264	504	64	
Volume Left	0	0	12	0	28	
Volume Right	0	5	0	0	36	
cSH	1700	1700	969	1700	412	
Volume to Capacity	0.20	0.10	0.01	0.30	0.16	
Queue Length 95th (m)	0.0	0.0	0.3	0.0	4.2	
Control Delay (s)	0.0	0.0	0.5	0.0	15.4	
Lane LOS			A		C	
Approach Delay (s)	0.0		0.2		15.4	
Approach LOS					C	
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			37.2%		ICU Level of Service	A
Analysis Period (min)			15			

Pine Valley Development
2: Mosley Street & 41st Street North

Projected (2025) and Proposed AM Peak Hour

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕↕	↕↔		↕	
Volume (veh/h)	0	499	705	0	3	2
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	542	766	0	3	2
Pedestrians					3	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	769				1040	386
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	769				1040	386
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	100
cM capacity (veh/h)	852				229	616
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	181	362	511	255	5	
Volume Left	0	0	0	0	3	
Volume Right	0	0	0	0	2	
cSH	852	1700	1700	1700	305	
Volume to Capacity	0.00	0.21	0.30	0.15	0.02	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.4	
Control Delay (s)	0.0	0.0	0.0	0.0	17.0	
Lane LOS					C	
Approach Delay (s)	0.0		0.0		17.0	
Approach LOS					C	
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			29.5%		ICU Level of Service	A
Analysis Period (min)			15			

Pine Valley Development
3: 41st Street South & North Access

Projected (2025) and Proposed AM Peak Hour

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙		↖			↑
Volume (veh/h)	0	9	49	1	0	16
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	10	53	1	0	17
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	71	54			54	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	71	54			54	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			100	
cM capacity (veh/h)	938	1019			1564	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	10	54	17			
Volume Left	0	0	0			
Volume Right	10	1	0			
cSH	1019	1700	1700			
Volume to Capacity	0.01	0.03	0.01			
Queue Length 95th (m)	0.2	0.0	0.0			
Control Delay (s)	8.6	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.6	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			1.0			
Intersection Capacity Utilization			13.3%	ICU Level of Service		A
Analysis Period (min)			15			

Pine Valley Development
 4: 41st Street South & South Access

Projected (2025) and Proposed AM Peak Hour

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙		↑			↓
Volume (veh/h)	10	9	41	2	3	13
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	10	45	2	3	14
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	66	46			47	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	66	46			47	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	99			100	
cM capacity (veh/h)	942	1030			1574	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	21	47	17			
Volume Left	11	0	3			
Volume Right	10	2	0			
cSH	982	1700	1574			
Volume to Capacity	0.02	0.03	0.00			
Queue Length 95th (m)	0.5	0.0	0.0			
Control Delay (s)	8.7	0.0	1.4			
Lane LOS	A		A			
Approach Delay (s)	8.7	0.0	1.4			
Approach LOS	A					
Intersection Summary						
Average Delay			2.4			
Intersection Capacity Utilization			13.3%	ICU Level of Service		A
Analysis Period (min)			15			










Pine Valley Development
1: 41st Street South & Mosley Street

Projected (2025) and Proposed PM Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↔			↕↑	↕	
Volume (veh/h)	813	23	19	606	12	25
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	838	24	20	625	12	26
Pedestrians	2			1		
Lane Width (m)	3.5			3.5		
Walking Speed (m/s)	1.2			1.2		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			862		1204	432
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			862		1204	432
tC, single (s)			4.1		6.8	7.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			98		93	95
cM capacity (veh/h)			789		175	537
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	559	303	228	416	38	
Volume Left	0	0	20	0	12	
Volume Right	0	24	0	0	26	
cSH	1700	1700	789	1700	321	
Volume to Capacity	0.33	0.18	0.02	0.24	0.12	
Queue Length 95th (m)	0.0	0.0	0.6	0.0	3.0	
Control Delay (s)	0.0	0.0	1.1	0.0	17.7	
Lane LOS			A		C	
Approach Delay (s)	0.0		0.4		17.7	
Approach LOS					C	
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			40.8%		ICU Level of Service	A
Analysis Period (min)			15			

Pine Valley Development
2: Mosley Street & 41st Street North

Projected (2025) and Proposed PM Peak Hour

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	7	832	625	3	3	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	7	858	644	3	3	0
Pedestrians					3	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	650				1092	327
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	650				1092	327
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				99	100
cM capacity (veh/h)	943				210	673
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	293	572	430	218	3	
Volume Left	7	0	0	0	3	
Volume Right	0	0	0	3	0	
cSH	943	1700	1700	1700	210	
Volume to Capacity	0.01	0.34	0.25	0.13	0.01	
Queue Length 95th (m)	0.2	0.0	0.0	0.0	0.3	
Control Delay (s)	0.3	0.0	0.0	0.0	22.4	
Lane LOS	A				C	
Approach Delay (s)	0.1		0.0		22.4	
Approach LOS					C	
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			37.9%		ICU Level of Service	A
Analysis Period (min)			15			

Pine Valley Development
3: 41st Street South & North Access

Projected (2025) and Proposed PM Peak Hour

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙		↖			↑
Volume (veh/h)	2	4	33	5	0	43
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	4	36	5	0	47
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	85	39			41	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	85	39			41	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	921	1039			1581	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	7	41	47			
Volume Left	2	0	0			
Volume Right	4	5	0			
cSH	996	1700	1700			
Volume to Capacity	0.01	0.02	0.03			
Queue Length 95th (m)	0.2	0.0	0.0			
Control Delay (s)	8.6	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.6	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			13.3%	ICU Level of Service		A
Analysis Period (min)			15			

Pine Valley Development
 4: 41st Street South & South Access

Projected (2025) and Proposed PM Peak Hour

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙		↖			↓
Volume (veh/h)	5	4	34	4	16	27
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	4	37	4	17	29
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	103	39			41	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	103	39			41	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			99	
cM capacity (veh/h)	890	1038			1581	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	10	41	47			
Volume Left	5	0	17			
Volume Right	4	4	0			
cSH	950	1700	1581			
Volume to Capacity	0.01	0.02	0.01			
Queue Length 95th (m)	0.2	0.0	0.3			
Control Delay (s)	8.8	0.0	2.8			
Lane LOS	A		A			
Approach Delay (s)	8.8	0.0	2.8			
Approach LOS	A					
Intersection Summary						
Average Delay			2.2			
Intersection Capacity Utilization			19.0%	ICU Level of Service		A
Analysis Period (min)			15			

Justification No. 7 - Combined Volumes (Existing Intersection)

(2025) 41st Street South / Mosley Street

Justification	Description	Restr. Flow	Compliance			Signal Warrant	Underground Provisions Warrant
			Sectional		Entire %		
			Numerical	%			
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)*	900	684	76%	8%	NO	NO
	B. Vehicle volume, along minor streets (average hour)*~	255	24	9%		NO	NO
2. Delay to cross traffic	A. Vehicle volume, major street (average hour)*	900	645	72%	7%	NO	NO
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)*	170	14	8%		NO	NO

* 25% increase in capacity is provided due to 4-lane road configuration of Bayfield

~ 50% increase in justification values for minor streets at 'T' intersections