TRANSPORTATION IMPACT STUDY

HAWK RIDGE LIV (Hawk Ridge) LP

TOWNSHIP OF SEVERN CITY OF ORILLIA

PREPARED BY:

C.F. CROZIER & ASSOCIATES INC. 70 HURON STREET, SUITE 100 COLLINGWOOD, ON L9Y 4L4

SEPTEMBER 2024

CFCA FILE NO. 1935-6135

The material in this report reflects best judgment in light of the information available at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions made based on it, are the responsibilities of such third parties. C.F. Crozier & Associates Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.



REVISION NUMBER	DATE	COMMENTS
Rev. 0	September 2024	First Submission

1.0 Executive Summary

C.F. Crozier & Associates Inc. (Crozier) has been retained by LIV (Hawk Ridge) LP (LIV Communities) to complete a Transportation Impact Study in support of an Official Plan Amendment (OPA), Zoning By-Law Amendment (ZBA) and Draft Plan of Subdivision Application for the proposed development located at 1151 Hurlwood Lane in the Township of Severn (Township), County of Simcoe (County). The proposed development will herein be referred to as the Subject Development/Subject Lands.

A Conceptual Draft Plan for the Subject Development was prepared by Biglieri Group (August 2024). The elements envisioned within the Draft Plan include a mix of low density single detached units (290) and medium density townhouse units (560) for a total of 850 units. The Draft Plan also includes two (2) stormwater management blocks, a series of municipal infrastructure blocks to support sanitary and water servicing, and 20 m right-of-way allowances and parkland/natural heritage area.

Existing Conditions

The following key intersections within the study area have been analysed under existing conditions:

- Hurlwood Lane/Brodie Drive and Burnside Line
- Burnside Line/West Street N and the Highway 11 northbound ramps
- Burnside Line/West Street N and the Highway 11 southbound ramps
- Murphy Road and Uhthoff Line
- Highway 12 and Murphy Road/West Ridge Boulevard
- Division Road W and Uhthoff Line
- Division Road W and Burnside Line

Based on existing traffic conditions the study intersections operate with a LOS "C" or better in the weekday a.m. and p.m. peak hours. A maximum control delay of 32.2 s and maximum volume-to-capacity ratio of 0.94 (SBTR) is experienced at the intersection of Murphy Road/West Ridge Boulevard and Highway 12. This indicates that the boundary road network is operating acceptably.

Future Background Conditions

In accordance with the agreed upon Terms of Reference, growth rate of 2% was utilized to forecast background growth on the boundary road network. The Inch Farm, the North Orillia Employment Lands, and Area 3 Residential and Industrial subdivisions were assessed as background developments, generating 693 a.m. and 713 p.m. peak hour two-way trips.

Severn Township has planned intersection improvements, including signalization, for the intersection of Burnside Line and Division Road West prior to the 2031 horizon year.

A new Industrial (Arterial) Road is planned to connect Burnside Line to Uhthoff Line. The road will run parallel to Highway 11. The western end of the roadway is planned to connect at a T-intersection with Uhthoff Line approximately 185 m north of Murphy Road. Construction drawings for the intersection were prepared by Tatham Engineering for the City of Orillia, dated December 2020. The intersection has been assessed as a minor stop control intersection with a single inbound and two outbound lanes. A northbound right-taper should be considered for the intersection as the percentage of future background northbound right-turning volumes are under, but approaching 200 vehicles in both peak hours, and are a considerable portion of the advancing volumes, which increase with the addition of the Subject Development.

The eastern end of the roadway is proposed to connect to Burnside Line at Brodie Drive. Planmac Engineering Inc. prepared a conceptual intersection design, dated January 30, 2022, which illustrates the conceptual configuration, including turn lanes. Crozier has prepared a first submission of detailed design, dated July 19, 2024, for the industrial road portion of the intersection. The design of the intersection is still subject to updates and revisions, including the recommended addition of an eastbound right turn lane with 75 m of storage. External improvements to the intersection should be implemented at the time of construction of the Industrial Road.

The existing Hurlwood Lane is planned to intersect Industrial Road at a T-intersection, approximately 75 m from the intersection with Burnside Line. The Industrial Road does not connect directly to the Subject Development and is being constructed as part of adjacent development.

Under the 2045 future background conditions modelled, the study intersections are expected to operate with a LOS 'C' or better, with the exception of Highway 12 and Murphy Road West/West Ridge Blvd as well as West Street N and Highway 11 Eastbound.

The Highway 11 Eastbound ramp at West Steet N is forecasted to operate with a LOS 'D' in the p.m. peak hour with 41.3 s of delay and a maximum v/c ratio of 1.08 for the southbound through volumes. The ramp is anticipated to operate with a v/c ratio of 0.74, just below the MTO's critical capacity threshold of 0.75. The 95th percentile queue for the northbound left-turn movement is expected to exceed the available storage by approximately one car length in the p.m. peak hour. As the width of the road can accommodate two lanes and queued vehicles are not anticipated to impact through movements. Line painting adjustments can be made to extend the turn lane should these volumes and the 95th percentile queues be realized. Ongoing monitoring by the MTO is recommended.

The intersection of Highway 12 and Murphy Road West/West Ridge Blvd is forecast to operate with a LOS 'C' in the a.m. peak hour and a LOS 'F' with a maximum delay of 85.5 s and a maximum v/c ratio of 1.14 (SBT) in the p.m. peak hour. LOS 'F' in the p.m. peak hour with a maximum delay of 85.5 s and a maximum v/c ratio of 1.14 (SBT) in the p.m. peak hour.

The 95th percentile queue for the east and westbound left-turn movements at Highway 12 and West Ridge Boulevard/Murphy Road are expected to exceed the provided storage. The 95th percentile queue of the southbound right turn movement will be contained within the available taper. These operations are not uncommon for high demand intersections during peak times. The intersection should be continually monitored as development in the area proceeds.

The p.m. peak hour was assessed under mitigated geometric conditions, with dual left-turn lanes on each approach. The mitigation reduces the intersection control delay by approximately 40 s and all 95th percentile queue are forecasted to be contained in the dual turn lane storage. It is noted that the feasibility of duality or extension of the eastbound and westbound left-turn lanes will need to be reviewed within the available spacing and right-of-way. The available spacing may restrict the use of this mitigation measure.

It is noted that these operations are forecasted for 21 years into the future with sustained growth on the boundary road network. Several assumptions have been made regarding trip generation of the industrial lands. Traffic Studies should be updated as Site Plan Applications for the Orillia Employment Lands as well as the Area 3 residential and industrial lands proceed to capture the planned size and use. As previously noted, ongoing monitoring is recommended as development phases proceed.

Future Total Conditions

The proposed Hawk Ridge development is forecasted to generate 452 a.m. and 580 p.m. peak hour, two-way trips.

An assessment of alternative road networks was undertaken to evaluate the best location to cross Silver Creek and provide connectivity between the development lands. An east-west crossing between the south parcel and the Golf Villa's on Uhthoff Line was established as the preferred alternative, along with two accesses to the north parcel. There is adequate sight distance and intersection spacing along Uhthoff Line to support the three proposed site accesses.

Signals were not found to be warranted at the existing unsignalized intersections and the proposed intersections, based on future total traffic volumes. Auxiliary turn lanes were not found to be warranted on Uhthoff Line at the proposed site accesses or the Industrial Road. A northbound right-taper should be considered for the intersection of Uhthoff Line and Industrial Road, based on the forecasted volumes. A northbound right-turn taper should be considered for the intersection of Uhthoff Line and Industrial Road based on the forecasted volume of northbound left and northbound through volumes.

Under the 2045 future total conditions modelled, the study intersections are forecast to continue operating with a LOS 'C' or better, with the exception of Highway 12 and Murphy Road West/West Ridge Blvd as West Street N and Highway 11 Eastbound.

The intersection of West Ridge Boulevard/Murphy Road and Highway 12 is expected to operate with a maximum control delay of 84.6 m and maximum volume-to-capacity ratio of 1.14 (WBTR) in the p.m. peak hour. The 95th percentile queue for the eastbound and westbound left-turn movements at the intersection is expected to exceed the available storage in the p.m. peak hour.

In comparison to the future background operations the intersection control delay is forecasted to be reduced by 0.9 sections while the maximum volume-to-capacity ration remains at 1.14.

The p.m. peak hour was assessed under mitigated geometric conditions, with dual left-turn lanes on each approach. The mitigation reduces the intersection control delay by approximately 30 s and the left-turn movements are contained in the dual storage lanes. The optimization does impact the northbound right turn queuing. It is noted that the feasibility of duality or extension of the eastbound and westbound left-turn lanes will need to be reviewed.

The Highway 11 Eastbound ramp to West Street N is forecast to operate with a Level of Service 'D' in the a.m. and p.m. peak hours. In the a.m. peak hour, the eastbound left-turn movement is anticipated to exceed the MTO's critical capacity ration of 0.75, however the volume-to-capacity ratio forecasted to be less than 0.90 and 95th percentile queues are not anticipated to impact the function of the highway off-ramp.

In the p.m. peak hour, the 95th percentile queue for the northbound left-turn movement if forecast to exceed the available storage by approximately 2 vehicles. This is an increase in 5 m from the future background condition. As previous noted, line painting adjustments can be made to extend the turn lanes should these volumes and the 95th percentile queues be realized. As development volumes are not forecasted to contribute to the northbound left movement, ongoing monitoring of network growth by the MTO is recommended.

The intersection of Industrial Road/Brodie Drive and Burnside Line is expected to operate with a Level of Service 'C' and acceptable delays. In the p.m. peak hour, the westbound left movement is

forecasted to operate with a critical capacity (0.91) and 95th percentile volumes exceeding the proposed storage length. The westbound left turn movement does not increase compared to future background conditions.

The intersection of Murphy Road and Uhthoff Line presents a difference in results when modelled as HCM2000 and HCM2010, with the prior noting a 52 s delay for the eastbound movements. A reorientation of the stop signs to have the east and west legs as free flowing would improve the delay for the increased eastbound left-turn movement, however this would increase the delay for the northbound approach.

<u>Recommendations</u>

The recommended improvements outlined in **Table E1** are based on both future background and future total conditions and are in support of surrounding development and projected traffic growth.

Table E1: Recommended Network Improvements

Location	Improvement	Timeline	Intention	Responsibility
West Street N & Hwy 11 Eastbound	Optimization of signal timings at a cycle length of 90 s in the a.m. peak hour and 95 s in the p.m. peak hour.		In support of development	МТО
Murphy Road/West Ridge Boulevard	Optimization of signal timings and increase of cycle length (Future background: 110 in the a.m. and 150 s in the p.m./ Future total 130 s in the p.m. peak hour)	Monitoring to	In support of development	МТО
and Highway 12	Southbound right-turn lane with 50 m of storage (Highway 12)	Determine	In support of existing operations	МТО
Murphy Road and Uhthoff Line	Consideration for reorientation of two- way stop control		In support of development	City of Orillia
Industrial Road	 Construction of Industrial Road (arterial) Creation of T-intersection at Industrial Road and Hurlwood Lane Creation of T-intersection at Industrial Road and Uhthoff Line with northbound right taper 	2027	Background Improvement	LIV Communities
Industrial	 Reconfiguration of the intersection including a 25 m eastbound left-turn lane, 75 m eastbound right-turn lane and a westbound right-turn lane. Extension of westbound left-turn lane to 100 m and northbound left-turn lane to 75 m 	2027	Background Improvement	LIV Communities
Road/Brodie Drive and Burnside Line	 Optimization of signal timings and increase of cycle length to 90 s with protected-permissive left-turn phases on each approach. Independent optimization of signal timing splits in the a.m. and p.m. peak hour. 	Monitoring to Determine	In support of development	LIV Communities
	Industrial Road transit stops	To Be Determined	In support of development	Orillia Transit
Division Road	Clearing of vegetation within sight lines of intersections	Immediate	To reduce collisions	Severn Township

The timeline for improvements is subject to the timeline of construction of the Inch Farm and Area 3 subdivisions as well as the results of monitoring the boundary road network as development phasing proceeds. Signal timings should be continually monitored by the MTO and municipalities to confirm when optimizations are required.

As the boundary road network is forecast to receive a high number of volumes from the industrial lands, the study intersections should continue to be reviewed under applications by the background developments as Site Plans are established. The Industrial lands are currently assessed under general industrial with the maximum lot coverage, which may not be achieved. If required, future updates to this report would account for up-to-date information on background developments

The 2045 operations indicate that the majority of the boundary road network should continue operating acceptably with the addition of site generated traffic. The background developments and the subject development will be constructed in phases, therefore the study intersections can continue to be monitored as Draft Plans and Site Plans are finalized, as typical with Secondary Plan areas. Monitoring will determine if and when a volume threshold for a poor Level of Service as well as mitigation measures are met.

The analysis within this report was prepared based on the Concept Draft Plan, prepared by Biglieri Group (August 2024). Any minor changes to the Plan will not materially impact the conclusions of this report.

It is concluded that the subject development can be supported from a traffic operations perspective with the noted recommendations and ongoing monitoring.

TABLE OF CONTENTS

1.0	Exec	cutive Summary	ii
2.0	Intro	duction	
	2.1	Background	
	2.2	Purpose & Scope	
3.0	Existi	ing Conditions	5
	3.1	Key Intersections	5
	3.2	Boundary Road Network	5
	3.3	Multi-Modal Network	7
	3.4	Traffic Data	
	3.5	Intersection Modelling	
	3.6	Intersection Operations	9
4.0	Futur	re Background Conditions	
	4.1	Horizon Years & Growth Rate	10
	4.2	Future Roadway Improvements	
	4.3	Background Developments	13
	4.4	Intersection Modelling	
	4.5	Intersection Operations	24
5.0		Generated Traffic	
	5.1	Trip Generation	
	5.2	Trip Distribution & Assignment	30
6.0	Total	l Future Conditions	
	6.1	Signal Warrants	
	6.2	Auxiliary Turn Lane Warrants	
	6.3	Intersection Modelling	
	6.4	Intersection Operations	43
7.0	Prop	osed Road Network	
	7.1	Evaluation of Alternatives	
	7.2	Intersection Spacing	
	7.3	Preliminary Horizontal Sight Distance Assessment	52
8.0	Activ	ve Transportation	53
9.0	Divis	ion Road West Review	53
10.0	Cond	clusion	54
11.0	Reco	ommendations	56

LIST OF TABLES

Table 1: Boundary Road Network	5
Table 2: Peak Hour Factors	
Table 3: 2024 Existing Levels of Service	
Table 4: Inch Farm Trip Generation	
Table 5: Area 3 Trip Generation	13
Table 6: Background Improvements to Boundary Road Network	18
Table 7: 2031 Future Background Levels of Service	24
Table 8: 2033 Future Background Levels of Service	25
Table 9: 2035 Future Background Levels of Service	26
Table 10: 2040 Future Background Levels of Service	27
Table 11: 2045 Future Background Levels of Service	28
Table 12: Trip Generation	30
Table 13: Signal Warrant Justification	35
Table 14: Auxiliary Lane Warrants	35
Table 15: Recommended Future Total Improvements to Boundary Road Network	41
Table 16: 2031 Future Total Levels of Service	43
Table 17: 2033 Future Total Levels of Service	
Table 18: 2035 Future Total Levels of Service	
Table 19: 2040 Future Total Levels of Service	46
Table 20: 2045 Future Total Levels of Service	47
Table 21: Evaluation of Alternatives	
Table 22: Access Spacing Assessment	
Table 23: Sight Distance Assessment	
Table 24: Recommended Network Improvements	57

LIST OF FIGURES

Figure 1: Site Location	3
Figure 2: Concept Draft Plan	4
Figure 3: Existing Traffic Conditions	
Figure 4: 2024 Existing Traffic Volumes	
Figure 5: Redistributed Volumes	
Figure 6: Inch Farm Residential Background Volumes	14
Figure 7: Orillia Employment Lands Background Volumes	15
Figure 8: Area 3 Residential Background Volumes	
Figure 9: Area 3 Industrial Background Volumes	
Figure 10: 2031 Future Background Traffic Volumes	19
Figure 11: 2033 Future Background Traffic Volumes	
Figure 12: 2035 Future Background Traffic Volumes	21
Figure 13: 2040 Future Background Traffic Volumes	22
Figure 14: 2045 Future Background Traffic Volumes	23
Figure 15: 2031 Trip Assignment	31
Figure 16: 2033 Trip Assignment	32
Figure 17: Full Build-Out Trip Distribution	33
Figure 18: 2035 Trip Assignment	34
Figure 19: 2031 Future Total Traffic Volumes	36
Figure 20: 2033 Future Total Traffic Volumes	37
Figure 21: 2035 Future Total Traffic Volumes	38
Figure 22: 2040 Future Total Traffic Volumes	39
Figure 23: 2045 Future Total Traffic Volumes	40
Figure 24: Future Total Road Network	42
Figure 25: Road Network Alternatives	51

LIST OF APPENDICES

Appendix A: Terms of Reference Correspondence **Appendix B:** Orillia Transit Schedule Excerpts

Appendix C: Traffic Data

Appendix D: Signal Timing Plans

Appendix E: Level of Service Definitions
Appendix F: Detailed Capacity Analysis

Appendix G: Environmental Study Report Excerpts (Tatham, 2021)

Appendix H:Industrial Road Intersection DesignAppendix I:Industrial Road Proposed Cross-Section

Appendix J: Inch Farm Residential Development TIS (Tatham, 2023)

Appendix K: Area 3 Subdivision TIS (Crozier, 2024)

Appendix L: Signal Warrant

Appendix M: Auxiliary Turn Lane Warrant

Appendix N: Division Road West Intersection Photos

2.0 Introduction

C.F. Crozier & Associates Inc. (Crozier) has been retained by LIV (Hawk Ridge) LP (LIV Communities) to complete a Transportation Impact Study in support of an Official Plan Amendment (OPA), Zoning By-Law Amendment (ZBA) and Draft Plan of Subdivision Application for the proposed development located at 1151 Hurlwood Lane in the Township of Severn (Township), County of Simcoe (County). The proposed development will herein be referred to as the Subject Development/Subject Lands.

The Subject Lands are approximately 126 ha and are bounded by agricultural lands and open space to the north, Burnside Line to the east, the proposed Inch Farm Development Lands and Highway 11 to the south, and Uhthoff Line to the west. The municipal boundary between the Township of Severn and City of Orillia is located west of the site, along Highway 11. Refer to **Figure 1** for the Site Location Plan.

The Draft Plan for the Subject Development was prepared by Biglieri Group (August 2024) and has been included as **Figure 2**. The elements envisioned within the Draft Plan include a mix of low density single detached units (290) and medium density townhouse units (560) for a total of 850 units. The Draft Plan also includes two (2) stormwater management blocks, a series of municipal infrastructure blocks to support sanitary and water servicing, and 20 m right-of-way allowances and parkland/natural heritage area.

Crozier is part of a team of consultants providing support for this development. Other members of the consulting team include:

- Biglieri Group (Planning)
- Azimuth Environmental Consulting Inc. (Azimuth) (Environmental)
- Green Geotechnical Ltd. (Geotechnical)
- Crozier (Civil, Transportation Engineering & Hydrogeological)
- Hutchinson Environmental Sciences (Assimilative Capacity Study)

These consultants have prepared studies/ plans to support the planning application. This report prepared by Crozier should be read in conjunction with the work of the other team members.

This Transportation Impact Study has been prepared to assess the impacts of the subject development on the boundary road network and to recommend warranted mitigation measures. The reader is directed to the Master Servicing Report, Functional Servicing Report, Flow Assessment Report and Preliminary Stormwater Management Report for additional details regarding the Subject Lands.

2.1 Background

The Subject Lands are currently designated as Open Space and Environmental Protection Area per Schedule D of the Township of Severn Official Plan (June 2024) and as Commercial per Schedule G4 of the Township of Severn Zoning By-Law 2010-65. The Subject Lands also fall within the South of Division Road Secondary Plan Area, which lies between Highway 11 (east), Highway 12 (south) and Division Road (west). Per Section 3.7.13 of the County of Simcoe Official Plan (2023), development within this area should follow the policies outlined in the Township of Severn's South of Division Road Secondary Plan. The purpose of the Secondary Plan is to outline major road systems and future land use patterns prior to the occurrence of major development. The Subject Lands are currently located outside of the Township of Severn's Settlement Boundary.

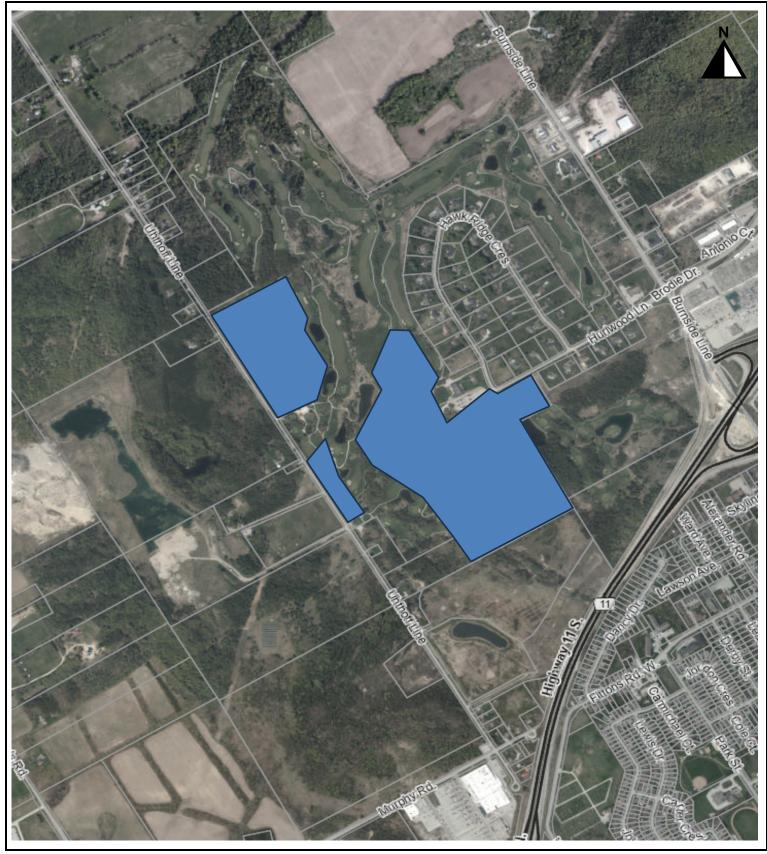
A Pre-Consultation Meeting with the Township of Severn was held on June 21, 2024. It was identified during the meeting that the preferred method to bring the Subject Lands into the Township's settlement boundary is via an Official Plan Amendment (OPA) and Zoning By-Law Amendment (ZBA) Application. As the Subject Lands are located within the Secondary Plan, there is an increased priority to develop as this area has been selected for targeted growth. With that being said, growth within the Subject Lands must not impede the future development of other currently zoned areas within the Secondary Plan.

2.2 Purpose & Scope

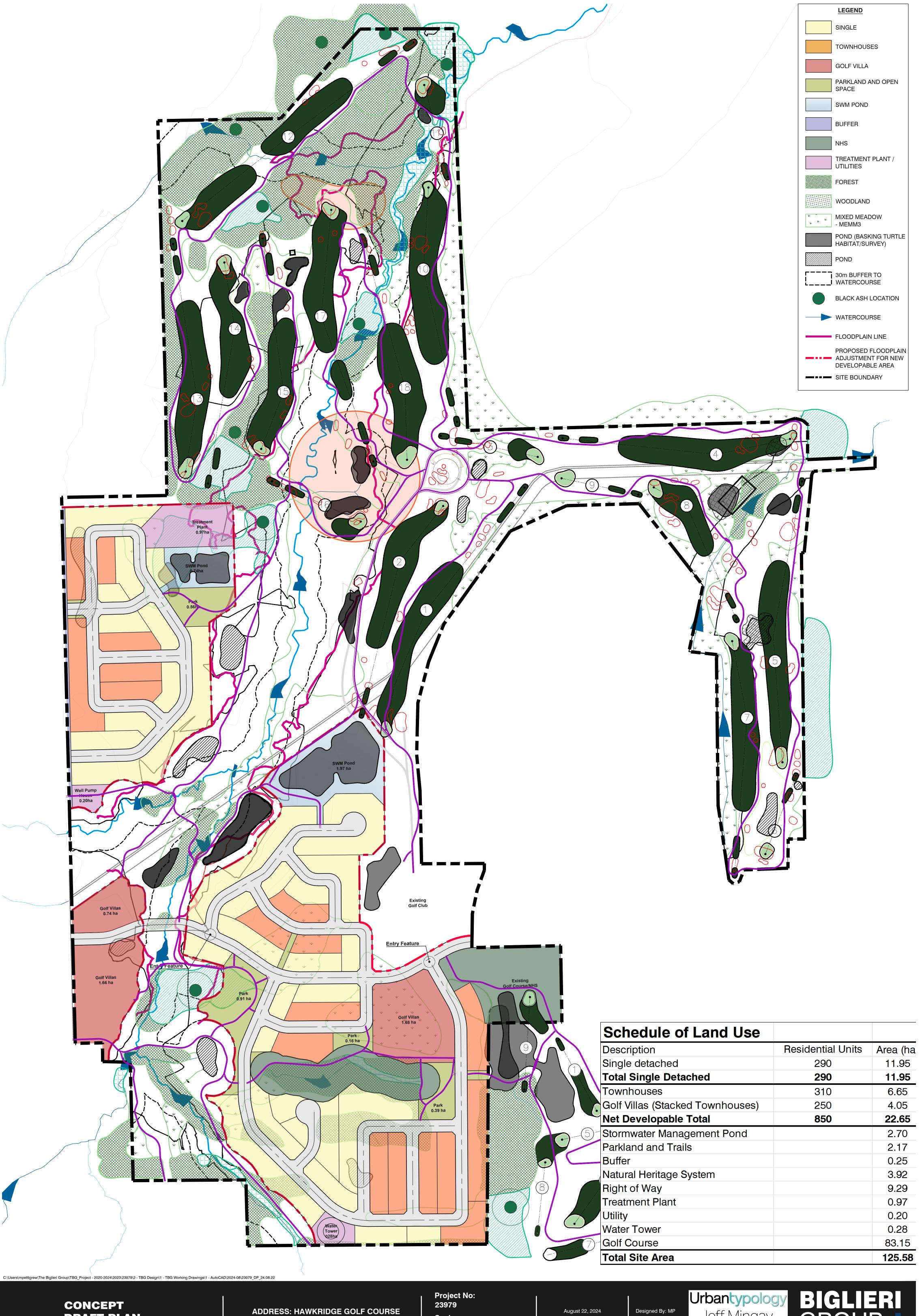
This study reviews aspects of the subject development from a transportation engineering perspective including the forecasted trip generation of the development and the existing, future background, and future total traffic operations at the study intersections.

At this time the Transportation Impact Study has reviewed the development at a similar level to a Secondary Plan assessment, as the Master Servicing Plan is ongoing. Updated assumptions and analysis can be completed as further details are confirmed, and phases proceed.

This Transportation Impact Study was conducted in accordance with the Terms of Reference circulated and based on comments provided by the Township of Severn and the City of Orillia. The Ministry of Transportation (MTO) was circulated on the Terms of Reference but did not provide comment. **Appendix A** contains the Terms of Reference correspondence.



Legend	Hawk Ridge	ODOZIED.	Figure 1
xx A.M. Peak Hour Traffic Volumes		CROZIER	Project No. 1935-6133
(xx) P.M. Peak Hour Traffic Volumes	Site Location		Date. Thursday July 11, 2024
	Sile rocalion	CONSULTING ENGINEERS	Analyst. KH



CONCEPT **DRAFT PLAN** 23979 Scale: 1:2500

Designed By: MP



3.0 Existing Conditions

This section outlines the current conditions of the transportation network in the vicinity of the site. Details of the study road network, including traffic controls, lane configurations, speed limits, transit routes and stops, active transportation infrastructure and other relevant transportation elements are identified. The existing traffic operations are also summarized.

3.1 Key Intersections

The following key intersections within the study area have been analysed. **Figure 3** illustrates the existing traffic controls and lane configurations at each intersection.

- Hurlwood Lane/Brodie Drive and Burnside Line
- Burnside Line/West Street N and the Highway 11 northbound ramps
- Burnside Line/West Street N and the Highway 11 southbound ramps
- Murphy Road and Uhthoff Line
- Highway 12 and Murphy Road/West Ridge Boulevard
- Division Road W and Uhthoff Line
- Division Road W and Burnside Line

3.2 Boundary Road Network

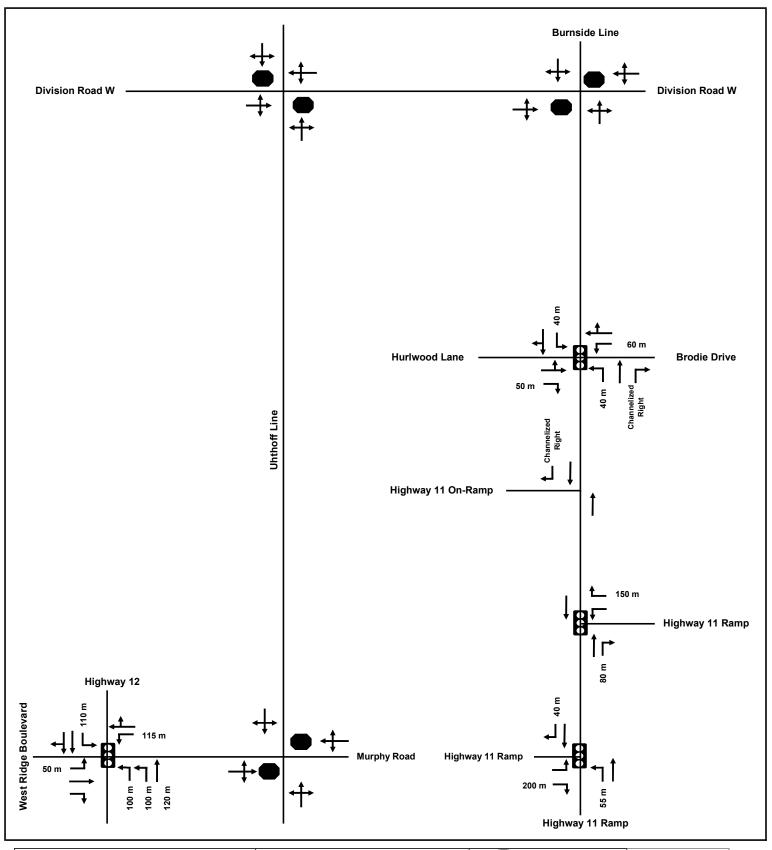
The boundary road network is described in **Table 1.** The information included below was obtained from the Township of Severn's Official Plan Schedules. Due to the skewed nature of the roadways, the directional orientation of the boundary road network is ambiguous. Accordingly, to provide clarity throughout the report, Highway 12, Uhthoff Line and Burnside Line have been given a north-south orientation and the remaining roadways have been given an east-west orientation.

Table 1: Boundary Road Network

Roadway	Direction	Classification	Jurisdiction	Posted Speed Limit	Lanes per Direction
Highway 11	East-West	Provincial Highway	MTO	100 km/h (50 km/h rec. off-ramp)	2
Burnside Line	North-South	Local	Township	60 km/h	1
Hurlwood Lane	East-West	Local	Township	50 km/h	1
Brodie Drive	East-West	Local	Township	60 km/h	1
Uhthoff Line	North-South	Local	Township/City ¹	60 km/h	1
Murphy Road	East-West	Local	Township/City ¹	50 km/h	1
West Ridge Boulevard	East-West	Arterial	Township	50 km/h	2
Division Road W	East-West	Local	Township	80 km/h (60 km/h east of Burnside & west of Uhthoff Line)	1
Highway 12	North-South	Provincial Highway	MTO	80 km/h (60 km/h within city limits)	2

Note1: A portion of Uhthoff Line and Murphy Road are the municipal border between the Township of Severn and the City of Orillia.

C.F. Crozier & Associates Inc. Project No. 1935-6135





3.3 Multi-Modal Network

The recent improvements to Burnside Line provided a sidewalk and bike lane on the east side of the roadway south of Hurlwood Lane/Brodie Drive. Multi-Use Pathways are present on the south side of West Ridge Boulevard and both sides of Highway 12, south of West Ridge Boulevard. Cyclist signages are provided at the south approach of the Highway 12 intersection. Pedestrian or cycling facilities do not existing on any other existing roadway within the study area.

The City of Orillia has two existing transit routes within the study area. The North Route loops from the central terminal to Orillia Square Mall via Burnside Line and Brodie Drive, with the stop closest to the subject development located next to The Brick. The West Ridge via Coldwater Road Route loops along Murphy Road back to the central terminal, with the stop closest to the subject development located next to the Walmart Supercentre at Murphy Road and Uhthoff Line. The buses operate every 30 minutes. **Appendix B** contains Orillia Transit's current schedule.

3.4 Traffic Data

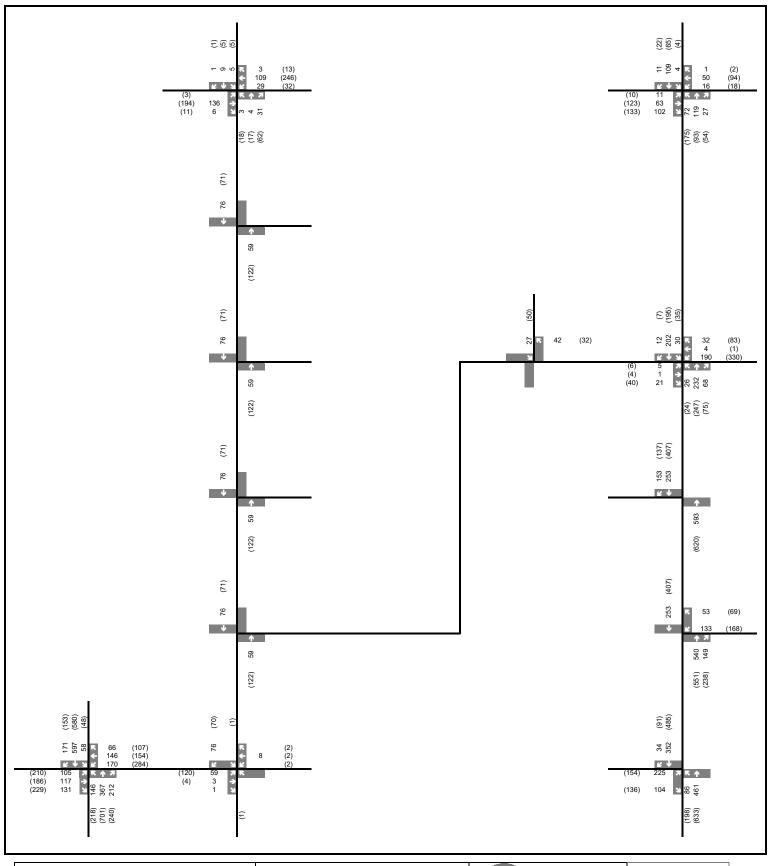
Turning movement counts at the study intersections were undertaken by Spectrum Traffic Data Inc. from 6:00 a.m. to 10:00 a.m. and from 3:00 p.m. to 7:00 p.m. on Thursday August 1, 2024. **Appendix C** contains the collected traffic data for reference. **Figure 4** illustrates the 2024 existing traffic volumes. When compared to April 2022 data collected for previous traffic studies in the area, the August 2024 data was more conservative. As such, no seasonal factor was applied to the 2024 summer counts.

Table 2 contains the calculated peak hour factors under a.m. and p.m. conditions at the study intersections.

Intersection	Peak Hour	Factor
Liurius and Long / Pradio Driva & Burnaida Ling	9:00-10:00	0.91
Horiwood Larie/Brodie Drive & Borriside Lirie	16:15-17:15	0.94
Purneida Lina & Highway 11 Wasth aund Dann	9:00-10:00	0.95
Burnside Line & nigriway 11 Westbouria Kamp	Page 12 Page 13 Page 14 Page 14 Page 14 Page 14 Page 15 Page 16 Page	0.98
West Street N. & Highway 11 Fasthound Damp	9:00-10:00	0.95
west street in & riighway i i Eastbootha kamp	16:30-17:30	0.95
Highway 10.9 Murphy Board/West Bidge Beyleverd	9:00-10:00 16:15-17:15 Line & Highway 11 Westbound Ramp Peet N & Highway 11 Eastbound	0.88
Highway 12 & Murphy Road/West Riage Boulevard		0.97
Murphy Dood & Hithoff Line	8:45-9:45	0.92
Morphy Rodd & driffoli Line	Sion Road W & Burnside Line 9:00-10:00 16:15-17:15 9:00-10:00 16:30-17:30 9:00-10:00 16:30-17:30 9:00-10:00 16:30-17:30 9:00-10:00 16:30-17:30 9:00-10:00 16:30-17:30 9:00-10:00 16:30-17:30 9:00-10:00 16:30-17:30 16:30-	0.90
Division Doord W. 9. Habbaff Line	8:45-9:45	0.96
Division Road W & Uninoil Line	16:15-17:15	0.93
Division Board W. & Burnsida Lina	9:00-10:00	0.92
DIVISION RODD W & BUTTISIDE LINE	16:15-17:15	0.94

Table 2: Peak Hour Factors

A recent site visit was undertaken on Sunday August 18th, 2024, and included a review of the study intersections and completed interchange improvements. Per communications with Township Staff, a site visit was conducted in April 2022 and signal timings were collected in the field for the intersection of Burnside Line and Hurlwood Lane/Brodie Drive. Signal timing plans for the Highway 11 ramps were provided by the MTO in August 2024. The signal timing plan for the Highway 12 intersection was provided by the Township of Severn through the Ainley Group. **Appendix D** includes the signal timing plans for reference.



Legend xx A.M. Peak Hour Traffic Volumes	Hawk Ridge	CROZIER	Figure 4 Project No. 1935-6133
(xx) P.M. Peak Hour Traffic Volumes	Existing Traffic Volumes	CONSULTING ENGINEERS	Date. Thursday July 11, 2024 Analyst. KH

3.5 Intersection Modelling

Unless otherwise noted, the existing traffic conditions on the study road network were modelled in Synchro 11 based on Highway Capacity Manual (HCM 2010) methodology and using the default Synchro parameters. A yield sign is present for vehicles using the channelized right turn lane from Burnside Line onto Brodie Drive. Southbound volumes of Burnside Line are not required to stop as the enter the westbound on-rap for Highway 11. Synchro does not calculate delays associated with these free flow conditions. **Appendix E** contains the Level of Service (LOS) definitions for signalized and unsignalized intersections.

3.6 Intersection Operations

Table 3 outlines the 2024 existing levels of service at the study intersections. **Appendix F** contains the detailed capacity analyses worksheets.

95[™] Percentile **Peak** Level of Control Maximum Intersection Control Queue > Hour Service Delay1 v/c Ratio² **Storage Length** Hurlwood A.M. В 11.8 s 0.51 (WBL) Lane/Brodie Drive & Signalized 0.73 (WBL) P.M. В 15.1 s _ Burnside Line В 10.1 s 0.57 (NBT) A.M. Burnside Line& Hwy Signalized 11 Westbound P.M. Α 9.3 s 0.51 (NBT) -В 16.8 s A.M. 0.66 (EBL) West Street N & Hwy Signalized 11 Eastbound В 14.2 s 0.69 (SBT) P.M. Highway 12 & С 30.7 s 0.92 (SBTR) A.M. Murphy Road/West Signalized P.M. С 32.2 s 0.94 (SBTR) Ridge Boulevard 0.0 s A.M. Α Murphy Road & Two-Way Stop **Uhthoff Line** (Murphy Road) 0.0 s P.M. Α A.M. В 11.3 s (SB) 0.05 (NB) Division Road W & Two-Way Stop Uhthoff Line (Uhthoff Line) P.M. В 14.4 s (SB) 0.17 (SB) A.M. В 14.6 s (WB) 0.29 (EB) Division Road W & Two-Way Stop Burnside Line (Division Road) P.M. С 23.4 s (WB) 0.56 (EB)

Table 3: 2024 Existing Levels of Service

Note: The Level of Service of a signalized intersection is based on the average control delay per vehicle.

The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road

Note²: The critic

The critical v/c ratio is considered to be the maximum v/c ratio for movements at the intersection. In addition, all v/c ratios greater than 0.85 for movements are outlined and highlighted. Per MTO TIS Guidelines, all ramp movements with v/c ratios greater than 0.75 are outlined and highlighted.

As presented in **Table 3**, under the existing traffic volume conditions, the study intersections operate with a LOS "C" or better in the weekday a.m. and p.m. peak hours. A maximum control delay of 32.2 s and maximum volume-to-capacity ratio of 0.94 (SBTR) is experienced at the intersection of Murphy Road/West Ridge Boulevard and Highway 12. This indicates that the boundary road network is operating acceptably, however with the v/c ratios on Highway 12 approaching capacity, mitigation measures such as a southbound right-turn lane, extension to the eastbound left-turn lane and signal optimizations for the intersection should be considered. These improvements have been explored through future background and future total conditions.

4.0 Future Background Conditions

This section summarizes the future background conditions of the study road network and provides details relating to growth rates, future transportation network improvements, and background developments within the study area.

4.1 Horizon Years & Growth Rate

In accordance with the agreed upon Terms of Reference, full build-out is expected by the year 2035, with interim phases in 2031 and 2033. The 5 and 10-year horizons beyond build-out (2040 and 2045) were also assessed. A growth rate of 2% was utilized to forecast background growth on the boundary road network. This growth rate was established based on historic traffic volumes on Highway 11 and is consistent with previous studies in the area.

4.2 Future Roadway Improvements

4.2.1.Division Road West

The Township of Severn's Transportation Master Plan (April 2023) outlines the signalization of Burnside Line at Division Road as a short term (0-5 years) improvement to the road network. Based on this timeline, the improvement will be completed by the first phase of build-out in 2031. This improvement has been modelled with optimized signal timings, based on 2045 volumes, under both the future total and future background scenarios.

4.2.2.<u>Industrial Road</u>

A new Industrial (Arterial) Road is planned to connect Burnside Line to Uhthoff Line. The road will run parallel to Highway 11. The roadway was first proposed by the City of Orillia as part of their 2019 Multi-Modal Transportation Master Plan. The Township/City have noted that they will no longer be undertaking the design and construction of the roadway. The final roadway design and construction will be developer driven, in support of the surrounding subdivisions. Accordingly, we have assessed the roadway as a background improvement.

Appendix A of the Inch Farm Arterial Road & Industrial Employment Lane Environmental Study Report (ESR) (Tatham Engineering, December 2021) provides the expected roadway alignment. The ESR also outlines the redistribution of existing volumes with the opening of the roadway. The redistribution to Burnside Line and Highway 12 was re-evaluated for this study and differs slightly from the Area 3 TIS (Crozier, 2024). The 2020 Diverted Traffic Volumes were grown to 2031. **Figure 5** illustrates the redistributed trips. **Appendix G** contains relevant excerpts from the ESR.

The western end of the roadway is planned to connect at a T-intersection with Uhthoff Line approximately 185 m north of Murphy Road. Construction drawings for the intersection were prepared by Tatham Engineering for the City of Orillia, dated December 2020. The intersection has been assessed as a minor stop control intersection with a single inbound and two outbound lanes. A northbound right-taper should be considered for the intersection as the percentage of future background northbound right-turning volumes are under, but approaching 200 vehicles in both peak hours, and are a considerable portion of the advancing volumes, which increase with the addition of the Subject Development. **Appendix H** also included excerpts from Tatham's Intersection Design Package.

The eastern end of the roadway is proposed to connect to Burnside Line at Brodie Drive. **Appendix H** contains a conceptual intersection design prepared by Planmac Engineering Inc. dated January

30, 2022, which illustrates the conceptual configuration changes, including turn lanes. **Appendix H** also included excerpts from the first submission of detailed design for the Industrial Road from Burnside Line to west of Hurlwood Lane, prepared by Crozier, dated July 19, 2024. The design is still subject to updates and revisions, including the recommended addition of an eastbound right turn lane with 75 m of storage. It is noted that signal timings at the intersection of Burnside Line and Industrial Road/Brodie Drive will need to be updated/optimized to reflect the new configuration. Improvements to the intersection should be implemented at the time of construction of the Industrial Road.

The existing Hurlwood Lane is planned to intersect Industrial Road at a T-intersection, approximately 75 m from the intersection with Burnside Line. The Industrial Road does not connect directly to the Subject Development and is being constructed as part of adjacent development. **Appendix I** includes the proposed cross-section for the Industrial Road (Crozier, April 2022).

4.2.3. Highway 12 and Murphy Road/West Ridge Boulevard

The Area 3 TIS (Crozier, July 2024) recommend several improvements for the intersection of Highway 12 and Murphy Road/West Ridge Boulevard including implementation of an auxiliary southbound right-turn lane (Highway 12) under the 2032 horizon. Based on existing conditions, a right-turn lane with 50 m of storage was modelled as a background improvement at the intersection under future horizons. Signal optimization was undertaken based on 2045 future background volumes.

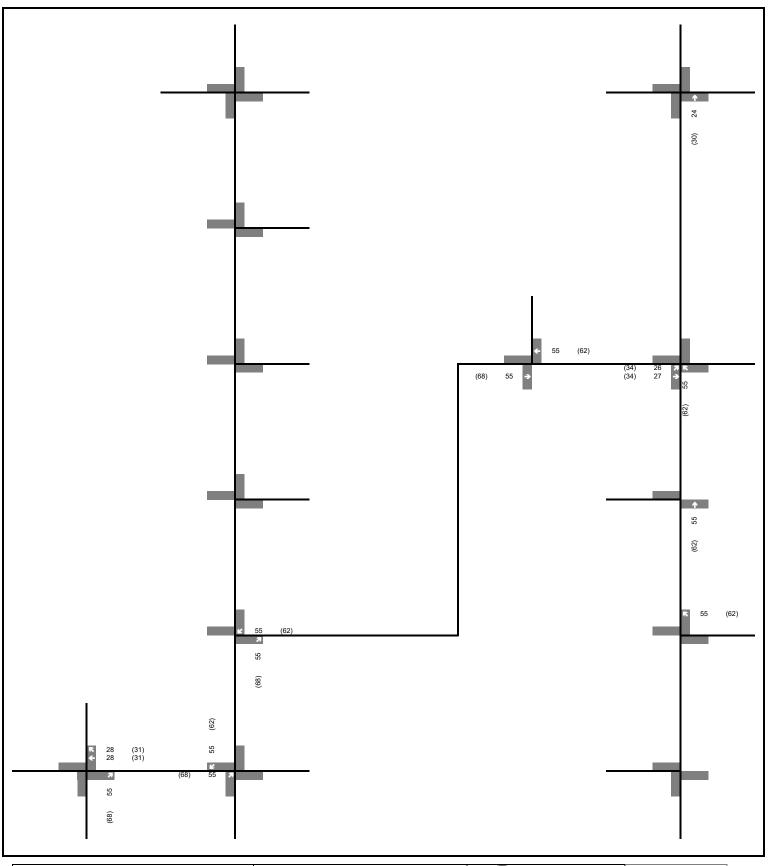
The Ministry of Transportation often advises the following capacity methodology for roadways:

- Dual left-turn lanes should be considered when the peak left turn volumes exceed 300 vehicles per hour per lane (vphpl).
- A separate right-turn lane should be considered when the right-turn volumes exceed 200 vphpl.
- Channelized right-turn should be considered when the peak right turn volumes exceed 500 vphpl.
- Additional though lanes should be considered when the though volumes exceed 800 vphpl.

It is important to note these thresholds are not a published requirement but rather a guideline previously provided by MTO staff for reviewing network improvements. Based on these thresholds a dual westbound left-turn lane at the intersection of Highway 12 and Murphy Road/ West Ridge Boulevard was considered.

The eastbound left turn lane at the intersection cannot be extended due to the adjacent turn lane for Bass Lake Side Road, a dual left-turn lane was also reviewed. As the northbound approach already provides dual left-turn lanes there is existing spacing for a dual southbound left-turn lane to be provided with pavement marking adjustments. All four approaches were considered for dual turn lanes as part of a mitigation measure review.

It is noted that the feasibility of duality or extension of the eastbound and westbound left-turn lanes will need to be reviewed within the available spacing and right-of-way. The available spacing may restrict the use of this mitigation measure. All geometric improvements recommended are subject to functional review and detailed design. The MTO should monitor the intersection to determine if and when such geometric improvements are required.



Legend	Hawk Ridge	ODOZIED	Figure 5
xx A.M. Peak Hour Traffic Volumes		CROZIER	Project No. 1935-6133
(xx) P.M. Peak Hour Traffic Volumes	Redistributed Volumes	CONSULTING ENGINEERS	Date. Thursday July 11, 2024 Analyst, KH

4.3 Background Developments

4.3.1.Inch Farm Subdivision

South of the development lands is the adjacent Inch Farm Subdivision and the North Orillia Employment Lands. The Inch Farm Subdivision will consist of 351 units, 39 single-detached homes and 312 semi-detached units. The development will have access to both Uhthoff Line and the future Industrial Road. The North Orillia Employment Lands did not have a formalized Site Plan and have been assessed based on the trip generation presented in the Inch Farm Residential Traffic Impact Study, prepared by Tatham Engineering in January 2023. **Table 4** outlines the trip generation presented in the report.

Number of Trips Peak Hour Land Use Inbound Outbound Total Weekday A.M. 54 124 177 Residential Weekday P.M. 124 90 215 Weekday A.M. 51 7 58 General Light Industrial 7 Weekday P.M. 45 52 Weekday A.M. 105 131 235 **TOTAL** Weekday P.M. 131 135 267

Table 4: Inch Farm Trip Generation

The trip distribution and assignment for the residential development was extracted from the residential TIS (Tatham 2023) and the distribution and assignment for the employment lands was summarized based on the ESR. The distribution to the Highway 11 intersections was not included in the ESR but has been assigned based on the distribution described in the Area 3 TIS (Crozier, 2024). Figure 6 illustrates the background development trip assignment and Appendix J contains excerpts from the updated Traffic Impact Study (Tatham, 2023). The development is expected to be complete prior to the 2031 horizon.

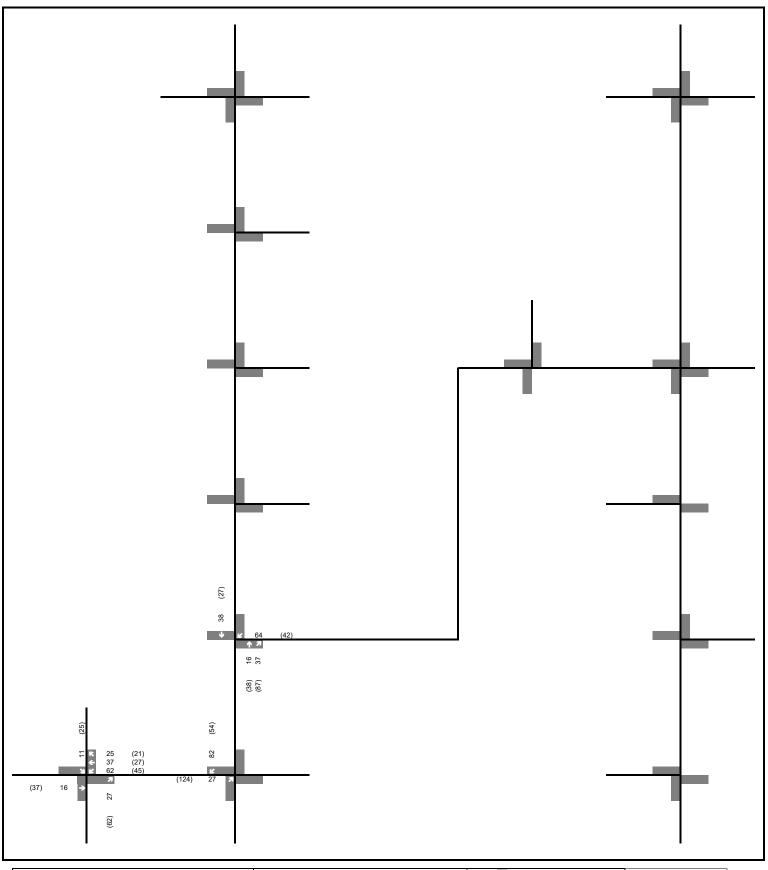
4.3.2. Area 3 Subdivision

Southeast of the development lands is the Area 3 Subdivision and the Industrial Lands. The development proposes 297 townhouse units. Based on the permitted zoning, 60% lot coverage of the industrial lands have been assessed based on a gross floor area (GFA) of 38,820 m² (417,855 ft²).

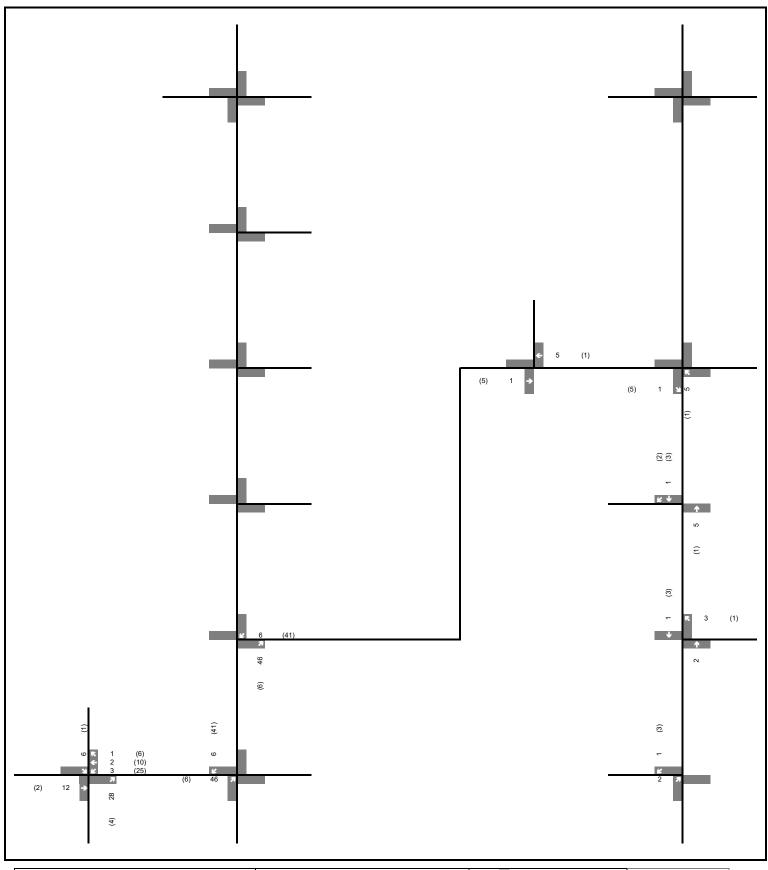
Table 5 summarizes the trip generation of the proposed development. The trips were assigned as distributed in the Area 3 TIS. **Figure 9** illustrates the background development trip assignment and **Appendix K** contains excerpts from updated Traffic Impact Study (Crozier, July 2024). The development is expected to be complete prior to the 2031 horizon.

Number of Trips Land Use **Peak Hour** Inbound Outbound Total "Single-Family Attached Housing" Weekday A.M. 37 112 149 (297 units) 103 71 174 Weekday P.M. "General Light Industrial" Weekday A.M. 272 37 309 (417,855 ft²) Weekday P.M. 38 234 272 Weekday A.M. 309 149 458 **TOTAL** 305 Weekday P.M. 141 446

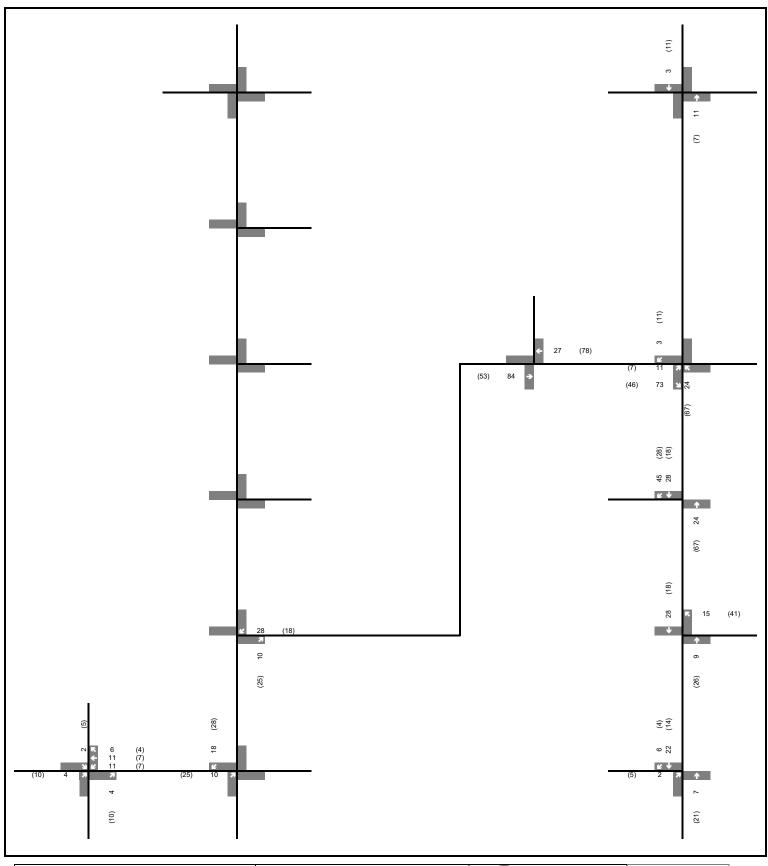
Table 5: Area 3 Trip Generation



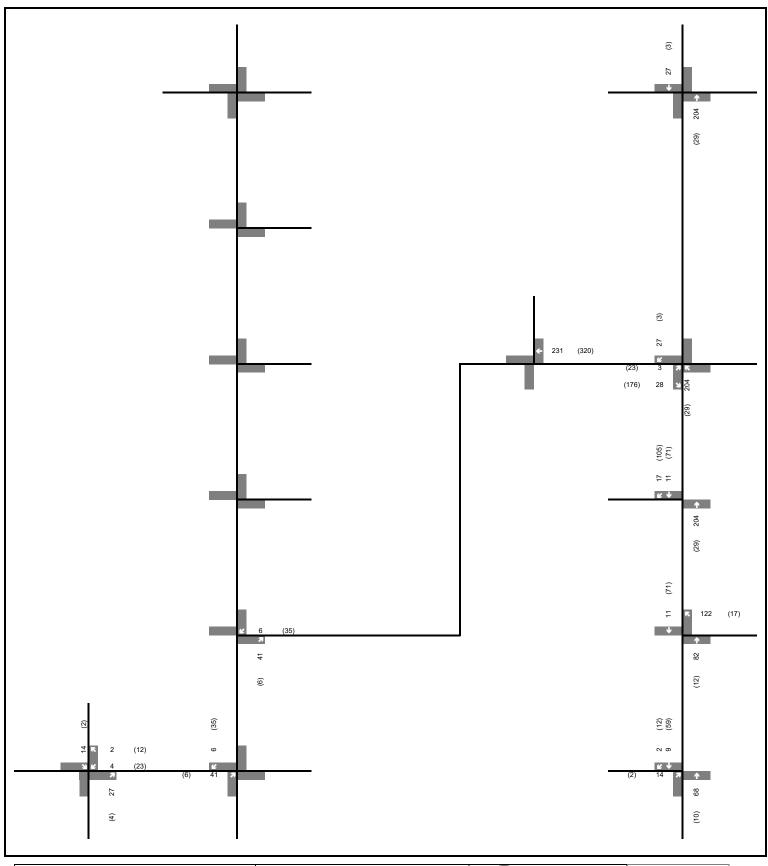
Legend	Hawk Ridge	ADOZIED	Figure 6
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	Inch Farm Residential Background Volumes	CROZIER CONSULTINE ENGINEERS	Project No. 1935-6133 Date. Thursday July 11, 2024 Analyst. KH



Legend	Hawk Ridge	ODOZIED	Figure 7
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	Orillia Employment Lands Background	CROZIER	Project No. 1935-6133 Date, Thursday July 11, 2024
(xx) F.M. Feak hoof frame volumes	Volumes	CONSULTING ENGINEERS	Analyst. KH



Legend	Hawk Ridge	CROZIER	Figure 8
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	Avera 2 Decidential Declaration of Volumes		Project No. 1935-6133 Date. Thursday July 11, 2024
	Area 3 Residential Background Volumes	CONSULTING ENGINEERS	Analyst, KH



Legend	Hawk Ridge	ODOZIED	Figure 9
xx A.M. Peak Hour Traffic Volumes	· ·	CROZIER	Project No. 1935-6133
(xx) P.M. Peak Hour Traffic Volumes	Area 3 Industrial Background Volumes	CONSULTING ENGINEERS	Date. Thursday July 11, 2024 Analyst, KH

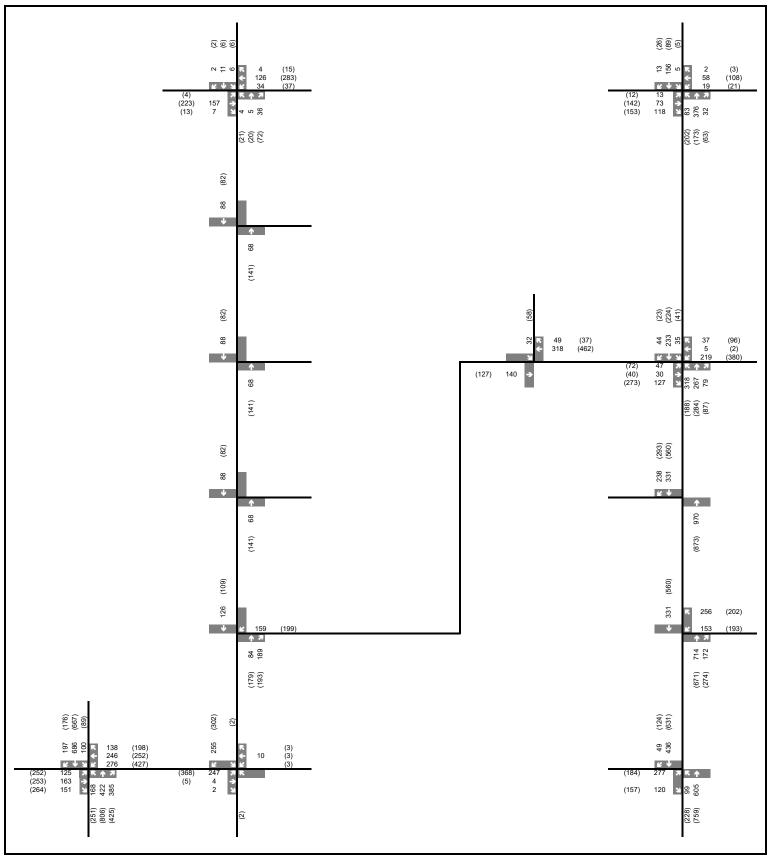
4.4 Intersection Modelling

The 2031, 2033, 3035, 2040 and 2045 future background volumes are illustrated in **Figure 10**, **Figure 11**, **Figure 12**, **Figure 13** and **Figure 14**, respectively. These volumes were analysed in Synchro 11 with the updated roadway geometry.

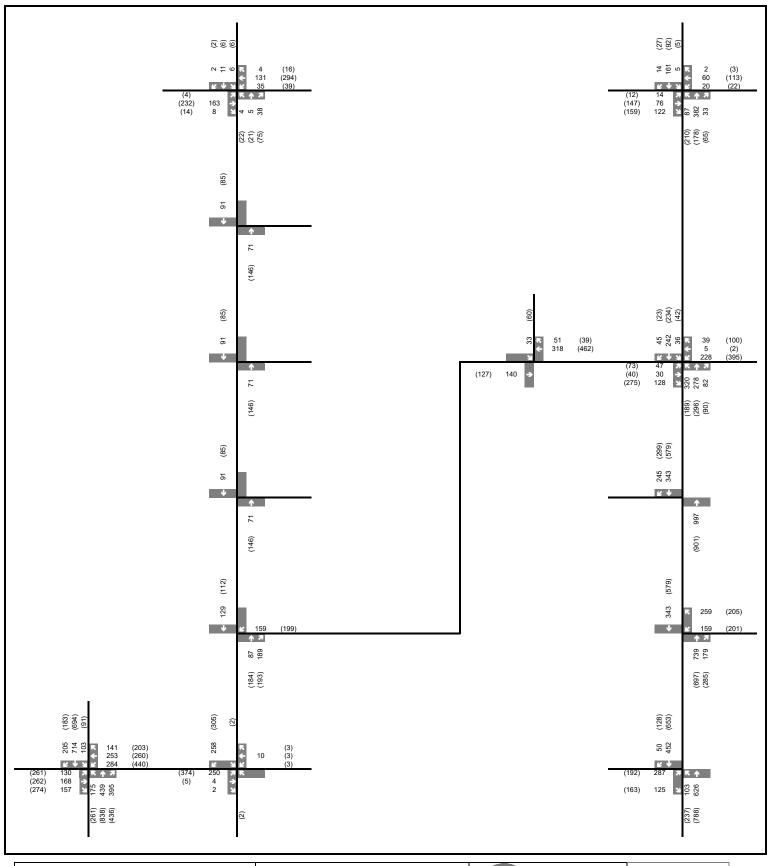
Table 6 summarizes the background road improvements modelled.

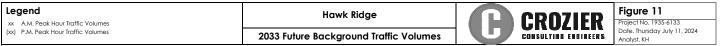
Table 6: Background Improvements to Boundary Road Network

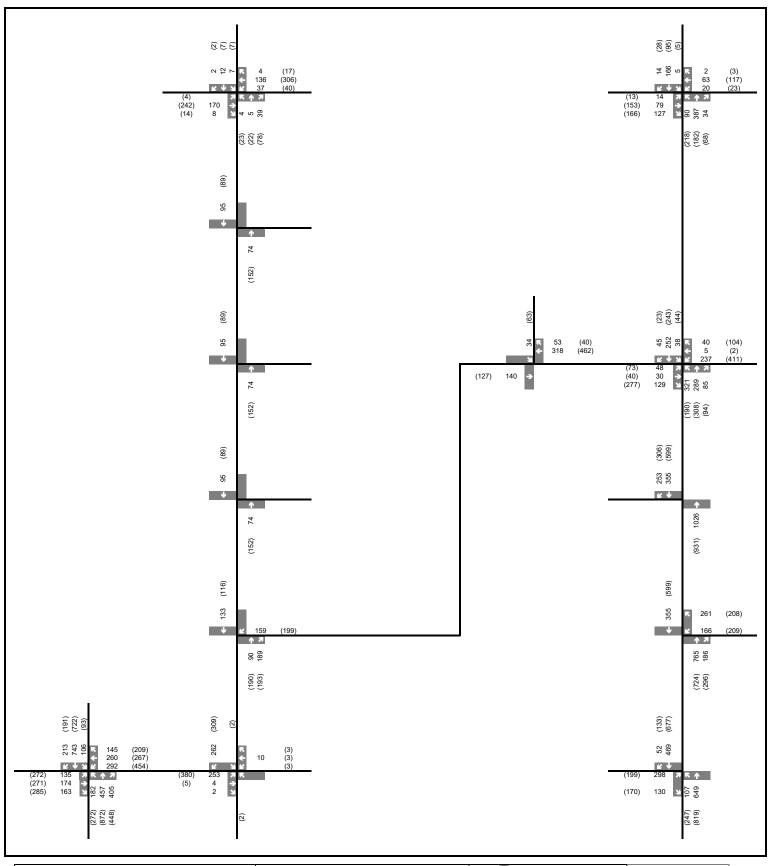
Location	Improvement	Intention	Primary Responsibility					
	Planned Background Improvement							
Division Road W and Burnside Line	Signalization	Background Improvement	Township of Severn					
Recommended Background Improvement								
West Street North and Highway 11 Eastbound	Optimization of signal timings at a cycle length of 90 s in the a.m. peak hour and 95 s in the p.m. peak hour.	In support of Future Background Operations	МТО					
Industrial Road and Burnside Line	 Optimization of signal timings and increase of cycle length to 90 s with protected-permissive left-turn phases on each approach. Independent optimization of signal timing splits in the a.m. and p.m. peak hour. Reconfiguration of the intersection including a 25 m eastbound left-turn lane, 75 m eastbound right-turn lane and a westbound right-turn lane. Extension of westbound left-turn lane to 100 m and northbound left-turn lane to 75 m 	Background Improvement	LIV Communities					
Industrial Road	 Construction of Industrial Road (arterial) Creation of T-intersection at Industrial Road and Hurlwood Lane Creation of T-intersection at Industrial Road and Uhthoff Line with northbound right taper 	In support of Development	LIV Communities					
	Southbound right-turn lane (Highway 12) with 50 m of storage	In support of Existing Operations						
Highway 12 and Murphy Road/West Ridge Boulevard	 Optimization of signal timings and increase of cycle length to 110 in the a.m. and 150 s in the p.m. peak hour Protected/permitted signal for the southbound left-turn movement. Duplication of the south, east and westbound left-turn lane at a cycle length of 120 s (reviewed as a mitigation only) 	In support of Future Background Operations	МТО					



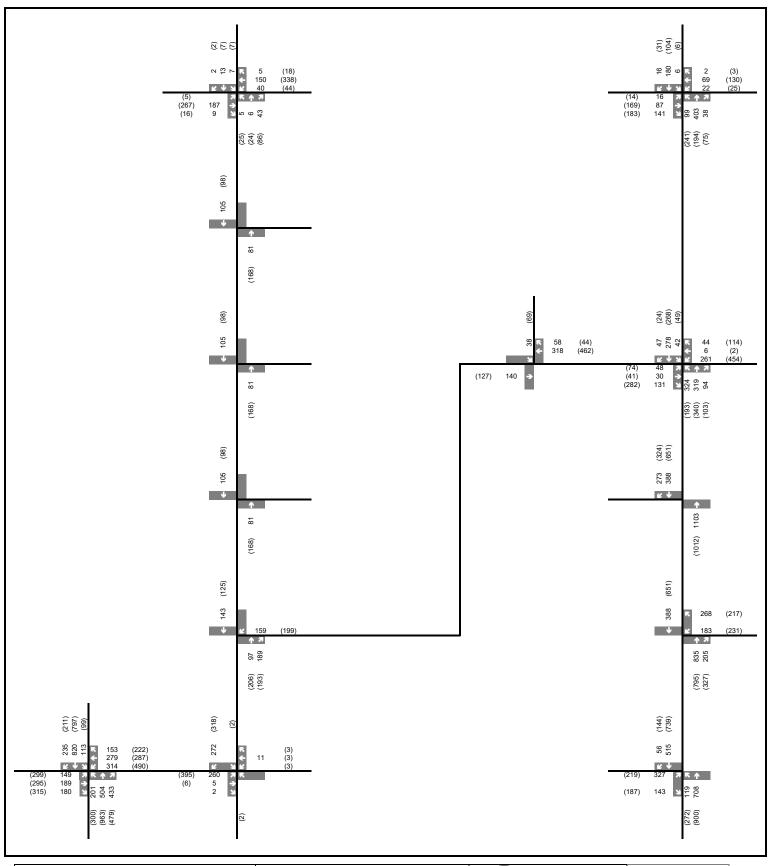
Legend	Hawk Ridge	CROZIER	Figure 10
xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes		GRUZIER	Project No. 1935-6133 Date. Thursday July 11, 2024
(xx) F.M. Feak Hoof Haffic Volumes	2031 Future Background Traffic Volumes	CONSULTING ENGINEERS	Anglyst, KH



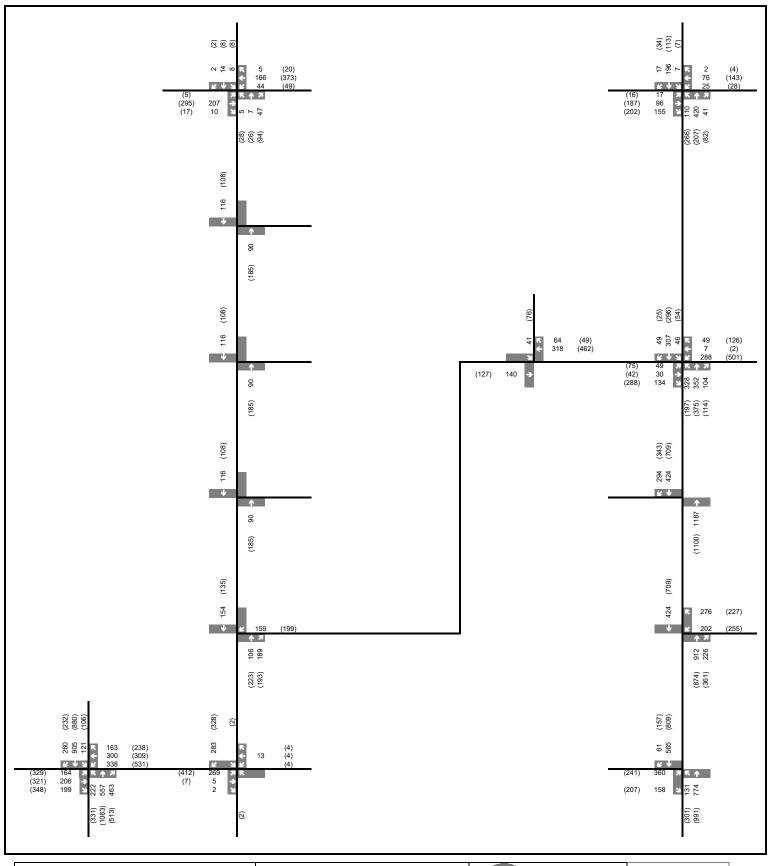


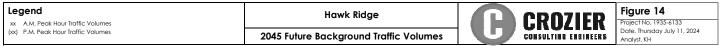


Legend	Hawk Ridge	ODOZUED	Figure 12
xx A.M. Peak Hour Traffic Volumes		CROZIER	Project No. 1935-6133
(xx) P.M. Peak Hour Traffic Volumes	2035 Future Background Traffic Volumes	CONSULTING ENGINEERS	Date. Thursday July 11, 2024 Analyst. KH



Legend	Hawk Ridge Figure		Figure 13
xx A.M. Peak Hour Traffic Volumes	· ·	CROZIER	Project No. 1935-6133
(xx) P.M. Peak Hour Traffic Volumes	2040 Future Background Traffic Volumes	CONSULTING ENGINEERS	Date. Thursday July 11, 2024 Anglyst, KH





4.5 Intersection Operations

The 2031, 2033, 3035, 2040 and 2045 future background Levels of Service are outlined in **Table 7**, **Table 8**, **Table 9**, **Table 10**, and **Table 11**, respectively. **Appendix E** contains the Level of Service (LOS) definitions for signalized and unsignalized intersections. **Appendix F** contains the detailed capacity analyses worksheets.

Table 7: 2031 Future Background Levels of Service

Intersection	Control	Peak Hour	Level of Service	Control Delay ¹	Maximum v/c Ratio²	95 TH Percentile Queue > Storage Length
Industrial	0	A.M.	С	20.0 s	0.67 (SBT)	-
Road/Brodie Drive & Burnside Line	Signalized	P.M.	В	19.1 s	0.63 (WBL)	-
Burnside Line & Hwy	Signalized	A.M.	В	14.9 s	0.83 (NBT)	-
11 Westbound	signalizea	P.M.	В	12.5 s	0.72 (NBT)	-
West Street N &	Signalizad	A.M.	С	21.4 s	0.74 (EBL)	-
Hwy 11 Eastbound	Signalized	P.M.	В	18.8 s	0.80 (SBT)	-
Highway 12 &		A.M.	С	26.0 s	0.76 (SBT)	-
Murphy Road/West Ridge Boulevard	Signalized	P.M.	D	43.2 s	0.92 (WBRT)	83 m > 50 m (EBL) 119 m>115 m (WBL)
Murphy Road &	Two-Way Stop	A.M.	Α	0 s	0.0 (NB)	-
Uhthoff Line	(Murphy Road)	P.M.	Α	7.9 s	0.01 (NB)	-
Division Road W &	Two-Way Stop	A.M.	В	11.7 s (SB)	0.04 (SB)	-
Uhthoff Line	(Uhthoff Line)	P.M.	С	15.7 s (SB)	0.04 (SB)	-
Division Road W &	Signalized	A.M.	В	13.1 s	0.72 (NBT)	-
Burnside Line	Signalized	P.M.	В	13.1 s	0.67 (EBT)	-
Industrial Road &	One-Way Stop	A.M.	В	11.6 s	0.06 (SB)	-
Hurlwood Lane	(Hurlwood Ln)	P.M.	В	13.2 s	0.13 (SB)	-
Industrial Road &	One-Way Stop	A.M.	В	12.3 s	0.26 (WB)	-
Uhthoff Line	(Industrial Rd)	P.M.	В	14.6 s	0.37 (WB)	-

Note¹: The Level of Service of a signalized intersection is based on the average control delay per vehicle.

The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach.

Note²: The critical v/c ratio is considered to be the maximum v/c ratio for movements at the intersection. In addition, all v/c ratios greater than 0.85 for movements are outlined and highlighted. Per MTO TIS Guidelines, all ramp movements with v/c ratios greater than 0.75 are outlined and highlighted.

Table 8: 2033 Future Background Levels of Service

Intersection	Control	Peak Hour	Level of Service	Control Delay ¹	Maximum v/c Ratio²	95 TH Percentile Queue > Storage Length
Industrial	C'analinat	A.M.	С	20.5 s	0.69 (SBT)	-
Road/Brodie Drive & Burnside Line	Signalized	P.M.	В	19.6 s	0.64 (WBL)	-
Burnside Line & Hwy	Signalizad	A.M.	В	15.8 s	0.85 (NBT)	-
11 Westbound	Signalized	P.M.	В	12.8 s	0.74 (NBT)	-
West Street N & Hwy	Signalizad	A.M.	С	22.3 s	0.75 (EBL)	-
11 Eastbound	Signalized	P.M.	С	20.0 s	0.82 (SBT)	-
Highway 12 &		A.M.	С	26.6 s	0.78 (SBT)	-
Murphy Road/West Ridge Boulevard	Signalized	P.M.	D	46.3 s	0.96 (WBRT)	92 m > 50 m (EBL) 127 m>115 m (WBL)
Murphy Road &	Two-Way Stop	A.M.	Α	0.0 s	0.0 (NB)	-
Uhthoff Line	(Murphy Road)	P.M.	Α	7.9 s	0.01 (NB)	-
Division Road W &	Two-Way Stop	A.M.	В	11.9 s (SB)	0.06 (NB)	-
Uhthoff Line	(Uhthoff Line)	P.M.	С	16.3 s (SB)	0.23 (NB)	-
Division Road W &	Cianaliza d	A.M.	В	13.8 s	0.74 (NB)	-
Burnside Line	Signalized	P.M.	В	13.5 s	0.68 (EB)	-
Industrial Road &	One-Way Stop	A.M.	В	11.6 s	0.06 (SB)	-
Hurlwood Lane	(Hurlwood Ln)	P.M.	В	13.2 s	0.13 (SB)	-
Industrial Road &	One-Way Stop	A.M.	В	12.4 s	0.26 (WB)	-
Uhthoff Line	(Industrial Rd)	P.M.	В	14.7 s	0.37 (WB)	-

Note¹: The Level of Service of a signalized intersection is based on the average control delay per vehicle.

The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach.

Note²: The critical v/c ratio is considered to be the maximum v/c ratio for movements at the intersection. In addition, all v/c ratios greater than 0.85 for movements are outlined and highlighted. Per MTO TIS Guidelines, all ramp movements with v/c ratios greater than 0.75 are outlined and highlighted.

Table 9: 2035 Future Background Levels of Service

Intersection	Control	Peak Hour	Level of Service	Control Delay ¹	Maximum v/c Ratio²	95 [™] Percentile Queue > Storage Length
Industrial	Ci ava avlina al	A.M.	С	21.1 s	0.71 (SBT)	-
Road/Brodie Drive & Burnside Line	Signalized	P.M.	С	20.2 s	0.66 (WBL)	-
Burnside Line &	Signalized	A.M.	В	16.7 s	0.86 (NBT)	-
Hwy 11 Westbound	signalizea	P.M.	В	13.2 s	0.76 (NBT)	-
West Street N &	Signalized	A.M.	С	23.5 s	0.77 (EBL/NBT)	-
Hwy 11 Eastbound	J	P.M.	С	21.8 s	0.86 (SBT)	-
Highway 12 &		A.M.	С	27.6 s	0.79 (SBT)	-
Murphy Road/West Ridge Boulevard	Signalized	P.M.	D	49.8 s	0.99 (WBTR)	97 m > 50 m (EBL) 140 m>115 m (WBL)
Murphy Road &	Two-Way Stop	A.M.	Α	0.0 s	0.0 (NB)	-
Uhthoff Line	(Murphy Rd)	P.M.	Α	7.9 s	0.01 (NB)	-
Division Road W &	Two-Way Stop	A.M.	В	12.2 s (SB)	0.07 (NB)	-
Uhthoff Line	(Uhthoff Line)	P.M.	С	17.0 s (SB)	0.05 (SB)	-
Division Road W &	Cianaliza d	A.M.	В	14.3 s	0.75 (NB)	-
Burnside Line	Signalized	P.M.	В	14.1 s	0.69 (EB)	-
Industrial Road &	One-Way	A.M.	В	11.6 s	0.06 (SB)	-
Hurlwood Lane	Stop (Hurlwood Ln)	P.M.	В	13.3 s	0.14 (SB)	-
Industrial Road &	One-Way	A.M.	В	12.5 s	0.27 (WB)	-
Uhthoff Line	Stop (Industrial Rd)	P.M.	С	15.0 s	0.38 (WB)	-

Note: The Level of Service of a signalized intersection is based on the average control delay per vehicle.

The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach.

Note²: The critical v/c ratio is considered to be the maximum v/c ratio for movements at the intersection. In addition, all v/c ratios greater than 0.85 for movements are outlined and highlighted. Per MTO TIS Guidelines, all ramp movements with v/c ratios greater than 0.75 are outlined and highlighted.

Table 10: 2040 Future Background Levels of Service

Intersection	Control	Peak Hour	Level of Service	Control Delay ¹	Maximum v/c Ratio ²	95 TH Percentile Queue > Storage Length
Industrial	Ci ava adia a al	A.M.	С	22.9 s	0.78 (SBT)	-
Road/Brodie Drive & Burnside Line	Signalized	P.M.	С	21.7 s	0.72 (WBL)	-
Burnside Line &	Signalized	A.M.	В	19.2 s	0.89 (NBT)	-
Hwy 11 Westbound	signalizea	P.M.	В	14.5 s	0.79 (NBT)	-
West Street N &	Signalized	A.M.	С	27.3 s	0.85 (NBT)	-
Hwy 11 Eastbound	signalizea	P.M.	С	28.9 s	0.96 (SBT)	-
		A.M.	С	29.7 s	0.83 (SBT)	-
Highway 12 & Murphy Road/West Ridge Boulevard	Signalized	P.M.	Е	62.0 s	1.07 (WBTR) 0.87 (EBT) 0.93 (WBL) 0.97 (NBT/SBT)	106 m > 50 m (EBL) 192 m>115 m (WBL)
Murphy Road &	Two-Way Stop	A.M.	А	0.0 s	0.0 (NB)	-
Uhthoff Line	(Murphy Rd)	P.M.	А	8.0 s	0.01 (NB)	-
Division Road W &	Two-Way Stop	A.M.	В	12.6 s (SB)	0.08 (NB)	-
Uhthoff Line	(Uhthoff Line)	P.M.	С	18.8 s (SB)	0.30 (NB)	-
Division Road W &	Signalizad	A.M.	В	16.9 s	0.81 (NB)	-
Burnside Line	Signalized	P.M.	В	16.1 s	0.73 (EB)	-
Industrial Road &	One-Way Stop	A.M.	В	11.7 s	0.07 (SB)	-
Hurlwood Lane	(Hurlwood Ln)	P.M.	В	13.4 s	0.15 (SB)	-
Industrial Road &	One-Way Stop	A.M.	В	12.8 s	0.27 (WB)	-
Uhthoff Line	(Industrial Rd)	P.M.	С	15.5 s	0.39 (WB)	-

Note1:

The Level of Service of a signalized intersection is based on the average control delay per vehicle.

The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road

Note2: The critical v/c ratio is considered to be the maximum v/c ratio for movements at the intersection. In addition, all v/c ratios greater than 0.85 for movements are outlined and highlighted. Per MTO TIS Guidelines, all ramp movements with v/c ratios greater than 0.75 are outlined and highlighted.

Table 11: 2045 Future Background Levels of Service

Intersection	Control	Peak Hour	Level of Service	Control Delay ¹	Maximum v/c Ratio²	95 TH Percentile Queue > Storage Length
Industrial	0: 1: 1	A.M.	С	25.6 s	0.85 (SBT)	-
Road/Brodie Drive & Burnside Line	Signalized	P.M.	С	24.5 s	0.78 (WBL)	-
Burnside Line& Hwy	Cian aliza d	A.M.	С	23.0 s	0.93 (NBT)	-
11 Westbound	Signalized	P.M.	В	16.7 s	0.85 (NBT)	-
West Street N &		A.M.	С	32.0 s	0.91(NBT)	-
Hwy 11 Eastbound	Signalized	P.M.	D	41.3 s	1.08 (SBT) 0.87 (NBT)	62 m > 55 m (NBL)
		A.M.	С	32.9 s	0.88 (SBT)	-
Highway 12 & Murphy Road/West Ridge Boulevard	Signalized	P.M.	F	85.5 s	1.14 (SBT) 0.86 (NBT) 0.96 (EBT) 0.98 (WBL) 1.13 (WBTR) 1.12 (NBT)	119 m > 50 m (EBL) 238 m > 115 m (WBL) 52 m > 50 m (SBR)
	Mitigated	P.M.	D	47.1 s	0.98 (WBTR) 0.97 (NBT) 0.90 (NBL) 0.96 (SBT)	-
Murphy Road &	Two-Way Stop	A.M.	Α	0.0 s	0.0 (NB)	-
Uhthoff Line	(Murphy Rd)	P.M.	Α	8.0 s	0.01 (NB)	-
Division Road W &	Two-Way Stop	A.M.	В	13.3 s (SB)	0.09 (NB)	-
Uhthoff Line	(Uhthoff Line)	P.M.	С	21.5 s (SB)	0.36 (NB)	-
Division Road W &	Signalized	A.M.	С	21.0 s	0.89 (NB)	-
Burnside Line	Signalized	P.M.	В	18.7 s	0.78 (EB)	-
Industrial Road &	One-Way Stop	A.M.	В	11.8 s	0.08 (SB)	-
Hurlwood Lane	(Hurlwood Ln)	P.M.	В	13.6 s	0.17 (SB)	-
Industrial Road &	One-Way Stop	A.M.	В	13.1 s	0.28 (WB)	-
Uhthoff Line	(Industrial Rd)	P.M.	С	16.2 s	0.40 (WB)	-

Note: The Level of Service of a signalized intersection is based on the average control delay per vehicle.

The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road

approach.

Note²: The critical v/c ratio is considered to be the maximum v/c ratio for movements at the intersection. In addition, all v/c ratios greater than 0.85 for movements are outlined and highlighted. Per MTO TIS Guidelines, all ramp movements with v/c ratios greater than 0.75 are outlined and highlighted.

Under the 2045 future background conditions modelled, the study intersections are expected to operate with a LOS 'C' or better, with the exception of Highway 12 and Murphy Road West/West Ridge Blvd as well as West Street N and Highway 11 Eastbound.

The Highway 11 Eastbound ramp at West Steet N is forecasted to operate with a LOS 'D' in the p.m. peak hour with 41.3 s of delay and a maximum v/c ratio of 1.08 for the southbound through volumes. The ramp is anticipated to operate with a v/c ratio of 0.74, just below the MTO's critical capacity threshold of 0.75.

The 95th percentile queue for the northbound left-turn movement is expected to exceed the available storage by approximately one car length in the p.m. peak hour. As the width of the road can accommodate two lanes, queued vehicles are not anticipated to impact through movements.

Line painting adjustments can be made to extend the turn lane, should the forecasted traffic volumes be realized, and 95th percentile queues exceed the available storage. Ongoing monitoring of background growth by the MTO is recommended.

The intersection of Highway 12 and Murphy Road West/West Ridge Blvd is forecast to operate with a LOS 'C' in the a.m. peak hour and a LOS 'F' with a maximum delay of 85.5 s and a maximum v/c ratio of 1.14 (SBT) in the p.m. peak hour. LOS 'F' in the p.m. peak hour with a maximum delay of 85.5 s and a maximum v/c ratio of 1.14 (SBT) in the p.m. peak hour. The 95th percentile queue for the east and westbound left-turn movements at Highway 12 and West Ridge Boulevard/Murphy Road are expected to exceed the provided storage. The 95th percentile queue of the southbound right turn movement exceeds the proposed storage of 50 m but will be contained within the available taper and is not expected to impact the southbound through volumes. These operations are not uncommon for high demand intersections during peak times. The intersection should be continually monitored as development in the area proceeds.

The p.m. peak hour was assessed under mitigated geometric conditions, with dual left-turn lanes on each approach. The mitigation reduces the intersection control delay by approximately 40 s and all 95th percentile queue are forecasted to be contained in the dual turn lane storage.

It is noted that these operations are forecasted for 21 years into the future with sustained growth on the boundary road network. Several assumptions have been made regarding trip generation of the industrial lands. If required, future updates to this report would account for up-to-date information on background developments. As previously noted, ongoing monitoring is recommended as development phases proceed.

These results indicate that the majority of the boundary road network is forecast to continue operating acceptably with reserve capacity for additional traffic volumes, while additional mitigation measure may need to be considered at some intersections. Monitoring will determine if the volume threshold for a poor Level of Service as well as mitigation measures are met in the future.

5.0 Site Generated Traffic

The subject development will result in additional turning movements at the study intersections. Therefore, this section describes the trip forecasting methodology and results of this forecast for the development proposal.

The site generated traffic forecasting methodology for this study consists of two steps. The first step, Trip Generation, projects the number of trips that originate or are destined for the subject development, while the second step, Trip Distribution and Assignment, assigns trips to the study road network based on the expected distribution of trips to catchment areas and expected shortest paths for trips destined for particular locations.

5.1 Trip Generation

The trip generation of the development was forecast using the fitted curve equations provided in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition. Land Use Code (LUC) 210 "Single-Family Detached Housing", LUC 215 "Single-Family Attached Housing" and LUC 220 "Multifamily Housing" were used to forecast trips generated by the subject development.

Table 12 summarizes the trip generation of the subject development. The subject development is forecasted to generate 452 a.m. and 580 p.m. peak hour trips.

Table 12: Trip Generation

Land Use	Peak Hour	Number of Trips			
Lana ose	reak nooi	Inbound	Outbound	Total	
	2031		1		
LUC 210 "Single-Family Detached Housing"	Weekday A.M.	21	64	85	
(115 units)	Weekday P.M.	71	42	113	
LUC 215 "Single-Family Attached Housing"	Weekday A.M.	15	44	59	
(125 units)	Weekday P.M.	42	29	71	
	2033				
LUC 210 "Single-Family Detached Housing"	Weekday A.M.	49	147	196	
(290 units)	Weekday P.M.	170	100	270	
LUC 215 "Single-Family Attached Housing"	Weekday A.M.	39	117	156	
(310 units)	Weekday P.M.	107	75	182	
	2035				
LUC 210 "Single-Family Detached Housing"	Weekday A.M.	49	147	196	
(290 units)	Weekday P.M.	170	100	270	
LUC 215 "Single-Family Attached Housing"	Weekday A.M.	39	117	156	
(310 units)	Weekday P.M.	107	75	182	
LUC 220	Weekday A.M.	24	76	100	
"Multifamily Housing (Low-rise)" (250 units)	Weekday P.M.	81	47	128	
Full Build-Out Total	Weekday A.M.	112	340	452	
Full Build-Out Total	Weekday P.M.	358	222	580	

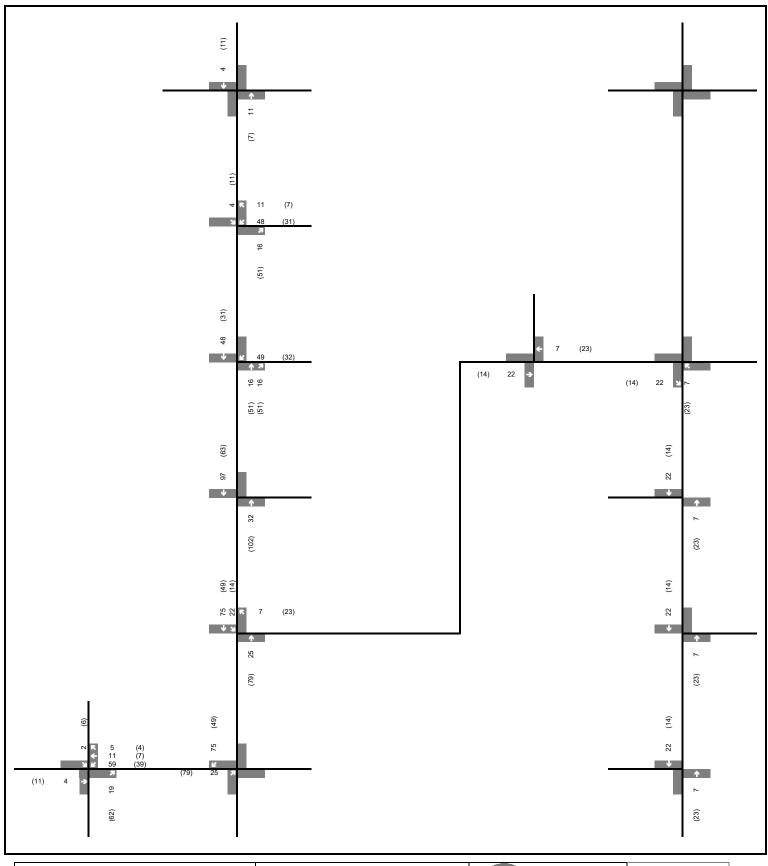
5.2 Trip Distribution & Assignment

The trips generated by the residential and industrial development were distributed to the boundary road network based on Transportation Tomorrow Survey (TTS) data. TTS data from Zone 8657 (Severn) and 8682 (Orillia) was utilized for the residential distribution. At full build-out trips were distributed to the boundary road network as follows:

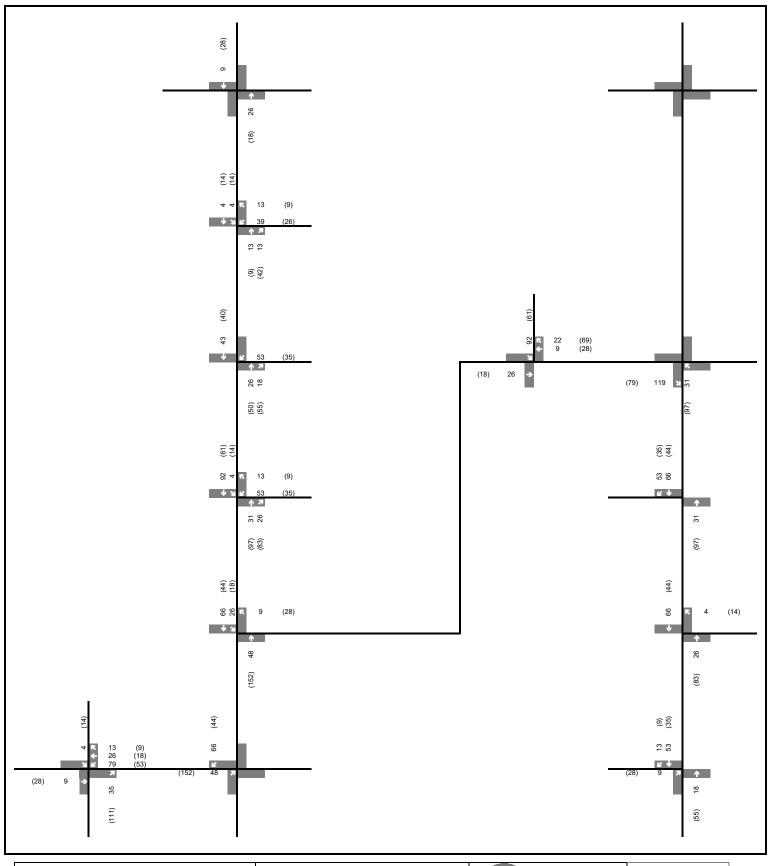
- 10% north on Uhthoff Line
- 20% south on Burnside Line/West Street N
- 5% east on Highway 11
- 50% west on Highway 11
 - o 20% via Highway 12
 - 30% via Burnside Line
- 5% north on Highway 12
- 10% west on West Ridge Boulevard

As build-out occurs and internal connections are made the distribution at the site accesses change. It has been assumed that approximately 10% of new trips will utilize the proposed Industrial Road while the remaining trips to and from the east will utilize the extension to Hurlwood Lane.

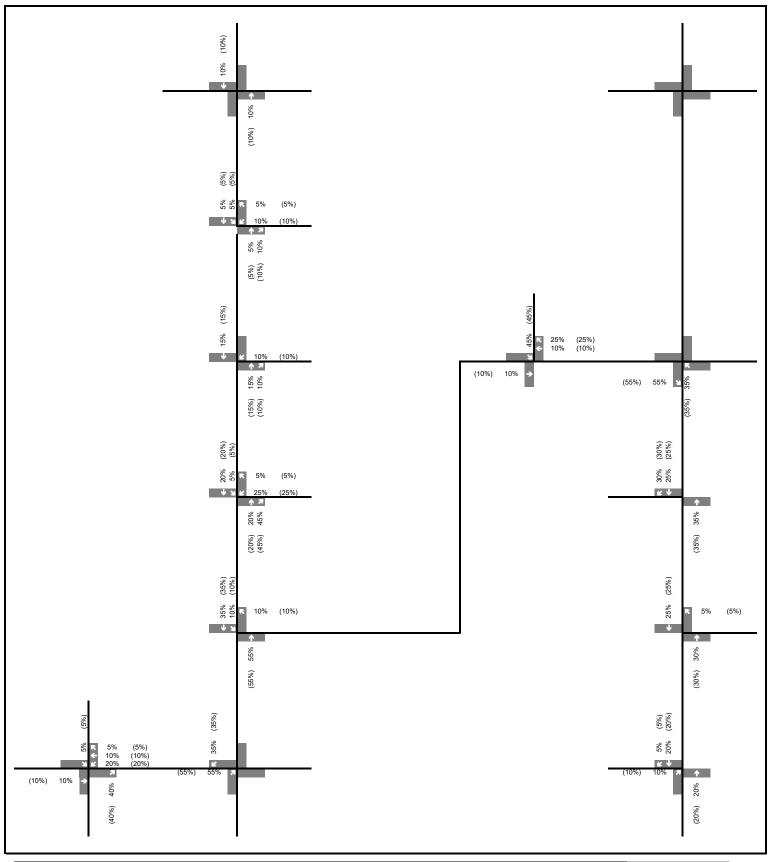
The 2031 and 2033 residential trip assignments are illustrated in **Figure 15** and **Figure 16**, respectively. The full build-out (2035) trip distribution and trip assignment are illustrated in **Figure 17** and **Figure 18**, respectively.



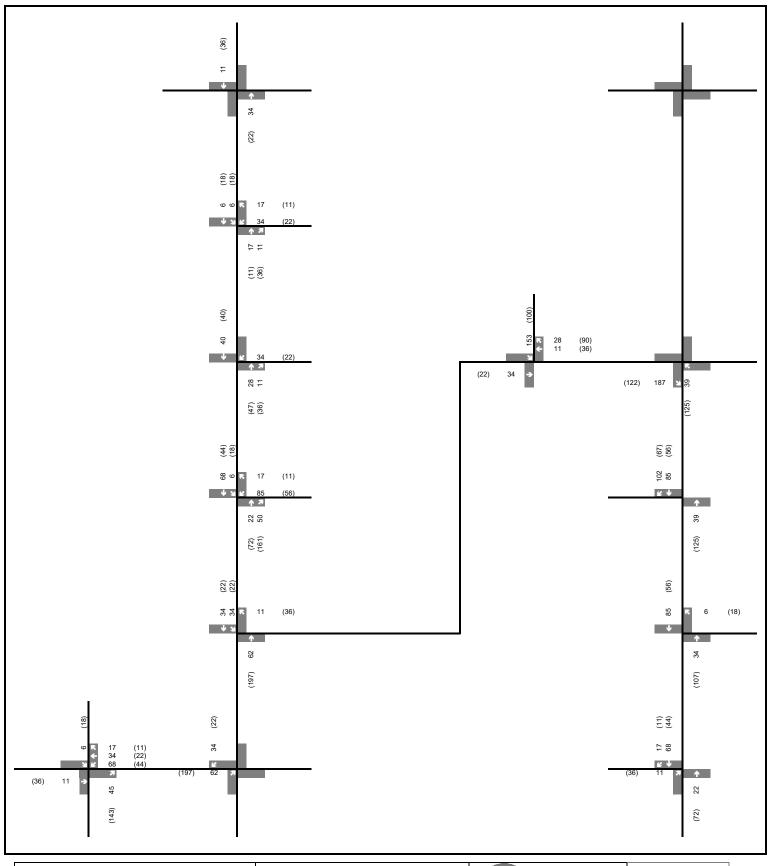
Legend	Hawk Ridge	ODOZUED	Figure 15
xx A.M. Peak Hour Traffic Volumes		CROZIER	Project No. 1935-6133
(xx) P.M. Peak Hour Traffic Volumes	2031 Trip Assignment	CONSULTING ENGINEERS	Date. Thursday July 11, 2024
	ZUST IIIP ASSIGNMENT	COMPONING ENGINEERS	Analyst KH



Legend	Hawk Ridge	ODOZIED	Figure 16
xx A.M. Peak Hour Traffic Volumes		CROZIER	Project No. 1935-6133
(xx) P.M. Peak Hour Traffic Volumes	2033 Trip Assignment	CONSULTING ENGINEERS	Date. Thursday July 11, 2024 Analyst, KH



Legend xx A.M. Peak Hour Traffic Volumes	Hawk Ridge	CROZIER	Figure 17 Project No. 1935-6133	
(xx) P.M. Peak Hour Traffic Volumes	Full Build-Out Trip Distribution	CONSULTING ENGINEERS	Date. Thursday July 11, 2024 Analyst. KH	



Legend	Hawk Ridge	ODOZUED	Figure 18
xx A.M. Peak Hour Traffic Volumes		CROZIER	Project No. 1935-6133
(xx) P.M. Peak Hour Traffic Volumes	2035 Trip Assignment	CONSULTING ENGINEERS	Date. Thursday July 11, 2024 Analyst. KH

6.0 Total Future Conditions

This section will summarize the future total conditions of the study road network. The future total traffic volumes for the horizon years consist of the following components:

- Future background traffic volumes from the corresponding horizon year.
- Forecasted development generated traffic volumes.

The resulting total volumes in the horizon years 2031, 2033, 2035, 2040 and 2045 are presented in Figure 19, Figure 20, Figure 21, Figure 22, and Figure 23, respectively.

6.1 Signal Warrants

Signal warrants were evaluated for the existing unsignalized and proposed intersections. The analysis followed the procedures specified in Chapter 4 of the "Ontario Traffic Manual – Book 12", March 2012. Justification 7 was used to evaluate the peak hour projected volumes. **Table 13** outlines the results of the signal warrants.

Percent Justified Signal Intersection Justification 2 Warranted? Justification 1 Uhthoff Line & Division Road 52% 41% No Uhthoff Line & Industrial Road 48% 40% No Uhthoff Line & Murphy Road 58% 24% No Hurlwood Lane & Industrial Road 36% 29% No

Table 13: Signal Warrant Justification

Signal warrants results indicate that signals are not warranted at the study intersections. **Appendix L** contains the signal warrants for reference.

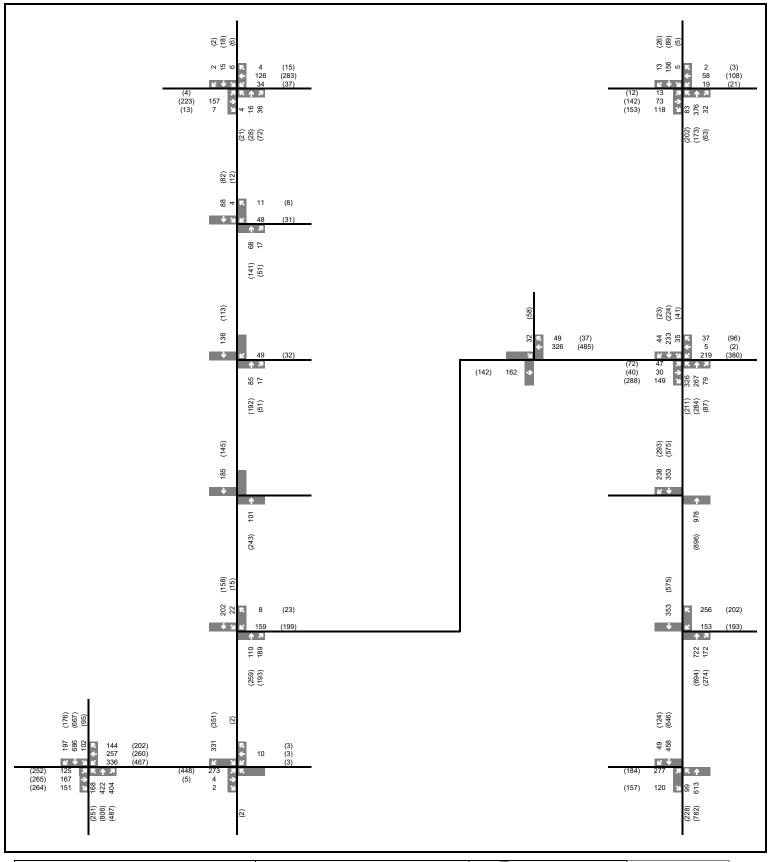
6.2 Auxiliary Turn Lane Warrants

An auxiliary left-turn lane analysis was undertaken based on the volumes forecasted for the proposed site accesses and Industrial Road connection to Uhthoff Line. The warrant charts included in the MTO Design Supplement for Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (GDGCR) were used to determine if auxiliary lanes were required. **Table 14** outlines the signal warrant results. **Appendix M** includes the warrant analysis.

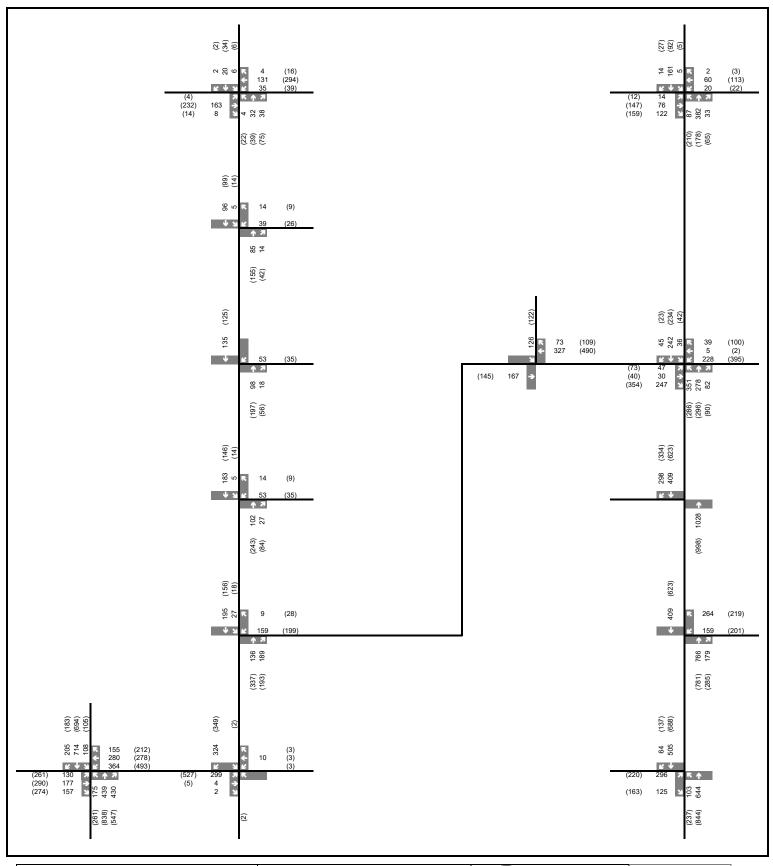
Intersection	Design Speed	Peak Hour	Percentage of Left Turns	Volume Advancing	Volume Opposing	Turn Lane Justified
Uhthoff Line & North	70 km /h	AM	5%	128	119	No
Site Access 1	70 km/h	PM	13%	144	233	No
Uhthoff Line &	70 km /h	AM	0%	156	131	No
North Site Access 2	70 km/h	PM	0%	148	268	No
Uhthoff Line &	70 km /h	AM	3%	190	164	No
South Site Access	70 km/h	PM	11%	170	419	No
Uhthoff Line &	70 km /h	AM	15%	222	357	No
Industrial Road	70 km/h	PM	13%	180	613	No

Table 14: Auxiliary Lane Warrants

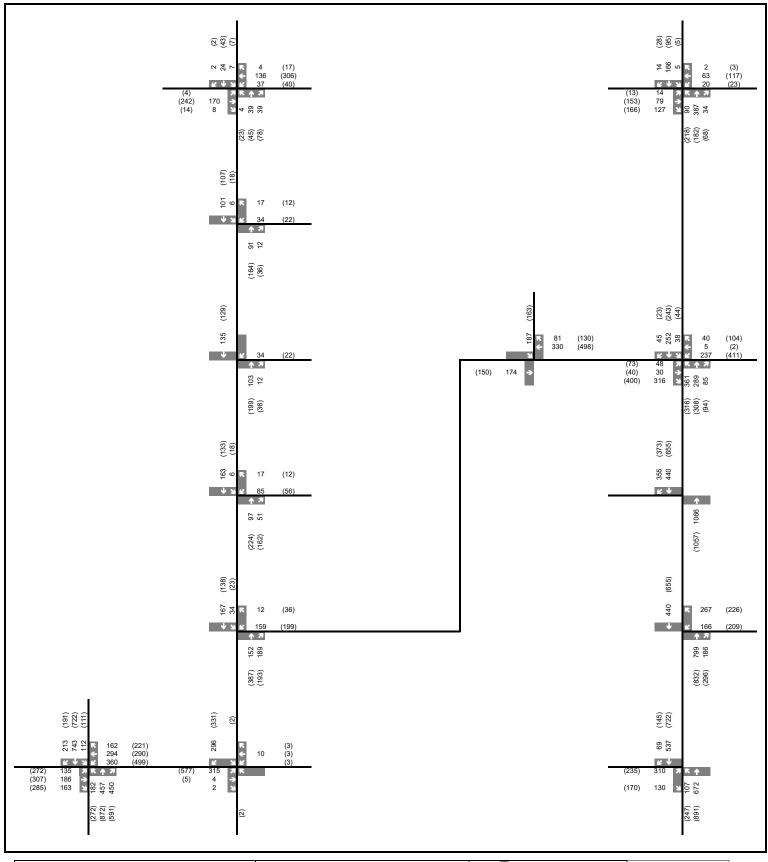
As noted under background improvements, a northbound right-turn taper should be considered for the intersection of Uhthoff Line and Industrial Road given the increase in northbound through trips generated by proposed development.

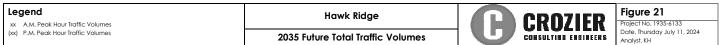


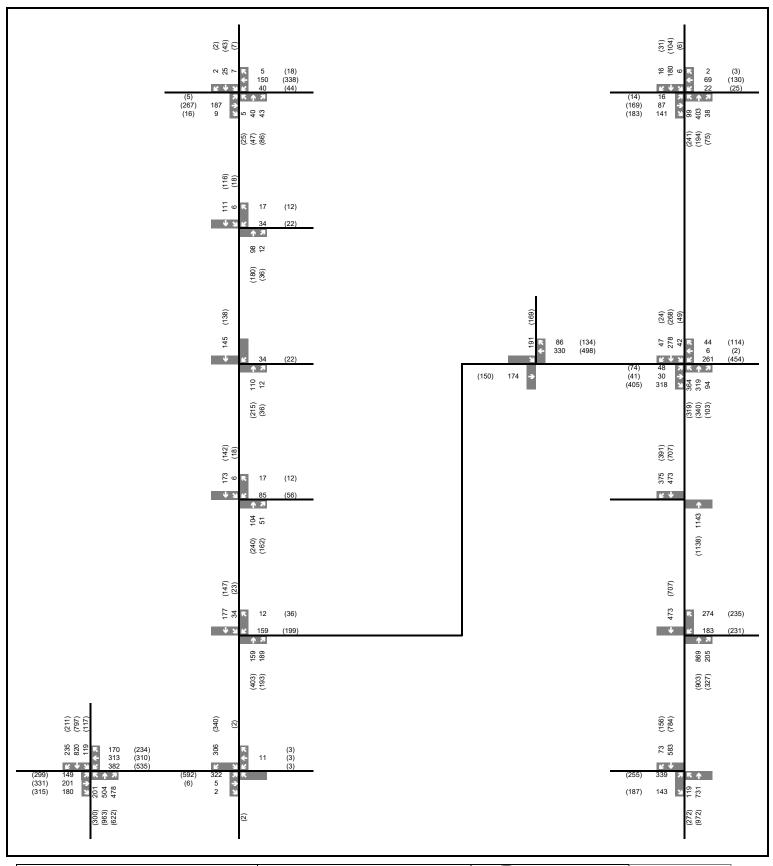
Legend	Hawk Ridge	ODOZIED	Figure 19
xx A.M. Peak Hour Traffic Volumes	· ·	CROZIER	Project No. 1935-6133
(xx) P.M. Peak Hour Traffic Volumes	2031 Future Total Traffic Volumes	CONSULTING ENGINEERS	Date. Thursday July 11, 2024 Analyst, KH



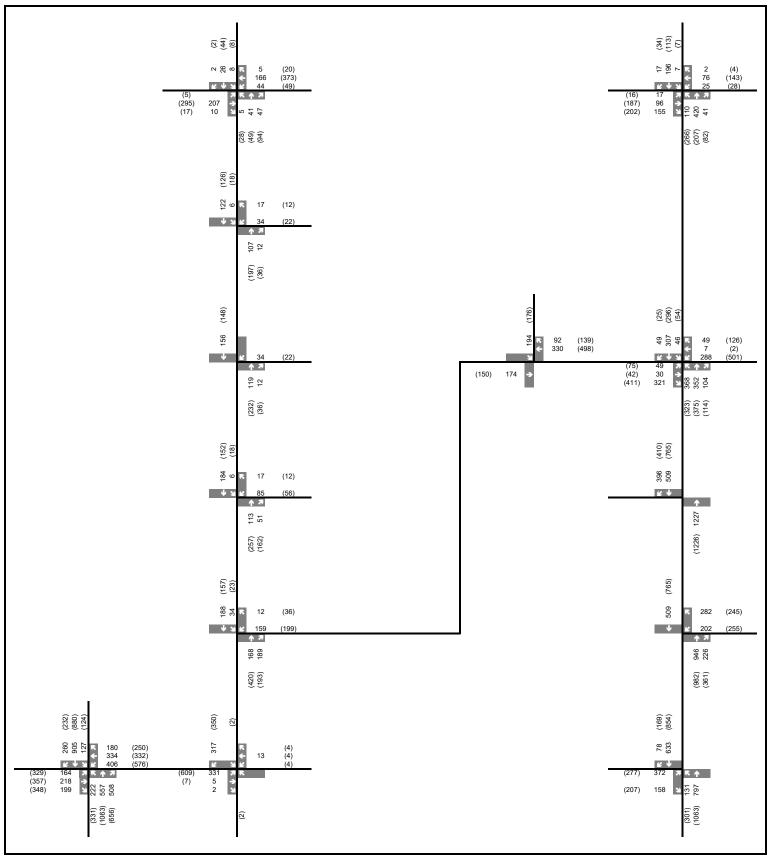
Legend xx A.M. Peak Hour Traffic Volumes	Hawk Ridge	CROZIER	Figure 20 Project No. 1935-6133
(xx) P.M. Peak Hour Traffic Volumes	2033 Future Total Traffic Volumes	COMSULTING ENGINEERS	Date. Thursday July 11, 2024 Analyst. KH







Legend xx A.M. Peak Hour Traffic Volumes	Hawk Ridge	CROZIER	Figure 22 Project No. 1935-6133
(xx) P.M. Peak Hour Traffic Volumes	2040 Future Total Traffic Volumes	CONSULTING ENGINEERS	Date. Thursday July 11, 2024 Analyst. KH



Legend	Hawk Ridge	ODOZIED	Figure 23
xx A.M. Peak Hour Traffic Volumes	· ·	CROZIER	Project No. 1935-6133
(xx) P.M. Peak Hour Traffic Volumes	2045 Future Total Traffic Volumes	CONSULTING ENGINEERS	Date. Thursday July 11, 2024 Analyst, KH

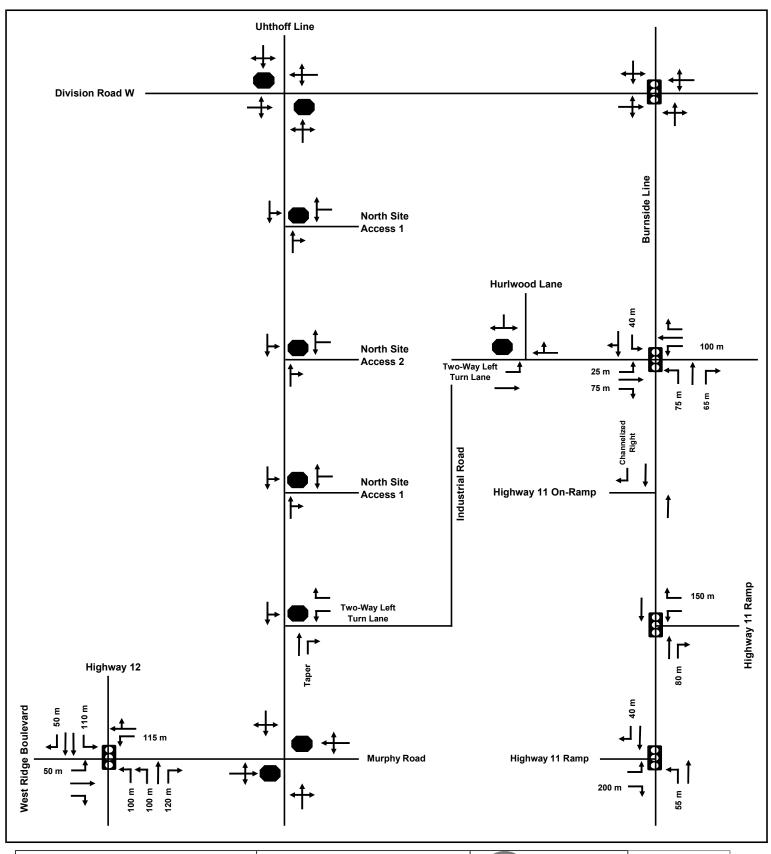
6.3 Intersection Modelling

The 2031, 2033, 3035, 2040 and 2045 future total volumes are illustrated in **Figure 19**, **Figure 20**, **Figure 21**, **Figure 22**, and **Figure 23**, respectively. These volumes were analysed in Synchro 11 with the updated roadway geometry. Signal timing optimization was undertaken under the 2045 future total conditions and carried back through the horizon years.

Table 15 summarizes the road improvements and optimizations, in addition to the future background improvements identified, required to support the subject development.

Table 15: Recommended Future Total Improvements to Boundary Road Network

Location	Improvement	Intention	Responsibility
Industrial Road/Brodie Drive & Burnside Line	Independent optimization of signal timing splits in the a.m. and p.m. peak hour.	In support of Future Operations	Severn Township
West Street N & Hwy 11 Eastbound	 No improvements in the a.m. peak hour Signal optimization at a 95 s cycle length in the p.m. peak hour. 	In support of Future Operations	МТО
Murphy Road/West Ridge Boulevard & Highway 12	 Signal timing optimization at a cycle length of 130 s in the p.m. peak hour. Duplication of the south, east and westbound left-turn lane at a cycle length of 120 s (reviewed as a mitigation only) 	In support of Future Operations	МТО





6.4 Intersection Operations

Table 16, Table 17, Table 18, Table 19, and **Table 20** outline the future total traffic operations for the 2031, 2033, 2035, 2040 and 2045 horizon years, respectively. **Appendix E** contains Level of Service definitions, and **Appendix F** contains detailed capacity analysis worksheets.

Table 16: 2031 Future Total Levels of Service

Intersection	Control	Peak Hour	Level of Service	Control Delay ¹	Maximum v/c Ratio ²	95 TH Percentile Queue > Storage Length
Industrial	0: 1: 1	A.M.	В	19.5 s	0.66 (SBTR)	-
Road/Brodie Drive & Burnside Line	Signalized	P.M.	В	19.2 s	0.70 (WBL)	-
Burnside Line& Hwy	ام مانح ما	A.M.	В	15.1 s	0.83 (NBT)	-
11 Westbound	Signalized	P.M.	В	12.7 s	0.74 (NBT)	-
West Street N & Hwy	Signalized	A.M.	С	21.9 s	0.74 (EBL)	-
11 Eastbound	signalizea	P.M.	В	19.7 s	0.84 (SBT)	-
Murphy Road/West		A.M.	С	26.4 s	0.76 (SBT)	-
Ridge Boulevard & Highway 12	Signalized	P.M.	D	41.8 s	0.90 (WBTR) 0.87 (WBL)	71 m>50 m (EBL) 135 m > 115 m (WBL)
Murphy Road &	Two-Way Stop	A.M.	Α	0.0 s	0.0 (NB)	-
Uhthoff Line	(Murphy Road)	P.M.	Α	8.1s	0.01 (NB)	-
Division Road W &	Two-Way Stop (Uhthoff Line)	A.M.	В	11.9 s (SB)	0.08 (NB)	-
Uhthoff Line		P.M.	С	16.3 s (SB)	0.24 (NB)	-
Division Road W &	Signalized	A.M.	В	13.1 s	0.72 (NB)	-
Burnside Line	signalizea	P.M.	В	13.1 s	0.67 (EB)	-
Industrial Road &	One-Way Stop	A.M.	В	11.8 s	0.06 (SB)	-
Hurlwood Lane	(Hurlwood Lane)	P.M.	В	13.5 s	0.13 (SB)	-
Industrial Road &	One-Way Stop	A.M.	С	15.2 s	0.34 (NB)	-
Uhthoff Line	(Industrial Road)	P.M.	С	19.5 s	0.47 (NB)	-
Uhthoff Line & North	One-Way Stop	A.M.	Α	9.7 s	0.08 (NB)	-
1 Site Access	(Site Access)	P.M.	В	10.3 s	0.06 (NB)	-
Uhthoff Line & North	One-Way Stop	A.M.	В	10.2 s	0.07 (NB)	-
2 Site Access	(Site Access)	P.M.	В	11.0 s	0.05 (NB)	-
Uhthoff Line & South	One-Way Stop	A.M.	Α	0.0 s	0.0 (SB)	-
Site Access	(Site Access)	P.M.	Α	0.0 s	0.0 (SB)	-

Note¹: The Level of Service of a signalized intersection is based on the average control delay per vehicle.

The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach.

Table 17: 2033 Future Total Levels of Service

Intersection	Control	Peak Hour	Level of Service	Control Delay ¹	Maximum v/c Ratio ²	95 TH Percentile Queue > Storage Length
Industrial	0	A.M.	С	20.3 s	0.70 (NBL)	-
Road/Brodie Drive & Burnside Line	Signalized	P.M.	С	20.0 s	0.72 (WBL)	-
Burnside Line& Hwy	Signalized	A.M.	В	16.6 s	0.86 (NBT)	-
11 Westbound	Signalized	P.M.	В	13.7 s	0.78 (NBT)	-
West Street N & Hwy	Signalized	A.M.	С	23.9 s	0.76 (EBL/NBT)	-
11 Eastbound	_	P.M.	С	22.7 s	0.87 (SBT)	-
		A.M.	С	28.0 s	0.79 (WBTR)	-
Murphy Road/West Ridge Boulevard & Highway 12	Signalized	P.M.	D	47.2 s	0.94 (WBTR) 0.86 (EBT) 0.93 (WBL) 0.87 (NBT/SBT)	85 m > 50 m (EBL) 174 m > 115 m (WBL)
Murphy Road &	Two-Way Stop	A.M.	Α	0.0 s	0.0 (NB)	-
Uhthoff Line	(Murphy Road)	P.M.	Α	8.1 s	0.01 (NB)	-
Division Road W &	Two-Way Stop	A.M.	В	12.2 s (SB)	0.12 (NB)	-
Uhthoff Line	(Uhthoff Line)	P.M.	С	17.5 s (SB)	0.29 (NB)	-
Division Road W &	Signalized	A.M.	В	13.8 s	0.74 (NB)	-
Burnside Line		P.M.	В	13.5 s	0.68 (EB)	-
Industrial Road &	One-Way Stop	A.M.	В	13.6 s	0.25 (SB)	-
Hurlwood Lane	(Hurlwood Lane)	P.M.	С	15.9 s	0.29 (SB)	-
Industrial Road &	One-Way Stop	A.M.	С	15.9 s	0.34 (NB)	-
Uhthoff Line	(Industrial Road)	P.M.	С	23.4 s	0.53 (NB)	-
Uhthoff Line & North	One-Way Stop	A.M.	Α	9.8 s	0.07 (NB)	-
1 Site Access	(Site Access)	P.M.	В	10.5 s	0.06 (NB)	-
Uhthoff Line & North	One-Way Stop	A.M.	В	10.4 s	0.08 (NB)	-
2 Site Access	(Site Access)	P.M.	В	11.2 s	0.06 (NB)	-
Uhthoff Line & South	One-Way Stop	A.M.	В	10.7 s	0.10 (NB)	-
Site Access	(Site Access)	P.M.	В	12.1 s	0.09 (NB)	-

Note: The Level of Service of a signalized intersection is based on the average control delay per vehicle.

The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach.

Table 18: 2035 Future Total Levels of Service

Intersection	Control	Peak Hour	Level of Service	Control Delay ¹	Maximum v/c Ratio²	95 TH Percentile Queue > Storage Length
Industrial		A.M.	С	20.6 s	0.73 (NBL)	-
Road/Brodie Drive & Burnside Line	Signalized	P.M.	С	21.2 s	0.75 (WBL)	-
Burnside Line& Hwy	Signalized	A.M.	В	17.5 s	0.87 (NBT)	-
11 Westbound	Signalizea	P.M.	В	14.9 s	0.82 (NBT)	-
West Street N & Hwy	Signalized	A.M.	С	25.6 s	0.79 (EBL/NBT)	-
11 Eastbound		P.M.	С	24.8 s	0.88 (SBT)	-
		A.M.	С	29.0 s	0.82 (WBTR)	
Murphy Road/West Ridge Boulevard & Highway 12	Signalized	P.M.	D	51.7 s	0.97 (WBTR) 0.85 (EBL) 0.91 (EBT) 0.95 (WBL) 0.91 (NBT) 0.90 (SBT)	99 m > 50 m (EBL) 189 m > 115 m (WBL)
Murphy Road &	Two-Way Stop	A.M.	Α	0.0 s	0.0 (NB)	-
Uhthoff Line	(Murphy Road)	P.M.	Α	8.0 s	0.01 (NB)	-
Division Road W &	Two-Way Stop	A.M.	В	12.6 s (SB)	0.07 (SB)	-
Uhthoff Line	(Uhthoff Line)	P.M.	С	18.7 s (SB)	0.18 (SB)	-
Division Road W &	Signalized	A.M.	В	14.3 s	0.75 (NB)	-
Burnside Line		P.M.	В	14.1 s	0.69 (EB)	-
Industrial Road &	One-Way Stop	A.M.	С	15.4 s	0.37 (SB)	-
Hurlwood Lane	(Hurlwood Lane)	P.M.	С	18.0 s	0.39 (SB)	-
Industrial Road &	One-Way Stop	A.M.	С	16.1 s	0.35 (NB)	-
Uhthoff Line	(Industrial Road)	P.M.	D	28.7 s	0.64 (NB)	-
Uhthoff Line & North	One-Way Stop	A.M.	Α	9.8 s	0.07 (NB)	-
1 Site Access	(Site Access)	P.M.	В	10.5 s	0.05 (NB)	-
Uhthoff Line & North	One-Way Stop	A.M.	В	10.2 s	0.05 (NB)	-
2 Site Access	(Site Access)	P.M.	В	10.5 s	0.05 (NB)	-
Uhthoff Line & South	One-Way Stop	A.M.	В	11.1 s	0.16 (NB)	-
Site Access	(Site Access)	P.M.	В	12.8 s	0.14 (NB)	-

Note: The Level of Service of a signalized intersection is based on the average control delay per vehicle.

The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach.

Table 19: 2040 Future Total Levels of Service

Intersection	Control	Peak Hour	Level of Service	Control Delay ¹	Maximum v/c Ratio²	95 TH Percentile Queue > Storage Length
Industrial		A.M.	С	22.3 s	0.76 (NBL/SBTR)	-
Road/Brodie Drive & Burnside Line	Signalized	P.M.	С	24.0 s	0.82 (WBL)	119 m >100 m (WBL)
Burnside Line& Hwy	Signalized	A.M.	С	20.3 s	0.91 (NBT)	-
11 Westbound	Signalized	P.M.	В	17.0 s	0.86 (NBT)	-
West Street N & Hwy		A.M.	С	29.9 s	0.86 (NBT)	-
11 Eastbound	Signalized	P.M.	С	31.9 s	0.97 (SBT)	57 m > 55 m (NBL)
		A.M.	С	31.6 s	0.86 (WBTR)	-
Murphy Road/West Ridge Boulevard & Highway 12	Signalized	P.M.	E	64.6 s	1.05 (WBTR) 0.91 (EBL) 1.00 (EBT) 1.02 (WBL) 0.86 (NBL) 0.99 (NBT/SBT)	118 m > 50 m (EBL) 218 m > 115 m (WBL)
Murphy Road &	Two-Way Stop	A.M.	Α	0.0 s	0.0 (NB)	-
Uhthoff Line	(Murphy Road)	P.M.	Α	8.0 s	0.01 (NB)	-
Division Road W &	Two-Way Stop (Uhthoff Line)	A.M.	В	13.1 s (SB)	0.16 (NB)	-
Uhthoff Line		P.M.	С	20.9 s (SB)	0.39 (NB)	-
Division Road W &	Signalized	A.M.	В	16.9 s	0.81 (NB)	-
Burnside Line	Signalized	P.M.	В	16.1 s	0.73 (EB)	-
Industrial Road &	One-Way Stop	A.M.	С	15.5 s	0.38 (SB)	-
Hurlwood Lane	(Hurlwood Lane)	P.M.	С	18.3 s	0.41 (SB)	-
Industrial Road &	One-Way Stop	A.M.	С	16.5 s	0.36 (NB)	-
Uhthoff Line	(Industrial Road)	P.M.	D	28.1 s	0.59 (NB)	-
Uhthoff Line & North	One-Way Stop	A.M.	Α	9.9 s	0.07 (NB)	-
1 Site Access	(Site Access)	P.M.	В	10.7 s	0.06 (NB)	-
Uhthoff Line & North	One-Way Stop	A.M.	В	10.4 s	0.05 (NB)	-
2 Site Access	(Site Access)	P.M.	В	11.2 s	0.04 (NB)	-
Uhthoff Line & South	One-Way Stop	A.M.	В	11.3 s	0.16 (NB)	-
Site Access	(Site Access)	P.M.	В	13.1 s	0.14 (NB)	-

Note: The Level of Service of a signalized intersection is based on the average control delay per vehicle.

The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach.

Table 20: 2045 Future Total Levels of Service

Intersection	Control	Peak Hour	Level of Service	Control Delay ¹	Maximum v/c Ratio²	95 TH Percentile Queue > Storage Length
Industrial Road/Brodie Drive	Signalized	A.M.	С	24.8 s	0.82 (NBL/SBTR)	-
& Burnside Line)	P.M.	С	28.8 s	0.91 (WBL)	155 m>100 m (WBL)
Burnside Line& Hwy	Cian aliza d	A.M.	С	24.3 s	0.95 (NBT)	-
11 Westbound	Signalized	P.M.	В	19.4 s	0.89 (NBT)	-
West Street N & Hwy	Signalized	A.M.	D	36.9 s	0.93 (SBT) 0.89 (EBL) 0.91 (NBT)	-
TT Editional		P.M.	D	44.4 s	1.08 (SBT) 0.91 (NBT)	67 m > 55 m (NBL)
		A.M.	D	35.9 s	0.91 (WBTR) 0.86 (NBL) 0.89 (SBT)	-
Murphy Road/West Ridge Boulevard & Highway 12	Signalized	P.M.	F	84.6 s	1.14 (WBTR) 0.96 (EBL) 1.08 (EBT) 1.10 (WBL) 0.93 (NBL) 1.09 (NBT) 1.10 (SBT)	139 m > 50 m (EBL) 244 m > 115 m (WBL)
	EB/WB Dual Turn Lane Mitigation	P.M.	D	52.6 s	0.99 (WBTR) 0.97 (EBL) 0.87 (NBL) 0.98 (NBT) 0.92 (NBR) 0.97 (SBT)	176 m > 120 m (NBR)
Murphy Road &	Two-Way Stop	A.M.	Α	0.0 s	0.0 (NB)	-
Uhthoff Line	(Murphy Road)	P.M.	Α	8.1 s	0.01 (NB)	-
Division Road W &	Two-Way Stop	A.M.	В	13.9 s (SB)	0.17 (NB)	-
Uhthoff Line	(Uhthoff Line)	P.M.	С	24.2 s (SB)	0.47 (NB)	-
Division Road W &	Signalized	A.M.	С	21.0 s	0.89 (NB)	-
Burnside Line	signalizea	P.M.	В	18.7 s	0.78 (EB)	-
Industrial Road &	One-Way Stop	A.M.	С	15.7 s	0.39 (SB)	-
Hurlwood Lane	(Hurlwood Lane)	P.M.	С	18.8 s	0.43 (SB)	-
Industrial Road &	One-Way Stop	A.M.	С	17.1 s	0.37 (NB)	-
Uhthoff Line	(Industrial Road)	P.M.	D	30.4 s	0.62 (NB)	-
Uhthoff Line & North	One-Way Stop	A.M.	В	10.0 s	0.07 (NB)	-
1 Site Access	(Site Access)	P.M.	В	10.9 s	0.06 (NB)	-
Uhthoff Line & North	One-Way Stop	A.M.	В	10.5 s	0.05 (NB)	-
2 Site Access	(Site Access)	P.M.	В	11.5 s	0.04 (NB)	-
Uhthoff Line & South	One-Way Stop	A.M.	В	11.5 s	0.17 (NB)	-
Site Access	(Site Access)	P.M.	C C	24.8 s	0.82 (NBL/SBTR)	-

Note: The Level of Service of a signalized intersection is based on the average control delay per vehicle.

The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach. The critical v/c ratio is considered to be the maximum v/c ratio for movements at the intersection. In addition, all v/c ratios greater than 0.85 for movements are outlined and highlighted. The critical v/c ratio is considered to be the maximum v/c ratio for

than 0.85 for movements are outlined and highlighted. The critical v/c ratio is considered to be the maximum v/c ratio for movements at the intersection. In addition, all v/c ratios greater than 0.85 for movements are outlined and highlighted. Per MTO TIS Guidelines, all ramp movements with v/c ratios greater than 0.75 are outlined and highlighted.

Note2:

Under the 2045 future total conditions modelled, the study intersections are forecast to continue operating with a LOS 'C' or better, with the exception of Highway 12 and Murphy Road West/West Ridge Blvd as West Street N and Highway 11 Eastbound.

The intersection of West Ridge Boulevard/Murphy Road and Highway 12 is expected to operate with a maximum control delay of 84.6 m and maximum volume-to-capacity ratio of 1.14 (WBTR) in the p.m. peak hour. The 95th percentile queue for the eastbound and westbound left-turn movements at the intersection is expected to exceed the available storage in the p.m. peak hour.

In comparison to the future background operations the intersection control delay is forecasted to be reduced by 0.9 sections while the maximum volume-to-capacity ration remains at 1.14. The movement experiencing the critical capacity changes however, with the southbound through movement v/c ratio reduced by 0.04 while the westbound through-right movement's v/c ratio increases by 0.01 with optimization of the signal timing splits.

The p.m. peak hour was assessed under mitigated geometric conditions, with dual left-turn lanes on each approach. The mitigation reduces the intersection control delay by approximately 30 s and the left-turn movements are contained in the dual storage lanes. The optimization does impact the northbound right turn queuing. It is noted that the feasibility of duality or extension of the eastbound and westbound left-turn lanes will need to be reviewed within the available spacing and right-of-way. The available spacing may restrict the use of this mitigation measure.

While it is acknowledged that the intersection is forecast to operate over capacity, these operations are not uncommon for high demand intersections during peak times. Operations are forecasted for 21 years into the future with sustained growth on the boundary road network and assumptions regarding lot coverage and land use applied. The intersection should be continually monitored as development in the area proceeds to determine if poor operations are achieved and mitigations are required.

The Highway 11 Eastbound ramp to West Street N is forecasted to operate with a Level of Service D in the a.m. and p.m. peak hours. In the a.m. peak hour, the eastbound left turn movement is anticipated to exceed the MTO's critical capacity ration of 0.75, however the volume-to-capacity ratio is forecast to be less than 0.9 and 95th percentile queues are not anticipated to impact the function of the highway off-ramp. In the p.m. peak hour, the 95th percentile northbound left-turn movement if forecasted to exceed the available storage by approximately 2 vehicles. This is an increase in 5 m from the future background condition. As previously noted, line painting adjustments could be made should the forecasted traffic volumes be realized, and 95th percentile queues exceed the available storage. As development volumes are not forecasted to contribute to the northbound left movement, ongoing monitoring of network growth by the MTO is recommended.

The intersection of Industrial Road/Brodie Drive and Burnside Line is expected to operate with a Level of Service 'C' and acceptable delays. In the p.m. peak hour, the westbound left movement is forecasted to operate with a critical capacity (0.91) and 95th percentile volumes exceeding the proposed storage length. The westbound left turn movement, however, does not grow from future background conditions. The forecasted eastbound, northbound left and southbound right-turn volumes increase with the inclusion of the Hawk Ridge development, resulting in less time for westbound left turn movements to proceed.

As the intersection is forecast to receive a high number of volumes from the industrial lands, the intersection should continue to be reviewed under applications by the background developments as Site Plans are established. The Industrial lands are currently assessed under general industrial with the maximum lot coverage, which may not be achieved. If required, future updates to this report would account for up-to-date information on background developments

It is noted that the intersection of Murphy Road and Uhthoff Line presents a difference in results when modelled as HCM2000 and HCM2010, with the prior noting a 52 s delay for the eastbound movements. A reorientation of the stop signs to have the east and west legs as free flowing would improve the delay for the increased eastbound left-turn movement, however this would increase the delay for the northbound approach. Given it is a cul-de-sac with low volumes, there may be a desire to prioritize the higher volume of left turns. It is recommended that the intersection be monitored as phases are constructed to determine if a level of service or delay warranting the reorientation of the intersection is reached.

These results indicate that most of the study intersections are forecast to continue operating acceptably with the addition of site generated traffic. The background developments and the proposed development will be constructed in phases; therefore the study intersections should continue to be monitored as Draft Plans and Site Plans are finalized. As noted previously, this is a high level study, comparable to a Secondary Plan level assessment and can continue to be refined as development is built-out and phases progressed. Monitoring will determine if the volume threshold for a poor Level of Service as well as mitigation measures are met in the future.

7.0 Proposed Road Network

The subject development is divided into two separate areas with independent connections to Uhthoff Line. The road network meanders through the residential area, a common layout for golf course communities. The curvature of the roadways is intended to encourage slower speeds and navigate natural heritage areas. It is recommended that a posted speed limit of 40 km/h be implemented on all internal roadways.

7.1 Evaluation of Alternatives

For the creation of the Concept Draft Plan, several alternatives were considered and evaluated to determine the optimal location for the road network connections and natural heritage crossings. **Figure 25** illustrates the alternatives reviewed.

7.1.1. Alternative 1 – No Crossing of Silver Creek

This option does not allow for connectivity of roads within the subject development and has been eliminated from further analysis.

7.1.2. Alternative 2 – Silver Creek Crossing (North-South)

This option considers providing two access connections to Uhthoff Line within the north parcel. Hurlwood Lane would continue through the south parcel to the northwest, connecting the two parcels by crossing Silver Creek.

Under this configuration the Golf Villas along Uhthoff Line would have their own independent access, separate from the south parcel. This road network layout would send volumes to and from the south parcel along Hurlwood Lane and up into the north parcel, increasing the overall volume at its proposed accesses. Along Uhthoff Line there is adequate spacing and sight distance available for three connections as outlined in **Section 7.2** and **Section 7.3**.

This road network layout would require a non-perpendicular crossing of the widest natural heritage area resulting in more environmental constraints. According to Azimuth Environmental Consulting Inc., the crossing would require two segments, Silver Creek and a tributary, as well as the removal of significantly more vegetation and the infill of an offline pod that contains turtles and amphibians.

Based on the impact to the natural heritage system and indirect layout for access to the external road network system this alternative was eliminated.

7.1.3. Alternative 3 – Silver Creek Crossing (East-West)

This option considers providing two access connections to Uhthoff Line within the north parcel. Hurlwood Lane would continue through the south parcel and the Golf Villas, connecting directly to Uhthoff Line. This road layout does not connect the north and south parcels, however both parcels will have two independent accesses.

The south parcel and the Golf Villas are connected by a perpendicular narrow natural heritage crossing of Silver Creek. According to Azimuth Environmental Consulting Inc., the east-west crossing location is preferred as the natural vegetation has already been removed due to the existing golf course landscaping.

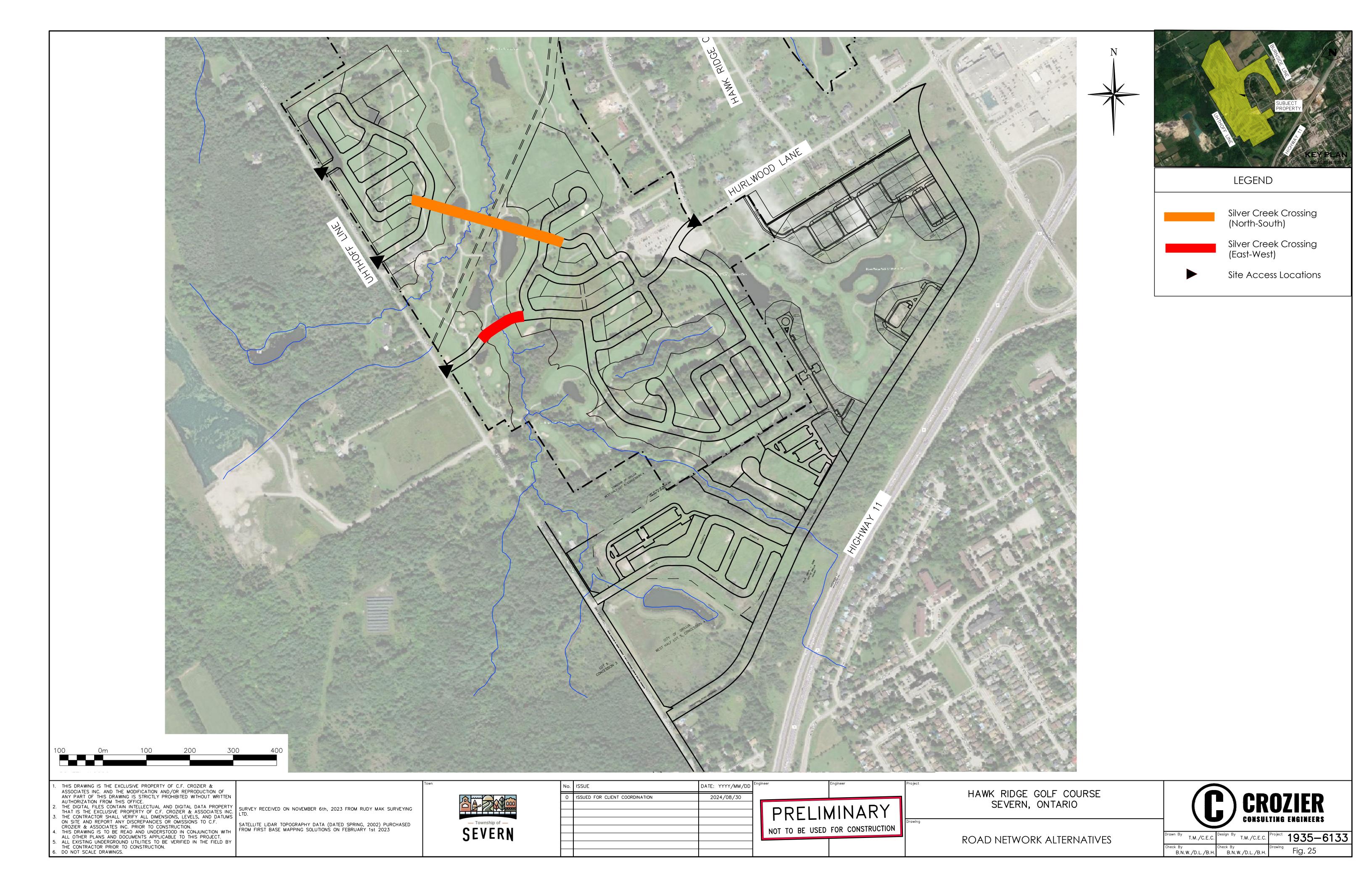
Based on the crossing location, number of access points and direct connections between Hurlwood Lane and Uhthoff Line this alternative was selected and carried forward. The Concept Draft Plan (**Figure 2**) illustrates the preferred orientation selected.

7.1.4. Ranking Alternatives

As part of the evaluation a rating out of five was given to each alternative for a variety of criteria. **Table 21** outlines the rankings and summarizes the final score for each alternative.

Criteria Alternative 1 Alternative 3 Alternative 4 Supports 0/5 4/5 Development Access not Adequate Access Adequate Direct Access Supported Provided Access Provided 5/5 5/5 0/5 Supports Function Roadway Function Function not Roadway Function of Roadways Supported Supported Supported 1/5 4/5 5/5 Large Impact on Natural Limited Impact on Existing **Ecological Impacts** No Further Impacts Vegetation and Animal Vegetation Habitat 1/5 3/5 Construction 5/5 Two Segment, Wide, Single Segment, Narrow, **Impact** No Crossing Required Angled, Natural Heritage Perpendicular Natural Crossing Required Heritage Crossing Required 10/20 10/20 16/20 Score

Table 21: Evaluation of Alternatives



7.2 Intersection Spacing

An assessment of the proposed site access spacing along Uhthoff Line was undertaken. TAC GDGCR recommends an access spacing of 40 m along local roads and 60 m along collector roadways. **Table 22** outlines the approximate centerline spacing between accesses to Uhthoff Line.

Table 22: Access Spacing Assessment

Intersection	Spacing (North)	Spacing (South)
North Site Access 1	1,400 m	215 m
North Site Access 2	215 m	280 m
South Site Access	280 m	615 m

The access spacing assessment concluded that adequate access spacing is provided along Uhthoff Line.

7.3 Preliminary Horizontal Sight Distance Assessment

A preliminary sight distance assessment was prepared. Confirmation of the horizonal sight distance, as well as vertical sight distance should be undertaken during detailed design of the three site accesses to Uhthoff Line.

For level roadways, the stopping sight distance requirements are tabulated in TAC GDGCR Table 2.5.2. Section 9.9 of the TAC GDGCR provides intersection sight distance for different intersection control types. The calculated and design sight distances are further summarized in TAC GDGCR Tables 9.9.4, 9.9.6 and 9.9.12 for vehicles turning left from stop, turning right from stop, or turning left from the major road, respectively. The applicable cases are as follows:

- Case B Intersections with stop control on the minor road
 - Case B1 Left turn from the minor road (Site Access)
 - Case B2 Right turn from the minor road (Site Access)

Intersection sight distance is calculated using equation 9.9.1 from the GDGCR as outlined below:

$$ISD = 0.278 * V major * t_G$$

Where:

ISD = Intersection Sight Distance Vmajor = design speed of roadway (km/h)

t_G = assumed time gap for vehicles to turn from stop onto roadway (s)

Case B1 requires the furthest available sight distance. Per TAC GDGCR Table 9.9.4. the required intersection sight distance to the north was determined to be 150 m for a posted speed limit of 60 km/h (design speed of 70 km/h). **Table 23** outlines the results of the site distance assessment on Uhthoff Line.

Table 23: Sight Distance Assessment

Intersection	Direction of Travel	Intersection Sight Distance (150 m Required)	Stopping Sight Distance (105 m Required)
North Site Access 1	Northbound	>200 m	> 200 m
Norm sile Access i	Southbound	>200 m	> 200 m
North Site Access 2	Northbound	>200 m	> 200 m
	Southbound	>200 m	> 200 m
South Site Access	Northbound	>200 m	> 200 m
	Southbound	>200 m	> 200 m

The sight distance assessment concluded that more than 200 m of sight distance is available at all proposed accesses to Uhthoff Line. Therefore the access locations are appropriate and supportable from a sight distance perspective.

8.0 Active Transportation

The subject development is planned to be integrated into the surrounding golf course and is intended to provide a relaxed and connected neighbourhood. Trails and cart paths for the golf course are not reviewed as part of this TIS, however the Concept Draft Plan does illustrate connection of these pathways to the residential area, as well as additional pathways through the site including the parks, stormwater retention ponds and natural heritage area.

The trail connections also provide pedestrian connectivity between the internal roadways and the neighbouring subdivisions. It is recommended that 1.5 m sidewalks be provided along at least one side of the proposed roadways to allow for further connection through the neighbourhood. Roadway cross-sections and active transportation locations will be further refined through detailed design.

9.0 Division Road West Review

The Township of Severn highlighted existing concerns with the intersections of Burnside Line and Uhthoff Line with Division Road West as part of the Terms of Reference discussion. The Township highlighted that these two intersections experience higher-than-average vehicle collisions as outlined in their Transportation Master Plan (TMP). As outlined in the TMP the most common impact type for collisions was 'Angle'. The OPP noted that these crashes were due to a number of drivers failing to yield.

A site visit conducted in August 2024 found that the sightlines for vehicles crossing/ turning from Uhthoff Line onto Division Road West and for those crossing/ turning from Division Road West to Burnside Line were impacted by overgrowth of vegetation along the roadway. **Appendix N** includes photographs taken during the site visit of the Division Road West intersections.

Additionally, vehicles were witnessed passing each other in the section of Division Road West between the two intersections which is a posted 80 km/h area, reducing to 60 km/h to the east of Burnside Line and West of Uhthoff Line. While speed data was not collected, vehicles were witnessed travelling at high speeds.

The subject development and reviewed background developments assumed approximately 10% of volumes generated would travel north along Uhthoff Line and Burnside Line. The additional volumes are not anticipated to have a negative impact on the intersection operations. The intersection of Burnside Line and Division Road West is planned to be signalized in the near future. Signalization and clearing of foliage within the daylighting triangles is expected to have a positive impact on the risk

of collision at the intersection. Clearing of overgrowth in the daylighting triangles and sightlines at the intersection of Uhthoff Line and Division Road West is recommended. The Township may also want to consider the reduction of speed limit between the two intersections to 60 km/h to discourage drivers from speeding between the existing 60 km/h zones.

10.0 Conclusion

Based of the analysis outlined within this report, the following key findings were concluded:

- Under the existing traffic volume conditions, the study intersections operate with a LOS "C" or better in the weekday a.m. and p.m. peak hours.
 - A maximum control delay of 32.2 s and maximum volume-to-capacity ratio of 0.94 (SBTR) is experienced at the intersection of Murphy Road/West Ridge Boulevard and Highway 12.
 - With the v/c ratios on Highway 12 approaching capacity, mitigation measures were explored through future background and future total conditions.
 - These operations indicate that the boundary road network is operating acceptably with reserve capacity for increases in traffic volumes.
- The future horizon years of 2031, 2033, 2035, 2040 and 2045 were assessed.
- A growth rate of 2% per year was utilized to assesses background growth, consistent with pervious studies in the area.
- Intersection improvements by the Township are planned for the intersection of Burnside Line and Division Road West prior to the 2031 horizon year.
- Intersection improvements to Brodie Drive and Burnside Line are expected with the construction of the Industrial Road.
- The Inch Farm, the North Orillia Employment Lands, and Area 3 Residential and Industrial subdivisions were assessed as background developments, generating 693 a.m. and 713 p.m. peak hour two-way trips.
- Under the 2045 future background conditions modelled, the study intersections are expected to operate with a LOS 'C' or better, with the exception of Highway 12 and Murphy Road West/West Ridge Blvd as well as West Street N and Highway 11 Eastbound.
 - The Highway 11 Eastbound ramp at West Steet N is forecasted to operate with a LOS 'D' in the p.m. peak hour with 41.3 s of delay and a maximum v/c ratio of 1.08 for the southbound through volumes.
 - The ramp is anticipated to operate with a v/c ratio of 0.74, just below the MTO's critical capacity threshold. The 95th percentile queue for the northbound left turn movement is expected to exceed the available storage by approximately one car length in the p.m. peak hour.
 - Line painting adjustments could be made, should forecasted background growth and the 95th percentile queues be realized.
 - o The intersection of Highway 12 and Murphy Road West/West Ridge Blvd is forecasted to operate with a LOS 'C' in the a.m. peak hour and a LOS 'F' with a maximum delay of 85.5 s and a maximum v/c ratio of 1.14 (SBT) in the p.m. peak hour.

C.F. Crozier & Associates Inc. Project No. 1935-6135

- The 95th percentile queue for the east and westbound left-turn movements are expected to exceed the provided storage.
- The 95th percentile queue of the southbound right-turn movement exceeds the proposed storage of 50 m but will be contained within the available taper and is not expected to impact the southbound through volumes.
- The p.m. peak hour was assessed under mitigated geometric conditions, with dual left-turn lanes on each approach. The mitigation reduces the intersection control delay by approximately 40 s and all 95th percentile queue are forecasted to be contained in the dual turn lane storage.
- The proposed Hawk Ridge development is forecasted to generate 452 a.m. and 580 p.m. peak hour two-way trips.
- An assessment of alternative road networks was undertaken to evaluate the best location to cross Silver Creek and provide connectivity between the development lands. An east-west crossing between the south parcel and the Golf Villa's on Uhthoff Line was established as the preferred alternative.
- There is adequate sight distance and intersection spacing along Uhthoff Line to support the three proposed site accesses.
- Signals were not found to be warranted at the existing unsignalized intersections and the proposed intersections, based on future total traffic volumes.
- Auxiliary turn lanes were not found to be warranted on Uhthoff Line at the proposed site
 accesses or the Industrial Road. A northbound right-taper should be considered for the
 intersection of Uhthoff Line and Industrial Road, based on the forecasted volumes.
- Under the 2045 future total conditions modelled, the study intersections are forecast to continue operating with a LOS 'C' or better, with the exception of Highway 12 and Murphy Road West/West Ridge Blvd as well as West Street N and Highway 11 Eastbound.
 - The intersection of West Ridge Boulevard/Murphy Road and Highway 12 is expected to operate with a maximum control delay of 84.6 m and maximum volume-to-capacity ratio of 1.14 (WBTR) in the p.m. peak hour.
 - The 95th percentile queue for the eastbound and westbound left-turn movements at the intersection is expected to exceed the available storage in the p.m. peak hour.
 - In comparison to the future background operations the intersection control delay is forecasted to be reduced by 0.9 sections while the maximum volume-to-capacity ration remains at 1.14.
 - The p.m. peak hour was assessed under mitigated geometric conditions, with dual leftturn lanes on each approach. The mitigation reduces the intersection control delay by approximately 30 s and the left-turn movements are contained in the dual storage lanes. The optimization does impact the northbound right turn queuing.
 - It is noted that the feasibility of duality or extension of the eastbound and westbound left-turn lanes will need to be reviewed within the available spacing and right-of-way. The available spacing may restrict the use of this mitigation measure.
 - o The Highway 11 Eastbound ramp to West Street N is forecast to operate with a Level of Service 'D' in the a.m. and p.m. peak hours.

C.F. Crozier & Associates Inc. Project No. 1935-6135

- In the a.m. peak hour, the eastbound left-turn movement is anticipated to exceed the MTO's critical capacity ration of 0.75, however the volume-to-capacity ratio forecasted to be less than 0.90 and 95th percentile queues are not anticipated to impact the function of the highway off-ramp.
- In the p.m. peak hour, the 95th percentile queue for the northbound left-turn movement if forecast to exceed the available storage by approximately 2 vehicles. This is an increase in 5 m from the future background condition.
- As previously noted, line painting adjustments can be made to accommodate queueing. Ongoing monitoring by the MTO is recommended.
- o The intersection of Industrial Road/Brodie Drive and Burnside Line is expected to operate with a Level of Service 'C' and acceptable delays.
 - In the p.m. peak hour, the westbound left movement is forecasted to operate with a critical capacity (0.91) and 95th percentile volumes exceeding the proposed storage length.
 - The westbound left turn movement does not increase compared to future background conditions.
- The intersection of Murphy Road and Uhthoff Line presents a difference in results when modelled as HCM2000 and HCM2010, with the prior noting a 52 s delay for the eastbound movements.
 - A reorientation of the stop signs to have the east and west legs as free flowing would improve the delay for the increased eastbound left-turn movement, however this would increase the delay for the northbound approach.

11.0 Recommendations

The recommended improvements outlined in **Table 24** are based on both future background and future total conditions and are in support of surrounding development and projected traffic growth. The timeline for improvements is subject to the timeline of construction of the Inch Farm and Area 3 subdivisions as well as the results of monitoring the boundary road network as development phasing proceeds. Signal timings should be continually monitored by the MTO and municipalities to confirm when optimizations are required.

C.F. Crozier & Associates Inc. Project No. 1935-6135

Table 24: Recommended Network Improvements

Location	Improvement	Timeline	Intention	Responsibility
West Street N & Hwy 11 Eastbound	Optimization of signal timings at a cycle length of 90 s in the a.m. peak hour and 95 s in the p.m. peak hour.		In support of development	МТО
Murphy Road/West Ridge Boulevard	Optimization of signal timings and increase of cycle length (Future background: 110 in the a.m. and 150 s in the p.m./ Future total 130 s in the p.m. peak hour)	Monitoring to Determine	In support of development	МТО
and Highway 12	Southbound right-turn lane with 50 m of storage (Highway 12)		Support operation of existing operations	МТО
Murphy Road and Uhthoff Line	Consideration for reorientation of two-way stop control		In support of development	City of Orillia
Industrial Road	 Construction of Industrial Road (arterial) Creation of T-intersection at Industrial Road and Hurlwood Lane Creation of T-intersection at Industrial Road and Unthoff Line with northbound right taper 	2027	Background Improvement	LIV Communities
Industrial	 Reconfiguration of the intersection including a 25 m eastbound left-turn lane, 75 m eastbound right-turn lane and a westbound right-turn lane. Extension of westbound left-turn lane to 100 m and northbound left-turn lane to 75 m 	2027	Background Improvement	LIV Communities
Road/Brodie Drive and Burnside Line	 Optimization of signal timings and increase of cycle length to 90 s with protected-permissive left-turn phases on each approach. Independent optimization of signal timing splits in the a.m. and p.m. peak hour. 	Monitoring to Determine	In support of development	LIV Communities
	Industrial Road transit stops	To Be Determined	In support of development	Orillia Transit
Division Road	Clearing of vegetation within sight lines of intersections	Immediate	To reduce collisions	Severn Township

As the boundary road network is forecast to receive a high number of volumes from the industrial lands, the study intersections should continue to be reviewed under applications by the background developments as Site Plans are established. The Industrial lands are currently assessed under general industrial with the maximum lot coverage, which may not be achieved. If required, future updates to this report would account for up-to-date information on background developments

The 2045 operations indicate that the majority of the boundary road network should continue operating acceptably with the addition of site generated traffic. The background developments and the subject development will be constructed in phases, therefore the study intersections can continue to be monitored as Draft Plans and Site Plans are finalized, as typical with Secondary Plan areas. Monitoring will determine if and when a volume threshold for a poor Level of Service as well as mitigation measures are met. Improvements to intersections along the industrial roadway and the proposed site accesses should be implemented at the time of construction.

The analysis within this report was prepared based on the Concept Draft Plan, prepared by Biglieri Group (August 2024). Any minor changes to the Plan will not materially impact the conclusions of this report.

It is concluded that the subject development can be supported from a traffic operations perspective with the noted recommendations and ongoing monitoring.

Prepared by,

C.F. CROZIER & ASSOCIATES INC.

Madeleine Ferguson, P.Eng.

Manager (Planning), Transportation

C.F. CROZIER & ASSOCIATES INC.

Kerianne Hagan, EIT

Engineering Intern, Transportation

MF/kh

 $\label{locality} $$J:\1900\1935-LIV Communities\6133-Hawk Ridge\Reports\1st Submission Draft Plan Approval\TIS\6135_Transportation Impact Study (September 2024).docx$

APPENDIX A

Terms of Reference Correspondence

Kerianne Hagan

From: Andrea Woodrow <AWoodrow@severn.ca>

Sent: July 25, 2024 9:02 AM **To:** Kerianne Hagan

Cc: Madeleine Ferguson; leonard.borgdorff@ainleygroup.com; Lilly Chen; Natasha Birch;

Derek Burke; Jamie Robinson

Subject: RE: Terms of Reference -1151 Hurlwood Lane, Severn

Categories: Filed to Sharepoint

Good morning Kerianne:

The Township, together with our consulting engineers from Ainley, offer the following comments on the Terms of Reference:

1. MTO Review

MTO review is key given the site location. As per MTO Highway Corridor Management Manual, permit control area is 800 m for the purpose of large traffic generators. The site is within 800 m control area and potentially is a large traffic generator. In addition, the intersection of Hurlwood Lane / Burnside Line is within 400 m of MTO interchange. It is recommended that the consultant contact MTO for confirmation.

2. Site Accesses

Additional site accesses will be challenging, but worth exploring. The south parcel of the site has only one site access which is unacceptable given the size of land and potentially the number of units. It is noted that any lands generated more than 100 trips during a peak hour need more than one access. In addition, Hurlwood Lane is currently serving the Township's office, a Golf & Country Club and a number of residential units already.

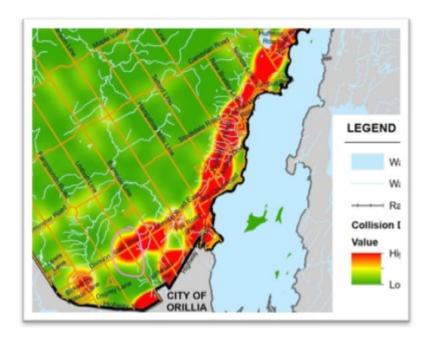
3. Study Area and Intersections

These are important to determine if any mitigation measures are required.

The following intersections should also be included:

- Division Road West / Uhthoff Line*; and
- Division Road West / Burnside Line.

^{*}Uhthoff and Division Road was one of the intersections highlighted by the Township's Transportation Master Plan as having a slightly higher collision rate than comparable intersections.



Please advise if you have any questions.

Thank you, Andrea



Andrea Woodrow

BSc (Hons), MES (PI), RPP, MCIP

Director of Planning and Development

Email: awoodrow@severn.ca
Phone: 705-325-2315 x234

(0)

severn.ca









From: Kerianne Hagan < khagan@cfcrozier.ca> Sent: Wednesday, July 24, 2024 4:26 PM

To: Andrea Woodrow < AWoodrow@severn.ca>; leonard.borgdorff@ainleygroup.com

Cc: Madeleine Ferguson <mferguson@cfcrozier.ca>

Subject: RE: Terms of Reference -1151 Hurlwood Lane, Severn

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Good Afternoon,

I wanted to follow up on our Terms of Reference circulated July 3rd.

Leonard and I spoke last week and I understand there was some discussion in the background regarding the TOR with the Township. We plan to collect traffic data on Tuesday and would like to confirm the study intersections prior. We understand if there is more discussion needed between Severn and Ainley but request any comments on the study intersections be provided at this time so we can proceed.

The City of Orillia has already responded and they have no comments on the TOR.

Thank you, Kerianne

Kerianne Hagan, EIT

Engineering Intern, Transportation

Office: 705.434.3407

Collingwood | Milton | Toronto | Bradford | Guelph

Proudly named one of Canada's Top Small & Medium Employers for 2024. Read more here.



This email was sent on behalf of C.F. Crozier & Associates Inc. and may contain confidential and/or privileged information for the sole use of the intended recipient. If you have received this email in error, please contact the sender and delete all copies. Any review or distribution by anyone other than the intended recipient is strictly prohibited.

From: Kerianne Hagan < khagan@cfcrozier.ca>

Sent: Friday, July 12, 2024 8:58 AM

To: leonard.borgdorff@ainleygroup.com; scrawford@orillia.ca

Cc: Andrea Woodrow AWoodrow@severn.ca; Madeleine Ferguson mferguson@cfcrozier.ca

Subject: RE: Terms of Reference -1151 Hurlwood Lane, Severn

Good morning Leonard and Shawn,

I am looing to follow up on the Terms of Reference circulated last week. We are hoping to get data collected in the next week or son and would like confirmation on the study intersection before proceeding.

Please let us know if we are okay to proceed with the intersection listed.

Have a great weekend, Kerianne

Kerianne Hagan, EIT

Engineering Intern, Transportation

Office: 705.434.3407

Collingwood | Milton | Toronto | Bradford | Guelph

Proudly named one of Canada's Top Small & Medium Employers for 2024. Read more here.



This email was sent on behalf of C.F. Crozier & Associates Inc. and may contain confidential and/or privileged information for the sole use of the intended recipient. If you have received this email in error, please contact the sender and delete all copies. Any review or distribution by anyone other than the intended recipient is strictly prohibited.

From: Kerianne Hagan < khagan@cfcrozier.ca > Sent: Wednesday, July 3, 2024 12:21 PM

To: leonard.borgdorff@ainleygroup.com; Lisa Dobson <LDobson@orillia.ca>

Cc: Andrea Woodrow AWoodrow@severn.ca; Madeleine Ferguson mferguson@cfcrozier.ca

Subject: Terms of Reference -1151 Hurlwood Lane, Severn

Good afternoon Leonard and Lisa.

I hope this email finds you well. C.F. Crozier & Associates has been retained to prepare a Transportation Impact Study the site located at 1151 Hurlwood Lane in the Township of Severn, known as the Hawk Ridge development.

We kindly request if you could let us know if the Terms of Reference (ToR) outlined below will be acceptable to the Township of Severn, and City of Orillia. If we should also receive approval from the MTO please let us know. We note that the lands are outside of the MTO permit control area. If we should circulate the ToR to any additional staff at Ainley, the Town or the City please advise.

The Concept Draft Plan dated February 15, 2024 (attached) envisions the following elements:

- 755 Single-detached and townhome residential units.
- Possible Long-Term Care, Affordable Housing, School Site.
- An 18-hole Golf Course routed throughout the community

Study Area and Intersections

- Highway 12 and Murphy Road/West Ridge Boulevard.
- Murphy Road and Uhthoff Line.
- o The proposed Industrial Road and Uhthoff Line.
- Hurlwood Lane and Burnside Line.
- Burnside Line/West Street North and the Highway 11 interchanges.
- The proposed Industrial Road and Hurlwood Lane.
- Proposed site accesses.

Analysis Periods and Scenarios

Based on the size of the development, it is expected to be built in phases. The a.m. and p.m. weekday peak hour existing conditions (2024), along with build-out phasing of 2031, 2033 and full build-out in 2035 and the five- and ten-year horizons beyond full build-out (2040 and 2045) will be reviewed under future background and future total conditions.

We will use the growth rate along Highway 11 (2%) for the study, consistent with the Area 3 TIS.

Background Developments

The adjacent Inch Farm and Area 3 will be reviewed as a background developments, as well as the redistribution of existing volumes onto the Industrial Road as outlined in the Inch Farm ESR. All are forecasted to be completed by the opening horizon of the Hawk Ridge development. Please provide any additional developments that you feel should be included in the analysis. We would appreciate if you could provide us with any background TIS reports we will be able to reference for our analysis.

Trip Generation

Trip generation for the development will be forecasted using the Institute of Traffic Engineers' (ITE) trip generation. Trips will be assigned to the boundary road network based on the Transportation Tomorrow Survey (TTS).

Analysis Procedures

Analysis will be conducted using the Synchro 11 analysis package and Highway Capacity Manual (HCM 2010) procedures. Per MTO TIS Guidelines, all ramp movements with v/c ratios greater than 0.75 will be considered critical.

We will use the latest signal timing plans on record for Burnside Line and Hurlwood Lane/Brodie Drive received on April 21, 2022.

Should you have any questions or concerns regarding the above, please feel free to contact me.

Thank you, Kerianne

Kerianne Hagan

From: Kerianne Hagan

Sent: July 25, 2024 9:28 AM

To: Steven Murphy

Cc: Shawn Crawford

Subject: RE: Terms of Reference -1151 Hurlwood Lane, Severn

Good Morning Steven,

I wanted to give you an update on our Terms of Reference. The Township of Severn has requested that we include the following intersections as pert of our study:

- Division Road West / Uhthoff Line; and
- Division Road West / Burnside Line.

No additional changed to the TOR were requested.

Thank you, Kerianne

Kerianne Hagan, EIT

Engineering Intern, Transportation

Office: 705.434.3407

Collingwood | Milton | Toronto | Bradford | Guelph

Proudly named one of Canada's Top Small & Medium Employers for 2024. Read more here.



This email was sent on behalf of C.F. Crozier & Associates Inc. and may contain confidential and/or privileged information for the sole use of the intended recipient. If you have received this email in error, please contact the sender and delete all copies. Any review or distribution by anyone other than the intended recipient is strictly prohibited.

From: Kerianne Hagan < khagan@cfcrozier.ca>

Sent: Friday, July 12, 2024 2:59 PM

To: Steven Murphy <smurphy@orillia.ca>
Cc: Shawn Crawford <SCrawford@orillia.ca>

Subject: RE: Terms of Reference -1151 Hurlwood Lane, Severn

Hi Steven,

Thank you for confirming. We are still waiting to hear back from Severn's peer reviewer. If they have any modifications I will reach out and let you know.

Have a wonderful weekend, Kerianne

Kerianne Hagan, EIT

Engineering Intern, Transportation

Office: 705.434.3407

Proudly named one of Canada's Top Small & Medium Employers for 2024. Read more here.



This email was sent on behalf of C.F. Crozier & Associates Inc. and may contain confidential and/or privileged information for the sole use of the intended recipient. If you have received this email in error, please contact the sender and delete all copies. Any review or distribution by anyone other than the intended recipient is strictly prohibited.

From: Steven Murphy <smurphy@orillia.ca>

Sent: Friday, July 12, 2024 2:56 PM

To: Kerianne Hagan < khagan@cfcrozier.ca **Cc:** Shawn Crawford < SCrawford@orillia.ca>

Subject: FW: Terms of Reference -1151 Hurlwood Lane, Severn

Hello Kerianne,

Yes, the City of Orillia agrees with the ToR supplied below. Can you please confirm that the township of Severn and MTO agrees with, or have they suggested any modifications?

Going forward please reach out to me regarding traffic TIS, as Lisa is no longer with the corporation.

Thanks,



Steven Murphy, P.Eng, P.M.P | Project Engineer - Transportation

Development Services and Engineering Department Engineering Division

T: 705-418-3550







This message is intended for the individual to whom it is addressed and may contain information that is confidential and exempt from disclosure under the Municipal Freedom of Information and Protection of Privacy Act. If you are not the intended recipient, please do not forward, copy or disclose this message to anyone and delete all copies and attachments received. If you have received this communication in error, please notify the sender immediately.

Kerianne Hagan

From: Kerianne Hagan
Sent: July 25, 2024 9:38 AM

To: Peter Dorton

Subject: Terms of Reference -1151 Hurlwood Lane, Severn

Attachments: 23979_DP_24.02.15.pdf

Good afternoon Peter

I hope this email finds you well. C.F. Crozier & Associates has been retained to prepare a Transportation Impact Study the site located at 1151 Hurlwood Lane in the Township of Severn, known as the Hawk Ridge development.

The site sits outside the MTO permit control area based on the mapping system. The Township requested that the MTO be circulated and confirm if the MTO would like to be included as a reviewing agency for the project. We have received confirmation on out TOR from Severn and Orillia and will be collecting traffic counts next week. If you are not the correct contact for this correspondence please let me know I should reach out to.

The Concept Draft Plan dated February 15, 2024 (attached) is currently under refinement but envisions the following elements:

- 755 Single-detached and townhome residential units.
- Possible Long-Term Care, Affordable Housing, School Site.
- An 18-hole Golf Course routed throughout the community

Study Area and Intersections

- Highway 12 and Murphy Road/West Ridge Boulevard.
- Murphy Road and Uhthoff Line.
- o The proposed Industrial Road and Uhthoff Line.
- o Hurlwood Lane and Burnside Line.
- Division Road West / Uhthoff Line.
- Division Road West / Burnside Line.
- o Burnside Line/West Street North and the Highway 11 interchanges.
- o The proposed Industrial Road and Hurlwood Lane.
- Proposed site accesses.

Analysis Periods and Scenarios

Based on the size of the development, it is expected to be built in phases. The a.m. and p.m. weekday peak hour existing conditions (2024), along with build-out phasing of 2031, 2033 and full build-out in 2035 and the five- and ten-year horizons beyond full build-out (2040 and 2045) will be reviewed under future background and future total conditions. We will use the growth rate along Highway 11 (2%) for the study, consistent with the Area 3 TIS.

Background Developments

The adjacent Inch Farm and Area 3 will be reviewed as a background developments, as well as the redistribution of existing volumes onto the Industrial Road as outlined in the Inch Farm ESR. All are forecasted to be completed by the opening horizon of the Hawk Ridge development. Please provide any additional developments that you feel should be included in the analysis. We would appreciate if you could provide us with any background TIS reports we will be able to reference for our analysis.

Trip Generation

Trip generation for the development will be forecasted using the Institute of Traffic Engineers' (ITE) trip generation. Trips will be assigned to the boundary road network based on the Transportation Tomorrow Survey (TTS).

Analysis Procedures

Analysis will be conducted using the Synchro 11 analysis package and Highway Capacity Manual (HCM 2010) procedures. Per MTO TIS Guidelines, all ramp movements with v/c ratios greater than 0.75 will be considered critical.

We will use the latest signal timing plans on record for Burnside Line and Hurlwood Lane/Brodie Drive received on April 21, 2022.

Should you have any questions or concerns regarding the above, please feel free to contact me.

Thank you, Kerianne

Kerianne Hagan, EIT Engineering Intern, Transportation

Office: 705.434.3407

Collingwood | Milton | Toronto | Bradford | Guelph

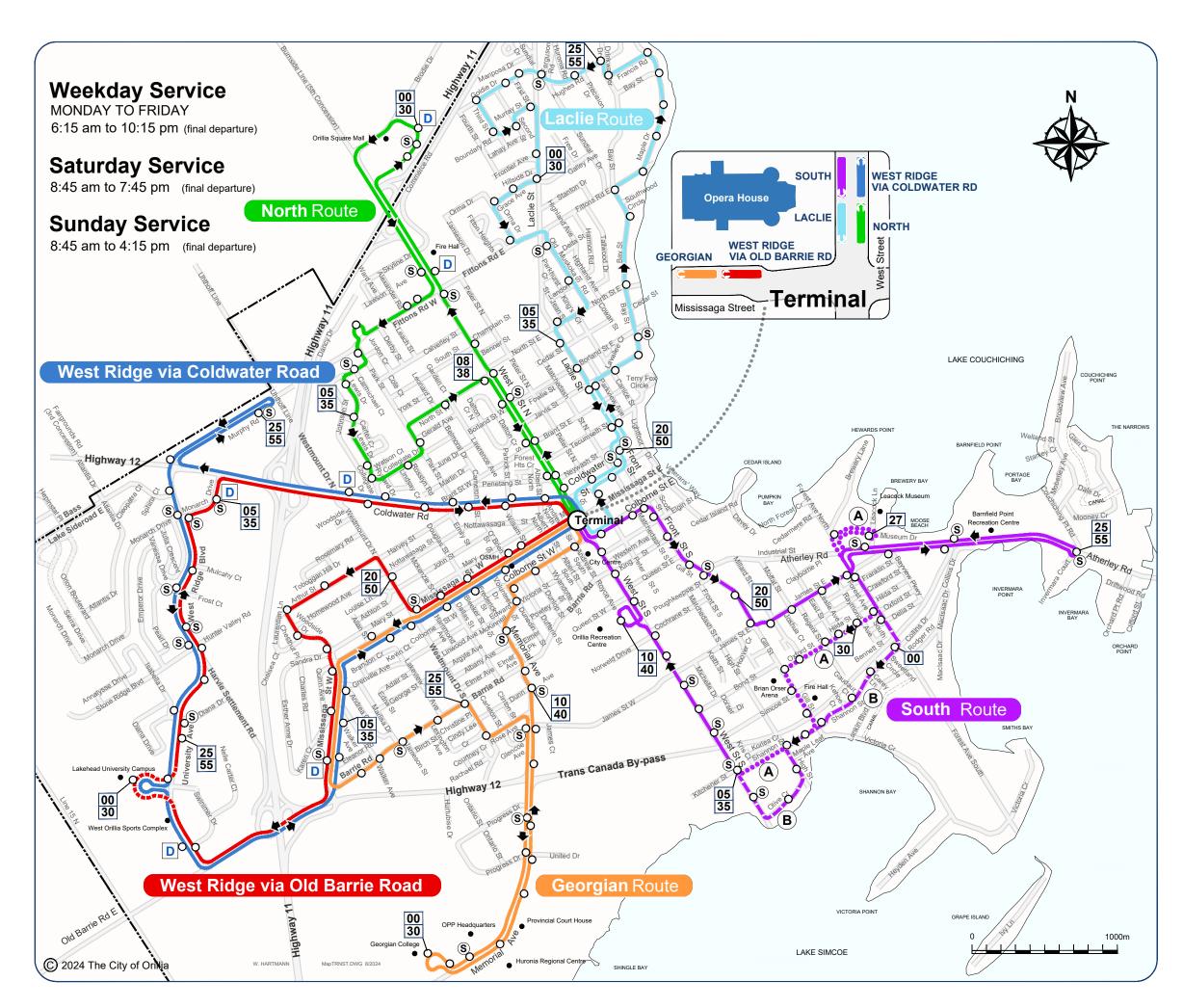
Proudly named one of Canada's Top Small & Medium Employers for 2024. Read more here.



This email was sent on behalf of C.F. Crozier & Associates Inc. and may contain confidential and/or privileged information for the sole use of the intended recipient. If you have received this email in error, please contact the sender and delete all copies. Any review or distribution by anyone other than the intended recipient is strictly prohibited.

APPENDIX B

Orillia Transit Schedule Excerpts



Orillia Transit

cOnnecting our community

North Route

Laclie Route

Georgian Route

West Ridge via Coldwater Road

West Ridge via Old Barrie Road

Each route departs the terminal at 15 and 45 minutes past the hour providing half hourly service to each stop on all routes. Except, hourly service is provided on the SOUTH route at (A) departing terminal at 15 minutes and (B) departing terminal at 45 minutes past the hour.

- West Ridge via Old Barrie Road stop at
 Lakehead University **only** for 5:45 pm and later departures from Terminal.
- •• A •• Hourly Service
 Departs terminal 15
 minutes after the hour.

Bus arrival times at stops noted in minutes after the hour.

-- B- Hourly Service
Departs terminal 45

Terminal Transit Terminal

— Half Hourly Service Departs terminal 15 and

45 minutes after the hour.

S Bus Shelter

D Dash Stop





Effective January 1, 2024

Information: (705) 326-8300

Orillia Transit

General Information

- Information: 705-326-8300
- Terminal located at West and Mississaga Streets
- Bus service operates all days except statutory holidays
- Transfers may only be made at the terminal
- Buses change routes at terminal
- Exact fare required at boarding

Dash Bus Service:

- December 1 to March 31
- Free travel across bridges from D Dash stops.
- No transfers are provided from Dash stops unless the normal fare is paid.

cOnnect Pass Cards are Available at:

- Orillia City Centre 50 Andrew St. S. (1st floor) cOnnect Pass cards available from Monday to Friday (8:30 a.m. to 4:30 p.m.)
- Orillia Public Library.................36 Mississaga St. W. cOnnect Pass cards are available from Monday to Thursday (10 a.m. to 8 p.m.), Friday (10 a.m. to 6 p.m.), Saturday (9 a.m. to 5 p.m.) and Sunday (1 p.m. to 4 p.m.)
- Memorial Pharmasave......200 Memorial Ave. Unit 1

(FARES ACCURATE AT TIME OF PRINTING, SUBJECT TO CHANGE WITHOUT NOTICE)

Cash Fares \$3.00
(Please have exact change, as bus drivers are unable to make change)
Simcoe LINX Transfer Fare Discount\$1.00 (Applicable to fares with valid Simcoe LINX Transfer)
Monthly Pass \$66.80

12 Rides (for the price of 11)	\$33.00
20 Rides (for the price of 19)	\$57.00
48 Rides (for the price of 42)	\$126.00

Lost Items on the bus? Call 705-326-8300

If your card is lost or stolen, registered cards can be replaced for a fee of \$5 and your balance will be transferred to your new card.

Special Group Pass

Group 1 = 10-15 children + 3 adults...\$22.60 **Group 2 =** 16-20 children + 4 adults...\$30.00 **Group 3 =** 21-30 children + 5 adults.....\$36.80

Good for one-way on date specified between the hours of 9:45 a.m. and 2:45 p.m. on weekdays and all day Saturdays. For group rates, children must be 12 years and younger.

Family Ride Program

Up to (2) two elementary aged children and/or preschoolers may ride free when accompanied by a paying quardian.

C.N.I.B. (Canadian National **Institute for the Blind)**

Card holders ride for free.

Effective March 1, 2024:

Teen Pass

- Teens aged 13-19 can obtain a cOnnect Pass to access Orillia Transit vehicles for free.
- Teens are responsible for the cash fare price if a valid cOnnect Pass is not used while boarding transit.
- 12-month pilot program running from March 1, 2024 to Feb. 28, 2025.

Senior Pass

- Seniors aged 65+ can ride any Orillia Transit vehicle for \$2 after obtaining a Seniors cOnnect Pass.
- Seniors are responsible for the full cash fare price if a valid cOnnect Pass is not used while boarding transit.

Proof of identification is required for both teen passes and seniors passes when registering. These cOnnect Passes can be requested online, in-person at City Centre or at the Orillia Public Library in early 2024.

OWLS 5

Cook Force

Orillia Wheelchair Limousine Service

- OWLS is a curb -to-curb service. The OWLS vehicle is unable to pull into private driveways and does not take custody of OWLS passengers. Please arrange for an attendant or companion if you will require personal care or assistance during the trip.
- Children under the age of 13 (riding without an attendant) must be met by an adult at their destination.
- Remember your attendant, friend, caregiver or companion is always welcome.

Applications to use this service are available on orillia.ca/transit or at Orillia City Centre (first floor reception). For more information, call OWLS administration at 705-325-3975.

Bookings Line: 705-327-0411

- Cash fares are \$3.00 per person each way and cOnnect Pass cards can be purchased from the driver.
- All trips must be pre-booked through 705-327-0411 (minimum 24 hours notice required).
- Provide eligibility card number, date, address, time of pick-up and return and number of passengers.
- The OWLS bus provides service within the Orillia City limits plus Orillia Square Mall.
- Allow 30 minutes between pick-up and arrival times.
- Operating hours: Monday to Friday (6:30 a.m. to 10 p.m.), Saturday (9 a.m. to 7:30 p.m.), and Sunday (9 a.m. to 4 p.m.)
- No service on statutory holidays.

APPENDIX C

Traffic Data

Turning Movement Count Location Name: HWY 12 & MURPHY RD / WEST RIDGE BLVD Date: Thu, Aug 01, 2024 Deployment Lead:

									Turi	ning Mo	vemer	t Count (1 . HW	Y 12 & I	MURPH	HY RD /	WEST I	RIDGE	BLVD)								
Ote at Time				N Approac	ch RD					E Approac	h				,	S Approac	ch LVD					W Approac	h		Int. Total (15 min)	Int. Total (1 hr)
Start Time	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
06:00:00	7	5	6	0	0	18	3	30	8	0	0	41	6	3	10	0	0	19	8	58	5	0	0	71	149	
06:15:00	5	6	12	0	3	23	11	51	5	0	2	67	6	10	4	0	0	20	7	89	3	0	0	99	209	
06:30:00	5	7	16	0	0	28	15	57	13	0	0	85	8	6	4	0	0	18	10	118	9	0	0	137	268	
06:45:00	6	11	14	0	0	31	20	61	3	1	1	85	13	16	4	0	0	33	16	125	8	0	0	149	298	924
07:00:00	8	11	33	0	0	52	26	65	10	0	0	101	9	15	14	0	0	38	20	104	7	0	0	131	322	1097
07:15:00	9	12	28	0	0	49	14	85	11	0	0	110	14	19	11	0	0	44	23	102	11	0	0	136	339	1227
07:30:00	8	15	32	0	0	55	31	85	10	0	0	126	13	17	13	0	0	43	21	141	7	0	0	169	393	1352
07:45:00	18	18	31	0	2	67	32	79	26	0	1	137	11	16	12	0	0	39	26	178	14	0	0	218	461	1515
08:00:00	9	14	33	0	0	56	23	60	24	0	0	107	19	19	15	0	0	53	19	140	13	0	0	172	388	1581
08:15:00	16	17	29	0	0	62	34	101	30	0	0	165	19	20	18	0	0	57	29	192	12	0	0	233	517	1759
08:30:00	14	18	31	0	0	63	27	80	18	0	0	125	21	26	11	0	0	58	35	157	6	0	0	198	444	1810
08:45:00	14	30	30	0	0	74	38	118	30	0	0	186	18	28	15	0	0	61	47	187	13	0	0	247	568	1917
09:00:00	18	36	36	0	0	90	42	86	36	0	0	164	23	24	16	0	0	63	42	122	18	0	0	182	499	2028
09:15:00	13	37	34	0	1	84	44	93	32	0	0	169	24	23	21	0	0	68	46	152	16	0	0	214	535	2046
09:30:00	16	35	58	0	1	109	68	85	42	0	2	195	40	35	35	0	0	110	39	138	14	0	0	191	605	2207
09:45:00	19	38	42	0	0	99	58	103	36	0	0	197	44	35	33	0	0	112	44	185	10	0	0	239	647	2286
***BREAK											·····															
15:00:00	26	56	92	0	0	174	59	156	57	0	2	272	56	45	49	0	0	150	43	133	8	0	0	184	780	
15:15:00	24	39	72	0	3	135	55	172	62	0	1	289	52	50	33	0	1	135	38	125	15	0	0	178	737	
15:30:00	38	34	87	0	0	159	66	158	49	0	2	273	50	42	47	0	0	139	39	140	14	0	0	193	764	
15:45:00	24	27	66	0	1	117	69	168	52	0	4	289	44	47	42	0	0	133	47	150	17	0	0	214	753	3034
16:00:00	35	49	86	0	1	170	64	173	51	0	3	288	59	55	54	0	0	168	33	145	12	0	0	190	816	3070
16:15:00	28	34	69	0	1	131	71	185	59	0	0	315	45	34	47	0	0	126	38	136	18	0	0	192	764	3097
16:30:00	33	41	74	0	2	148	63	163	53	0	2	279	62	48	54	0	0	164	33	122	19	0	0	174	765	3098
16:45:00	22	32	69	0	1	123	51	195	41	0	1	287	49	43	49	0	0	141	43	153	9	0	0	205	756	3101
17:00:00	28	37	76	0	0	141	65	165	50	0	2	280	52	46	56	0	0	154	43	160	11	0	0	214	789	3074
17:15:00	24	44	65	0	0	133	61 56	178	74	1	2	314 244	66	49	51	0	0	166	34	145	9	0	0	188	801	3111
17:30:00	24	50 29	65 56	0	0	108	60	145	43 39	0	1	251	51 28	34 43	33	0	0	129	34	108	6 17	0	0	158	679 621	2890
18:00:00	24	30	73	0	0	127	53	137	38	0	0	228	41	34	45	0	0	120	36	96		0	0	145	620	2721
18:00:00	20	29	52	0	0	101	45	137	48	0	0	228	36	38	32	0	0	106	43	141	13 18	0	0	202	640	2560
18:30:00	15	42	73	0	0	130	43	120	30	0	0	193	36	38	54	0	0	128	31	115	10	0	0	156	607	2488
18:45:00	17	29	59	0	0	105	55	132	35	0	0	222	45	37	34	0	0	116	37	109	16	0	0	162	605	2400
Grand Total	590	912	1599	0	16	3101	1422	3776	1115	2	26	6315	1060	995	960	0	1	3015	1037	4293	378	0	0	5708	18139	-
Approach%	19%	29.4%	51.6%	0%	10	3101	22.5%	59.8%	17.7%	0%	20	0313	35.2%	33%	31.8%	0%	'	3013	18.2%	75.2%	6.6%	0%	U	3700	10133	
Totals %	3.3%	29.4%	8.8%	0%		17.1%	7.8%	20.8%	6.1%	0%		34.8%	5.8%	5.5%	5.3%	0%		16.6%	5.7%	23.7%	2.1%	0%		31.5%	-	-
Heavy	33	67	38	0		-	45	151	19	0		-	19	52	27	0		-	32	193	29	0		-	_	-
Heavy %	5.6%	7.3%	2.4%	0%		-	3.2%	4%	1.7%	0%		-	1.8%	5.2%	2.8%	0%		-	3.1%	4.5%	7.7%	0%		-	-	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-

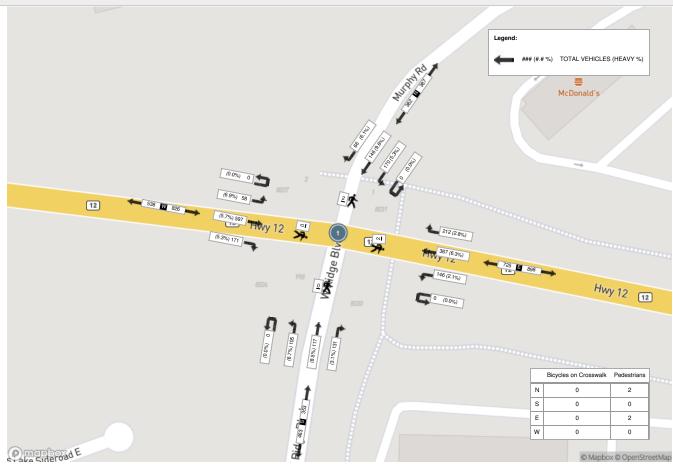
Turning Movement Count Location Name: HWY 12 & MURPHY RD / WEST RIDGE BLVD Date: Thu, Aug 01, 2024 Deployment Lead:

								Pe	ak Hou	r: 09:00	AM - 1	0:00 AM We	ather: C	lear Sk	y (17.59	°C)									
Start Time				N Approact	n D					E Approac HWY 12	h				; w	S Approact	h VD					W Approac	:h		Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
09:00:00	18	36	36	0	0	90	42	86	36	0	0	164	23	24	16	0	0	63	42	122	18	0	0	182	499
09:15:00	13	37	34	0	1	84	44	93	32	0	0	169	24	23	21	0	0	68	46	152	16	0	0	214	535
09:30:00	16	35	58	0	1	109	68	85	42	0	2	195	40	35	35	0	0	110	39	138	14	0	0	191	605
09:45:00	19	38	42	0	0	99	58	103	36	0	0	197	44	35	33	0	0	112	44	185	10	0	0	239	647
Grand Total	66	146	170	0	2	382	212	367	146	0	2	725	131	117	105	0	0	353	171	597	58	0	0	826	2286
Approach%	17.3%	38.2%	44.5%	0%		-	29.2%	50.6%	20.1%	0%		-	37.1%	33.1%	29.7%	0%		-	20.7%	72.3%	7%	0%		-	-
Totals %	2.9%	6.4%	7.4%	0%		16.7%	9.3%	16.1%	6.4%	0%		31.7%	5.7%	5.1%	4.6%	0%		15.4%	7.5%	26.1%	2.5%	0%		36.1%	-
PHF	0.87	0.96	0.73	0		0.88	0.78	0.89	0.87	0		0.92	0.74	0.84	0.75	0		0.79	0.93	0.81	0.81	0		0.86	-
Heavy	4	14	9	0		27	6	23	3	0		32	4	10	7	0		21	9	34	4	0		47	
Heavy %	6.1%	9.6%	5.3%	0%		7.1%	2.8%	6.3%	2.1%	0%		4.4%	3.1%	8.5%	6.7%	0%		5.9%	5.3%	5.7%	6.9%	0%		5.7%	-
Lights	62	132	161	0		355	206	344	142	0		692	127	107	97	0		331	162	563	54	0		779	
Lights %	93.9%	90.4%	94.7%	0%		92.9%	97.2%	93.7%	97.3%	0%		95.4%	96.9%	91.5%	92.4%	0%		93.8%	94.7%	94.3%	93.1%	0%		94.3%	-
Single-Unit Trucks	4	10	7	0		21	3	14	1	0		18	3	10	3	0		16	5	16	4	0		25	-
Single-Unit Trucks %	6.1%	6.8%	4.1%	0%		5.5%	1.4%	3.8%	0.7%	0%		2.5%	2.3%	8.5%	2.9%	0%		4.5%	2.9%	2.7%	6.9%	0%		3%	-
Buses	0	2	1	0		3	3	0	0	0		3	1	0	1	0		2	1	0	0	0		1	-
Buses %	0%	1.4%	0.6%	0%		0.8%	1.4%	0%	0%	0%		0.4%	0.8%	0%	1%	0%		0.6%	0.6%	0%	0%	0%		0.1%	-
Articulated Trucks	0	2	1	0		3	0	9	2	0		11	0	0	3	0		3	3	18	0	0		21	-
Articulated Trucks %	0%	1.4%	0.6%	0%		0.8%	0%	2.5%	1.4%	0%		1.5%	0%	0%	2.9%	0%		0.8%	1.8%	3%	0%	0%		2.5%	-
Bicycles on Road	0	0	0	0		0	0	0	1	0		1	0	0	1	0		1	0	0	0	0		0	-
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0.7%	0%		0.1%	0%	0%	1%	0%		0.3%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	2	-	-	-	-	-	2	=	-	-	-	-	0	-	-	-	-	-	0	=	-
Pedestrians%	-	-	-	-	50%		-	-	-	-	50%		-	-	-	-	0%		-	-	-	-	0%		-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	=	-	-	-	-	0	-	-	-	-	-	0	=	-
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-

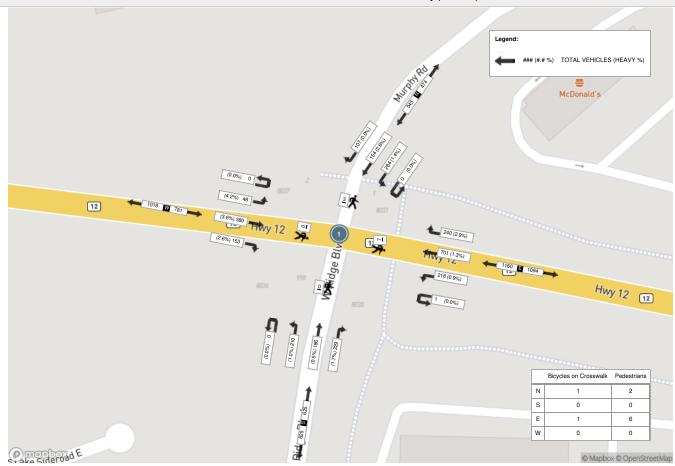
Turning Movement Count Location Name: HWY 12 & MURPHY RD / WEST RIDGE BLVD Date: Thu, Aug 01, 2024 Deployment Lead:

								Pe	ak Hou	ır: 04:30	PM - 0	5:30 PM We	ather: C	lear Sk	y (30.07	°C)									
Start Time				N Approac	h RD					E Approac	h				W	S Approac	h VD					W Approac	:h		Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:30:00	33	41	74	0	2	148	63	163	53	0	2	279	62	48	54	0	0	164	33	122	19	0	0	174	765
16:45:00	22	32	69	0	1	123	51	195	41	0	1	287	49	43	49	0	0	141	43	153	9	0	0	205	756
17:00:00	28	37	76	0	0	141	65	165	50	0	2	280	52	46	56	0	0	154	43	160	11	0	0	214	789
17:15:00	24	44	65	0	0	133	61	178	74	1	2	314	66	49	51	0	0	166	34	145	9	0	0	188	801
Grand Total	107	154	284	0	3	545	240	701	218	1	7	1160	229	186	210	0	0	625	153	580	48	0	0	781	3111
Approach%	19.6%	28.3%	52.1%	0%		-	20.7%	60.4%	18.8%	0.1%		-	36.6%	29.8%	33.6%	0%		-	19.6%	74.3%	6.1%	0%		-	-
Totals %	3.4%	5%	9.1%	0%		17.5%	7.7%	22.5%	7%	0%		37.3%	7.4%	6%	6.8%	0%		20.1%	4.9%	18.6%	1.5%	0%		25.1%	-
PHF	0.81	0.88	0.93	0		0.92	0.92	0.9	0.74	0.25		0.92	0.87	0.95	0.94	0		0.94	0.89	0.91	0.63	0		0.91	-
Heavy	0	4	4	0		8	7	9	2	0		18	4	1	2	0		7	4	21	2	0		27	
Heavy %	0%	2.6%	1.4%	0%		1.5%	2.9%	1.3%	0.9%	0%		1.6%	1.7%	0.5%	1%	0%		1.1%	2.6%	3.6%	4.2%	0%		3.5%	-
Lights	107	149	280	0		536	233	692	216	1		1142	225	185	208	0		618	149	559	46	0		754	
Lights %	100%	96.8%	98.6%	0%		98.3%	97.1%	98.7%	99.1%	100%		98.4%	98.3%	99.5%	99%	0%		98.9%	97.4%	96.4%	95.8%	0%		96.5%	-
Single-Unit Trucks	0	1	4	0		5	3	8	1	0		12	3	1	1	0		5	2	12	2	0		16	-
Single-Unit Trucks %	0%	0.6%	1.4%	0%		0.9%	1.3%	1.1%	0.5%	0%		1%	1.3%	0.5%	0.5%	0%		0.8%	1.3%	2.1%	4.2%	0%		2%	-
Buses	0	3	0	0		3	2	0	0	0		2	0	0	1	0		1	1	1	0	0		2	-
Buses %	0%	1.9%	0%	0%		0.6%	0.8%	0%	0%	0%		0.2%	0%	0%	0.5%	0%		0.2%	0.7%	0.2%	0%	0%		0.3%	-
Articulated Trucks	0	0	0	0		0	2	1	1	0		4	1	0	0	0		1	1	8	0	0		9	-
Articulated Trucks %	0%	0%	0%	0%		0%	0.8%	0.1%	0.5%	0%		0.3%	0.4%	0%	0%	0%		0.2%	0.7%	1.4%	0%	0%		1.2%	-
Bicycles on Road	0	1	0	0		1	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Bicycles on Road %	0%	0.6%	0%	0%		0.2%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	2	-	-	-	-	-	6	=	-	-	-	-	0	=	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	20%		-	-	-	-	60%		-	-	-	-	0%		-	-	-	-	0%		-
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	-	10%		-	-	-	-	10%		-	-	-	-	0%		-	-	-	-	0%		-





Peak Hour: 04:30 PM - 05:30 PM Weather: Clear Sky (30.07 °C)



Turning Movement Count Location Name: MURPHY RD & UHTHOFF LINE Date: Thu, Aug 01, 2024 Deployment Lead:

										Tur	ning N	lovement Count	t (2 . ML	IRPHY I	RD & UI	HTHOF	F LINE)									
				N Approa	ich LINE					E Approac	h RD					S Approad	:h INE					W Approac	ch RD		Int. Total (15 min)	Int. Total (1 hr)
Start Time	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		` '
06:00:00	3	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	5	
06:15:00	1	0	0	0	0	1	0	2	0	0	0	2	0	0	1	0	0	1	1	1	4	0	0	6	10	
06:30:00	7	0	0	0	0	7	0	1	0	0	0	1	0	0	0	0	0	0	0	1	7	0	0	8	16	
06:45:00	4	1	0	0	0	5	1	2	0	0	0	3	0	0	2	0	0	2	0	2	7	0	0	9	19	50
07:00:00	10	0	0	0	0	10	0	2	0	0	0	2	0	0	0	0	0	0	0	0	13	0	0	13	25	70
07:15:00	10	0	0	0	0	10	0	1	0	0	0	1	0	0	0	0	0	0	0	1	8	0	0	9	20	80
07:30:00	14	0	0	0	0	14	0	0	0	0	0	0	0	1	0	0	0	1	1	1	6	0	0	8	23	87
07:45:00	7	0	0	0	0	7	0	4	0	0	0	4	0	0	0	0	0	0	0	2	19	0	0	21	32	100
08:00:00	15	0	0	0	0	15	1	1	0	0	0	2	0	0	0	0	0	0	0	2	14	0	0	16	33	108
08:15:00	10	0	0	0	0	10	0	2	0	0	0	2	0	0	0	0	0	0	0	2	15	0	0	17	29	117
08:30:00	8	0	0	0	0	8	0	1	0	0	0	1	1	0	0	0	0	1	1	0	8	0	0	9	19	113
08:45:00	20	0	0	0	0	20	0	4	0	0	0	4	0	0	0	0	0	0	0	2	14	0	0	16	40	121
09:00:00	20	0	0	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	0	0	17	37	125
09:15:00	18	0	0	0	0	18	0	2	0	0	0	2	0	0	0	0	0	0	0	1	9	0	0	10	30	126
09:30:00	18	0	0	0	0	18	0	2	0	0	0	2	0	0	0	0	0	0	1	0	19	0	0	20	40	147
09:45:00	16	0	0	0	0	16	0	1	0	0	0	1	0	0	0	0	0	0	0	1	18	0	0	19	36	143
BREAK	(
15:00:00	17	0	0	0	0	17	1	1	0	0	0	2	0	0	0	0	5	0	0	1	36	0	0	37	56	
15:15:00	14	0	0	0	0	14	0	1	2	0	0	3	0	0	0	0	0	0	0	2	21	0	0	23	40	
15:30:00	19	0	0	0	0	19	0	0	0	0	0	0	0	0	1	0	2	1	0	1	31	0	0	32	52	
15:45:00	20	0	1	0	0	21	1	0	0	0	0	1	0	0	0	0	1	0	0	0	32	0	0	32	54	202
16:00:00	14	0	0	0	0	14	0	2	0	0	0	2	0	0	1	0	0	1	0	2	32	0	0	34	51	197
16:15:00	13	0	0	0	0	13	0	2	0	0	0	2	0	0	0	0	0	0	0	2	17	0	0	19	34	191
16:30:00	18	0	0	0	0	18	0	3	0	0	0	3	0	1	1	0	0	2	2	4	23	0	0	29	52	191
16:45:00	14	0	0	0	0	14	1	1	0	0	0	2	0	0	0	0	0	0	0	4	20	0	0	24	40	177
17:00:00	14	0	0	0	0	14	1	0	0	0	0	1	0	0	0	0	0	0	0	1	31	0	0	32	47	173
17:15:00	13	0	0	0	0	13	0	3	0	0	0	3	0	0	1	0	1	1	1	1	31	0	0	33	50	189
17:30:00	9	0	0	0	0	9	0	1	0	0	0	1	0	0	0	0	0	0	0	0	19	1	0	20	30	167
17:45:00	12	0	0	0	0	12	0	1	0	0	0	1	0	0	0	0	0	0	1	1	17	0	0	19	32	159
18:00:00	10	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	1	19	0	0	20	30	142
18:15:00	17	0	0	0	0	17	0	1	0	0	0	1	0	0	0	0	1	0	1	1	15	0	0	17	35	127
18:30:00	11	0	1	0	0	12	0	1	0	0	0	1	0	0	0	0	0	0	0	0	14	0	0	14	27	124
18:45:00	8	0	0	0	0	8	0	1	0	0	0	1	0	0	1	0	0	1	1	1	13	0	0	15	25	117
Grand Total	404	1	2	0	0	407	6	43	2	0	0	51	1	2	8	0	10	11	10	38	551	1	0	600	1069	-
Approach%	99.3%	0.2%	0.5%	0%		-	11.8%	84.3%	3.9%	0%		-	9.1%	18.2%	72.7%	0%		-	1.7%	6.3%	91.8%	0.2%		-	-	-
Totals %	37.8%	0.1%	0.2%	0%		38.1%	0.6%	4%	0.2%	0%		4.8%	0.1%	0.2%	0.7%	0%		1%	0.9%	3.6%	51.5%	0.1%		56.1%	-	-
Heavy	90	0	0	0		-	0	18	0	0		-	1	0	0	0		-	1	16	89	0		-	-	-
Heavy %	22.3%	0%	0%	0%		-	0%	41.9%	0%	0%		-	100%	0%	0%	0%		-	10%	42.1%	16.2%	0%		-	-	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-

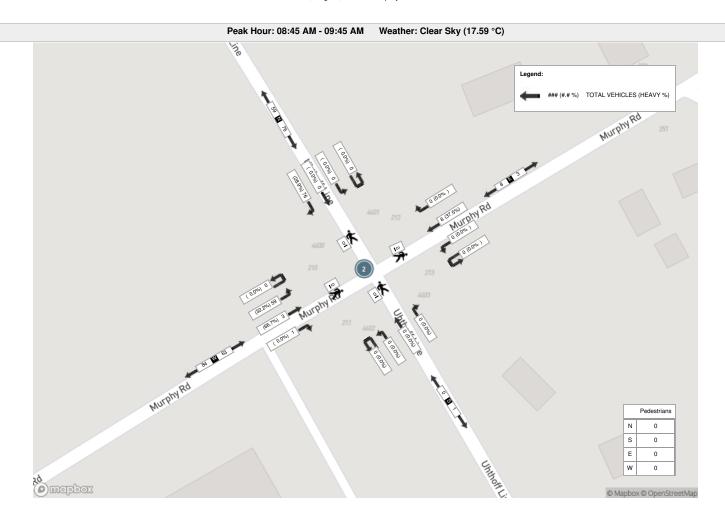
Turning Movement Count Location Name: MURPHY RD & UHTHOFF LINE Date: Thu, Aug 01, 2024 Deployment Lead:

									Peak	Hour: 0	8:45 AN	И - 09:45 AM	Weathe	r: Clea	ar Sky	(17.59	°C)								
Start Time				N Appro	ach LINE					E Appro	ach 'RD					S Appro	oach F LINE					W Approac	ch RD		Int. 7 (15
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
08:45:00	20	0	0	0	0	20	0	4	0	0	0	4	0	0	0	0	0	0	0	2	14	0	0	16	
09:00:00	20	0	0	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	0	0	17	
09:15:00	18	0	0	0	0	18	0	2	0	0	0	2	0	0	0	0	0	0	0	1	9	0	0	10	
09:30:00	18	0	0	0	0	18	0	2	0	0	0	2	0	0	0	0	0	0	1	0	19	0	0	20	
Grand Total	76	0	0	0	0	76	0	8	0	0	0	8	0	0	0	0	0	0	1	3	59	0	0	63	Ì
Approach%	100%	0%	0%	0%		-	0%	100%	0%	0%		-	0%	0%	0%	0%		-	1.6%	4.8%	93.7%	0%		-	
Totals %	51.7%	0%	0%	0%		51.7%	0%	5.4%	0%	0%		5.4%	0%	0%	0%	0%		0%	0.7%	2%	40.1%	0%		42.9%	
PHF	0.95	0	0	0		0.95	0	0.5	0	0		0.5	0	0	0	0		0	0.25	0.38	0.78	0		0.79	
Heavy	22	0	0	0		22		3	0	0		3		0	0	0		0	0	2	19	0		21	
Heavy %	28.9%	0%	0%	0%		28.9%	0%	37.5%	0%	0%		37.5%	0%	0%	0%	0%		0%	0%	66.7%	32.2%	0%		33.3%	
Lights	54	0	0	0		54	0	5	0	0		5	0	0	0	0		0	1	1	40	0		42	
Lights %	71.1%	0%	0%	0%		71.1%	0%	62.5%	0%	0%		62.5%	0%	0%	0%	0%		0%	100%	33.3%	67.8%	0%		66.7%	
ingle-Unit Trucks	22	0	0	0		22	0	0	0	0		0	0	0	0	0		0	0	0	19	0		19	
ngle-Unit Trucks %	28.9%	0%	0%	0%		28.9%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	32.2%	0%		30.2%	
Buses	0	0	0	0		0	0	2	0	0		2	0	0	0	0		0	0	2	0	0		2	
Buses %	0%	0%	0%	0%		0%	0%	25%	0%	0%		25%	0%	0%	0%	0%		0%	0%	66.7%	0%	0%		3.2%	
rticulated Trucks	0	0	0	0		0	0	1	0	0		1	0	0	0	0		0	0	0	0	0		0	
ticulated Trucks %	0%	0%	0%	0%		0%	0%	12.5%	0%	0%		12.5%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	
icycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	

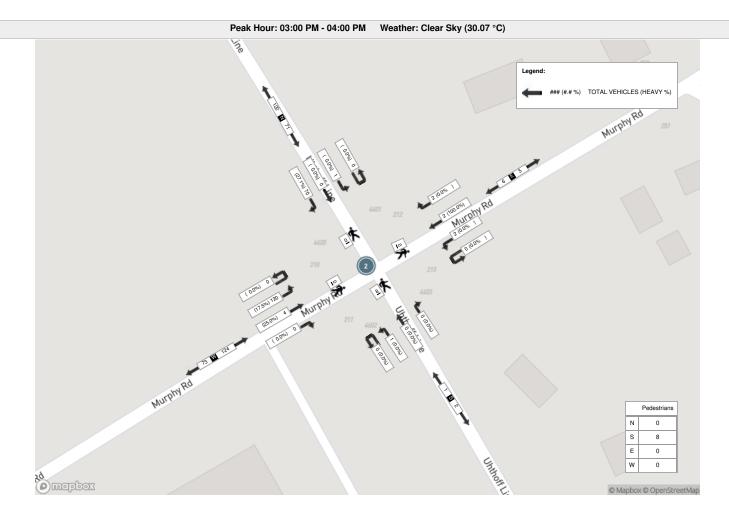
Turning Movement Count Location Name: MURPHY RD & UHTHOFF LINE Date: Thu, Aug 01, 2024 Deployment Lead:

Sample S									F	eak Ho	our: 03:0	JU PM -	04:00 PM We	eather:	Clear	Sку (30	.07 °C)									
15:0000 17 0 0 0 0 17 1 1 1 0 0 0 0 0 0 17 1 1 1 0 0 0 0	Start Time				N Approa	ich LINE					E Approact	h ID					S Appro UHTHOFF	ach LINE					W Approa	ch RD		Int. 1 (15 i
15:15:00		Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
15:30:00 19 0 0 0 19 0 0 19 0 0 0 19 0 0 0 0 0	15:00:00	17	0	0	0	0	17	1	1	0	0	0	2	0	0	0	0	5	0	0	1	36	0	0	37	
15.45.00 20 0 1 0 0 21 1 0 0 21 1 0 0 0 0 0 0 0 1 0 0	15:15:00	14	0	0	0	0	14	0	1	2	0	0	3	0	0	0	0	0	0	0	2	21	0	0	23	
Grand Total 70 0 1 0 0 71 2 2 2 0 0 6 0 0 1 0 8 1 0 4 120 0 0 124 Approach% 98.6% 0% 1.4% 0% 33.3% 33.3% 33.3% 0% 0% 0% 0% 0.5% 0% 0% 3.2% 98.8% 0% Totals % 34.7% 0% 0.5% 0%	15:30:00	19	0	0	0	0	19	0	0	0	0	0	0	0	0	1	0	2	1	0	1	31	0	0	32	
Approach's 98.6% 0% 1.4% 0% 0 - 33.3% 33.3% 33.8% 0% 0 - 0% 0% 100% 0% 0.5% 0% 0.5% 0% 2% 96.8% 0% - Totals % 34.7% 0% 0.5% 0.5	15:45:00	20	0	1	0	0	21	1	0	0	0	0	1	0	0	0	0	1	0	0	0	32	0	0	32	
Totals % 34.7% 0% 0.5% 0% 35.1% 1% 1% 1% 0% 3% 0% 0% 0.5% 0.5	Grand Total	70	0	1	0	0	71	2	2	2	0	0	6	0	0	1	0	8	1	0	4	120	0	0	124	
PHF 0.88 0 0.25 0 0.85 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.	Approach%	98.6%	0%	1.4%	0%		-	33.3%	33.3%	33.3%	0%		-	0%	0%	100%	0%		-	0%	3.2%	96.8%	0%		-	
Heavy 19 0 0 0 0 19 0 0 2 0 0 0 2 0 0 0 0 0 0 0 0 0 0 0 0	Totals %	34.7%	0%	0.5%	0%		35.1%	1%	1%	1%	0%		3%	0%	0%	0.5%	0%		0.5%	0%	2%	59.4%	0%		61.4%	
Heavy 6 27.1% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%	PHF	0.88	0	0.25	0		0.85	0.5	0.5	0.25	0		0.5	0	0	0.25	0		0.25	0	0.5	0.83	0		0.84	
Lights 51 0 1 0 52 2 0 2 0 4 0 0 1 0 0 1 0 1 0 3 99 0 102 Lights 72.9% 0% 100% 0% 73.2% 100% 0% 100% 0% 66.7% 0% 0% 100% 0% 100% 0% 100% 0% 100% 0% 82.3% Single-Unit Trucks 18 0 0 0 0 18 0 0 0 0 0 0 0 0 0 0 0 0 0	Heavy	19	0	0	0		19	0	2	0	0		2	0	0	0	0		0	0	1	21	0		22	
Lights % 72.9% 0% 100% 0% 73.2% 100% 0% 100% 0% 100% 0% 66.7% 0% 0% 100% 0% 100% 0% 100% 0% 100% 0% 21 0 21 10 21 21 21 21 21 21 21 21 21 21 21 21 21	Heavy %	27.1%	0%	0%	0%		26.8%	0%	100%	0%	0%		33.3%	0%	0%	0%	0%		0%	0%	25%	17.5%	0%		17.7%	
ingle-Unit Trucks 18 0 0 0 18 0 0 0 0 18 0 0 0 0 0 0 0 0	Lights	51	0	1	0		52	2	0	2	0		4	0	0	1	0		1	0	3	99	0		102	
Figure Unit Trucks % 25.7% 0% 0% 0% 0% 25.4% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%	Lights %	72.9%	0%	100%	0%		73.2%	100%	0%	100%	0%		66.7%	0%	0%	100%	0%		100%	0%	75%	82.5%	0%		82.3%	
Buses 0 0 0 0 0 0 0 0 2 0 0 0 2 0 0 0 0 0 0	ingle-Unit Trucks	18	0	0	0		18	0	0	0	0		0	0	0	0	0		0	0	0	21	0		21	
Buses % 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0	ngle-Unit Trucks %	25.7%	0%	0%	0%		25.4%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	17.5%	0%		16.9%	
riculated Trucks 1 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	Buses	0	0	0	0		0	0	2	0	0		2	0	0	0	0		0	0	1	0	0		1	
ticulated Trucks % 1.4% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%	Buses %	0%	0%	0%	0%		0%	0%	100%	0%	0%		33.3%	0%	0%	0%	0%		0%	0%	25%	0%	0%		0.8%	
Sicycles on Road 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	rticulated Trucks	1	0	0	0		1	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	
cycles on Road % 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0	ticulated Trucks %	1.4%	0%	0%	0%		1.4%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	
	Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	
Pedestrians 0 0 0 0 8 0 -	icycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	
	Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	8	=	-	-	-	-	0	=	









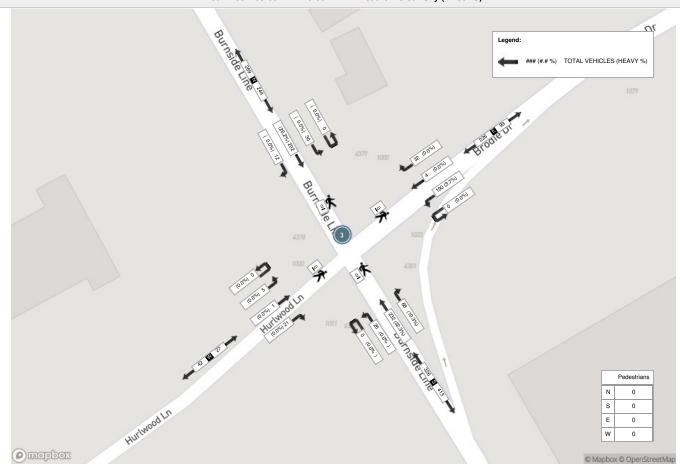
										Turni	ng Mov	vement Count (3	. HURL	WOOD	LN & B	URNSI	DE LIN	E)								
			В	N Approad	ch LINE				ı	E Approa	ch D LN				В	S Approac	h INE					W Approac	ch D LN		Int. Total (15 min)	Int. Total (1 hr)
Start Time	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
06:00:00	0	23	3	0	0	26	0	0	2	0	0	2	8	25	4	0	0	37	0	0	0	0	0	0	65	
06:15:00	0	44	1	0	0	45	0	0	3	0	0	3	6	24	2	0	0	32	0	0	0	0	0	0	80	
06:30:00	2	31	7	0	0	40	0	0	5	0	0	5	9	30	2	0	0	41	2	0	0	0	0	2	88	
06:45:00	2	57	2	0	0	61	0	0	10	0	0	10	21	36	6	0	0	63	1	0	0	0	0	1	135	368
07:00:00	2	38	6	0	0	46	5	1	9	0	0	15	9	31	8	0	0	48	3	0	0	0	0	3	112	415
07:15:00	2	35	2	0	0	39	0	0	9	0	0	9	7	31	5	0	0	43	4	0	0	0	0	4	95	430
07:30:00	3	51	8	0	0	62	2	1	10	0	0	13	11	34	5	0	0	50	1	0	0	0	0	1	126	468
07:45:00	3	49	10	0	0	62	4	1	15	0	0	20	15	35	15	0	0	65	2	1	0	0	0	3	150	483
08:00:00	7	60	9	0	0	76	2	0	17	0	0	19	11	46	7	0	0	64	1	0	2	0	0	3	162	533
08:15:00	6	50	6	0	0	62	3	0	31	0	0	34	26	42	19	0	0	87	3	1	0	0	0	4	187	625
08:30:00	2	44	12	0	0	58	6	1	38	0	0	45	10	45	6	0	0	61	5	1	0	0	0	6	170	669
08:45:00	3	40	5	0	0	48	7	1	47	0	0	55	11	43	9	0	0	63	8	0	3	0	0	11	177	696
09:00:00	5	54	5	0	0	64	10	0	39	0	0	49	14	50	4	0	0	68	1	0	1	0	0	2	183	717
09:15:00	2	44	6	0	0	52	7	1	45	0	0	53	22	62	9	0	0	93	5	0	1	0	0	6	204	734
09:30:00	4	54	11	0	0	69	7	0	55	0	0	62	18	64	5	0	0	87	8	0	1	0	0	9	227	791
09:45:00	1	50	8	0	0	59	8	3	51	0	0	62	14	56	8	0	0	78	7	1	2	0	0	10	209	823
BREAK	**	***********************************																								
15:00:00	1	73	16	0	0	90	19	1	86	0	0	106	16	62	5	0	0	83	7	0	4	0	1	11	290	
15:15:00	1	49	10	0	0	60	15	3	80	0	0	98	23	47	9	0	0	79	7	1	0	0	0	8	245	
15:30:00	4	45	7	0	0	56	23	3	88	0	0	114	12	52	10	0	0	74	10	0	0	0	0	10	254	
15:45:00	3	36	10	0	0	49	13	3	68	0	0	84	11	50	8	0	0	69	5	2	5	0	0	12	214	1003
16:00:00	2	49	10	0	0	61	19	2	73	0	0	94	14	44	11	0	0	69	11	2	4	0	0	17	241	954
16:15:00	4	52	9	0	0	65	18	0	76	0	0	94	21	61	7	0	0	89	9	1	1	0	0	11	259	968
16:30:00	1	46	9	0	0	56	23	1	94	0	0	118	14	59	5	0	0	78	19	2	4	0	0	25	277	991
16:45:00	0	44	9	0	0	53	23	0	77	0	0	100	17	70	5	0	0	92	7	0	1	0	0	8	253	1030
17:00:00	2	53	8	0	0	63	19	0	83	0	0	102	23	57	7	0	0	87	5	1	0	0	0	6	258	1047
17:15:00	3	34	10	0	0	47	18	1	81	0	0	100	20	56	9	0	0	85	4	1	7	0	0	12	244	1032
17:30:00	0	29	15	0	0	44	12	0	68	0	0	80	13	44	6	0	0	63	6	0	3	0	0	9	196	951
17:45:00	4	36	7	0	0	47	16	1	86	0	0	103	12	40	1	0	0	53	9	0	4	0	0	13	216	914
18:00:00	0	27	12	0	0	39	15	1	61	0	0	77	13	37	6	0	0	56	6	1	2	0	0	9	181	837
18:15:00	1	36	5	0	0	42	8	0	50	0	0	58	9	29	3	1	0	42	5	0	1	0	0	6	148	741
18:30:00	0	30	9	0	0	39	9	0	59	0	0	68	10	33	6	0	0	49	3	1	0	0	0	4	160	705
18:45:00	0	14	5	0	0	19	11	4	46	0	0	61	11	46	1	0	0	58	17	1	2	0	0	20	158	647
Grand Total	70	1377	252	0	0	1699	322	29	1562	0	0	1913	451	1441	213	1	0	2106	181	17	48	0	1	246	5964	-
Approach%	4.1%	81%	14.8%	0%		-	16.8%	1.5%	81.7%	0%		-	21.4%	68.4%	10.1%	0%		-	73.6%	6.9%	19.5%	0%		-	-	-
Totals %	1.2%	23.1%	4.2%	0%		28.5%	5.4%	0.5%	26.2%	0%		32.1%	7.6%	24.2%	3.6%	0%		35.3%	3%	0.3%	0.8%	0%		4.1%	-	-
Heavy	0	295	2	0		-	2	0	50	0		-	36	265	2	0		-	3	0	0	0		-	-	-
Heavy %	0%	21.4%	0.8%	0%		-	0.6%	0%	3.2%	0%		-	8%	18.4%	0.9%	0%		-	1.7%	0%	0%	0%		-	-	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-

									Peak H	our: 09	:00 AM	- 10:00 AM	Weather	Clear S	Sky (17	.59 °C)									
Start Time			В	N Approac	h .INE				F	E Approac	ch D LN				В	S Approac URNSIDE L	h INE					W Approac	h LN		Int. Tot (15 mi
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
09:00:00	5	54	5	0	0	64	10	0	39	0	0	49	14	50	4	0	0	68	1	0	1	0	0	2	183
09:15:00	2	44	6	0	0	52	7	1	45	0	0	53	22	62	9	0	0	93	5	0	1	0	0	6	204
09:30:00	4	54	11	0	0	69	7	0	55	0	0	62	18	64	5	0	0	87	8	0	1	0	0	9	227
09:45:00	1	50	8	0	0	59	8	3	51	0	0	62	14	56	8	0	0	78	7	1	2	0	0	10	209
Grand Total	12	202	30	0	0	244	32	4	190	0	0	226	68	232	26	0	0	326	21	1	5	0	0	27	823
Approach%	4.9%	82.8%	12.3%	0%		-	14.2%	1.8%	84.1%	0%		-	20.9%	71.2%	8%	0%		-	77.8%	3.7%	18.5%	0%		-	
Totals %	1.5%	24.5%	3.6%	0%		29.6%	3.9%	0.5%	23.1%	0%		27.5%	8.3%	28.2%	3.2%	0%		39.6%	2.6%	0.1%	0.6%	0%		3.3%	-
PHF	0.6	0.94	0.68	0		0.88	0.8	0.33	0.86	0		0.91	0.77	0.91	0.72	0		0.88	0.66	0.25	0.63	0		0.68	
Heavy	0	53	0	0		53	0	0	7	0		7	7	75	0	0		82	0	0	0	0		0	
Heavy %	0%	26.2%	0%	0%		21.7%	0%	0%	3.7%	0%		3.1%	10.3%	32.3%	0%	0%		25.2%	0%	0%	0%	0%		0%	
Lights	12	149	30	0		191	32	4	183	0		219	61	157	26	0		244	21	1	5	0		27	
Lights %	100%	73.8%	100%	0%		78.3%	100%	100%	96.3%	0%		96.9%	89.7%	67.7%	100%	0%		74.8%	100%	100%	100%	0%		100%	
Single-Unit Trucks	0	15	0	0		15	0	0	5	0		5	6	19	0	0		25	0	0	0	0		0	
Single-Unit Trucks %	0%	7.4%	0%	0%		6.1%	0%	0%	2.6%	0%		2.2%	8.8%	8.2%	0%	0%		7.7%	0%	0%	0%	0%		0%	
Buses	0	0	0	0		0	0	0	2	0		2	0	0	0	0		0	0	0	0	0		0	
Buses %	0%	0%	0%	0%		0%	0%	0%	1.1%	0%		0.9%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	
Articulated Trucks	0	38	0	0		38	0	0	0	0		0	1	56	0	0		57	0	0	0	0		0	
Articulated Trucks %	0%	18.8%	0%	0%		15.6%	0%	0%	0%	0%		0%	1.5%	24.1%	0%	0%		17.5%	0%	0%	0%	0%		0%	
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	
Pedestrians%	_			_	0%				_	_	0%		_		_	_	0%						0%		

									Peak H	our: 04:	:15 PM	- 05:15 PM \	Weather:	Clear S	ky (30.	07 °C)									
Start Time			E	N Approac	h _INE				ı	E Approac	ch D LN				E	S Approac	h .INE					W Approa	ch D LN		Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:15:00	4	52	9	0	0	65	18	0	76	0	0	94	21	61	7	0	0	89	9	1	1	0	0	11	259
16:30:00	1	46	9	0	0	56	23	1	94	0	0	118	14	59	5	0	0	78	19	2	4	0	0	25	277
16:45:00	0	44	9	0	0	53	23	0	77	0	0	100	17	70	5	0	0	92	7	0	1	0	0	8	253
17:00:00	2	53	8	0	0	63	19	0	83	0	0	102	23	57	7	0	0	87	5	1	0	0	0	6	258
Grand Total	7	195	35	0	0	237	83	1	330	0	0	414	75	247	24	0	0	346	40	4	6	0	0	50	1047
Approach%	3%	82.3%	14.8%	0%		-	20%	0.2%	79.7%	0%		-	21.7%	71.4%	6.9%	0%		-	80%	8%	12%	0%		-	
Totals %	0.7%	18.6%	3.3%	0%		22.6%	7.9%	0.1%	31.5%	0%		39.5%	7.2%	23.6%	2.3%	0%		33%	3.8%	0.4%	0.6%	0%		4.8%	-
PHF	0.44	0.92	0.97	0		0.91	0.9	0.25	0.88	0		0.88	0.82	0.88	0.86	0		0.94	0.53	0.5	0.38	0		0.5	-
Heavy	0	16	0	0		16	0	0	5	0		5	10	4	0	0		14	1	0	0	0		1	-
Heavy %	0%	8.2%	0%	0%		6.8%	0%	0%	1.5%	0%		1.2%	13.3%	1.6%	0%	0%		4%	2.5%	0%	0%	0%		2%	
Lights	7	179	35	0		221	83	1	325	0		409	65	243	24	0		332	39	4	6	0		49	-
Lights %	100%	91.8%	100%	0%		93.2%	100%	100%	98.5%	0%		98.8%	86.7%	98.4%	100%	0%		96%	97.5%	100%	100%	0%		98%	-
Single-Unit Trucks	0	1	0	0		1	0	0	3	0		3	7	2	0	0		9	1	0	0	0		1	-
Single-Unit Trucks %	0%	0.5%	0%	0%		0.4%	0%	0%	0.9%	0%		0.7%	9.3%	0.8%	0%	0%		2.6%	2.5%	0%	0%	0%		2%	-
Buses	0	0	0	0		0	0	0	2	0		2	0	0	0	0		0	0	0	0	0		0	-
Buses %	0%	0%	0%	0%		0%	0%	0%	0.6%	0%		0.5%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Articulated Trucks	0	15	0	0		15	0	0	0	0		0	3	2	0	0		5	0	0	0	0		0	-
Articulated Trucks %	0%	7.7%	0%	0%		6.3%	0%	0%	0%	0%		0%	4%	0.8%	0%	0%		1.4%	0%	0%	0%	0%		0%	-
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-

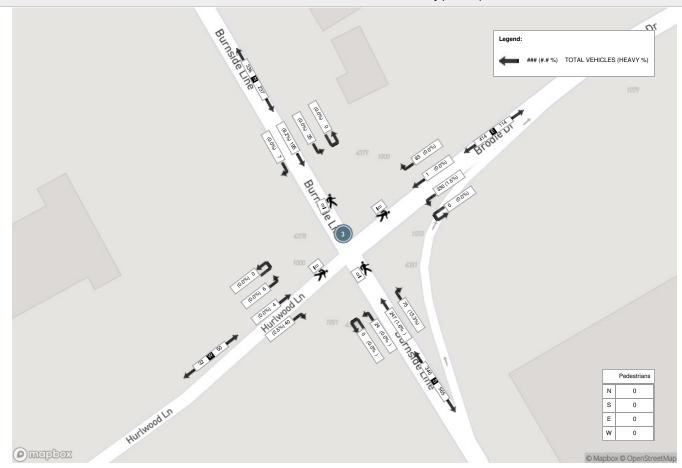
Crozier & Associates SUITE 200 1 FIRST STREET COLLINGWOOD ONTARIO, L9Y 1A1 CANADA

Peak Hour: 09:00 AM - 10:00 AM Weather: Clear Sky (17.59 °C)



Crozier & Associates SUITE 200 1 FIRST STREET COLLINGWOOD ONTARIO, L9Y 1A1 CANADA

Peak Hour: 04:15 PM - 05:15 PM Weather: Clear Sky (30.07 °C)



Turning Movement Count (4 . BURNSIDE LINE / WEST ST N & HWY 11 INTERCHANGE (NORTH))

a 		N Approach BURNSIDE LINE						HWY	E App 11 INTERC	oroach CHANGE (I	NORTH)			S App	proach ST ST N			W A	Approach	Int. Total (15 min)	Int. Total (1 hr)
Start Time	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	UTurn S:S	Peds S:	Approach Total	UTurn W:W	Peds W:	Approach Total		
06:00:00	12	15	0	0	0	27	1	4	0	0	5	24	40	0	0	64	0	0	0	96	
06:15:00	26	18	0	0	0	44	0	11	0	0	11	40	36	0	0	76	0	0	0	131	
06:30:00	16	24	0	0	0	40	2	15	0	0	17	35	49	0	0	84	0	0	0	141	
06:45:00	28	35	0	0	0	63	5	24	0	0	29	28	68	0	0	96	0	0	0	188	556
07:00:00	21	33	0	0	0	54	8	14	0	0	22	38	62	0	0	100	0	0	0	176	636
07:15:00	18	30	0	0	0	48	10	24	0	1	34	39	50	0	0	89	0	0	0	171	676
07:30:00	26	36	0	0	0	62	9	32	0	1	41	33	60	0	0	93	0	0	0	196	731
07:45:00	27	38	0	0	0	65	14	52	0	0	66	40	91	0	0	131	0	0	0	262	805
08:00:00	30	48	0	0	0	78	10	42	0	0	52	54	77	0	0	131	0	0	0	261	890
08:15:00	26	59	0	0	0	85	18	35	0	0	53	46	109	0	0	155	0	0	0	293	1012
08:30:00	25	54	0	0	0	79	10	37	0	2	47	48	85	0	0	133	0	0	0	259	1075
08:45:00	33	70	0	0	0	103	12	51	0	2	63	44	106	0	0	150	0	0	0	316	1129
09:00:00	31	63	0	0	0	94	11	32	0	0	43	30	106	0	0	136	0	0	0	273	1141
09:15:00	34	56	0	0	0	90	14	41	0	0	55	39	149	0	0	188	0	0	0	333	1181
09:30:00	48	70	0	0	0	118	14	27	0	2	41	36	142	0	0	178	0	0	0	337	1259
09:45:00	40	64	0	0	0	104	14	33	0	0	47	44	143	0	0	187	0	0	0	338	1281
BREAK	(-	
15:00:00	65	106	0	0	0	171	6	25	0	0	31	62	151	0	0	213	0	0	0	415	
15:15:00	38	94	0	0	0	132	15	35	0	0	50	55	128	0	0	183	0	0	0	365	
15:30:00	47	91	0	0	0	138	12	35	0	0	47	52	130	0	0	182	0	0	0	367	
15:45:00	32	81	0	0	0	113	16	39	0	2	55	59	136	0	0	195	0	0	0	363	1510
16:00:00	43	89	0	0	0	132	10	28	0	1	38	55	127	0	0	182	0	0	0	352	1447
16:15:00	39	99	0	0	0	138	10	39	0	0	49	58	139	0	0	197	0	0	0	384	1466
16:30:00	44	109	0	0	0	153	12	37	0	0	49	55	138	0	0	193	0	0	0	395	1494
16:45:00	25	97	1	0	0	123	23	41	0	1	64	50	136	0	0	186	0	0	0	373	1504
17:00:00	32	110	0	0	0	142	17	41	0	1	58	70	132	0	0	202	0	0	0	402	1554
17:15:00	36	91	0	0	0	127	17	49	0	0	66	63	145	0	0	208	0	0	0	401	1571
17:30:00	27	78	0	0	0	105	20	39	0	1	59	45	91	0	0	136	0	0	0	300	1476
17:45:00	41	89	0	0	0	130	9	32	0	0	41	37	100	0	0	137	0	0	0	308	1411
18:00:00	21	72	1	0	0	94	6	20	0	0	26	24	87	0	0	111	0	0	0	231	1240
18:15:00	24	72	0	0	0	96	5	36	0	0	41	39	79	0	0	118	0	0	0	255	1094
18:30:00	24	70	0	0	0	94	12	28	0	1	40	36	79	0	0	115	0	0	0	249	1043
18:45:00	22	54	0	0	0	76	10	29	0	0	39	36	93	0	0	129	0	0	0	244	979
Grand Total	1001	2115	2	0	0	3118	352	1027	0	15	1379	1414	3264	0	0	4678	0	0	0	9175	-
Approach%	32.1%	67.8%	0.1%	0%		-	25.5%	74.5%	0%		-	30.2%	69.8%	0%		-	0%		-	-	-
Totals %	10.9%	23.1%	0%	0%		34%	3.8%	11.2%	0%		15%	15.4%	35.6%	0%		51%	0%		0%	-	-
Heavy	302	50	0	0		-	23	19	0		-	41	311	0		-	0		-	-	-
Heavy %	30.2%	2.4%	0%	0%		-	6.5%	1.9%	0%		-	2.9%	9.5%	0%		-	0%		-	-	-
Bicycles	-	-	-	-		-	-	-	-		-	-	-	-		-	-		-	-	-
Bicycle %	-	-	-	-		-	-	-	-		-	-	-	-		-	-		-	-	-



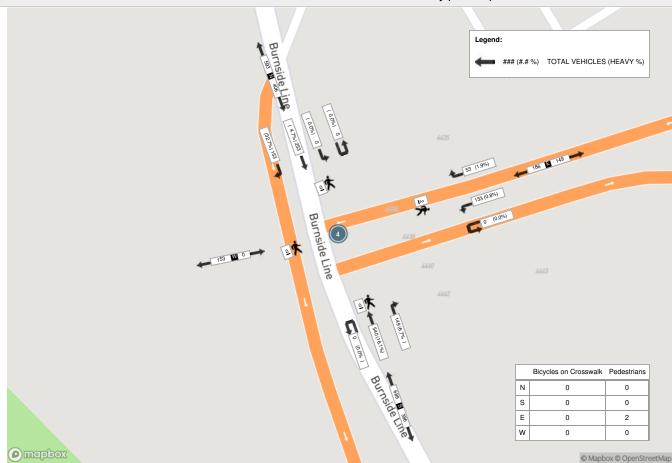
						Pea	ak Hour:	09:00 A	M - 10:0	00 AM	Weather: Clea	r Sky (17	.59 °C)							
Start Time			E	N Approa BURNSIDE	ch LINE			HWY	E Ap	proach CHANGE (N	NORTH)			S App WES	proach T ST N	W Approach Int				
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	UTurn	Peds	Approach Total	
09:00:00	31	63	0	0	0	94	11	32	0	0	43	30	106	0	0	136	0	0	0	273
09:15:00	34	56	0	0	0	90	14	41	0	0	55	39	149	0	0	188	0	0	0	333
09:30:00	48	70	0	0	0	118	14	27	0	2	41	36	142	0	0	178	0	0	0	337
09:45:00	40	64	0	0	0	104	14	33	0	0	47	44	143	0	0	187	0	0	0	338
Grand Total	153	253	0	0	0	406	53	133	0	2	186	149	540	0	0	689	0	0	0	1281
Approach%	37.7%	62.3%	0%	0%		-	28.5%	71.5%	0%		-	21.6%	78.4%	0%		-	0%		-	-
Totals %	11.9%	19.8%	0%	0%		31.7%	4.1%	10.4%	0%		14.5%	11.6%	42.2%	0%		53.8%	0%		0%	-
PHF	0.8	0.9	0	0		0.86	0.95	0.81	0		0.85	0.85	0.91	0		0.92	0		0	-
Heavy	50	12	0	0		62	1	1	0		2	10	87	0		97	0		0	
Heavy %	32.7%	4.7%	0%	0%		15.3%	1.9%	0.8%	0%		1.1%	6.7%	16.1%	0%		14.1%	0%		0%	-
Lights	103	241	0	0		344	52	131	0		183	139	453	0		592	0		0	
Lights %	67.3%	95.3%	0%	0%		84.7%	98.1%	98.5%	0%		98.4%	93.3%	83.9%	0%		85.9%	0%		0%	-
Single-Unit Trucks	16	6	0	0		22	1	1	0		2	9	27	0		36	0		0	-
Single-Unit Trucks %	10.5%	2.4%	0%	0%		5.4%	1.9%	0.8%	0%		1.1%	6%	5%	0%		5.2%	0%		0%	-
Buses	0	2	0	0		2	0	0	0		0	0	2	0		2	0		0	-
Buses %	0%	0.8%	0%	0%		0.5%	0%	0%	0%		0%	0%	0.4%	0%		0.3%	0%		0%	-
Articulated Trucks	34	4	0	0		38	0	0	0		0	1	58	0		59	0		0	-
Articulated Trucks %	22.2%	1.6%	0%	0%		9.4%	0%	0%	0%		0%	0.7%	10.7%	0%		8.6%	0%		0%	-
Bicycles on Road	0	0	0	0		0	0	1	0		1	0	0	0		0	0		0	-
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0.8%	0%		0.5%	0%	0%	0%		0%	0%		0%	-
Pedestrians	-	-	-	-	0	-	-	-	-	2	-	-	-	-	0	-	-	0	-	-
Pedestrians%	-	-	-	-	0%		-	-	-	100%		-	-	-	0%		-	0%		-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	0%		-	-	-	0%		-	0%		-



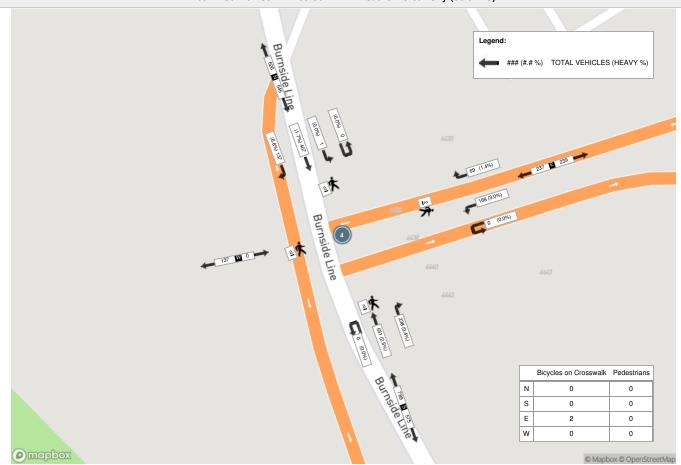
						Pea	k Hour:	04:30 P	M - 05:3	0 PM	Weather: Clear	Sky (30.	07 °C)							
Start Time			В	N Approac	h INE			HWY	E Ap	proach CHANGE (I	NORTH)			S App WES	roach FSTN			pproach	Int. Total (15 min)	
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	UTurn	Peds	Approach Total	
16:30:00	44	109	0	0	0	153	12	37	0	0	49	55	138	0	0	193	0	0	0	395
16:45:00	25	97	1	0	0	123	23	41	0	1	64	50	136	0	0	186	0	0	0	373
17:00:00	32	110	0	0	0	142	17	41	0	1	58	70	132	0	0	202	0	0	0	402
17:15:00	36	91	0	0	0	127	17	49	0	0	66	63	145	0	0	208	0	0	0	401
Grand Total	137	407	1	0	0	545	69	168	0	2	237	238	551	0	0	789	0	0	0	1571
Approach%	25.1%	74.7%	0.2%	0%		-	29.1%	70.9%	0%		-	30.2%	69.8%	0%		-	0%		-	-
Totals %	8.7%	25.9%	0.1%	0%		34.7%	4.4%	10.7%	0%		15.1%	15.1%	35.1%	0%		50.2%	0%		0%	-
PHF	0.78	0.93	0.25	0		0.89	0.75	0.86	0		0.9	0.85	0.95	0		0.95	0		0	-
Heavy	9	7	0	0		16	1	5	0		6	1	14	0		15	0		0	
Heavy %	6.6%	1.7%	0%	0%		2.9%	1.4%	3%	0%		2.5%	0.4%	2.5%	0%		1.9%	0%		0%	-
Lights	128	400	1	0		529	68	163	0		231	237	536	0		773	0		0	
Lights %	93.4%	98.3%	100%	0%		97.1%	98.6%	97%	0%		97.5%	99.6%	97.3%	0%		98%	0%		0%	-
Single-Unit Trucks	2	3	0	0		5	0	4	0		4	1	8	0		9	0		0	-
Single-Unit Trucks %	1.5%	0.7%	0%	0%		0.9%	0%	2.4%	0%		1.7%	0.4%	1.5%	0%		1.1%	0%		0%	-
Buses	0	3	0	0		3	0	0	0		0	0	4	0		4	0		0	-
Buses %	0%	0.7%	0%	0%		0.6%	0%	0%	0%		0%	0%	0.7%	0%		0.5%	0%		0%	-
Articulated Trucks	7	1	0	0		8	1	1	0		2	0	2	0		2	0		0	-
Articulated Trucks %	5.1%	0.2%	0%	0%		1.5%	1.4%	0.6%	0%		0.8%	0%	0.4%	0%		0.3%	0%		0%	-
Bicycles on Road	0	0	0	0		0	0	0	0		0	0	1	0		1	0		0	-
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%		0%	0%	0.2%	0%		0.1%	0%		0%	-
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	0	-	-
Pedestrians%	-	-	-	-	0%		-	-	-	0%		-	-	-	0%		-	0%		-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	2	-	-	-	-	0	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	100%		-	-	-	0%		-	0%		-

Crozier & Associates SUITE 200 1 FIRST STREET COLLINGWOOD ONTARIO, L9Y 1A1 CANADA

Peak Hour: 09:00 AM - 10:00 AM Weather: Clear Sky (17.59 °C)



Peak Hour: 04:30 PM - 05:30 PM Weather: Clear Sky (30.07 °C)





Crozier & Associates SUITE 200 1 FIRST STREET COLLINGWOOD ONTARIO, L9Y 1A1 CANADA

Turning Movement Count (5 . BURNSIDE LINE / WEST ST N & HWY 11 INTERCHANGE (SOUTH)) N Approach S Approach W Approach **NW Approach** Int. Total Int. Total WEST ST N WEST ST N HWY 11 SB OFF RAMP HWY 11 NB ON RAMP (15 min) (1 hr) Start Time Hard Right Thru UTurn Peds Thru Bear Left UTurn Peds Right Left UTurn Peds UTurn Approach Total Approach Total Approach Total Approach Total N:NW S:N S:NW W:N NW:NW NW: N:S N:N N: S:S S: W:S W:W W: 06:00:00 06:15:00 06:30:00 06:45:00 07:00:00 07:15:00 07:30:00 07:45:00 08:00:00 08:15:00 08:30:00 08:45:00 09:00:00 09:15:00 09:30:00 09:45:00 ***BREAK*** 15:00:00 15:15:00 n 15:30:00 15:45:00 16:00:00 16:15:00 16:30:00 16:45:00 17:00:00 17:15:00 n 17:30:00 17:45:00 18:00:00 18:15:00 18:30:00 18:45:00 **Grand Total** n Approach% 14.4% 85.6% 0% 79.1% 20.9% 0% 41.9% 58.1% 0% 0%

Totals %

4.7%

28%

0%

32.8%

37%

9.8%

0%

8.6%

11.9%

0%

20.5%

0%

0%



Heavy	18	49	0	-	89	14	0	-	28	265	0	-	0	-	-	-
Heavy %	4%	1.8%	0%	-	2.5%	1.5%	0%	-	3.4%	23.2%	0%	-	0%	-	-	-
Bicycles	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycle %	-	-	-	-	-	-	-	-	-	-	-	_	=	=	-	_

					Po	eak Hou	ır: 09:00 <i>A</i>	AM - 10	:00 AM	Weather: Cl	ear Sky	(17.59	°C)						
Start Time			N Appro	oach ST N				S Appr WEST				F	W App WY 11 SE		MP			pproach IB ON RAMP	Int. Total (15 min)
	Hard Right	Thru	UTurn	Peds	Approach Total	Thru	Bear Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	UTurn	Peds	Approach Total	
09:00:00	12	84	0	0	96	97	23	0	0	120	29	40	0	0	69	0	0	0	285
09:15:00	9	87	0	0	96	128	23	0	0	151	26	58	0	0	84	0	0	0	331
09:30:00	7	87	0	0	94	109	17	0	0	126	24	69	0	0	93	0	0	0	313
09:45:00	6	94	0	0	100	127	23	0	0	150	25	58	0	0	83	0	2	0	333
Grand Total	34	352	0	0	386	461	86	0	0	547	104	225	0	0	329	0	2	0	1262
Approach%	8.8%	91.2%	0%		-	84.3%	15.7%	0%		-	31.6%	68.4%	0%		-	0%		-	-
Totals %	2.7%	27.9%	0%		30.6%	36.5%	6.8%	0%		43.3%	8.2%	17.8%	0%		26.1%	0%		0%	-
PHF	0.71	0.94	0		0.97	0.9	0.93	0		0.91	0.9	0.82	0		0.88	0		0	-
Heavy	4	9	0		13	17	1	0		18	6	81	0		87	0		0	
Heavy %	11.8%	2.6%	0%		3.4%	3.7%	1.2%	0%		3.3%	5.8%	36%	0%		26.4%	0%		0%	-
Lights	30	342	0		372	444	85	0		529	98	144	0		242	0		0	
Lights %	88.2%	97.2%	0%		96.4%	96.3%	98.8%	0%		96.7%	94.2%	64%	0%		73.6%	0%		0%	-
Single-Unit Trucks	0	7	0		7	13	1	0		14	5	22	0		27	0		0	-
Single-Unit Trucks %	0%	2%	0%		1.8%	2.8%	1.2%	0%		2.6%	4.8%	9.8%	0%		8.2%	0%		0%	-
Buses	0	2	0		2	2	0	0		2	0	0	0		0	0		0	-
Buses %	0%	0.6%	0%		0.5%	0.4%	0%	0%		0.4%	0%	0%	0%		0%	0%		0%	-
Articulated Trucks	4	0	0		4	2	0	0		2	1	59	0		60	0		0	-
Articulated Trucks %	11.8%	0%	0%		1%	0.4%	0%	0%		0.4%	1%	26.2%	0%		18.2%	0%		0%	-
Bicycles on Road	0	1	0		1	0	0	0		0	0	0	0		0	0		0	-
Bicycles on Road %	0%	0.3%	0%		0.3%	0%	0%	0%		0%	0%	0%	0%		0%	0%		0%	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	2	-	-
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-	100%		-

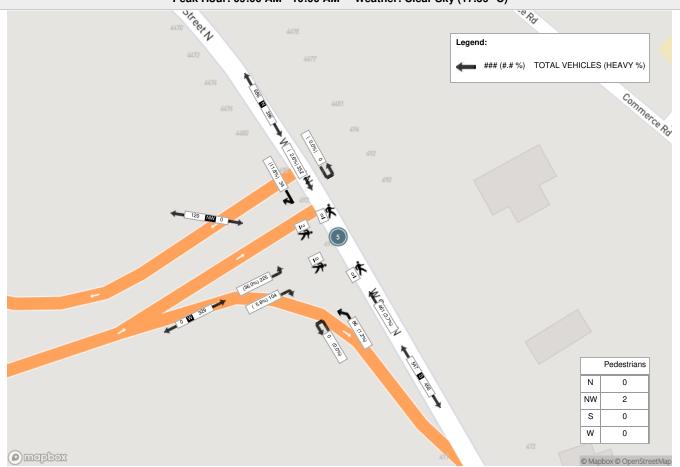
Pedestrians%

Turning Movement Count Location Name: BURNSIDE LINE / WEST ST N & HWY 11 INTERCHANGE (SOUTH) Date: Thu, Aug 01, 2024 Deployment Lead:

					P	eak Hou	ır: 04:30 F	PM - 05	:30 PM	Weather: Cl	ear Sky	Sky (30.07 °C)									
Start Time			N Appro					S Appr				F	W Ap	proach B OFF RA	MP			pproach NB ON RAMP	Int. Tota (15 min)		
	Hard Right	Thru	UTurn	Peds	Approach Total	Thru	Bear Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	UTurn	Peds	Approach Total			
16:30:00	28	113	0	0	141	150	45	0	0	195	36	45	0	0	81	0	0	0	417		
16:45:00	26	117	0	0	143	154	35	0	0	189	36	35	0	0	71	0	0	0	403		
17:00:00	22	130	0	0	152	161	65	0	0	226	32	36	0	0	68	0	0	0	446		
17:15:00	15	125	0	0	140	168	53	0	0	221	32	38	0	0	70	0	0	0	431		
Grand Total	91	485	0	0	576	633	198	0	0	831	136	154	0	0	290	0	0	0	1697		
Approach%	15.8%	84.2%	0%		-	76.2%	23.8%	0%		-	46.9%	53.1%	0%		-	0%		-	-		
Totals %	5.4%	28.6%	0%		33.9%	37.3%	11.7%	0%		49%	8%	9.1%	0%		17.1%	0%		0%	-		
PHF	0.81	0.93	0		0.95	0.94	0.76	0		0.92	0.94	0.86	0		0.9	0		0	-		
Heavy	2	8	0		10	9	2	0		11	2	6	0		8	0		0			
Heavy %	2.2%	1.6%	0%		1.7%	1.4%	1%	0%		1.3%	1.5%	3.9%	0%		2.8%	0%		0%	-		
Lights	89	477	0		566	624	196	0		820	134	148	0		282	0		0			
Lights %	97.8%	98.4%	0%		98.3%	98.6%	99%	0%		98.7%	98.5%	96.1%	0%		97.2%	0%		0%	-		
Single-Unit Trucks	2	3	0		5	5	2	0		7	2	4	0		6	0		0	-		
Single-Unit Trucks %	2.2%	0.6%	0%		0.9%	0.8%	1%	0%		0.8%	1.5%	2.6%	0%		2.1%	0%		0%	-		
Buses	0	3	0		3	4	0	0		4	0	0	0		0	0		0	-		
Buses %	0%	0.6%	0%		0.5%	0.6%	0%	0%		0.5%	0%	0%	0%		0%	0%		0%	-		
Articulated Trucks	0	2	0		2	0	0	0		0	0	2	0		2	0		0	-		
Articulated Trucks %	0%	0.4%	0%		0.3%	0%	0%	0%		0%	0%	1.3%	0%		0.7%	0%		0%	-		
Bicycles on Road	0	0	0		0	0	0	0		0	0	0	0		0	0		0	-		
Bicycles on Road %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	0%		0%	-		
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	0	-	-		

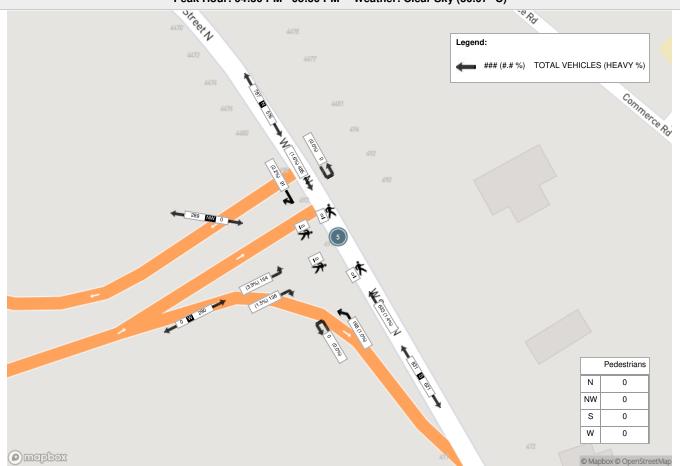
Crozier & Associates SUITE 200 1 FIRST STREET COLLINGWOOD ONTARIO, L9Y 1A1 CANADA

Peak Hour: 09:00 AM - 10:00 AM Weather: Clear Sky (17.59 °C)



Crozier & Associates SUITE 200 1 FIRST STREET COLLINGWOOD ONTARIO, L9Y 1A1 CANADA

Peak Hour: 04:30 PM - 05:30 PM Weather: Clear Sky (30.07 °C)



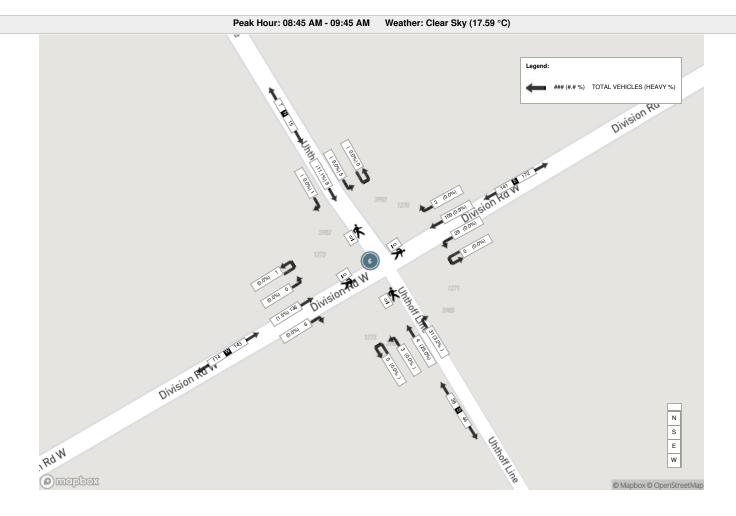
Turning Movement Count Location Name: DIVISION RD W & UHTHOFF LINE Date: Thu, Aug 01, 2024 Deployment Lead:

										Turn	ing Mc	vement Count (6 . DIVIS	SION RE) W & U	HTHOFI	F LINE))								
				N Approa	ich LINE					E Approac	:h O W					S Approach	n NE					W Approa	ch RD W		Int. Total (15 min)	Int. Total (1 hr)
Start Time	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		, ,
06:00:00	0	2	0	0	0	2	0	2	1	0	0	3	2	1	0	0	0	3	0	18	1	0	0	19	27	
06:15:00	0	0	2	0	0	2	1	9	1	0	0	11	1	1	0	0	0	2	0	22	0	0	0	22	37	
06:30:00	0	3	1	0	0	4	0	11	2	0	0	13	1	4	1	0	0	6	4	35	0	0	0	39	62	
06:45:00	0	1	3	0	0	4	1	7	3	0	0	11	1	0	1	0	0	2	1	38	0	0	0	39	56	182
07:00:00	0	2	1	0	0	3	2	15	1	0	0	18	2	2	2	0	0	6	0	23	1	0	0	24	51	206
07:15:00	1	4	3	0	0	8	1	19	1	0	0	21	2	2	1	0	0	5	1	26	0	0	0	27	61	230
07:30:00	0	3	2	0	0	5	2	14	3	0	0	19	1	1	0	0	0	2	3	35	0	0	0	38	64	232
07:45:00	0	0	3	0	0	3	0	21	0	0	0	21	4	4	0	0	0	8	1	41	0	0	0	42	74	250
08:00:00	0	2	3	0	0	5	2	23	2	0	0	27	6	1	0	0	0	7	0	31	0	0	0	31	70	269
08:15:00	0	4	2	0	0	6	0	21	1	0	0	22	8	0	0	0	0	8	1	35	0	0	0	36	72	280
08:30:00	0	2	0	0	0	2	0	23	7	0	0	30	5	0	0	0	0	5	1	27	0	0	0	28	65	281
08:45:00	0	1	3	0	0	4	2	34	7	0	0	43	3	2	0	0	0	5	1	31	0	1	0	33	85	292
09:00:00	1	2	1	0	0	4	0	27	9	0	0	36	9	0	2	0	0	11	2	28	0	0	0	30	81	303
09:15:00	0	3	1	0	0	4	1	27	7	0	0	35	11	1	0	0	0	12	1	36	0	0	0	37	88	319
09:30:00	0	3	0	0	0	3	0	21	6	0	0	27	8	1	1	0	0	10	2	41	0	0	0	43	83	337
09:45:00	0	4	0	0	0	4	1	24	7	0	0	32	8	2	2	0	0	12	3	30	0	0	0	33	81	333
***BREAK	***																									
15:00:00	0	2	0	0	0	2	2	46	9	0	0	57	18	4	4	0	0	26	1	44	0	0	0	45	130	
15:15:00	1	3	1	0	0	5	0	32	4	0	0	36	14	4	2	0	0	20	2	44	0	0	0	46	107	
15:30:00	0	3	3	0	0	6	0	51	8	0	0	59	17	4	1	0	0	22	4	48	0	0	0	52	139	
15:45:00	0	5	1	0	0	6	3	44	8	0	0	55	22	6	2	0	0	30	3	28	0	0	0	31	122	498
16:00:00	0	2	2	0	0	4	3	56	3	0	0	62	20	4	4	0	0	28	2	49	0	0	0	51	145	513
16:15:00	1	0	1	0	0	2	1	60	8	0	0	69	11	5	2	0	0	18	4	47	2	0	0	53	142	548
16:30:00	0	1	1	0	0	2	8	65	9	0	0	82	11	4	4	0	0	19	2	57	0	0	0	59	162	571
16:45:00	0	2	0	0	0	2	3	53	7	0	0	63	17	6	5	0	0	28	4	43	0	0	0	47	140	589
17:00:00	0	2	3	0	0	5	1	68	8	0	0	77	23	2	7	0	0	32	1	47	1	0	0	49	163	607
17:15:00	0	4	1	0	0	5	1	56	5	0	0	62	18	4	0	0	0	22	1	39	0	0	0	40	129	594
17:30:00	0	1	0	0	0	1	1	51	7	0	0	59	16	4	5	0	0	25	2	44	1	0	0	47	132	564
17:45:00	0	3	0	0	0	3	3	37	6	0	0	46	10	5	2	0	0	17	1	37	0	0	0	38	104	528
18:00:00	0	4	1	0	0	5	2	35	10	0	0	47	11	3	0	0	0	14	4	20	0	0	0	24	90	455
18:15:00	0	3	3	0	0	6	0	33	10	0	0	43	11	1	2	0	0	14	2	36	0	0	0	38	101	427
18:30:00	0	1	1	0	0	2	0	25	6	1	0	32	12	1	3	0	0	16	2	20	0	0	0	22	72	367
18:45:00	0	3	1	0	0	4	1	38	4	0	0	43	6	5	2	0	0	13	2	21	0	0	0	23	83	346
Grand Total	4	75	44	0	0	123	42	1048	170	1	0	1261	309	84	55	0	0	448	58	1121	6	1	0	1186	3018	-
Approach%	3.3%	61%	35.8%	0%		-	3.3%	83.1%	13.5%	0.1%		-	69%	18.8%	12.3%	0%		-	4.9%	94.5%	0.5%	0.1%		-	-	-
Totals %	0.1%	2.5%	1.5%	0%		4.1%	1.4%	34.7%	5.6%	0%		41.8%	10.2%	2.8%	1.8%	0%		14.8%	1.9%	37.1%	0.2%	0%		39.3%	-	-
Heavy	0	7	1	0		-	0	13	0	0		-	2	4	0	0		-	0	18	0	0		-	-	-
Heavy %	0%	9.3%	2.3%	0%		-	0%	1.2%	0%	0%		-	0.6%	4.8%	0%	0%		-	0%	1.6%	0%	0%		-	-	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-

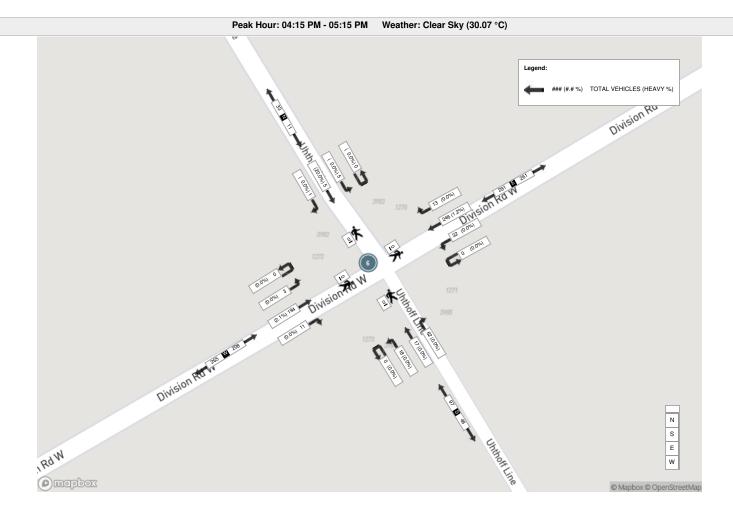
								Pe	eak Hou	ır: 08:45	5 AM - (09:45 AM We	ather: C	lear Sk	y (17.59	9 °C)									
Start Time			ι	N Approac	h NE				D	E Approach	n W				L	S Approacl	n NE					W Appro	ach RD W		Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
08:45:00	0	1	3	0	0	4	2	34	7	0	0	43	3	2	0	0	0	5	1	31	0	1	0	33	85
09:00:00	1	2	1	0	0	4	0	27	9	0	0	36	9	0	2	0	0	11	2	28	0	0	0	30	81
09:15:00	0	3	1	0	0	4	1	27	7	0	0	35	11	1	0	0	0	12	1	36	0	0	0	37	88
09:30:00	0	3	0	0	0	3	0	21	6	0	0	27	8	1	1	0	0	10	2	41	0	0	0	43	83
Grand Total	1	9	5	0	0	15	3	109	29	0	0	141	31	4	3	0	0	38	6	136	0	1	0	143	337
Approach%	6.7%	60%	33.3%	0%		-	2.1%	77.3%	20.6%	0%		-	81.6%	10.5%	7.9%	0%		-	4.2%	95.1%	0%	0.7%		-	-
Totals %	0.3%	2.7%	1.5%	0%		4.5%	0.9%	32.3%	8.6%	0%		41.8%	9.2%	1.2%	0.9%	0%		11.3%	1.8%	40.4%	0%	0.3%		42.4%	-
PHF	0.25	0.75	0.42	0		0.94	0.38	8.0	0.81	0		0.82	0.7	0.5	0.38	0		0.79	0.75	0.83	0	0.25		0.83	-
Heavy	0	1	0	0		1	0	1	0	0		1	1	1	0	0		2	0	2	0	0		2	
Heavy %	0%	11.1%	0%	0%		6.7%	0%	0.9%	0%	0%		0.7%	3.2%	25%	0%	0%		5.3%	0%	1.5%	0%	0%		1.4%	
Lights	1	8	5	0		14	2	108	29	0		139	30	3	3	0		36	6	134	0	1		141	-
Lights %	100%	88.9%	100%	0%		93.3%	66.7%	99.1%	100%	0%		98.6%	96.8%	75%	100%	0%		94.7%	100%	98.5%	0%	100%		98.6%	-
Single-Unit Trucks	0	1	0	0		1	0	1	0	0		1	1	1	0	0		2	0	2	0	0		2	-
Single-Unit Trucks %	0%	11.1%	0%	0%		6.7%	0%	0.9%	0%	0%		0.7%	3.2%	25%	0%	0%		5.3%	0%	1.5%	0%	0%		1.4%	-
Buses	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Buses %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Bicycles on Road	0	0	0	0		0	1	0	0	0		1	0	0	0	0		0	0	0	0	0		0	-
Bicycles on Road %	0%	0%	0%	0%		0%	33.3%	0%	0%	0%		0.7%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-

									Peak H	our: 04	:15 PM	- 05:15 PM V	Veather:	Clear S	ky (30.0	07 °C)									
Start Time			ι	N Approac	:h INE				[E Approac	ch D W				U	S Approach	ı NE					W Approad	ch D W		Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:15:00	1	0	1	0	0	2	1	60	8	0	0	69	11	5	2	0	0	18	4	47	2	0	0	53	142
16:30:00	0	1	1	0	0	2	8	65	9	0	0	82	11	4	4	0	0	19	2	57	0	0	0	59	162
16:45:00	0	2	0	0	0	2	3	53	7	0	0	63	17	6	5	0	0	28	4	43	0	0	0	47	140
17:00:00	0	2	3	0	0	5	1	68	8	0	0	77	23	2	7	0	0	32	1	47	1	0	0	49	163
Grand Total	1	5	5	0	0	11	13	246	32	0	0	291	62	17	18	0	0	97	11	194	3	0	0	208	607
Approach%	9.1%	45.5%	45.5%	0%		-	4.5%	84.5%	11%	0%		-	63.9%	17.5%	18.6%	0%		-	5.3%	93.3%	1.4%	0%		-	-
Totals %	0.2%	0.8%	0.8%	0%		1.8%	2.1%	40.5%	5.3%	0%		47.9%	10.2%	2.8%	3%	0%		16%	1.8%	32%	0.5%	0%		34.3%	-
PHF	0.25	0.63	0.42	0		0.55	0.41	0.9	0.89	0		0.89	0.67	0.71	0.64	0		0.76	0.69	0.85	0.38	0		0.88	-
Heavy	0	1	0	0		1	0	3	0	0		3	0	0	0	0		0	0	4	0	0		4	
Heavy %	0%	20%	0%	0%		9.1%	0%	1.2%	0%	0%		1%	0%	0%	0%	0%		0%	0%	2.1%	0%	0%		1.9%	-
Lights	1	4	5	0		10	13	243	31	0		287	62	17	18	0		97	11	190	3	0		204	
Lights %	100%	80%	100%	0%		90.9%	100%	98.8%	96.9%	0%		98.6%	100%	100%	100%	0%		100%	100%	97.9%	100%	0%		98.1%	-
Single-Unit Trucks	0	1	0	0		1	0	2	0	0		2	0	0	0	0		0	0	3	0	0		3	-
Single-Unit Trucks %	0%	20%	0%	0%		9.1%	0%	0.8%	0%	0%		0.7%	0%	0%	0%	0%		0%	0%	1.5%	0%	0%		1.4%	-
Buses	0	0	0	0		0	0	1	0	0		1	0	0	0	0		0	0	0	0	0		0	-
Buses %	0%	0%	0%	0%		0%	0%	0.4%	0%	0%		0.3%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	1	0	0		1	-
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0.5%	0%	0%		0.5%	-
Bicycles on Road	0	0	0	0		0	0	0	1	0		1	0	0	0	0		0	0	0	0	0		0	-
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	3.1%	0%		0.3%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-









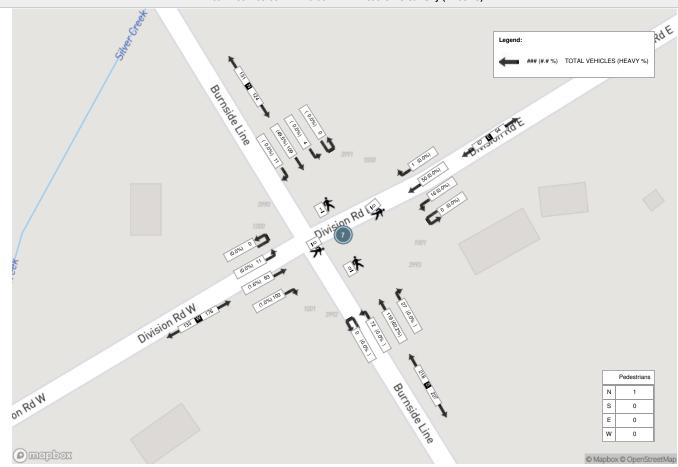
										Turnii	ng Mov	rement Count (7	. DIVIS	ION RD	W & B	URNSI	DE LINI	E)								
			E	N Approa	ch LINE				D	E Approact	h) W				E	S Approad	ch LINE					W Approac	ch D W		Int. Total (15 min)	Int. Total (1 hr)
Start Time	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
06:00:00	1	15	1	0	0	17	1	1	1	0	0	3	1	17	2	0	0	20	10	7	1	0	0	18	58	
06:15:00	0	30	0	0	0	30	0	9	1	0	0	10	1	20	2	0	0	23	12	15	0	0	0	27	90	
06:30:00	0	25	0	0	0	25	0	8	2	0	0	10	3	24	4	0	0	31	18	13	4	0	0	35	101	
06:45:00	1	29	1	0	0	31	1	5	2	0	0	8	8	20	5	0	0	33	23	18	1	0	0	42	114	363
07:00:00	1	28	0	0	1	29	0	6	1	0	0	7	5	15	12	0	0	32	16	9	2	0	0	27	95	400
07:15:00	1	25	3	0	0	29	1	9	2	0	0	12	5	16	10	0	0	31	13	14	0	0	0	27	99	409
07:30:00	2	33	0	0	1	35	1	10	4	0	0	15	9	17	9	0	0	35	26	14	1	0	0	41	126	434
07:45:00	0	36	1	0	0	37	1	14	2	0	0	17	2	24	11	0	0	37	28	13	3	0	0	44	135	455
08:00:00	1	33	1	0	0	35	0	3	2	0	0	5	5	20	19	0	0	44	25	15	3	0	0	43	127	487
08:15:00	4	26	0	0	0	30	1	13	3	0	0	17	7	29	7	0	0	43	31	11	3	0	0	45	135	523
08:30:00	3	29	3	0	0	35	1	13	5	0	0	19	3	25	15	0	0	43	23	11	1	0	0	35	132	529
08:45:00	2	24	1	0	1	27	0	20	6	0	0	26	3	23	18	0	0	44	20	12	2	0	0	34	131	525
09:00:00	4	24	1	0	1	29	0	12	4	0	0	16	9	21	20	0	0	50	23	13	3	0	0	39	134	532
09:15:00	4	26	2	0	0	32	1	12	1	0	0	14	7	32	22	0	0	61	23	20	3	0	0	46	153	550
09:30:00	1	31	1	0	0	33	0	12	7	0	0	19	5	39	12	0	0	56	30	18	3	0	0	51	159	577
09:45:00	2	28	0	0	0	30	0	14	4	0	0	18	6	27	18	0	0	51	26	12	2	0	0	40	139	585
BREAK	***	***********************************																								
15:00:00	3	42	1	0	0	46	0	16	5	0	0	21	11	29	37	0	0	77	37	29	4	0	0	70	214	
15:15:00	2	19	3	0	0	24	2	10	5	0	0	17	7	23	22	0	0	52	27	29	5	0	0	61	154	
15:30:00	1	21	1	0	0	23	5	23	3	0	0	31	8	29	40	0	0	77	34	28	3	0	0	65	196	
15:45:00	1	15	6	0	0	22	3	13	2	0	0	18	10	20	39	0	0	69	20	31	6	0	0	57	166	730
16:00:00	2	29	2	0	0	33	2	26	8	0	0	36	8	16	33	0	0	57	23	35	1	0	0	59	185	701
16:15:00	1	19	1	0	0	21	1	25	4	0	0	30	9	19	45	0	0	73	35	29	2	0	0	66	190	737
16:30:00	7	20	1	0	0	28	1	25	5	0	0	31	14	24	45	0	0	83	32	33	4	0	0	69	211	752
16:45:00	5	12	1	0	0	18	0	23	5	0	0	28	18	28	41	0	0	87	25	31	1	0	0	57	190	776
17:00:00	9	14	1	0	0	24	0	21	4	0	0	25	13	22	44	0	0	79	41	30	3	0	0	74	202	793
17:15:00	5	10	1	0	0	16	2	22	2	0	0	26	5	26	37	0	0	68	26	29	4	0	0	59	169	772
17:30:00	2	12	1	0	0	15	1	22	2	0	0	25	7	21	33	0	0	61	28	29	4	0	0	61	162	723
17:45:00	3	13	0	0	0	16	3	12	5	0	0	20	7	18	30	0	0	55	24	23	5	0	0	52	143	676
18:00:00	2	9	0	0	0	11	2	16	3	0	0	21	8	13	33	0	0	54	20	9	3	0	0	32	118	592
18:15:00	2	14	0	0	0	16	2	15	3	0	0	20	1	16	22	0	0	39	20	22	6	0	0	48	123	546
18:30:00	1	12	0	0	0	13	3	16	4	0	0	23	4	19	18	0	0	41	16	16	3	0	0	35	112	496
18:45:00	3	4	3	0	0	10	1	13	1	0	0	15	5	26	27	0	0	58	13	14	3	0	0	30	113	466
Grand Total	76	707	37	0	4	820	36	459	108	0	0	603	214	718	732	0	0	1664	768	632	89	0	0	1489	4576	-
Approach%	9.3%	86.2%	4.5%	0%		-	6%	76.1%	17.9%	0%		-	12.9%	43.1%	44%	0%		-	51.6%	42.4%	6%	0%		-	-	-
Totals %	1.7%	15.5%	0.8%	0%		17.9%	0.8%	10%	2.4%	0%		13.2%	4.7%	15.7%	16%	0%		36.4%	16.8%	13.8%	1.9%	0%		32.5%	-	-
Heavy	0	292	0	0		-	5	9	3	0		-	4	260	4	0		-	8	13	1	0		-	-	-
Heavy %	0%	41.3%	0%	0%		-	13.9%	2%	2.8%	0%		-	1.9%	36.2%	0.5%	0%		-	1%	2.1%	1.1%	0%		-	-	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-

									Peak F	lour: 09	:00 AN	Л - 10:00 AM	Weather	: Clear	Sky (17	.59 °C)									
Start Time				N Approa	ch LINE				[E Approac	e h D W				В	S Approach JRNSIDE LI	n NE					W Approac	ch O W		Int. To (15 m
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
09:00:00	4	24	1	0	1	29	0	12	4	0	0	16	9	21	20	0	0	50	23	13	3	0	0	39	13
09:15:00	4	26	2	0	0	32	1	12	1	0	0	14	7	32	22	0	0	61	23	20	3	0	0	46	1
09:30:00	1	31	1	0	0	33	0	12	7	0	0	19	5	39	12	0	0	56	30	18	3	0	0	51	1
09:45:00	2	28	0	0	0	30	0	14	4	0	0	18	6	27	18	0	0	51	26	12	2	0	0	40	1
Grand Total	11	109	4	0	1	124	1	50	16	0	0	67	27	119	72	0	0	218	102	63	11	0	0	176	
Approach%	8.9%	87.9%	3.2%	0%		-	1.5%	74.6%	23.9%	0%		-	12.4%	54.6%	33%	0%		-	58%	35.8%	6.3%	0%		-	
Totals %	1.9%	18.6%	0.7%	0%		21.2%	0.2%	8.5%	2.7%	0%		11.5%	4.6%	20.3%	12.3%	0%		37.3%	17.4%	10.8%	1.9%	0%		30.1%	
PHF	0.69	0.88	0.5	0		0.94	0.25	0.89	0.57	0		0.88	0.75	0.76	0.82	0		0.89	0.85	0.79	0.92	0		0.86	
Heavy	0	54	0	0		54	0	0	0	0		0	0	74	0	0		74	1	1	0	0		2	
Heavy %	0%	49.5%	0%	0%		43.5%	0%	0%	0%	0%		0%	0%	62.2%	0%	0%		33.9%	1%	1.6%	0%	0%		1.1%	
Lights	11	55	4	0		70	1	50	16	0		67	27	45	72	0		144	100	62	11	0		173	
Lights %	100%	50.5%	100%	0%		56.5%	100%	100%	100%	0%		100%	100%	37.8%	100%	0%		66.1%	98%	98.4%	100%	0%		98.3%	
ngle-Unit Trucks	0	15	0	0		15	0	0	0	0		0	0	20	0	0		20	1	1	0	0		2	
gle-Unit Trucks %	0%	13.8%	0%	0%		12.1%	0%	0%	0%	0%		0%	0%	16.8%	0%	0%		9.2%	1%	1.6%	0%	0%		1.1%	
Buses	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	
Buses %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	
articulated Trucks	0	39	0	0		39	0	0	0	0		0	0	54	0	0		54	0	0	0	0		0	
iculated Trucks %	0%	35.8%	0%	0%		31.5%	0%	0%	0%	0%		0%	0%	45.4%	0%	0%		24.8%	0%	0%	0%	0%		0%	
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	1	0	0	0		1	
cycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	1%	0%	0%	0%		0.6%	
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	
Pedestrians%			_	_	100%						0%				_		0%				_		0%		

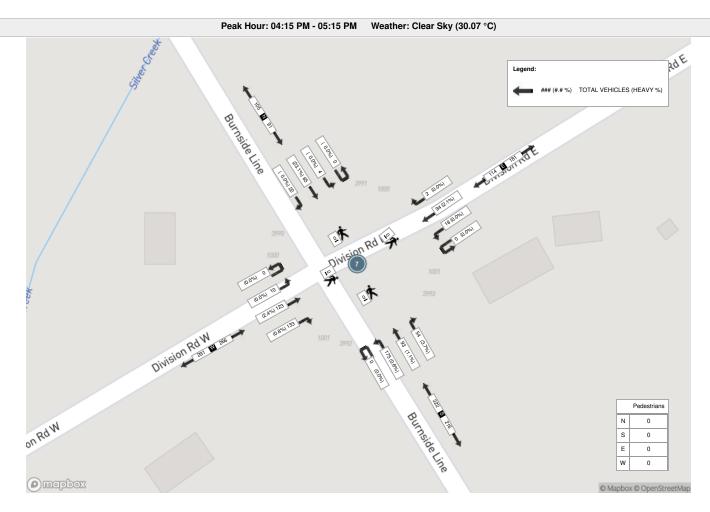
									Peak H	lour: 04	1:15 PN	M - 05:15 PM	Weather	: Clear	Sky (30.	07 °C)									
Start Time			В	N Approac	:h _INE					E Approac	c h D W				ВІ	S Approach JRNSIDE LI	n NE				[W Approac	ch O W		Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:15:00	1	19	1	0	0	21	1	25	4	0	0	30	9	19	45	0	0	73	35	29	2	0	0	66	190
16:30:00	7	20	1	0	0	28	1	25	5	0	0	31	14	24	45	0	0	83	32	33	4	0	0	69	211
16:45:00	5	12	1	0	0	18	0	23	5	0	0	28	18	28	41	0	0	87	25	31	1	0	0	57	190
17:00:00	9	14	1	0	0	24	0	21	4	0	0	25	13	22	44	0	0	79	41	30	3	0	0	74	202
Grand Total	22	65	4	0	0	91	2	94	18	0	0	114	54	93	175	0	0	322	133	123	10	0	0	266	793
Approach%	24.2%	71.4%	4.4%	0%		-	1.8%	82.5%	15.8%	0%		-	16.8%	28.9%	54.3%	0%		-	50%	46.2%	3.8%	0%		-	-
Totals %	2.8%	8.2%	0.5%	0%		11.5%	0.3%	11.9%	2.3%	0%		14.4%	6.8%	11.7%	22.1%	0%		40.6%	16.8%	15.5%	1.3%	0%		33.5%	-
PHF	0.61	0.81	1	0		0.81	0.5	0.94	0.9	0		0.92	0.75	0.83	0.97	0		0.93	0.81	0.93	0.63	0		0.9	-
Heavy	0	15	0	0		15	0	2	0	0		2	2	1	1	0		4	1	3	0	0		4	
Heavy %	0%	23.1%	0%	0%		16.5%	0%	2.1%	0%	0%		1.8%	3.7%	1.1%	0.6%	0%		1.2%	0.8%	2.4%	0%	0%		1.5%	-
Lights	22	50	4	0		76	2	91	18	0		111	52	92	174	0		318	132	120	10	0		262	
Lights %	100%	76.9%	100%	0%		83.5%	100%	96.8%	100%	0%		97.4%	96.3%	98.9%	99.4%	0%		98.8%	99.2%	97.6%	100%	0%		98.5%	-
Single-Unit Trucks	0	1	0	0		1	0	1	0	0		1	1	0	1	0		2	0	2	0	0		2	-
Single-Unit Trucks %	0%	1.5%	0%	0%		1.1%	0%	1.1%	0%	0%		0.9%	1.9%	0%	0.6%	0%		0.6%	0%	1.6%	0%	0%		0.8%	-
Buses	0	0	0	0		0	0	1	0	0		1	0	0	0	0		0	0	1	0	0		1	-
Buses %	0%	0%	0%	0%		0%	0%	1.1%	0%	0%		0.9%	0%	0%	0%	0%		0%	0%	0.8%	0%	0%		0.4%	-
Articulated Trucks	0	14	0	0		14	0	0	0	0		0	1	1	0	0		2	1	0	0	0		1	-
Articulated Trucks %	0%	21.5%	0%	0%		15.4%	0%	0%	0%	0%		0%	1.9%	1.1%	0%	0%		0.6%	0.8%	0%	0%	0%		0.4%	-
Bicycles on Road	0	0	0	0		0	0	1	0	0		1	0	0	0	0		0	0	0	0	0		0	-
Bicycles on Road %	0%	0%	0%	0%		0%	0%	1.1%	0%	0%		0.9%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Podostrians%					00/						00/						00/						00/		

Crozier & Associates SUITE 200 1 FIRST STREET COLLINGWOOD ONTARIO, L9Y 1A1 CANADA

Peak Hour: 09:00 AM - 10:00 AM Weather: Clear Sky (17.59 °C)







APPENDIX D

Signal Timing Plans

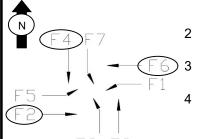
2070 CONTROLLER FIELD SHEETS

Ontario	Y
---------	---

ACTUATED	X PRE-TIMED	SIGNAL TO BE MAINTAINED BY:	МТО
	EMERGENCY TIMING	SIGNAL TO BE OPERATED BY:	МТО
LOCATION:	Hwy 11 & Burnside Line N-EW	CONFLICT FLASH:	F2/F6 AMBER

GENERIC TIMING IDENTIFIED HERE SHALL BE TRANSCRIBED ONTO "OFFICIAL" TIMING SHEETS FOR THE TRAFFIC SIGNAL CONTROLLER BEING USED AT THIS SIGNALIZED INTERSECTION. A COPY OF THE "OFFICIAL" LOCAL TIMING SHEETS AND COORDINATION SHEETS IF USED, SHALL BE ATTACHED TO THIS FORM AND FILED IN THE MTO REGIONAL TRAFFIC OFFICE.

OPERATIONAL NOTES:



- All Prot/Perm left turn movements shall be followed by parent through movements without exception.
 - If serving F2 and F6 the signal must cycle to F4 and/or F8 prior to serving F1 and/or F5.

If serving F4 and F8, the signal must cycle to F2 and/or F6 prior to serving F3 and/or F7.

Through Movements shall lag left turn movements unless otherwise specified.

FUNCTION/ODEDATION				FA	ZE			
FUNCTION/OPERATION	F1	F2	F3	F4	F5	F6	F7	F8
PERMITTED MOVEMENTS		Х		Х		Χ		
RED LOCK								
AMBER LOCK								
VEHICLE MIN RECALL		Х				X		
VEHICLE MAX RECALL								
PEDESTRIAN RECALL								
PEDESTRIAN RECYCLE								
REST IN WALK								
DOUBLE ENTRY		Х				Χ		
MOVEMENTS MUST GAP OUT SIMULTANEOUSLY		Х				Χ		
EXCLUSIVE (SEPERATE) PHASING BY APPORACH								
PROT/PERM LEFT TURN ARROW								
PROT/PERM FAST FLASH ADVANCE GREEN								
FULLY PROTECTED LEFT TURN								
OVERLAP A								
OVERLAP B								
DISPLAY AMBER ON STARTUP		X				Χ		
PLACE VEHICLE CALLS ON STARTUP		X		X		X		
PLACE PED CALLS ON STARTUP						X		
FIRST FAZE				X				

INTERVAL TIMES				FA	ZE			
INTERVAL TIMES	F1	F2	F3	F4	F5	F6	F7	F8
WALK						10		
FLASHING DON'T WALK						43		
MINIMUM GREEN		20		10		20		
VEHICLE EXTENSION (PASSAGE TIME)		3.2		3.0		3.2		
MAXIMUM GREEN (INCLUDES MIN GREEN)		53		17		53		
MAXIMUM GREEN 2 (ALTERNATE MAX GREEN)								
AMBER CLEARANCE		4.5		4.5		4.5		
ALL RED CLEARANCE		2.8		1.6		2.8		
MAX INITIAL GREEN TIME (VARIABLE INIT)								
TIME ADDED/VEHICLE (VARIABLE INIT)								
	11				フロ			

DETECTOR SETUP				FΑ	ZE			
DETECTOR SETUP	F1	F2	F3	F4	F5	F6	F7	F8
DELAY				10				
RIGHT TURN LANE DELAY, IF DIFFERENT THAN ABOVE				15				
DL1, EXT								
DL2, EXT + CARRY								

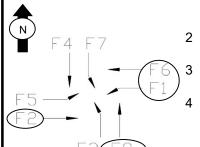
TIME OF DAY	TIME C	F DAY	DAY	OF V	VEEK				FA	ZE			
OPERATIONS	START	END	SM	T W `	T F S	F1	F2	F3	F4	F5	F6	F7	F8
PHASE OMIT													
RED LOCK													
AMBER LOCK													
MIN RECALL													
MAX RECALL													
MAX GREEN 2													
PED RECALL													
REST IN WALK													

			DETE	CTOR		
PRE-EMPTION	D1	D2	D3	D4	D5	D6
	RR	RR	EVA	EVB	EVC	EVD
DWELL FAZE			F2, F6			
EXIT FAZES			F2, F6			
DELAY (SET IN THE FIELD)						
RED CLEARANCE			5.0			
MIN INITIAL			7.0			
WALK			4.0			
FDW			5.0			

ACTUATED ACTUATED X PRE-TIMED SIGNAL TO BE MAINTAINED BY: MTO SIGNAL TO BE OPERATED BY: MTO LOCATION: Hwy 11 & West St, S-EW CONFLICT FLASH: F2/F6 AMBER

GENERIC TIMING IDENTIFIED HERE SHALL BE TRANSCRIBED ONTO "OFFICIAL" TIMING SHEETS FOR THE TRAFFIC SIGNAL CONTROLLER BEING USED AT THIS SIGNALIZED INTERSECTION. A COPY OF THE "OFFICIAL" LOCAL TIMING SHEETS AND COORDINATION SHEETS IF USED, SHALL BE ATTACHED TO THIS FORM AND FILED IN THE MTO REGIONAL TRAFFIC OFFICE.

OPERATIONAL NOTES:



- All Prot/Perm left turn movements shall be followed by parent through movements without exception.
 - If serving F2 and F6 the signal must cycle to F4 and/or F8 prior to serving F1 and/or F5.

If serving F4 and F8, the signal must cycle to F2 and/or F6 prior to serving F3 and/or F7.

Through Movements shall lag left turn movements unless otherwise specified.

FUNCTION/OPEDATION				FA	ZE			
FUNCTION/OPERATION	F1	F2	F3	F4	F5	F6	F7	F8
PERMITTED MOVEMENTS	Х	Х				Χ		Х
RED LOCK								
AMBER LOCK								
VEHICLE MIN RECALL		Х				Χ		
VEHICLE MAX RECALL								
PEDESTRIAN RECALL								
PEDESTRIAN RECYCLE								
REST IN WALK								
DOUBLE ENTRY		Х				Х		
MOVEMENTS MUST GAP OUT SIMULTANEOUSLY		Χ				Χ		
EXCLUSIVE (SEPERATE) PHASING BY APPORACH								
PROT/PERM LEFT TURN ARROW	Х							
PROT/PERM FAST FLASH ADVANCE GREEN								
FULLY PROTECTED LEFT TURN								
OVERLAP A								
OVERLAP B								
DISPLAY AMBER ON STARTUP		Х				Χ		
PLACE VEHICLE CALLS ON STARTUP	Х	Х				X		Х
PLACE PED CALLS ON STARTUP								
FIRST FAZE								Χ

INTERVAL TIMES				FΑ	ZE			
INTERVAL TIMES	F1	F2	F3	F4	F5	F6	F7	F8
WALK								
FLASHING DON'T WALK								
MINIMUM GREEN	7	20				20		10
VEHICLE EXTENSION (PASSAGE TIME)	3.0	3.2				3.2		3.0
MAXIMUM GREEN (INCLUDES MIN GREEN)	7	49				49		18
MAXIMUM GREEN 2 (ALTERNATE MAX GREEN)		41				41		26
AMBER CLEARANCE	3.0	4.5				4.5		4.5
ALL RED CLEARANCE		2.6				2.6		1.7
MAX INITIAL GREEN TIME (VARIABLE INIT)								
TIME ADDED/VEHICLE (VARIABLE INIT)								

DETECTOR SETUP				FA	ZE			
DETECTOR SETUP	F1	F2	F3	F4	F5	F6	F7	F8
DELAY	5							10
RIGHT TURN LANE DELAY, IF DIFFERENT THAN ABOVE								15
DL1, EXT								
DL2, EXT + CARRY								

TIME OF DAY	TIME C	F DAY)A\	/ OI	F۷	٧E	Ek					FA	ZE			
OPERATIONS	START	END	S	M	T	W	Т	F	S	F1	F2	F3	F4	F5	F6	F7	F8
PHASE OMIT																	
RED LOCK																	
AMBER LOCK																	
MIN RECALL																	
MAX RECALL																	
MAX GREEN 2	7:00	10:00	Х	X	X	X	X	X	X		X				X		Х
PED RECALL																	
REST IN WALK																	

			DETE	CTOR		
PRE-EMPTION	D1	D2	D3	D4	D5	D6
	RR	RR	EVA	EVB	EVC	EVD
DWELL FAZE			F2, F6			
EXIT FAZES			F2, F6			
DELAY (SET IN THE FIELD)						
RED CLEARANCE			5.0			
MIN INITIAL			7.0			
WALK			4.0			
FDW			5.0			

ACTUATED INTERVAL TIMING AND FAZE FUNCTIONS

				F	PHAS	E											_						С	OLL	JMN	۱F	PH/	\SE	S				
		1	2	3	4	5	6	7	8			9	Α	В	С	D		Е	_			1	2	3	4	5	6	7	8				
0	WALK	•	-	-	-	-	7	•	7	0							RR1 DLY		i L	0	PERMIT	X	X	Х	Х	Х	Χ	X	X				
1	DON'T WALK	•	-	•	-	-	19	·	42	1	PHASE 1	-					RR1 CLR		l [1	RED LOCK												
2	MIN INITIAL	7	20	7	10	7	20	7	10	2		-					EVA DLY			2	YELLOW LOCK												
3	TYPE 3 LIMIT	ı	-	ı	-	-	-	ı	-	3	PHASE 3	-					EVA CLR	5	HE	3	VEH MIN CALL		X				Χ			<u>Date:</u>	Jar	1 20	19
4	ADD PER VEH	ı	-	1	-	-	-	ı	-	4	PHASE 4	-					EVB DLY		: -	4	PED RECALL												
5	VEH EXT	3.0	3.6	3.0	3.0	3.0	3.6	3.0	3.0	5	PHASE 5	-					EVB CLR	5	1[5	PEDESTRIANS			٧	iew	Onl	у			LO:	CATIO	<u>N</u>	
6	MAX GAP	3.0	3.6	3.0	3.0	3.0	3.6	3.0	3.0	6	PHASE 6	-					EVC DLY		10	6 ۱	YIELD AT FLSH D/W									Hwy:	12	We	st
7	MIN GAP	3.0	3.6	3.0	3.0	3.0	3.6	3.0	3.0	7	PHASE 7	-					EVC CLR	5		7	RED REST									At:	Mu	rph	y /
8	MAX LIMIT	16	50	18	29	16	50	26	21	8	PHASE 8	-					EVD DLY		[8	DOUBLE ENTRY		Χ		Х		Χ		X		Wes	t Ric	dge
9	MAXIMUM 2	-	-	-	-	-	-	-	-					ALT			EVD CLR		[9	VEH MAX CALL												
Α	ADV /DLY WALK	-	-	-	-	-	-	-	-			INT	WALI	K FLH	INT	EXT	RR2 DLY		[7	A	SOFT RECALL										Α	В	С
В	SEQUENCE TO	4	-	2	-	8	-	6	-					D/W			RR2 CLR			в	MAXIMUM 2									PREEMPT	RR1-2	SP	EMER
С	COND SRV MIN	-	-	-	-	-	-	-	-		ALL RED STA	RT					EV CLR		[COND SERVICE									MINIMUMS	SPEV1	EV2	VEH
D	REDUCE EVERY	-	-	-	-	-	-	-	-		(F/1 + C + O)	=		5	.0		EV DLY		[σŢ	MAN CONT CALL									A WLK (DFL	Γ)		4
E	YELLOW	3.0	5.0	3.0	4.5	3.0	5.0	3.0	4.5		RED REVERT						RR CLR			ĒΓ	YELLOW START		Х				Х			B FD WALK			5
F	RED CLEAR	2.0	2.2	1.0	3.5	2.0	2.2	1.0	3.5		(F/1 + O + F)	=		5	.0		RR DLY		ļП	F	FIRST PHASES			Х				Х		C INITAL	T		7
	PHASE BANK #	1 <	C +	O + I	F = 1	>										•			-			<c+o+f=1></c+o+f=1>			< C + C) + F =	1 >						
					 Di		 D:4-									 Di		 •4 -	†														
					Phas							_		_		_	ses / B	_			1	Column F Phases / Bits											
	E)(0) 1 10)) /E	1	2	3	4	5	6	7	8		I	1	2	3	4	5	6 7	8	1	$\overline{}$	ABV 6BV 5111	1 2 3 4 5 6 7 8			MANUAL		ŀ	14					
0	EXCLUSIVE									0									- 1	0 1	ADV GRN FLH				\dashv				\vdash	< C/0 + A			
- ⊢	RR1 CLEAR									<u> </u>	EXT PERMIT 1									_	PHASE FLASH				-				\vdash	MANUAL		'	0
3	RR2 CLEAR									2	EXT PERMIT 2									2	FLASH WALK				-				\vdash	< C/0 + B			
<u></u>	RR2 LTD SRV							· ·		3	EXCLU PED									3	GUAR PASS		· ·		,				 , 	MANUAL	SELEC	HOI	N
4	PROT/PERM			X				Х		4	DED 00 01/F							-		4	SIMUL GAP		Х		Х		Х		X				
5	FLH TO PREMT									5								-		5 6	SEQ TIMING												
6	FLASH ENTRY									6	PED 6P OUT		Х					-			ADV WALK				_					!	JAL PL		
7	DISABL MIN YEL									7	PED 4P OUT			-					• -	7	DELAY WALK				_					0 = Autom	`	,	
8	DISABL OVP YEL									8	PED 8P OUT		_					X		8	EXT RECALL				_	-			$\vdash\vdash$	9 = Contro			
9	OVP FLH YEL		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \							9	FLH YELLOW			_				-		9					\dashv					14 (E) = Fre	•	,	
A	EM VEH A		X		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Х			-	Α				_				-	· 🛏	A	MAX EXTEN				\dashv					15 (F) = So	ftware F	lash	
В	EM VEH B				Х				Х	В				_						В	INH PED RSRV				_				\vdash				_
C	EM VEH C	Х					Х			С				_					: 1—		SEMI ACTUATED				_				\sqcup	MANU.			<u>I</u>
D	EM VEH D									D									1 1											0 = Autom	•	ster)	
틸	EXTRA 1	Х		Х		Х				E	RESTRICTED								· i I—	EI.	STRT VEH CALL	X	X	Х	Х	Х	Х	Х	-	1 = Offset			
[F]	IC SELECT		X						لبا	<u> </u> <u> </u>	EXTRA 2			1					ļĽ	F	STRT PED CALL		_	ليا			Х		X	2 = Offset I	_		
								< C	+0	+ E :	= 125 >										SPECIALS < C	+ 0	+ F	= 2 >	• 					3 = Offset (<u> </u>		
	FLASH TO PREE	MPT							EXTR	4 1									Е	XTI	RA 2								IC SE	ELECT			
	1 = EVA	5 = R	R1		1 = T	BC TY	/PE 1				5 = EXPANDED	STA	TUS	S RE	POR	TING	3		1 = /	ΑW	R ON DURING PHAS	SE II	ATIV	L	2 = 2	2 W <i>A</i>	Y M	ODE	ΞM	5 = SIMPLE	X MAS	ΓER	
	2 = EVB	6 = R	R2		2 = N	EMA I	EXT. C	COOR	D.		6 = INTERNATION	ANC	L PE	ED					2 = I	LM	U INSTALLED				3 = 7	7 WI	RE S	SLA\	/E	7 = 7 WIRE	MASTE	R	

8 = SE2

7 = SE1 3 = DAYLIGHT SAVINGS

4 =

3 = EVC

4 = EVD

4 = FLASH / FREE

8 = OFFSET INTURP

7 = CLEAR OUTPUTS DURING FLASH

8 = SPLIT RING

Hurlwood Lane and Burnside Drive

## ATMS now Controller ID	NODE SETTINGS	í	TIMING SETTINGS	EBL	— → EBT	EBR	WBL	₩BT	WBR	NBL	↑ NBT	NBR	SBL	↓ SBT	√ SBR	## PED	HOLD
o Import from ATMS now. Import or Export Future Volume (vph) 3 1 20 126 1 19 21 157 76 26 172 3 - <th< td=""><td></td><td>2</td><td></td><td>- Inches</td><td>स</td><td>7</td><td>ሻ</td><td>1</td><td></td><td>ሻ</td><td>†</td><td>7</td><td>ሻ</td><td>1></td><td></td><td>_</td><td>_</td></th<>		2		- Inches	स	7	ሻ	1		ሻ	†	7	ሻ	1>		_	_
Export to ATMS now. Export ∅ Tum Type Perm <	ATMS.now Controller ID		 Traffic Volume (vph) 	3	1	20	126	1	19	21	157	76	26	172	3	_	_
© Zickest (m):	Import from ATMS.now:	Import	Future Volume (vph)	3	1	20	126	1	19	21	157	76	26	172	3	_	_
№ X East (m): 1030 № Y North (m): 55 № Y North (m): 55 № Z Elevation (m): 0 Permitted Phases 4 4 8 - 2 2 6 -	Export to ATMS.now:	Export	∇ Turn Type	Perm	-	Perm	Perm	_	-	Perm	-	Perm	Perm	_	-	_	_
№ Y North (m): 555 № Z Elevation (m): Description ————————————————————————————————————	© Zone:		 Protected Phases 		4			8			2			6	_		
© Zelevation [m]: © Description © Control Type Semi Act Un © Cycle Length (s): © Optimize Cycle Length: © Optimize Splits: © Optimize Splits: © Actuated Cycle(s): © Actuated Cycle(s): © Allered Time (s) © Allered Time (s) © Lead Imperior Adjust (s) © Lead Imperior Adjust (s) © Lead Imperior Interestion LOS: © Lead Imperior Interestion LOS: © Lead Imperior Interestion LOS: © Actuated Effct. Green (s) © Actuated Effct. Green (s) © Actuated Effct. Green (s) © Coordination Mode: © Condination Mode: © Condination Mode: © Condination Mode: © Control Delay (s): — Total Split (s) — Allow Lead/Lag Optimize? — — — — — — — — — — — — — — — — — — —	∞ × East (m):	1030	 Permitted Phases 	4		4	8		-	2		2	6		-	-	-
№ Description Semi Act-Unity Semi Ac	∞ Y North (m):	55	 Permitted Flashing Yellow 	0-1	1444	·—	-	5 <u>—1</u> 1	_	·	-	5 <u>—</u>	-	-	_		
© Control Type Semi Act-Un			 Detector Phases 	4	4	4	8	8	-	2	2	2	6	6	-		_
○ Cycle Length (s): 7 ○ Lock Timings: □ ○ Optimize Cycle Length: Optimize Optimize ○ Optimize Splits: Optimize Optimize ○ Optimize Splits: Optimize Splits: ○ Actuated Cycle(s): 5 ○ Natural Cycle(s): 5 ○ Max v/c Ratio: 0 ○ Intersection Delay (s): ○ Intersection Delay (s): ○ Intersection LOS: ○ Recall Mode ○ ICU: 0 ○ Offset (s): ○ Referenced to: ○ Reference Phase: ○ Othinated Cycle(s): ○ Coordination Mode: 7 ○ Coordination Mode: 0 ○ Intersection [m] - 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Description		Switch Phase	0	0	0	0	0	-	0	0	0	0	0		-	-
C Lock Timings: □ ○ Optimize Cycle Length: Optimize Optimize ○ Optimize Splits: Optimize Optimize ○ Optimize Splits: Optimize Optimize ○ Actuated Cycle(s): 5 ○ Natural Cycle(s): 5 ○ Matural Cycle(s): 5 ○ Intersection Delay (s): ○ Intersection LOS: ○ Intersection LOS: ○ Allow Lead/Lag Optimize? — — — — — — — — — — — — — — — — — — —	Control Type	Semi Act-Un		7-0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0		_	-
◇ Optimize Cycle Length: Optimize ◇ Optimize Spits: Optimize ◇ Actuated Cycle(s): 5 ◇ Natural Cycle(s): 5 ◇ All-Red Time (s) 2.0	Cycle Length (s):	7		(i)	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0		-	_
O Optimize Splits: Optimize O Actuated Cycle(s): 5 O Natural Cycle(s): 5 O Natural Cycle(s): 5 O Natural Cycle(s): 5 O Max v/c Ratio: 0 O Intersection Delay (s): ○ Lagging Phase? O Intersection LOS: ○ Allow Lead/Lag Optimize? O ICU: ○ Recall Mode Min	Lock Timings:		Minimum Initial (s)	15.0	15.0	15.0	15.0	15.0	****	25.0	25.0	25.0	25.0	25.0	-	_	-
◇ Actuated Cycle(s): 5 ◇ Natural Cycle(s): 5 ◇ Natural Cycle(s): 5 ◇ All-Red Time (s) 2.0	 Optimize Cycle Length: 	Optimize	 Minimum Split (s) 	21.0	21.0	21.0	21.0	21.0	-	31.0	31.0	31.0	31.0	31.0	-	-	_
◇ Natural Cycle(s): 5 ◇ Max v/c Ratio: 0 All-Red Time (s) 2.0	 Optimize Splits: 	Optimize	Total Split (s)	34.0	34.0	34.0	34.0	34.0	-	43.0	43.0	43.0	43.0	43.0	-	-	-
✓ Max v/c Ratio: 0 ✓ Intersection Delay (s): ✓ Lost Time Adjust (s) — 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	 Actuated Cycle(s): 	5	Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	-	4.0	4.0	4.0	4.0	4.0	-		_
Intersection Delay (s): Lagging Phase? — — — — — — — — — — — — — — — — — — —	 Natural Cycle(s): 	5	All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	-	2.0	2.0	2.0	2.0	2.0	-	-	-
Intersection LOS: Ø Allow Lead/Lag Optimize? — — — — — — — — — — — — — — — — — — —	Max v/c Ratio:	0	 Lost Time Adjust (s) 	0-0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	_	-	_
CICU: O Recall Mode Min Min <t< td=""><td> Intersection Delay (s): </td><td></td><td>Lagging Phase?</td><td><u>-</u>2 → 2</td><td>1000</td><td>-</td><td>575</td><td>: - :</td><td>1</td><td><u>:</u>—:</td><td></td><td>-</td><td>170</td><td>i — i</td><td></td><td>-</td><td>=</td></t<>	 Intersection Delay (s): 		Lagging Phase?	<u>-</u> 2 → 2	1000	-	575	: - :	1	<u>:</u> —:		-	170	i — i		-	=
◇ ICU LOS: ◇ Speed limit (km/h)	Intersection LOS:		Allow Lead/Lag Optimize?			(-	-	(-	700	()	-	18 -7 3	700	(A -1 -)		-	_
Offset (s): Actuated Effct. Green (s) — 15.0 15.0 15.0 — 25.0 25.0	O ICU:	0	 Recall Mode 	Min	Min	Min	Min	Min		Min	Min	Min	Min	Min	-	<u> </u>	-
PReferenced to: ✓ Actuated g/C Ratio — 0.29 0.29 0.29 — 0.48 0.48 0.48 0.48 — 0.48 — 0.48 0.48 0.48 — 0.48 — 0.48 0.48 0.48 — 0.48 — 0.48 0.48 0.48 0.48 — 0.48 — 0.48 0.48 0.48 — 0.48 — 0.48 0.48 0.48 — 0.48 — 0.48 0.48 0.48 — 0.48 — 0.48 0.48 0.48 0.48 — 0.48 — 0.48 0.48 0.48 0.48 — 0.48 — 0.48 0.48 0.48 0.48 — 0.48 — 0.48 0.48 0.48 0.48 — 0.48 — 0.48 0.48 0.48 0.48 — 0.48 — 0.48 0.48 0.48 0.48 — 0.48 — 0.48 0.48 — 0.48 <td>O ICU LOS:</td> <td></td> <td> Speed limit (km/h) </td> <td>1-2</td> <td>60</td> <td>-</td> <td>-</td> <td>60</td> <td>-</td> <td>1-0</td> <td>50</td> <td>_</td> <td>-</td> <td>70</td> <td>-</td> <td>-</td> <td>-</td>	O ICU LOS:		 Speed limit (km/h) 	1-2	60	-	-	60	-	1-0	50	_	-	70	-	-	-
✓ Reference Phase: ✓ Volume to Capacity Ratio — 0.01 0.05 0.34 0.05 — 0.04 0.21 0.10 0.05 0.24 — — — ✓ Coordination Mode: ✓ Control Delay (s) — 13.2 3.0 17.7 7.5 — 7.6 8.7 2.7 7.5 8.9 — — —	Offset (s):		 Actuated Effct. Green (s) 	1 = 1	15.0	15.0	15.0	15.0	-	25.0	25.0	25.0	25.0	25.0	-	_	=
Coordination Mode: Control Delay (s) — 13.2 3.0 17.7 7.5 — 7.6 8.7 2.7 7.5 8.9 — — —	 Referenced to: 		 Actuated g/C Ratio 		0.29	0.29	0.29	0.29	-	0.48	0.48	0.48	0.48	0.48	-	S==	-
	 Reference Phase: 		Volume to Capacity Ratio	-	0.01	0.05	0.34	0.05		0.04	0.21	0.10	0.05	0.24	- 20	_	_
Market leteronation: V a Queue Delaufe) 00 00 00 00 00 00 00 00 00	Coordination Mode:		Control Delay (s)	10-0	13.2	3.0	17.7	7.5	-	7.6	8.7	2.7	7.5	8.9	900		100
	Master Intersection		O. Ougus Dolanija)		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0			
	Ø6											4 s					

APPENDIX E

Level of Service Definitions

Level of Service Definitions

Two-Way Stop Controlled Intersections

Level of Service	Control Delay per Vehicle (seconds)	Interpretation
	.10	EXCELLENT. Large and frequent gaps in
A	≤ 10	traffic on the main roadway. Queuing on the minor street is rare.
		VERY GOOD. Many gaps exist in traffic on
В	> 10 and ≤ 15	the main roadway. Queuing on the minor
		street is minimal.
		GOOD. Fewer gaps exist in traffic on the
С	> 15 and ≤ 25	main roadway. Delay on minor approach
		becomes more noticeable.
		FAIR. Infrequent and shorter gaps in traffic
D	> 25 and ≤ 35	on the main roadway. Queue lengths
		develop on the minor street.
_	05 50	POOR. Very infrequent gaps in traffic on
E	> 35 and ≤ 50	the main roadway. Queue lengths
		become noticeable.
		UNSATISFACTORY. Very few gaps in traffic
F	> 50	on the main roadway. Excessive delay
		with significant queue lengths on the
		minor street.

Adapted from Highway Capacity Manual 2000, Transportation Research Board

Level of Service Definitions

Signalized Intersections

Level of Service	Control Delay per Vehicle (seconds)	Interpretation
А	≤ 10	EXCELLENT. Extremely favourable progression with most vehicles arriving during the green phase. Most vehicles do not stop and short cycle lengths may contribute to low delay.
В	> 10 and ≤ 20	VERY GOOD. Very good progression and/or short cycle lengths with slightly more vehicles stopping than LOS "A" causing slightly higher levels of average delay.
С	> 20 and ≤ 35	GOOD. Fair progression and longer cycle lengths lead to a greater number of vehicles stopping than LOS "B".
D	> 35 and ≤ 55	FAIR. Congestion becomes noticeable with higher average delays resulting from a combination of long cycle lengths, high volume-to-capacity ratios and unfavourable progression.
E	> 55 and ≤ 80	POOR. Lengthy delays values are indicative of poor progression, long cycle lengths and high volume-to-capacity ratios. Individual cycle failures are common with individual movement failures also common.
F	> 80	UNSATISFACTORY. Indicative of oversaturated conditions with vehicular demand greater than the capacity of the intersection.

Adapted from Highway Capacity Manual 2000, Transportation Research Board

APPENDIX F

Detailed Capacity Analysis

2024 Existing Conditions A.M. 09-06-2024

Lanes, Volumes, Timings
1: Burnside Line & Hurlwood Lane/Brodie Drive

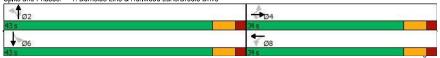
	۶	→	*	1	+	•	1	†	/	1	↓	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		ની	7	*	1		*	^	7	*	1	
Traffic Volume (vph)	5	1	21	190	4	32	26	232	68	30	202	12
Future Volume (vph)	5	1	21	190	4	32	26	232	68	30	202	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		50.0	60.0		0.0	40.0		0.0	40.0		0.0
Storage Lanes	0		1	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.865				0.850		0.992	
Flt Protected		0.960		0.950			0.950			0.950		
Satd. Flow (prot)	0	1824	1615	1736	1644	0	1805	1439	1468	1805	1513	0
Flt Permitted		0.857		0.754			0.612			0.601		
Satd. Flow (perm)	0	1628	1615	1377	1644	0	1163	1439	1468	1142	1513	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			43		35				75		5	
Link Speed (k/h)		50			60			60			60	
Link Distance (m)		157.9			136.5			65.5			1953.3	
Travel Time (s)		11.4			8.2			3.9			117.2	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	4%	0%	0%	0%	32%	10%	0%	26%	0%
Adj. Flow (vph)	5	1	23	209	4	35	29	255	75	33	222	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	6	23	209	39	0	29	255	75	33	235	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	C I +Ex	CI+Ex	CI+Ex	CI+Ex	C I +Ex		CI+Ex	C I +Ex	C I +Ex	CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			C I +Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	

C.F. Crozier & Associates Synchro 11 Report Page 1 Lanes, Volumes, Timings
1: Burnside Line & Hurlwood Lane/Brodie Drive

2024 Existing Conditions A.M. 09-06-2024

	•	-	7	1	•		1	†	1	1	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Permitted Phases	4		4	8			2		2	6		
Detector Phase	4	4	4	8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	15.0	15.0		25.0	25.0	25.0	25.0	25.0	
Minimum Split (s)	21.0	21.0	21.0	21.0	21.0		31.0	31.0	31.0	31.0	31.0	
Total Split (s)	34.0	34.0	34.0	34.0	34.0		43.0	43.0	43.0	43.0	43.0	
Total Split (%)	44.2%	44.2%	44.2%	44.2%	44.2%		55.8%	55.8%	55.8%	55.8%	55.8%	
Maximum Green (s)	28.0	28.0	28.0	28.0	28.0		37.0	37.0	37.0	37.0	37.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	Min	Min	Min	Min	Min		Min	Min	Min	Min	Min	
Act Effct Green (s)		15.6	15.6	15.6	15.6		25.0	25.0	25.0	25.0	25.0	
Actuated g/C Ratio		0.30	0.30	0.30	0.30		0.48	0.48	0.48	0.48	0.48	
v/c Ratio		0.01	0.05	0.51	0.08		0.05	0.37	0.10	0.06	0.33	
Control Delay		13.0	2.9	20.5	6.5		8.2	11.1	3.0	8.3	10.2	
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		13.0	2.9	20.5	6.5		8.2	11.1	3.0	8.3	10.2	
LOS		В	Α	С	Α		Α	В	Α	Α	В	
Approach Delay		5.0			18.3			9.2			10.0	
Approach LOS		Α			В			Α			Α	
Queue Length 50th (m)		0.4	0.0	17.0	0.3		1.4	14.5	0.0	1.6	12.7	
Queue Length 95th (m)		2.5	2.5	33.7	5.4		5.3	32.0	5.5	5.8	28.3	
Internal Link Dist (m)		133.9			112.5			41.5			1929.3	
Turn Bay Length (m)			50.0	60.0			40.0			40.0		
Base Capacity (vph)		866	879	732	891		817	1011	1054	803	1065	
Starvation Cap Reductn		0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn		0	0	0	0		0	0	0	0	0	
Storage Cap Reductn		0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio		0.01	0.03	0.29	0.04		0.04	0.25	0.07	0.04	0.22	
Intersection Summary												
Area Type: C	Other											
Cycle Length: 77												
Actuated Cycle Length: 52.6												
Natural Cycle: 55												
Control Type: Semi Act-Unco	ord											
Maximum v/c Ratio: 0.51												
Intersection Signal Delay: 11	.8			İr	tersection	LOS: B						
Intersection Capacity Utilizati				IC	CU Level o	of Service	C					
Analysis Period (min) 15												

Splits and Phases: 1: Burnside Line & Hurlwood Lane/Brodie Drive



Lanes, Volumes, Timings

2024 Existing Conditions A.M. 09-06-2024

3: Burnside Line & Highway 11 Westbound

	1	•	†	1	1	
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	*	7	*	7		<u> </u>
Traffic Volume (vph)	133	53	540	149	0	253
Future Volume (vph)	133	53	540	149	0	253
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	1000	80.0	0.0	1000
Storage Lanes	1	1		1	0.0	
Taper Length (m)	7.5			-	7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.850	1.00	0.850	1.00	1.00
Flt Protected	0.950	0.000		0.000		
Satd. Flow (prot)	1787	1583	1638	1509	0	1810
Flt Permitted	0.950	1000	1000	1000	J	1010
Satd. Flow (perm)	1787	1583	1638	1509	0	1810
Right Turn on Red	1707	Yes	1000	Yes	U	1010
Satd. Flow (RTOR)		56		157		
Link Speed (k/h)	50	50	60	137		60
Link Distance (m)	104.8		160.3			51.5
Travel Time (s)	7.5		9.6			3.1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
	1%	2%	16%	0.95 7%	0.95	0.95 5%
Heavy Vehicles (%)						
Adj. Flow (vph)	140	56	568	157	0	266
Shared Lane Traffic (%)	140	FC	FCC	457		200
Lane Group Flow (vph)	140	56	568	157	0	266
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1		2
Detector Template	Left	Right	Thru	Right		Thru
Leading Detector (m)	2.0	2.0	10.0	2.0		10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0
Detector 1 Size(m)	2.0	2.0	0.6	2.0		0.6
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex		Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			CI+Ex			CI+Ex
Detector 2 Channel			J/			J/
Detector 2 Extend (s)			0.0			0.0
Turn Type	Perm	Perm	NA	Perm		NA
Protected Phases	Felill	Felill	6	Fellil		2
Protected Phases			б			2

C.F. Crozier & Associates Synchro 11 Report Page 4

Lanes, Volumes, Timings
3: Burnside Line & Highway 11 Westbound

2024 Existing Conditions A.M. 09-06-2024

	1	•	†	1	1	↓	
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	
Permitted Phases	4	4		6			
Detector Phase	4	4	6	6		2	
Switch Phase							
Minimum Initial (s)	10.0	10.0	20.0	20.0		20.0	
Minimum Split (s)	16.1	16.1	27.3	27.3		27.3	
Total Split (s)	24.0	24.0	61.0	61.0		61.0	
Total Split (%)	28.2%	28.2%	71.8%	71.8%		71.8%	
Maximum Green (s)	17.9	17.9	53.7	53.7		53.7	
Yellow Time (s)	4.5	4.5	4.5	4.5		4.5	
All-Red Time (s)	1.6	1.6	2.8	2.8		2.8	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	
Total Lost Time (s)	6.1	6.1	7.3	7.3		7.3	
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.2	3.2		3.2	
Recall Mode	None	None	None	None		None	
Act Effct Green (s)	11.4	11.4	27.6	27.6		27.6	
Actuated g/C Ratio	0.25	0.25	0.61	0.61		0.61	
v/c Ratio	0.31	0.13	0.57	0.16		0.24	
Control Delay	20.0	7.4	11.4	1.8		7.4	
Queue Delay	0.0	0.0	0.0	0.0		0.0	
Total Delay	20.0	7.4	11.4	1.8		7.4	
LOS	C	A	В	A		A	
Approach Delay	16.4	,,	9.3	,,		7.4	
Approach LOS	В		A			A	
Queue Length 50th (m)	9.6	0.0	33.8	0.0		12.1	
Queue Length 95th (m)	29.0	7.9	69.6	6.4		25.8	
Internal Link Dist (m)	80.8	7.0	136.3	0.1		27.5	
Turn Bay Length (m)	00.0		100.0	80.0		21.0	
Base Capacity (vph)	755	702	1590	1469		1756	
Starvation Cap Reductn	0	0	0	0		0	
Spillback Cap Reductn	0	0	0	0		0	
Storage Cap Reductn	0	0	0	0		0	
Reduced v/c Ratio	0.19	0.08	0.36	0.11		0.15	
	0.19	0.06	0.30	0.11		0.15	
Intersection Summary							
Area Type:	Other						
Cycle Length: 85							
Actuated Cycle Length: 45.	6						
Natural Cycle: 50							
Control Type: Semi Act-Und	coord						
Maximum v/c Ratio: 0.57							
Intersection Signal Delay: 1				ln:	tersection	n LOS: B	
Intersection Capacity Utiliza	ation 47.9%			IC	U Level	of Service A	4
Analysis Period (min) 15							
, , ,							

Splits and Phases: 3: Burnside Line & Highway 11 Westbound



Lanes, Volumes, Timings 4: West Street North & Highway 11 Eastbound 2024 Existing Conditions A.M. 09-06-2024

	•	1	1	†	Ţ	1
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	*	7	*	↑	<u> </u>	7
Traffic Volume (vph)	225	104	86	461	352	34
Future Volume (vph)	225	104	86	461	352	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	55.0	1300	1300	40.0
Storage Lanes	1	1	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.850	1.00	1.00	1.00	0.850
Fit Protected	0.950	0.000	0.950			0.000
Satd. Flow (prot)	1327	1524	1787	1827	1845	1442
Fit Permitted	0.950	1024	0.416	1027	1040	1442
		1504		1827	10 <i>1F</i>	1442
Satd. Flow (perm)	1327	1524	783	1827	1845	
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	F.0	109		00	00	36
Link Speed (k/h)	50			60	60	
Link Distance (m)	154.2			160.8	176.6	
Travel Time (s)	11.1			9.6	10.6	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	36%	6%	1%	4%	3%	12%
Adj. Flow (vph)	237	109	91	485	371	36
Shared Lane Traffic (%)						
Lane Group Flow (vph)	237	109	91	485	371	36
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	2.0
	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Type Detector 1 Channel	U +EX	OI+EX	CITEX	OI+EX	∪I+EX	CITEX
	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	pm+pt	NA	NA	Perm
Protected Phases			1	6	2	

C.F. Crozier & Associates Synchro 11 Report Page 6

Lanes, Volumes, Timings 4: West Street North & Highway 11 Eastbound 2024 Existing Conditions A.M. 09-06-2024

	•	•	1	†	ļ	1				
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR				
Permitted Phases	8	8	6			2				
Detector Phase	8	8	1	6	2	2				
Switch Phase										
Minimum Initial (s)	10.0	10.0	7.0	20.0	20.0	20.0				
Minimum Split (s)	18.0	18.0	10.0	41.0	41.0	41.0				
Total Split (s)	26.0	26.0	10.0	59.0	49.0	49.0				
Total Split (%)	30.6%	30.6%	11.8%	69.4%	57.6%	57.6%				
Maximum Green (s)	19.8	19.8	7.0	51.9	41.9	41.9				
Yellow Time (s)	4.5	4.5	3.0	4.5	4.5	4.5				
All-Red Time (s)	1.7	1.7	0.0	2.6	2.6	2.6				
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0				
Total Lost Time (s)	6.2	6.2	3.0	7.1	7.1	7.1				
Lead/Lag	0.2	0.2	Lead		Lag	Lag				
Lead-Lag Optimize?			Yes		Yes	Yes				
Vehicle Extension (s)	3.0	3.0	3.0	3.2	3.2	3.2				
Recall Mode	None	None	None	None	None	None				
Act Effct Green (s)	15.7	15.7	32.9	28.7	21.2	21.2				
Actuated g/C Ratio	0.27	0.27	0.57	0.49	0.37	0.37				
v/c Ratio	0.66	0.22	0.16	0.54	0.55	0.07				
Control Delay	29.5	5.6	7.1	13.2	20.3	6.1				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0				
Total Delay	29.5	5.6	7.1	13.2	20.3	6.1				
LOS	23.5 C	Α.	A	10.2 B	20.5 C	A				
Approach Delay	21.9	Α.	А	12.3	19.0	Α				
Approach LOS	21.9 C			12.3 B	13.0 B					
Queue Length 50th (m)	24.0	0.0	4.2	34.9	34.9	0.0				
Queue Length 95th (m)	49.0	10.2	10.5	64.4	63.4	5.3				
Internal Link Dist (m)	130.2	10.2	10.5	136.8	152.6	3.3				
Turn Bay Length (m)	130.2		55.0	130.0	132.0	40.0				
Base Capacity (vph)	463	602	567	1598	1362	1074				
Starvation Cap Reductn	403	002	0	1090	1302	0				
Spillback Cap Reductin	0	0	0	0	0	0				
	0	0	0	0	0	0				
Storage Cap Reductn Reduced v/c Ratio										
Reduced V/C Rallo	0.51	0.18	0.16	0.30	0.27	0.03				
Intersection Summary										
Area Type:	Other									
Cycle Length: 85										
Actuated Cycle Length: 58										
Natural Cycle: 70										
Control Type: Semi Act-Unc	oord									
Maximum v/c Ratio: 0.66										
Intersection Signal Delay: 16	3.8			lr	ntersection	n LOS: B				
Intersection Capacity Utiliza				IC	CU Level	of Service A	1			
Analysis Period (min) 15										
Splits and Phases: 4: We	st Street N	orth & Hig	hway 11	Eastbour	nd					
opino una i nasos. 4. vvo.										
↑ Ø1										

Lane Group Lane Configurations Traffic Volume (vph) Future Volume (vph) Ideal Flow (vphpl) Storage Length (m) Storage Lanes Taper Length (m) Lane Util. Factor Flt Protected Satd. Flow (prot) Flt Permitted Satd. Flow (perm) Right Turn on Red Satd. Flow (RTOR) Link Speed (k/h) Link Distance (m) Travel Time (s) Peak Hour Factor

Heavy Vehicles (%)

Shared Lane Traffic (%) Lane Group Flow (vph)

Enter Blocked Intersection

Adj. Flow (vph)

Lane Alignment

Median Width(m)

Detector 1 Size(m)

Detector 1 Channel Detector 1 Extend (s)

Detector 1 Queue (s)

Detector 1 Delay (s)

Detector 2 Size(m)

Detector 2 Channel Detector 2 Extend (s)

Detector 2 Type

Turn Type

Detector 2 Position(m)

Detector 1 Type

5: Highway 12 & W

0.97

108

108

Left

2.0

0.0

0.0

0.0

pm+pt

CI+Ex

0.97

1%

121

121

No

Left

3.6

0.6

0.0

0.0

9.4

0.6

0.0

NA

CI+Ex

CI+Ex

0.97

2%

135

135

Right

2.0

0.0

0.0

Perm pm+pt

CI+Ex

0.97

175

175

Left

2.0

0.0

0.0

CI+Ex

0.97

3%

151

219

Left Right

3.6

0.6

0.0

0.0

0.0

9.4

0.0

NA

CI+Ex

0.97

0%

68 151

0 151 0.97

1%

378

378

No

Left

7.2

0.6

0.0

0.0

0.0

9.4

0.6

0.0

NA

CI+Ex

CI+Ex

1%

Left

2.0

0.0

0.0

0.0

Prot

CI+Ex

0.97

3%

219

219

No

2.0

0.0

0.0

CI+Ex

Right

0.97

60

60

No

Left

2.0

0.0

0.0

0.0

Prot

CI+Ex

0.97

4%

615

791

No

Left Right

7.2

0.6

0.0

0.0

0.0

9.4

0.6

0.0

NA

CI+Ex

CI+Ex

0.97

3%

176

/ V	est Rid	ge bot	lievait	a/iviui p					00-0	6-2024		
	•	-	*	1		*	1	Ť	-	1	Ţ	1
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
	7	^	7	*	1		77	^	7	*	†	
	105	117	131	170	146	66	146	367	212	58	597	171
	105	117	131	170	146	66	146	367	212	58	597	171
	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
	50.0		0.0	115.0		0.0	100.0		120.0	110.0		0.0
	1		1	1		0	2		1	1		0
	70.0			65.0			80.0			100.0		
	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	0.95
			0.850		0.953				0.850		0.967	
	0.950			0.950			0.950			0.950		
	1787	1881	1583	1787	1774	0	3467	3574	1568	1736	3364	0
	0.621			0.603			0.950			0.950		
	1168	1881	1583	1134	1774	0	3467	3574	1568	1736	3364	0
			Yes			Yes			Yes			Yes
			174		23				219		29	
		60			60			70			70	
		186.6			853.6			529.0			469.5	
		11.2			51.2			27.2			24.1	

Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	100		15	25		15	25		100
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	

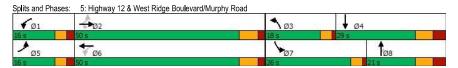
Protected Phases 2 6 8 4 C.F. Crozier & Associates Synchro 11 Report Page 8 Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road 2024 Existing Conditions A.M. 09-06-2024

	•	→	+	1	-	*	1	†	1	1	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2		2	6					8			
Detector Phase	5	2	2	1	6		3	8	8	7	4	
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0		7.0	10.0	10.0	7.0	10.0	
Minimum Split (s)	12.0	27.2	27.2	12.0	33.2		11.5	21.0	21.0	11.5	22.5	
Total Split (s)	16.0	50.0	50.0	16.0	50.0		18.0	21.0	21.0	26.0	29.0	
Total Split (%)	14.2%	44.2%	44.2%	14.2%	44.2%		15.9%	18.6%	18.6%	23.0%	25.7%	
Maximum Green (s)	11.0	42.8	42.8	11.0	42.8		14.0	13.0	13.0	22.0	21.0	
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	4.5	4.5	3.0	4.5	
All-Red Time (s)	2.0	2.2	2.2	2.0	2.2		1.0	3.5	3.5	1.0	3.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	7.2	7.2	5.0	7.2		4.0	8.0	8.0	4.0	8.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.6	3.6	3.0	3.6		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None		None	None	None	None	None	
Walk Time (s)					7.0			7.0	7.0			
Flash Dont Walk (s)					19.0			6.0	6.0			
Pedestrian Calls (#/hr)					0			0	0			
Act Effct Green (s)	31.2	20.2	20.2	34.4	23.9		9.0	23.8	23.8	8.6	21.0	
Actuated g/C Ratio	0.37	0.24	0.24	0.41	0.28		0.11	0.28	0.28	0.10	0.25	
v/c Ratio	0.22	0.27	0.26	0.33	0.42		0.41	0.38	0.37	0.34	0.92	
Control Delay	15.7	28.7	3.5	16.8	27.0		38.9	27.3	6.0	41.1	48.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	15.7	28.7	3.5	16.8	27.0		38.9	27.3	6.0	41.1	48.1	
LOS	В	С	Α	В	С		D	С	Α	D	D	
Approach Delay		15.5			22.4			23.4			47.6	
Approach LOS		В			С			С			D	
Queue Length 50th (m)	10.5	16.9	0.0	17.7	27.9		12.6	28.2	0.0	9.8	67.2	
Queue Length 95th (m)	21.1	32.7	8.1	32.4	52.7		22.1	44.1	17.5	21.8	#111.0	
Internal Link Dist (m)		162.6			829.6			505.0			445.5	
Turn Bay Length (m)	50.0			115.0			100.0		120.0	110.0		
Base Capacity (vph)	543	955	889	553	912		575	1007	599	453	859	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.20	0.13	0.15	0.32	0.24		0.26	0.38	0.37	0.13	0.92	
Intersection Summany												

Intersection Summary		
Area Type: Other		
Cycle Length: 113		
Actuated Cycle Length: 84.4		
Natural Cycle: 80		
Control Type: Semi Act-Uncoord		
Maximum v/c Ratio: 0.92		
Intersection Signal Delay: 30.7	Intersection LOS: C	
Intersection Capacity Utilization 74.0%	ICU Level of Service D	
Analysis Period (min) 15		
# 95th percentile volume exceeds capacity, queue	may be longer.	

C.F. Crozier & Associates Synchro 11 Report Page 9 Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road 2024 Existing Conditions A.M. 09-06-2024

Queue shown is maximum after two cycles.



C.F. Crozier & Associates Synchro 11 Report Page 10

HCM 2010 TWSC 6: Uhthoff Line & Murphy Road

2024 Existing Conditions A.M. 09-06-2024

Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol. veh/h	59	3	1	0	8	0	0	0	0	0	0	76
Future Vol. veh/h	59	3	1	0	8	0	0	0	0	0	0	76
Conflicting Peds. #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized		-	None	-	-	None	-		None	-	-	None
Storage Length			-			-			-			-
Veh in Median Storage	e.# -	0	_	-	0	-	-	0	_	-	0	_
Grade, %	-, <i>n</i>	0			0			0			0	_
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	32	67	0	0	30	100	50	0	100	0	50	30
Mymt Flow	64	3	1	0	9	0	0	0	0	0	0	83
WWIIITIOW	04	J	- '	U	9	U	U	U	U	U	U	00
Major/Minor	Minor2			Minor1		ı	Major1		N	/lajor2		
Conflicting Flow All	47	42	42	44	83	0	83	0	0	0	0	0
Stage 1	42	42	-	0	0	-	-	-	-	-	-	-
Stage 2	5	0		44	83			-		-		
Critical Hdwy	7.42	7.17	6.2	7.1	6.8	7.2	4.6			4.1	_	_
Critical Hdwy Stg 1	6.42	6.17	-	6.1	5.8	- '	1.0					
Critical Hdwy Stg 2	6.42	6.17		6.1	5.8	-	_	_	_	_	_	_
Follow-up Hdwy	3.788	4.603	3.3	3.5	4.27	4.2	2.65	-		2.2		
Pot Cap-1 Maneuver	884	739	1034	963	757	7.2	1259	_		2.2		
Stage 1	901	747	1004	-	131	-	1200	-				
Stage 2	944	- 141		975	774	-		-		_		
Platoon blocked, %	244	_	_	313	114	_	_					
Mov Cap-1 Maneuver	_	739	1034	959	757	_	1259	-		_		-
Mov Cap-1 Maneuver	-	739	1034	959	757	-	1209	-	-	-		
Stage 1	901	747	_	909	131	-	-		-	-		-
Stage 2	944	747		970	774			_	-	-		_
Staye 2	344			510	114	-			-	-	-	
Approach	EB			WB			NB			SB		
HCM Control Delay, s				.,,5			0			0		
HCM LOS							U			U		
TIOW LOG	-											
Minor Lane/Major Mvn	nt	NBL	NBT	NBR	EBLn1\	VBI n1	SBL	SBT	SBR			
Capacity (veh/h)		1259	-	-		-	-	-	-			
HCM Lane V/C Ratio		1209				-						
HCM Control Delay (s)	١	0	-	-	-	-	0	-				
HCM Lane LOS		A		- :	-	-	A					
HCM 95th %tile Q(veh	Λ	0					٨					
HOW SOUL WINE CONTROL	,	U	_		_			_				

C.F. Crozier & Associates Synchro 11 Report

Page 12

Intersection												
Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	LDL	4	LDIN	WDL	4	WOIN	INDL	4	NUIT	ODL	4	ODIN
Traffic Vol., veh/h	0	136	6	29	109	3	3	4	31	5	9	1
Future Vol. veh/h	0	136	6	29	109	3	3	4	31	5	9	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	- 1100	-	None	-	-	None	- Otop	- Otop	None	- Otop	- Clop	None
Storage Length			-			-			-			-
Veh in Median Storage	.# -	0	-		0	-		0	_		0	_
Grade, %	, -	0			0			0			0	
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	2	0	0	1	0	0	25	3	0	11	0
Mymt Flow	0	142	6	30	114	3	3	4	32	5	9	1
	- 5	112	- 0	- 00				- 1	02		- 0	
Majar/Minar	Majaut			Maja #0			Ain aud		_	linas^		
	Major1	0		Major2	^		Minor1	200		Minor2	204	440
Conflicting Flow All	117	0	0	148	0	0	326	322	145	339	324	116
Stage 1	-	-	-	-	-	-	145	145	-	176	176	-
Stage 2	-	-	-	-	-	-	181	177	-	163	148	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.75	6.23	7.1	6.61	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.75	-	6.1	5.61	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.75		6.1	5.61	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4.225	3.327	3.5	4.099	3.3
Pot Cap-1 Maneuver	1484	-	-	1446	-	-	631	559	900	619	579	942
Stage 1	-	-	-	-	-	-	863	735	-	831	737	-
Stage 2	-	-	-	-	-	-	825	711	-	844	758	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1484	-	-	1446	-	-	612	547	900	583	566	942
Mov Cap-2 Maneuver	-	-	-	-	-	-	612	547	-	583	566	-
Stage 1	-	-	-	-	-	-	863	735	-	831	721	-
Stage 2	-	-	-	-	-	-	795	695	-	809	758	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			1.6			9.6			11.3		
HCM LOS							Α			В		
Minor Lane/Major Mvm	it N	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)		814	1484	-	-	1446	-		587			
HCM Lane V/C Ratio		0.049	-					-	0.027			
HCM Control Delay (s)		9.6	0	_	_	7.5	0		11.3			
HCM Lane LOS		Α.	A		-	Α.	A	_	В			
HCM 95th %tile Q(veh)		0.2	0	_	_	0.1	-	_	0.1			
TOTAL COURT FORME CE(FORM)		J.2	U			J. I			3.1			

Intersection												
Int Delay, s/veh	6.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol. veh/h	11	63	102	16	50	1	72	119	27	4	109	11
Future Vol. veh/h	11	63	102	16	50	1	72	119	27	4	109	11
Conflicting Peds. #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	_	None	-	-	None
Storage Length		-	-	-		-	-	-	-	-		-
Veh in Median Storage,	# -	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0			0		-	0			0	
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	1	0	0	0	0	62	0	0	50	0
Mymt Flow	12	68	111	17	54	1	78	129	29	4	118	12
Major/Minor N	/linor2			Minor1			Major1			Major2		
Conflicting Flow All	459	446	124	522	438	144	130	0	0	158	0	0
Stage 1	132	132	124	300	300	144	130	-	-	130	-	-
Stage 2	327	314	_	222	138		- :			-		
Critical Hdwv	7.1	6.52	6.21	7.1	6.5	6.2	4.1		-	4.1		
Critical Hdwy Stg 1	6.1	5.52	0.21	6.1	5.5	- 0.2	4.1	-		7.1		
Critical Hdwy Stg 2	6.1	5.52	-	6.1	5.5	-				-		
Follow-up Hdwy	3.5	4.018		3.5	4	3.3	2.2			2.2		
Pot Cap-1 Maneuver	516	507	929	468	515	909	1468			1434		
Stage 1	876	787	J25	713	669	-	-	-		1404	-	
Stage 2	690	656	-	785	786							
Platoon blocked, %	030	000		100	700						-	_
Mov Cap-1 Maneuver	449	476	929	350	484	909	1468	_		1434		
Mov Cap-1 Maneuver	449	476	323	350	484	- 505	-			704		
Stage 1	825	785	-	672	630	-	-	_	_	-		
Stage 2	593	618	_	629	784							
Olago Z	000	010		023	704							
				ME			NE			0.5		
Approach	EB			WB			NB			SB		
HCM Control Delay, s	12.7			14.6			2.5			0.2		
HCM LOS	В			В								
Minor Lane/Major Mvmi	t	NBL	NBT	NBR I	EBLn1\	NBLn1	SBL	SBT	SBR			
Capacity (veh/h)		1468			660	446	1434					
HCM Lane V/C Ratio		0.053			0.29	0.163	0.003					
HCM Control Delay (s)		7.6	0		12.7	14.6	7.5	0				
HCM Lane LOS		A	A		В	В	A	Ā				
HCM 95th %tile Q(veh)		0.2	-	-	1.2	0.6	0	-	-			

Lanes, Volumes, Timings

1: Burnside Line & Hurlwood Lane/Brodie Drive

2024 Existing Conditions P.M.

09-06-2024

	٠	-	*	•	•	•	1	†	~	-	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		લી	7	1	1		7	^	7	1	1	
Traffic Volume (vph)	6	4	40	330	1	83	24	247	75	35	195	7
Future Volume (vph)	6	4	40	330	1	83	24	247	75	35	195	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		50.0	60.0		0.0	40.0		0.0	40.0		0.0
Storage Lanes	0		1	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.852				0.850		0.995	
Flt Protected		0.971		0.950			0.950			0.950		
Satd. Flow (prot)	0	1845	1568	1770	1619	0	1805	1863	1429	1805	1755	0
Flt Permitted		0.887		0.751			0.624			0.597		
Satd. Flow (perm)	0	1685	1568	1399	1619	0	1186	1863	1429	1134	1755	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			43		88	100			80		3	. 00
Link Speed (k/h)		50	10		60			60	00		60	
Link Distance (m)		157.9			136.5			65.5			1953.3	
Travel Time (s)		11.4			8.2			3.9			117.2	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	3%	2%	0.54	0.54	0%	2%	13%	0.54	8%	0.34
Adi. Flow (vph)	6	4	43	351	1	88	26	263	80	37	207	7
Shared Lane Traffic (%)			75	331	'	00	20	200	00	31	201	,
Lane Group Flow (vph)	0	10	43	351	89	0	26	263	80	37	214	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	Leit	3.6	rtigiit	Leit	3.6	rtigrit	Leit	3.6	rtigitt	Leit	3.6	ragin
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		4.0			4.0			4.0			4.0	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	1.00	1.00	25	1.00	1.00	25	1.00	1.00	25	1.00	1.00
Number of Detectors	1	2	1	1	2	13	1	2	1	1	2	13
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.0	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	
Detector 1 Type Detector 1 Channel	CITEX	CITEX	CITEX	CITEX	CITEX		UI∓EX	CITEX	CITEX	CITEX	CITEX	
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0		0.0		0.0		0.0	0.0		
Detector 1 Delay (s) Detector 2 Position(m)	0.0	0.0 9.4	0.0	0.0	9.4		0.0	0.0 9.4	0.0	0.0	0.0 9.4	
. ,												
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			C I +Ex			CI+Ex	
Detector 2 Channel		0.0			0.0			0.0			0.0	
Detector 2 Extend (s)	D	0.0	D	D	0.0		D	0.0	D	D	0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	

C.F. Crozier & Associates Synchro 11 Report Page 1

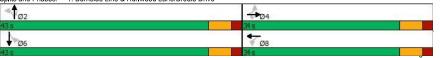
Lanes, Volumes, Timings
1: Burnside Line & Hurlwood Lane/Brodie Drive

2024 Existing Conditions P.M.

09-06-2024

	•	\rightarrow	*	1	•	•	1	Ť	1	-	Į.	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8			2		2	6		
Detector Phase	4	4	4	8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	15.0	15.0		25.0	25.0	25.0	25.0	25.0	
Minimum Split (s)	21.0	21.0	21.0	21.0	21.0		31.0	31.0	31.0	31.0	31.0	
Total Split (s)	34.0	34.0	34.0	34.0	34.0		43.0	43.0	43.0	43.0	43.0	
Total Split (%)	44.2%	44.2%	44.2%	44.2%	44.2%		55.8%	55.8%	55.8%	55.8%	55.8%	
Maximum Green (s)	28.0	28.0	28.0	28.0	28.0		37.0	37.0	37.0	37.0	37.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	Min	Min	Min	Min	Min		Min	Min	Min	Min	Min	
Act Effct Green (s)		19.7	19.7	19.7	19.7		25.2	25.2	25.2	25.2	25.2	
Actuated g/C Ratio		0.35	0.35	0.35	0.35		0.44	0.44	0.44	0.44	0.44	
v/c Ratio		0.02	0.08	0.73	0.14		0.05	0.32	0.12	0.07	0.28	
Control Delay		11.3	4.5	25.6	3.9		11.5	12.9	4.1	11.7	12.5	
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		11.3	4.5	25.6	3.9		11.5	12.9	4.1	11.7	12.5	
LOS		В	Α	С	Α		В	В	Α	В	В	
Approach Delay		5.8			21.2			10.9			12.4	
Approach LOS		Α			С			В			В	
Queue Length 50th (m)		0.7	0.0	32.3	0.1		1.5	16.9	0.0	2.1	13.3	
Queue Length 95th (m)		3.1	4.9	57.5	7.1		6.4	40.4	7.3	8.3	33.2	
Internal Link Dist (m)		133.9			112.5			41.5			1929.3	
Turn Bay Length (m)			50.0	60.0			40.0			40.0		
Base Capacity (vph)		833	797	692	845		775	1218	962	741	1148	
Starvation Cap Reductn		0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn		0	0	0	0		0	0	0	0	0	
Storage Cap Reductn		0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio		0.01	0.05	0.51	0.11		0.03	0.22	0.08	0.05	0.19	
Intersection Summary												
	Other											
Cycle Length: 77												
Actuated Cycle Length: 57												
Natural Cycle: 60												
Control Type: Semi Act-Unc	coord											
Maximum v/c Ratio: 0.73	F 4					100.5						
Intersection Signal Delay: 1					ntersection		0					
Intersection Capacity Utiliza	ition 69.2%			IC	CU Level	of Service	C					
Analysis Period (min) 15												

Splits and Phases: 1: Burnside Line & Hurlwood Lane/Brodie Drive



Lanes, Volumes, Timings 3: Burnside Line & Highway 11 Westbound 2024 Existing Conditions P.M. 09-06-2024

Lane Group		1	•	†	-	-	ļ
Lane Configurations	Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (vph)							
Future Volume (vph) 168 69 551 238 0 407 Ideal Flow (vphpl) 1900 1900 1900 1900 1900 Storage Length (m)						0	
Ideal Flow (vphpl)							
Storage Length (m) 0.0 0.0 80.0 0.0						-	
Storage Lanes							
Taper Length (m)							
Lane Util. Factor						_	
Fit Protected 0.850 0.850 Satd. Flow (prot) 1752 1599 1863 1615 0 1863 Flt Permitted 0.950 1863 1615 0 1863 Satd. Flow (perm) 1752 1599 1863 1615 0 1863 Right Turn on Red Yes			1.00	1.00	1.00		1.00
Fit Protected		1.00		1.00		1.00	1.00
Satd. Flow (prot) 1752 1599 1863 1615 0 1863 Flit Permitted 0.950 Satd. Flow (perm) 1752 1599 1863 1615 0 1863 Right Turn on Red Yes Yes Yes Satd. Flow (RTOR) 70 243 Link Speed (k/h) 50 60 60 60 60 Link Speed (k/h) 50 60 60 51.5 51.5 75.5 9.6 3.1 9.8 0.98		0.050	0.000		0.000		
Fit Permitted			1500	1062	1615	0	1062
Satd, Flow (perm) 1752 1599 1863 1615 0 1863 Right Turn on Red Yes 15.5 75.5 9.6 9.8 0.98 <td></td> <td></td> <td>1599</td> <td>1803</td> <td>1015</td> <td>U</td> <td>1803</td>			1599	1803	1015	U	1803
Right Turn on Red Yes Yes Satd. Flow (RTOR) 70 243 Link Speed (k/h) 50 60 Link Distance (m) 104.8 160.3 51.5 Travel Time (s) 7.5 9.6 3.1 Peak Hour Factor 0.98			4500	4000	4045		4000
Satd. Flow (RTOR) 70 243 Link Speed (k/h) 50 60 60 Link Speed (k/h) 104.8 160.3 51.5 Travel Time (s) 7.5 9.6 3.1 Peak Hour Factor 0.98 0.98 0.98 0.98 0.98 Heavy Vehicles (%) 3% 1% 2% 0% 0% 2% Adj. Flow (vph) 171 70 562 243 0 415 Shared Lane Traffic (%) Lane Group Flow (vph) 171 70 562 243 0 415 Enter Blocked Intersection No		1/52		1863		0	1863
Link Speed (k/h) 50 60 60 Link Distance (m) 104.8 160.3 51.5 Travel Time (s) 7.5 9.6 3.1 Peak Hour Factor 0.98 0.98 0.98 0.98 0.98 0.98 Heavy Vehicles (%) 3% 1% 2% 0% 0% 2% Adj. Flow (vph) 171 70 562 243 0 415 Shared Lane Traffic (%) Lane Group Flow (vph) 171 70 562 243 0 415 Enter Blocked Intersection No							
Link Distance (m) 104.8 160.3 51.5 Travel Time (s) 7.5 9.6 3.1 Peak Hour Factor 0.98			70		243		
Travel Time (s) 7.5 9.6 3.1 Peak Hour Factor 0.98 0.48 28 48 48 15 15 15 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00 1.00 1.00 1.00 1.00 1.00							
Peak Hour Factor 0.98 0.08 0 20 0 415 Lane Alignment Lane Lettillowidth(m) 3.6 0.0	Link Distance (m)						
Heavy Vehicles (%) 3% 1% 2% 0% 0% 2% Adj. Flow (vph) 171 70 562 243 0 415 Shared Lane Traffic (%) Lane Group Flow (vph) 171 70 562 243 0 415 Enter Blocked Intersection No No No No No No No	Travel Time (s)	7.5		9.6			3.1
Adj. Flow (vph) 171 70 562 243 0 415 Shared Lane Traffic (%) Lane Group Flow (vph) 171 70 562 243 0 415 Enter Blocked Intersection No Ads 4.8 Left Left Median 4.8 4.8 4.8 To Ads To 1.00 1.00 1.00	Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph) 171 70 562 243 0 415 Shared Lane Traffic (%) Lane Group Flow (vph) 171 70 562 243 0 415 Enter Blocked Intersection No Ads 4.8 Left Left Median 4.8 4.8 4.8 To Ads To 1.00 1.00 1.00	Heavy Vehicles (%)	3%	1%	2%	0%	0%	2%
Shared Lane Traffic (%) Lane Group Flow (vph) 171 70 562 243 0 415							
Lane Group Flow (vph) 171 70 562 243 0 415 Enter Blocked Intersection No No <t< td=""><td>, , , ,</td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	, , , ,						
Enter Blocked Intersection No No <th< td=""><td></td><td>171</td><td>70</td><td>562</td><td>243</td><td>0</td><td>415</td></th<>		171	70	562	243	0	415
Lane Alignment Left Median Width(m) Left No.0 Left Left No.0 Left Left No.0 Left No.0 <th< td=""><td>1 (1)</td><td></td><td></td><td></td><td></td><td></td><td></td></th<>	1 (1)						
Median Width(m) 3.6 0.0 0.0 Link Offset(m) 0.0 0.0 0.0 Crosswalk Width(m) 4.8 4.8 4.8 Two way Left Turn Lane Headway Factor 1.00 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>							
Link Offset(m) 0.0 0.0 0.0 Crosswalk Width(m) 4.8 4.8 4.8 Two way Left Turn Lane 4.8 4.8 4.8 Headway Factor 1.00 1.00 1.00 1.00 1.00 Turning Speed (k/h) 25 15 15 25 Number of Detectors 1 1 2 1 2 Detector Tempdate Left Right Thru Right Thru Leading Detector (m) 2.0 2.0 10.0 2.0 10.0 Trailing Detector (m) 0.0 0.0 0.0 0.0 0.0 Detector 1 Position(m) 0.0 0.0 0.0 0.0 0.0 Detector 1 Size(m) 2.0 2.0 0.6 2.0 0.6 Detector 1 Type Cl+Ex Cl+Ex Cl+Ex Cl+Ex Cl+Ex Detector 1 Channel Detector 1 Extend (s) 0.0 0.0 0.0 0.0 Detector 2 Tueue (s) 0.0			Rigiti		Right	Leit	
Crosswalk Width(m) 4.8 4.8 4.8 Two way Left Turn Lane 1.00 2.0 1.00							
Two way Left Turn Lane Headway Factor Turning Speed (k/h) 100 1.00 1.00 1.00 1.00 1.00 1.00 1.00							
Headway Factor		4.8		4.8			4.8
Turning Speed (k/h) 25 15 15 25 Number of Detectors 1 1 2 1 2 Detector Template Left Right Thru Right Thru Leading Detector (m) 2.0 2.0 10.0 2.0 10.0 Trailing Detector (m) 0.0 0.0 0.0 0.0 0.0 Detector 1 Position(m) 0.0 0.0 0.0 0.0 0.0 Detector 1 Size(m) 2.0 2.0 0.6 2.0 0.6 Detector 1 Type Cl+Ex Cl+Ex Cl+Ex Cl+Ex Cl+Ex Detector 1 Channel Detector 1 Channel Detector 1 Extend (s) 0.0 0.0 0.0 0.0 Detector 1 Queue (s) 0.0 0.0 0.0 0.0 0.0 Detector 1 Delay (s) 0.0 0.0 0.0 0.0 0.0 Detector 2 Position(m) 0.0 9.4 9.4 9.4 Detector 2 Type Cl+Ex Cl+Ex							
Number of Detectors 1 1 2 1 2 Detector Template Left Right Thru Right Thru Leading Detector (m) 2.0 2.0 10.0 2.0 10.0 Trailing Detector (m) 0.0 0.0 0.0 0.0 0.0 Detector 1 Position(m) 0.0 0.0 0.0 0.0 0.0 Detector 1 Position(m) 0.0 0.0 0.0 0.0 0.0 Detector 1 Size(m) 2.0 2.0 0.6 2.0 0.6 Detector 1 Channel Detector 1 Channel Detector 1 Detay (s) 0.0 0.0 0.0 0.0 Detector 1 Detay (s) 0.0 0.0 0.0 0.0 0.0 0.0 Detector 1 Detay (s) 0.0 0.0 0.0 0.0 0.0 0.0 Detector 2 Position(m) 9.4 9.4 9.4 9.4 9.4 Detector 2 Type Cl+Ex Cl+Ex Cl+Ex Cl+Ex Dete				1.00			1.00
Detector Template Left Right Thru Right Thru Leading Detector (m) 2.0 2.0 10.0 2.0 10.0 Trailing Detector (m) 0.0 0.0 0.0 0.0 0.0 Detector 1 Position(m) 0.0 0.0 0.0 0.0 0.0 Detector 1 Size(m) 2.0 2.0 0.6 2.0 0.6 Detector 1 Type CHEX CHEX <td>Turning Speed (k/h)</td> <td></td> <td></td> <td></td> <td>15</td> <td>25</td> <td></td>	Turning Speed (k/h)				15	25	
Leading Detector (m) 2.0 2.0 10.0 2.0 10.0 Trailing Detector (m) 0.0 0.0 0.0 0.0 0.0 Detector 1 Position(m) 0.0 0.0 0.0 0.0 0.0 Detector 1 Size(m) 2.0 2.0 0.6 2.0 0.6 Detector 1 Type CI+Ex CI+Ex CI+Ex CI+Ex Detector 1 Type 0.0 0.0 0.0 0.0 Detector 1 Extend (s) 0.0 0.0 0.0 0.0 Detector 1 Queue (s) 0.0 0.0 0.0 0.0 Detector 1 Delay (s) 0.0 0.0 0.0 0.0 Detector 1 Delay (s) 0.0 0.0 0.0 0.0 Detector 2 Position(m) 9.4 9.4 Detector 2 Size(m) 0.6 0.6 Detector 2 Type CI+Ex CI+Ex Detector 2 Channel 0.0 0.0 0.0 Detector 2 Extend (s) 0.0 0.0 0.0	Number of Detectors	1	1	2	1		2
Trailing Detector (m) 0.0 0.0 0.0 0.0 0.0 Detector 1 Position(m) 0.0 0.0 0.0 0.0 0.0 Detector 1 Size(m) 2.0 2.0 0.6 2.0 0.6 Detector 1 Type CI+Ex CI+Ex CI+Ex CI+Ex CI+Ex Detector 1 Channel Detector 1 Extend (s) 0.0 0.0 0.0 0.0 Detector 1 Queue (s) 0.0 0.0 0.0 0.0 0.0 Detector 1 Delay (s) 0.0 0.0 0.0 0.0 0.0 Detector 2 Position(m) 9.4 9.4 9.4 Detector 2 Size(m) 0.6 0.6 0.6 Detector 2 Type CI+Ex CI+Ex CI+Ex Detector 2 Channel Detector 2 Extend (s) 0.0 0.0 0.0 Turn Type Perm Perm NA Perm NA	Detector Template	Left	Right	Thru	Right		Thru
Detector 1 Position(m) 0.0 0.0 0.0 0.0 0.0 Detector 1 Size(m) 2.0 2.0 0.6 2.0 0.6 Detector 1 Type CI+Ex CI+Ex CI+Ex CI+Ex CI+Ex Detector 1 Channel Detector 1 Extend (s) 0.0 0.0 0.0 0.0 0.0 Detector 1 Queue (s) 0.0 0.0 0.0 0.0 0.0 0.0 Detector 1 Detay (s) 0.0 0.0 0.0 0.0 0.0 0.0 Detector 2 Position(m) 9.4 9.4 9.4 9.4 Detector 2 Size(m) 0.6 0.6 0.6 Detector 2 Type CI+Ex CI+Ex CI+Ex Detector 2 Channel Detector 2 Extend (s) 0.0 0.0 0.0 Turn Type Perm Perm NA Perm NA	Leading Detector (m)	2.0	2.0	10.0	2.0		10.0
Detector 1 Position(m) 0.0 0.0 0.0 0.0 0.0 Detector 1 Size(m) 2.0 2.0 0.6 2.0 0.6 Detector 1 Type CI+Ex CI+Ex CI+Ex CI+Ex CI+Ex Detector 1 Channel Detector 1 Extend (s) 0.0 0.0 0.0 0.0 0.0 Detector 1 Queue (s) 0.0 0.0 0.0 0.0 0.0 0.0 Detector 1 Detay (s) 0.0 0.0 0.0 0.0 0.0 0.0 Detector 2 Position(m) 9.4 9.4 9.4 9.4 Detector 2 Size(m) 0.6 0.6 0.6 Detector 2 Type CI+Ex CI+Ex CI+Ex Detector 2 Channel Detector 2 Extend (s) 0.0 0.0 0.0 Turn Type Perm Perm NA Perm NA		0.0	0.0	0.0	0.0		0.0
Detector 1 Size(m) 2.0 2.0 0.6 2.0 0.6 Detector 1 Type Cl+Ex Cl+Ex Cl+Ex Cl+Ex Cl+Ex Cl+Ex Detector 1 Channel Detector 1 Extend (s) 0.0 0.0 0.0 0.0 0.0 Detector 1 Queue (s) 0.0 0.0 0.0 0.0 0.0 0.0 Detector 1 Delay (s) 0.0 0.0 0.0 0.0 0.0 0.0 Detector 2 Position(m) 9.4 9.4 9.4 Detector 2 Size(m) 0.6 0.6 0.6 Detector 2 Type Cl+Ex Cl+Ex Cl+Ex Detector 2 Channel 0.0 0.0 0.0 0.0 Turn Type Perm Perm NA Perm NA	• ()						
Detector 1 Type CI+Ex							
Detector 1 Channel Detector 1 Extend (s) 0.0 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>							
Detector 1 Extend (s) 0.0 0.0 0.0 0.0 Detector 1 Queue (s) 0.0 0.0 0.0 0.0 Detector 1 Delay (s) 0.0 0.0 0.0 0.0 Detector 2 Position(m) 9.4 9.4 Detector 2 Size(m) 0.6 0.6 Detector 2 Type CI+Ex CI+Ex Detector 2 Channel Detector 2 Extend (s) 0.0 0.0 Turn Type Perm Perm NA Perm NA		CITEX	CITEX	CITEX	OITEX		CITEX
Detector 1 Queue (s) 0.0 0.0 0.0 0.0 0.0 Detector 1 Delay (s) 0.0 0.0 0.0 0.0 0.0 Detector 2 Position(m) 9.4 9.4 9.4 Detector 2 Size(m) 0.6 0.6 0.6 Detector 2 Type CI+Ex CI+Ex CI+Ex Detector 2 Channel Detector 2 Extend (s) 0.0 0.0 Turn Type Perm Perm NA Perm NA		0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s) 0.0 0.0 0.0 0.0 Detector 2 Position(m) 9.4 9.4 Detector 2 Size(m) 0.6 0.6 Detector 2 Type Cl+Ex Cl+Ex Detector 2 Channel 0.0 0.0 Detector 2 Extend (s) 0.0 0.0 Turn Type Perm Perm NA	\ /						
Detector 2 Position(m) 9.4 9.4 Detector 2 Size(m) 0.6 0.6 Detector 2 Type CI+Ex CI+Ex Detector 2 Channel Detector 2 Extend (s) 0.0 0.0 Turn Type Perm Perm NA Perm NA							
Detector 2 Size(m) 0.6 0.6 Detector 2 Type CI+Ex CI+Ex Detector 2 Channel 0.0 0.0 Detector 2 Extend (s) Perm NA Perm NA		0.0	0.0		0.0		
Detector 2 Type CI+Ex CI+Ex Detector 2 Channel V 0.0 0.0 Detector 2 Extend (s) 0.0 0.0 0.0 Turn Type Perm Perm NA Perm NA							
Detector 2 Channel Detector 2 Extend (s) 0.0 0.0 Turn Type Perm Perm NA Perm NA							
Detector 2 Extend (s) 0.0 0.0 Turn Type Perm Perm NA Perm NA	Detector 2 Type			CI+Ex			CI+Ex
Turn Type Perm Perm NA Perm NA	Detector 2 Channel						
	Detector 2 Extend (s)			0.0			0.0
	Turn Type	Perm	Perm	NA	Perm		NA
Projected Phases 6 2	Protected Phases			6			2

C.F. Crozier & Associates Synchro 11 Report Page 4 Lanes, Volumes, Timings 3: Burnside Line & Highway 11 Westbound 2024 Existing Conditions P.M. 09-06-2024

	1	•	†	1	-	ļ	
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	
Permitted Phases	4	4		6			
Detector Phase	4	4	6	6		2	
Switch Phase							
Minimum Initial (s)	10.0	10.0	20.0	20.0		20.0	
Minimum Split (s)	16.1	16.1	27.3	27.3		27.3	
Total Split (s)	24.0	24.0	61.0	61.0		61.0	
Total Split (%)	28.2%	28.2%	71.8%	71.8%		71.8%	
Maximum Green (s)	18.3	18.3	53.7	53.7		53.7	
Yellow Time (s)	4.1	4.1	4.5	4.5		4.5	
All-Red Time (s)	1.6	1.6	2.8	2.8		2.8	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	
Total Lost Time (s)	5.7	5.7	7.3	7.3		7.3	
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.2	3.2		3.2	
Recall Mode	None	None	None	None		None	
Act Effct Green (s)	11.5	11.5	26.1	26.1		26.1	
Actuated g/C Ratio	0.26	0.26	0.59	0.59		0.59	
v/c Ratio	0.37	0.15	0.51	0.23		0.38	
Control Delay	19.1	6.3	10.3	1.8		8.8	
Queue Delay	0.0	0.0	0.0	0.0		0.0	
Total Delay	19.1	6.3	10.3	1.8		8.8	
LOS	В	Α	В	Α		Α	
Approach Delay	15.4		7.8			8.8	
Approach LOS	В		Α			Α	
Queue Length 50th (m)	11.4	0.0	30.4	0.0		20.2	
Queue Length 95th (m)	31.8	8.1	64.0	8.3		43.2	
Internal Link Dist (m)	80.8		136.3			27.5	
Turn Bay Length (m)				80.0			
Base Capacity (vph)	774	745	1827	1589		1827	
Starvation Cap Reductn	0	0	0	0		0	
Spillback Cap Reductn	0	0	0	0		0	
Storage Cap Reductn	0	0	0	0		0	
Reduced v/c Ratio	0.22	0.09	0.31	0.15		0.23	
Intersection Summary							
	Other						
Cycle Length: 85							
Actuated Cycle Length: 44.1							
Natural Cycle: 45							
Control Type: Semi Act-Unco	ord						
Maximum v/c Ratio: 0.51							
Intersection Signal Delay: 9.0	3			In	tersection	LOS: A	
Intersection Capacity Utilizat				IC	U Level	of Service	Α
Analysis Period (min) 15							

Splits and Phases: 3: Burnside Line & Highway 11 Westbound



Lanes, Volumes, Timings 4: West Street North & Highway 11 Eastbound

2024 Existing Conditions P.M. 09-06-2024

	•	*	1	†	Ţ	1
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	*	7	7	†	<u> </u>	7
Traffic Volume (vph)	154	136	198	633	485	91
Future Volume (vph)	154	136	198	633	485	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	55.0	1300	1000	40.0
Storage Lanes	1	1	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.850	1.00	1.00	1.00	0.850
Flt Protected	0.950	0.000	0.950			0.000
Satd. Flow (prot)	1736	1583	1787	1881	1863	1583
Flt Permitted	0.950	1000	0.299	1001	1000	1000
Satd. Flow (perm)	1736	1583	562	1881	1863	1583
Right Turn on Red	1730	Yes	302	1001	1003	Yes
Satd. Flow (RTOR)		143				94
Link Speed (k/h)	50	143		60	60	94
	154.2			160.8	176.6	
Link Distance (m)	11.1			9.6	176.6	
Travel Time (s)		0.05	0.05	0.95		0.95
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	2%	1%		2%	
Adj. Flow (vph)	162	143	208	666	511	96
Shared Lane Traffic (%)	400	440	000	000	544	00
Lane Group Flow (vph)	162	143	208	666	511	96
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	pm+pt	NA	NA	Perm
Protected Phases			1	6	2	

Synchro 11 Report Page 6 C.F. Crozier & Associates

Lanes, Volumes, Timings 4: West Street North & Highway 11 Eastbound

2024 Existing Conditions P.M. 09-06-2024

	•	•	1	†	ļ	1
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	8	8	6			2
Detector Phase	8	8	1	6	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	7.0	20.0	20.0	20.0
Minimum Split (s)	18.0	18.0	10.0	41.0	41.0	41.0
Total Split (s)	26.0	26.0	10.0	59.0	49.0	49.0
Total Split (%)	30.6%	30.6%	11.8%	69.4%	57.6%	57.6%
Maximum Green (s)	19.8	19.8	7.0	51.9	41.9	41.9
Yellow Time (s)	4.5	4.5	3.0	4.5	4.5	4.5
All-Red Time (s)	1.7	1.7	0.0	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	3.0	7.1	7.1	7.1
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.2	3.2	3.2
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	11.8	11.8	37.7	33.5	23.4	23.4
Actuated g/C Ratio	0.20	0.20	0.64	0.57	0.40	0.40
v/c Ratio	0.47	0.33	0.41	0.62	0.69	0.14
Control Delay	26.6	7.1	7.1	11.7	20.4	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.6	7.1	7.1	11.7	20.4	3.6
LOS	С	Α	Α	В	С	Α
Approach Delay	17.5			10.6	17.8	
Approach LOS	В			В	В	
Queue Length 50th (m)	14.8	0.0	7.1	40.9	43.6	0.1
Queue Length 95th (m)	37.0	13.3	18.1	85.3	83.3	7.5
Internal Link Dist (m)	130.2			136.8	152.6	
Turn Bay Length (m)			55.0			40.0
Base Capacity (vph)	592	634	507	1683	1346	1169
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.23	0.41	0.40	0.38	0.08
Intersection Summary		*				
	Other					
Cycle Length: 85						
Actuated Cycle Length: 58.8	3					
Natural Cycle: 70						
Control Type: Semi Act-Unc	oord					
Maximum v/c Ratio: 0.69						
Intersection Signal Delay: 14	4.2			Ir	ntersection	n LOS: B
Intersection Capacity Utiliza				-		of Service E
Analysis Period (min) 15						30. 1.00 E
Splits and Phases: 4: We	st Street N	orth & Hig	ghway 11	Eastbour	ıd	
↑ Ø1						



2024 Existing Conditions P.M.

Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road

	•	\rightarrow	*	1		•	1	Ť		-	↓	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	↑	7	7	1		44	^	7	7	1	
Traffic Volume (vph)	210	186	229	284	154	107	218	701	240	48	580	153
Future Volume (vph)	210	186	229	284	154	107	218	701	240	48	580	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	115.0		0.0	100.0		120.0	110.0		0.0
Storage Lanes	1		1	1		0	2		1	1		0
Taper Length (m)	70.0			65.0			80.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor			0.99	1.00								
Frt			0.850		0.938				0.850		0.969	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1900	1599	1787	1772	0	3502	3539	1599	1805	3403	0
Flt Permitted	0.453			0.583			0.950			0.950		
Satd. Flow (perm)	852	1900	1577	1095	1772	0	3502	3539	1599	1805	3403	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			244		36				255		26	
Link Speed (k/h)		50			70			50			50	
Link Distance (m)		186.6			853.6			529.0			469.5	
Travel Time (s)		13.4			43.9			38.1			33.8	
Confl. Peds. (#/hr)			2	2								
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	0%	1%	1%	1%	0%	0%	2%	1%	0%	3%	2%
Adi. Flow (vph)	223	198	244	302	164	114	232	746	255	51	617	163
Shared Lane Traffic (%)												
Lane Group Flow (vph)	223	198	244	302	278	0	232	746	255	51	780	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6	J		7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25	.,,,,	15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	
Detector 1 Channel	OIILX	OIILX	OILL	OIILX	OIILX		OIILX	OIILX	OIILX	OILEX	OIILX	
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)	0.0	9.4	0.0	0.0	9.4		0.0	9.4	0.0	0.0	9.4	
		0.6			0.6			0.6			0.6	
Detector 2 Size(m) Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
		U+EX			CITEX			CI+EX			CITEX	
Detector 2 Channel		0.0			0.0			0.0			0.0	
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Synchro 11 Report Page 8 C.F. Crozier & Associates

Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road

2024 Existing Conditions P.M.

09-06-2024

	۶	→	*	•	←	*	1	†	1	1	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6					8			
Detector Phase	5	2	2	1	6		3	8	8	7	4	
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0		7.0	10.0	10.0	7.0	10.0	
Minimum Split (s)	12.0	27.2	27.2	12.0	33.2		11.5	21.0	21.0	11.5	22.5	
Total Split (s)	16.0	50.0	50.0	16.0	50.0		18.0	21.0	21.0	26.0	29.0	
Total Split (%)	14.2%	44.2%	44.2%	14.2%	44.2%		15.9%	18.6%	18.6%	23.0%	25.7%	
Maximum Green (s)	11.0	42.8	42.8	11.0	42.8		14.0	13.0	13.0	22.0	21.0	
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	4.5	4.5	3.0	4.5	
All-Red Time (s)	2.0	2.2	2.2	2.0	2.2		1.0	3.5	3.5	1.0	3.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	7.2	7.2	5.0	7.2		4.0	8.0	8.0	4.0	8.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.6	3.6	3.0	3.6		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None		None	None	None	None	None	
Walk Time (s)	None	INOTIC	None	None	7.0		INOTIC	7.0	7.0	None	None	
Flash Dont Walk (s)					19.0			6.0	6.0			
Pedestrian Calls (#/hr)					0			0.0	0.0			
Act Effct Green (s)	33.9	21.2	21.2	34.7	21.6		11.0	28.4	28.4	8.3	21.0	
Actuated g/C Ratio	0.38	0.24	0.24	0.39	0.24		0.12	0.32	0.32	0.09	0.24	
v/c Ratio	0.51	0.24	0.43	0.59	0.24		0.12	0.52	0.32	0.09	0.24	
	20.7	32.4	6.5	22.8	32.4		41.2			43.0	53.4	
Control Delay	0.0				0.0			31.1	5.5			
Queue Delay		0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	
Total Delay	20.7	32.4	6.5	22.8	32.4		41.2	31.1	5.5	43.0	53.4	
LOS	С	C	A	С	C		D	C	A	D	D	
Approach Delay		19.0			27.4			27.7			52.8	
Approach LOS		В			С			С			D	
Queue Length 50th (m)	24.4	30.1	0.0	34.7	38.5		20.0	63.1	0.0	8.6	68.6	
Queue Length 95th (m)	42.5	52.1	18.2	58.0	66.7		33.2	#97.6	18.6	20.7	#121.0	
Internal Link Dist (m)		162.6			829.6			505.0			445.5	
Turn Bay Length (m)	50.0			115.0			100.0		120.0	110.0		
Base Capacity (vph)	447	921	890	517	877		555	1136	686	450	829	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.50	0.21	0.27	0.58	0.32		0.42	0.66	0.37	0.11	0.94	
Intersection Summary												
Area Type:	Other											
Cycle Length: 113												
Actuated Cycle Length: 88.	4											
Natural Cycle: 80												
Control Type: Semi Act-Une	coord											
Maximum v/c Ratio: 0.94												
Intersection Signal Delay: 3	2.2			lr	ntersection	LOS: C						

Intersection Capacity Utilization 79.7% ICU Level of Service D

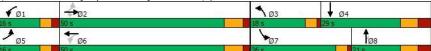
Lanes, Volumes, Timings

2024 Existing Conditions P.M. 09-06-2024

5: Highway 12 & West Ridge Boulevard/Murphy Road

Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Highway 12 & West Ridge Boulevard/Murphy Road



C.F. Crozier & Associates Synchro 11 Report Page 10

HCM 2010 TWSC 6: Uhthoff Line & Murphy Road

2024 Existing Conditions P.M. 09-06-2024

Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol, veh/h	120	4	0	2	2	2	1	0	0	1	0	70
Future Vol, veh/h	120	4	0	2	2	2	1	0	0	1	0	70
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage	e,# -	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	18	25	0	0	100	0	0	0	0	0	0	27
Mvmt Flow	133	4	0	2	2	2	1	0	0	1	0	78
Major/Minor	Minor2			Minor1		1	Major1		1	Major2		
Conflicting Flow All	45	43	39	45	82	0	78	0	0	0	0	0
Stage 1	41	41	-	2	2	-	-			-	-	-
Stage 2	4	2	-	43	80	-	-	-	-	-	-	-
Critical Hdwy	7.28	6.75	6.2	7.1	7.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.28	5.75	-	6.1	6.5	-		-	-	-	-	-
Critical Hdwy Stg 2	6.28	5.75	-	6.1	6.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.662	4.225	3.3	3.5	4.9	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	918	806	1038	962	655	-	1533			-	-	-
Stage 1	934	817	-	1026	733	-	-	-	-	-	-	-
Stage 2	978	850	-	976	671	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	805	1038	957	654	-	1533	-	-	-	-	-
Mov Cap-2 Maneuver	-	805	-	957	654	-	-	-	-	-	-	-
Stage 1	933	817	-	1025	732	-	-	-	-	-	-	-
Stage 2	974	849	-	971	671	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s				-,,,,			7.3			00		
HCM LOS							1.5					
TIOW LOS	-											
Minor Lane/Major Mvn	nt	NBL	NBT	NRR I	EBLn1\	WRI n1	SBL	SBT	SBR			
Capacity (veh/h)		1533	-	INDIX I	LULIIII		ODL	-	ODIT			
HCM Lane V/C Ratio		0.001	-		-							
HCM Control Delay (s)		7.3	0		-	-			-			
HCM Lane LOS		7.3 A	A			- :						
HCM 95th %tile Q(veh	١	0	А									
HOW SOUL WILL OF ACT	1	U		-	-	-	-	-	-			

C.F. Crozier & Associates Synchro 11 Report

Page 12

HCM 2010 TWSC 8: Burnside Line & Division Road W

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol., veh/h	3	194	11	32	246	13	18	17	62	5	5	1
Future Vol. veh/h	3	194	11	32	246	13	18	17	62	5	5	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	_	-	None	_	-	None		-	None	-		None
Storage Length	-	-	-	-		-		-	-	-		-
Veh in Median Storage	.# -	0	-	-	0	-	-	0	-	-	0	_
Grade. %	-	0			0			0			0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	2	0	0	1	0	0	0	0	0	20	0
Mymt Flow	3	209	12	34	265	14	19	18	67	5	5	1
		200	12	- 01	200	- 17	10	- 10	- 01		- 0	
Major/Minor N	Major1		ı	Major2			Minor1		ı	Minor2		
Conflicting Flow All	279	0	0	221	0	0	564	568	215	604	567	272
Stage 1		-				-	221	221		340	340	
Stage 2				-			343	347	-	264	227	
Critical Hdwy	4.1	-		4.1	-		7.1	6.5	6.2	7.1	6.7	6.2
Critical Hdwy Stg 1	7.1				-	-	6.1	5.5	0.2	6.1	5.7	U.Z
Critical Hdwy Stg 2		-	_		_	_	6.1	5.5	_	6.1	5.7	_
Follow-up Hdwy	2.2		_	2.2	-	-	3.5	4	3.3	3.5	4.18	3.3
Pot Cap-1 Maneuver	1295			1360	-	-	439	435	830	413	409	772
Stage 1	1200			1000	-		786	724	000	679	608	112
Stage 2			_	-			676	638	-	746	684	-
Platoon blocked, %				_			010	000	_	140	004	_
Mov Cap-1 Maneuver	1295		-	1360			423	421	830	358	396	772
Mov Cap-1 Maneuver	1285	-		1000	-	-	423	421	030	358	396	112
Stage 1		_					784	722	-	677	590	_
Stage 2	-					-	649	619	-	667	682	-
Stage 2							049	פוט	-	007	002	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.8			12			14.4		
HCM LOS	0.1			0.0			В			В		
TIOW EOO							٥			٥		
Minor Lane/Major Mvm	ıt l	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR :	SBLn1			
Capacity (veh/h)		615	1295	-		1360	-		394			
HCM Lane V/C Ratio		0.17	0.002		-	0.025			0.03			
HCM Control Delay (s)		12	7.8	0	_	7.7	0		14.4			
HCM Lane LOS		B	Α.	A	-	Α.	A		В			
HCM 95th %tile Q(veh)		0.6	0		_	0.1	-	_	0.1			
HOM JOHN JOHN Q(VEII)		0.0	0			0.1		_	0.1			

Intersection												
Int Delay, s/veh	12											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol., veh/h	10	123	133	18	94	2	175	93	54	4	65	22
Future Vol., veh/h	10	123	133	18	94	2	175	93	54	4	65	22
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-		None
Storage Length							-					-
Veh in Median Storage	.# -	0	-	-	0	-	-	0	-	-	0	
Grade. %	-	0			0		-	0			0	
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	2	1	0	2	0	1	1	4	0	23	0
Mymt Flow	11	131	141	19	100	2	186	99	57	4	69	23
						_						
Major/Minor 1	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	640	617	81	725	600	128	92	0	0	156	0	0
Stage 1	89	89	-	500	500	-	-	-	-	-	-	-
Stage 2	551	528	-	225	100			-	-			
Critical Hdwy	7.1	6.52	6.21	7.1	6.52	6.2	4.11	_	_	4.1		
Critical Hdwy Stg 1	6.1	5.52	-	6.1	5.52	-	-					
Critical Hdwy Stg 2	6.1	5.52	_	6.1	5.52		_	_		_	_	
Follow-up Hdwy	3.5	4.018	3.309		4.018	3.3	2.209			2.2		
Pot Cap-1 Maneuver	391	405	982	343	415	927	1509		-	1436		
Stage 1	923	821	-	557	543	-	-	-		-		
Stage 2	522	528	-	782	812	-	-	-	_	_	_	-
Platoon blocked, %					U.E							
Mov Cap-1 Maneuver	275	349	982	187	357	927	1509		-	1436		
Mov Cap-2 Maneuver	275	349	-	187	357	-	-			-		
Stage 1	797	819	-	481	469	-	-	_	-	_	_	-
Stage 2	354	456		561	810							
		.50			5.0							
Approach	EB			WB			NB			SB		
HCM Control Delay, s	20.7			23.4			4.2			0.3		
HCM LOS	20.7 C			20.4 C			1.2			0.0		
	J			J								
Minor Lane/Major Mvm	t	NBL	NBT	NBR	EBLn1\	VBLn1	SBL	SBT	SBR			
Capacity (veh/h)		1509	-	-	507	315	1436	-	-			
HCM Lane V/C Ratio		0.123	-			0.385	0.003	-				
HCM Control Delay (s)		7.7	0		20.7	23.4	7.5	0	-			
HCM Lane LOS		A	A		C	C	A	Ā				
HCM 95th %tile Q(veh)		0.4	-	-	3.4	1.8	0	-	-			
TOTAL OUT TOTAL Q(VEII)		0.7			0.7	1.0	J					

Lanes, Volumes, Timings

2031 Future Background A.M. 09-25-2024

1: Burnside Line & Industrial Road/Brodie Drive

	۶	→	*	1	+	•	1	†	~	1	Ţ	√
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	*	7	7	†	7	*	†	7	*	f)	
Traffic Volume (vph)	47	30	127	219	5	37	318	267	79	35	233	44
Future Volume (vph)	47	30	127	219	5	37	318	267	79	35	233	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		75.0	100.0		0.0	75.0		65.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		_
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.976	
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1900	1615	1736	1900	1615	1805	1439	1468	1805	1521	0
Flt Permitted	0.754			0.581			0.371			0.581		
Satd. Flow (perm)	1433	1900	1615	1061	1900	1615	705	1439	1468	1104	1521	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			255			200			200		11	
Link Speed (k/h)		50	200		60	200		60	200		60	
Link Distance (m)		140.4			136.5			65.5			1953.3	
Travel Time (s)		10.1			8.2			3.9			117.2	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0.51	0.01	4%	0%	0.51	0.01	32%	10%	0.01	26%	0.01
Adj. Flow (vph)	52	33	140	241	5	41	349	293	87	38	256	48
Shared Lane Traffic (%)	32	33	140	271	,		343	233	01	30	200	70
Lane Group Flow (vph)	52	33	140	241	5	41	349	293	87	38	304	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	Len	3.6	rtigiit	Len	3.6	ragni	Leit	3.6	rtigitt	Leit	3.6	ragni
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes			4.0			4.0			4.0	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	1.00	1.00	25	1.00	1.00	25	1.00	1.00	25	1.00	1.00
Number of Detectors	1	2	1	1	2	1 1	1	2	1	1	2	10
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	
Detector 1 Type Detector 1 Channel	Olicx	OITEX	CITEX	OIILX	CITEX	CITEX	CITEX	CITEX	OITEX	OITEX	OIILX	
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)	0.0	9.4	0.0	0.0	9.4	0.0	0.0	9.4	0.0	0.0	9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Type Detector 2 Channel		OITEX			OITEX			OITEX			OITEX	
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
	nm+nt	NA	Perm	nm+nf	NA	Perm	nm+nf	NA	Perm	nmint	NA	
Turn Type Protected Phases	pm+pt 7	NA 4	Perm	pm+pt 3	NA 8	Penn	pm+pt 5	NA 2	Perm	pm+pt 1	NA 6	
Frotected Phases	- 1	4		3	8		5			- 1	0	

Synchro 11 Report Page 1 Lanes, Volumes, Timings 1: B

2031 Future Background A.M. 09-25-2024

Burnside Line & Industrial Road/Brodie Drive	

	•	-	•	1	←	*	1	†	1	-	ļ	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	25.0	25.0	5.0	25.0	
Minimum Split (s)	9.5	21.0	21.0	9.5	21.0	21.0	9.5	31.0	31.0	9.5	31.0	
Total Split (s)	9.6	21.0	21.0	16.1	27.5	27.5	19.4	43.4	43.4	9.5	33.5	
Total Split (%)	10.7%	23.3%	23.3%	17.9%	30.6%	30.6%	21.6%	48.2%	48.2%	10.6%	37.2%	
Maximum Green (s)	5.1	15.0	15.0	11.6	21.5	21.5	14.9	37.4	37.4	5.0	27.5	
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	6.0	6.0	4.5	6.0	6.0	4.5	6.0	6.0	4.5	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Min	Min	None	Min	Min	None	Min	Min	None	Min	
Act Effct Green (s)	21.6	15.0	15.0	31.8	24.7	24.7	45.9	38.8	38.8	32.0	25.5	
Actuated g/C Ratio	0.25	0.17	0.17	0.37	0.28	0.28	0.53	0.45	0.45	0.37	0.29	
v/c Ratio	0.14	0.10	0.29	0.51	0.01	0.07	0.63	0.46	0.11	0.08	0.67	
Control Delay	20.0	32.1	1.5	24.8	25.8	0.2	17.7	20.9	0.3	11.7	34.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	20.0	32.1	1.5	24.8	25.8	0.2	17.7	20.9	0.3	11.7	34.5	
LOS	В	С	Α	С	С	Α	В	С	Α	В	С	
Approach Delay		10.2			21.3			16.9			32.0	
Approach LOS		В			С			В			С	
Queue Length 50th (m)	5.8	5.0	0.0	30.4	0.7	0.0	34.3	38.1	0.0	3.1	45.8	
Queue Length 95th (m)	13.9	13.5	0.0	52.5	3.5	0.0	53.2	62.2	0.0	7.7	74.9	
Internal Link Dist (m)		116.4			112.5			41.5			1929.3	
Turn Bay Length (m)	25.0		75.0	100.0			75.0		65.0	40.0		
Base Capacity (vph)	379	329	490	479	540	602	562	659	781	448	490	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.14	0.10	0.29	0.50	0.01	0.07	0.62	0.44	0.11	80.0	0.62	
Intersection Summary												

Intersection Summary
Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 86.7
Natural Cycle: 75
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.67
Intersection Capacity Utilization 71.0%
Analysis Period (min) 15

Intersection LOS: C ICU Level of Service C

Analysis Period (min) 15





Lanes, Volumes, Timings 2: Burnside Line & Highway 11 Westbound On-Ramp 2031 Future Background A.M. 09-25-2024

	•	*	1	†	↓	4
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				^	^	7
Traffic Volume (vph)	0	0	0	970	331	238
Future Volume (vph)	0	0	0	970	331	238
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	1638	1810	1214
Flt Permitted						
Satd. Flow (perm)	0	0	0	1638	1810	1214
Link Speed (k/h)	50			70	60	
Link Distance (m)	185.9			51.5	174.3	
Travel Time (s)	13.4			2.6	10.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	16%	5%	33%
Adj. Flow (vph)	0	0	0	1021	348	251
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1021	348	251
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	
Intersection Summary						
Area Type: (Other					
Control Type: Unsignalized						
Intersection Capacity Utilizat	ion 54.4%			IC	U Level	of Service
Analysis Period (min) 15						
, , ,						

Lanes, Volumes, Timings 3: Burnside Line & Highway 11 Westbound 2031 Future Background A.M. 09-25-2024

	1	*	†	-	1	Ţ
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	7	7	†	7		A
Traffic Volume (vph)	153	256	714	172	0	331
Future Volume (vph)	153	256	714	172	0	331
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	1000	80.0	0.0	1000
Storage Lanes	1	1		1	0.0	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.850	1.00	0.850	1.00	1.00
	0.050	0.850		0.850		
Fit Protected	0.950	4500	4000	4500		4040
Satd. Flow (prot)	1787	1583	1638	1509	0	1810
Flt Permitted	0.950					
Satd. Flow (perm)	1787	1583	1638	1509	0	1810
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		231		181		
Link Speed (k/h)	50		60			60
Link Distance (m)	104.8		160.3			51.5
Travel Time (s)	7.5		9.6			3.1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	2%	16%	7%	0%	5%
Adj. Flow (vph)	161	269	752	181	0	348
Shared Lane Traffic (%)	101	203	102	101	U	340
Lane Group Flow (vph)	161	269	752	181	0	348
Enter Blocked Intersection	No	No No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswa l k Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1		2
Detector Template	Left	Right	Thru	Right		Thru
Leading Detector (m)	2.0	2.0	10.0	2.0		10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0
	2.0	2.0	0.6	2.0		0.0
Detector 1 Size(m)						
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	C I +Ex		Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			CI+Ex			CI+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Perm	Perm	NA	Perm		NA
Protected Phases	Fellii	Fellil		Fellii		2
Protected Phases			6			2

Synchro 11 Report Page 3

Synchro 11 Report Page 4 Lanes, Volumes, Timings 3: Burnside Line & Highway 11 Westbound

1ø6

2031 Future Background A.M. 09-25-2024

Lanes, Volumes, Timings	
4: West Street North & Highway 11	Fastbound

2031 Future Background A.M. 09-25-2024

O. Darriolae Elile	gc	• • • • •	10000					
	6		Ť	-	-	Ţ		
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT		
Permitted Phases	4 VVDL	WDK 4	INDI	NDR 6	SDL	SDI		
Detector Phases	4	4	6	6		2		
	4	4	ь	б				
Switch Phase	0.7	0.7	20.0	20.0		20.0		
Minimum Initial (s)	9.7	9.7	20.0	20.0		20.0		
Minimum Split (s)	16.1	16.1	27.3	27.3		27.3		
Total Split (s)	24.0	24.0	61.0	61.0		61.0		
Total Split (%)	28.2%	28.2%	71.8%	71.8%		71.8%		
Maximum Green (s)	17.6	17.6	53.7	53.7		53.7		
Yellow Time (s)	4.5	4.5	4.5	4.5		4.5		
All-Red Time (s)	1.9	1.9	2.8	2.8		2.8		
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		
Total Lost Time (s)	6.4	6.4	7.3	7.3		7.3		
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.2	3.2		3.2		
Recall Mode	None	None	None	None		None		
Act Effct Green (s)	12.2	12.2	33.3	33.3		33.3		
Actuated g/C Ratio	0.20	0.20	0.56	0.56		0.56		
v/c Ratio	0.44	0.53	0.83	0.20		0.35		
Control Delay	28.6	10.6	19.7	1.7		8.1		
Queue Delay	0.0	0.0	0.0	0.0		0.0		
Total Delay	28.6	10.6	19.7	1.7		8.1		
LOS	Z0.0	В	В	Α.		A		
Approach Delay	17.3	٥	16.2			8.1		
Approach LOS	17.3 B		10.2 B			ο.1		
Queue Length 50th (m)	15.6	3.4	56.7	0.0		17.5		
Queue Length 95th (m)	42.9	26.9	124.3	6.8		38.2		
	42.9 80.8	20.9	136.3	0.0		27.5		
Internal Link Dist (m)	8.00		130.3	00.0		21.0		
Turn Bay Length (m)		054	4400	80.0		4507		
Base Capacity (vph)	555	651	1436	1345		1587		
Starvation Cap Reductn	0	0	0	0		0		
Spillback Cap Reductn	0	0	0	0		0		
Storage Cap Reductn	0	0	0	0		0		
Reduced v/c Ratio	0.29	0.41	0.52	0.13		0.22		
Intersection Summary								
Area Type:	Other							
Cycle Length: 85	Otilei							
Cycle Length: 85 Actuated Cycle Length: 60	1							
	J							
Natural Cycle: 60	nanard							
Control Type: Semi Act-U	ncoora							
Maximum v/c Ratio: 0.83	44.0					100 B		
Intersection Signal Delay:					tersection			
Intersection Capacity Utiliz	zation 64.8%			IC	U Level of	f Service C		
Analysis Period (min) 15								
Splits and Phases: 3: B	urnside Line	& Highwa	ay 11 We:	stbound				
0-1							>	 0
▼ Ø2							√ Ø4	
61s							24 s	

Synchro 11 Report Page 6 Lanes, Volumes, Timings 4: West Street North & Highway 11 Eastbound 2031 Future Background A.M. 09-25-2024

Lanes, Volumes,	Limings	
5: Highway 12 & \	West Ridge Boulevard/Murphy Roa	ac

2031 Future Background A.M.

912 3471

686

1900

0.95

3471

469.5

24.1

0.97

4%

707

707

No

Left Right

7.2

0.0

4.8

Thru Right 2.0

10.0

0.0

0.0

0.6

0.0

0.0

0.0

9.4

0.6

0.0

NA

CI+Ex

CI+Ex CI+Ex

197

50.0

1.00

0.850

1568

Yes

187

0.97

3%

203

100

0.0

0.0

2.0

0.0

	٠	*	1	†	ļ	1		٠	-	*	1	•	*	1	†	1	ĺ
ne Group	EBL	EBR	NBL	NBT	SBT	SBR	Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	
nitted Phases	8	8	6	1101	05.	2	Lane Configurations	1		#	*	14	*****	ሻሻ	^	#	f
ctor Phase	8	8	1	6	2	2	Traffic Volume (vph)	125	163	151	276	246	138	168	422	385	
ch Phase							Future Volume (vph)	125		151	276	246	138	168	422	385	
mum Initial (s)	10.0	10.0	7.0	20.0	20.0	20.0	Ideal Flow (yphpl)	1900		1900	1900	1900	1900	1900	1900	1900	
imum Split (s)	18.0	18.0	10.0	41.0	41.0	41.0	Storage Length (m)	50.0		0.0	115.0	1000	0.0	100.0	1000	120.0	
al Split (s)	38.0	38.0	10.0	52.0	42.0	42.0	Storage Lanes	00.0		1	1		0.0	2		1	
al Split (%)	42.2%	42.2%	11.1%	57.8%	46.7%	46.7%	Taper Length (m)	70.0			65.0		Ū	80.0			
ximum Green (s)	31.8	31.8	8.0	44.9	34.9	34.9	Lane Util. Factor	1.00		1.00	1.00	1.00	1.00	0.97	0.95	1.00	
low Time (s)	4.5	4.5	2.0	4.5	4.5	4.5	Frt	1.00	1.00	0.850	1.00	0.946	1.00	0.01	0.00	0.850	
Red Time (s)	1.7	1.7	0.0	2.6	2.6	2.6	Fit Protected	0.950		0.000	0.950	0.040		0.950		0.000	ì
t Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	Satd. Flow (prot)	1787		1583	1787	1763	0	3467	3574	1568	
Lost Time (s)	6.2	6.2	2.0	7.1	7.1	7.1	Fit Permitted	0.379		1303	0.545	1703	U	0.950	3374	1300	í
d/Lag	0.2	0.2	Lead	7.1	Lag	Lag	Satd. Flow (perm)	713		1583	1025	1763	0	3467	3574	1568	
d-Lag Optimize?			Yes		Yes	Yes	Right Turn on Red	710	1001	Yes	1023	1703	Yes	3407	3374	Yes	
icle Extension (s)	3.0	3.0	3.0	3.2	3.2	3.2	Satd. Flow (RTOR)			156		27	168			397	
all Mode		None		None		None			60	100		60			70	391	
	None		None	32.2	None		Link Speed (k/h)					853.6			529.0		
Effct Green (s)	19.7	19.7	37.6		25.0	25.0	Link Distance (m)		186.6								
uated g/C Ratio	0.30	0.30	0.57	0.49	0.38	0.38	Travel Time (s)	0.0	11.2	0.07	0.07	51.2	0.07	0.07	27.2	0.07	
Ratio	0.74	0.23	0.21	0.72	0.66	0.09	Peak Hour Factor	0.97		0.97	0.97	0.97	0.97	0.97	0.97	0.97	
ntrol Delay	34.1	5.3	8.9	19.7	24.6	7.3	Heavy Vehicles (%)	1%		2%	1%	3%	0%	1%	1%	3%	
ue Delay	0.0	0.0	0.0	0.0	0.0	0.0	Adj. Flow (vph)	129	168	156	285	254	142	173	435	397	
al Delay	34.1	5.3	8.9	19.7	24.6	7.3	Shared Lane Traffic						_				
	С	Α	Α	В	С	Α	Lane Group Flow (v			156	285	396	0	173	435	397	
roach Delay	25.4			18.2	22.9		Enter Blocked Inters			No	No	No	No	No	No	No	
roach LOS	С			В	С		Lane Alignment	Lef		Right	Left	Left	Right	Left	Left	Right	
ue Length 50th (m)	31.8	0.0	5.4	58.7	49.4	0.7	Median Width(m)		3.6			3.6			7.2		
ue Length 95th (m)	72.1	11.5	16.0	126.6	100.5	8.0	Link Offset(m)		0.0			0.0			0.0		
rnal Link Dist (m)	130.2			136.8	152.6		Crosswalk Width(m)		4.8			4.8			4.8		
n Bay Length (m)			55.0			40.0	Two way Left Turn L										
e Capacity (vph)	678	840	508	1306	1035	828	Headway Factor	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	
vation Cap Reductn	0	0	0	0	0	0	Turning Speed (k/h)	25		15	100		15	25		15	è
back Cap Reductn	0	0	0	0	0	0	Number of Detectors	1	2	1	1	2		1	2	1	
age Cap Reductn	0	0	0	0	0	0	Detector Template	Lef		Right	Left	Thru		Left	Thru	Right	
uced v/c Ratio	0.43	0.15	0.20	0.49	0.44	0.06	Leading Detector (m	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	Ì
section Summary							Trailing Detector (m	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	,
	Other						Detector 1 Position(0.0	0.0	0.0		0.0	0.0	0.0	
a Type:	Other						Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	,
cle Length: 90							Detector 1 Type	CI+E	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	
uated Cycle Length: 66.	.1						Detector 1 Channel										
tural Cycle: 75							Detector 1 Extend (s	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	į
ntrol Type: Semi Act-Un	coord						Detector 1 Queue (s	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	j
rimum v/c Ratio: 0.74							Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	į
rsection Signal Delay: 2						n LOS: C	Detector 2 Position()	9.4			9.4			9.4		
rsection Capacity Utiliza	ation 58.5%)		IC	CU Level	of Service	Detector 2 Size(m)	,	0.6			0.6			0.6		
lysis Period (min) 15							Detector 2 Type		CI+Ex			CI+Ex			CI+Ex		
							Detector 2 Channel		J/						J/		
s and Phases: 4: We	est Street N	orth & Hig	ghway 11	Eastbour	nd		Detector 2 Extend (s		0.0			0.0			0.0		
						3 5	Turn Type	pm+p		Perm	pm+pt	NA		Prot	NA	Perm	i
										1 01111						1 01111	
Ø1 V Ø2						Common Co.	Protected Phases	Ę	2		- 1	6		3	8		

4 Synchro 11 Report Page 8 Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road 2031 Future Background A.M. 09-25-2024

	•	-	*	1	←	*	1	†	1	1	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2		2	6					8	4		4
Detector Phase	5	2	2	1	6		3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0		7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	12.0	27.2	27.2	12.0	33.2		11.5	21.0	21.0	11.5	22.5	22.5
Total Split (s)	12.0	39.0	39.0	17.0	44.0		12.0	42.0	42.0	12.0	42.0	42.0
Total Split (%)	10.9%	35.5%	35.5%	15.5%	40.0%		10.9%	38.2%	38.2%	10.9%	38.2%	38.2%
Maximum Green (s)	7.0	31.8	31.8	12.0	36.8		8.0	34.0	34.0	8.0	34.0	34.0
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	2.0	2.2	2.2	2.0	2.2		1.0	3.5	3.5	1.0	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.2	7.2	5.0	7.2		4.0	8.0	8.0	4.0	8.0	8.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.6	3.6	3.0	3.6		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	None	None	None	None	None
Walk Time (s)					7.0			7.0	7.0			
Flash Dont Walk (s)					19.0			6.0	6.0			
Pedestrian Calls (#/hr)					0			0	0			
Act Effct Green (s)	32.5	23.1	23.1	41.6	27.7		7.9	27.3	27.3	36.5	24.6	24.6
Actuated g/C Ratio	0.35	0.25	0.25	0.45	0.30		0.09	0.30	0.30	0.40	0.27	0.27
v/c Ratio	0.39	0.36	0.30	0.51	0.72		0.58	0.41	0.53	0.24	0.76	0.37
Control Delay	20.1	31.7	6.6	20.7	35.7		51.1	28.4	5.8	17.3	37.1	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.1	31.7	6.6	20.7	35.7		51.1	28.4	5.8	17.3	37.1	7.3
LOS	С	С	Α	С	D		D	С	Α	В	D	Α
Approach Delay		19.8			29.4			23.4			29.1	
Approach LOS		В			С			С			С	
Queue Length 50th (m)	13.3	25.4	0.0	32.4	60.0		15.4	33.7	0.0	10.3	60.4	2.1
Queue Length 95th (m)	28.3	48.6	15.5	60.8	105.5		#34.2	55.3	22.5	23.9	93.6	19.5
Internal Link Dist (m)		162.6			829.6			505.0			445.5	
Turn Bay Length (m)	50.0			115.0			100.0		120.0	110.0		50.0
Base Capacity (vph)	334	659	656	570	732		306	1341	836	437	1302	705
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.25	0.24	0.50	0.54		0.57	0.32	0.47	0.24	0.54	0.29

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 91.9
Natural Cycle: 80
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.76

Intersection Signal Delay: 26.0 Intersection LOS: C Intersection Capacity Utilization 76.9% ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road 2031 Future Background A.M. 09-25-2024

Queue shown is maximum after two cycles.



Synchro 11 Report Synchro 11 Report Page 10 Page 9

l												
Intersection Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol, veh/h	247	4	2	0	10	0	0	0	0	0	0	255
Future Vol, veh/h	247	4	2	0	10	0	0	0	0	0	0	255
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-		-	-	-	-	-	-	-	-	-	-
Veh in Median Storage	e,# -	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	32	67	0	0	30	100	50	0	100	0	50	30
Mvmt Flow	268	4	2	0	11	0	0	0	0	0	0	277
Major/Minor	Minor2		ı	Minor1			Major1		N	Major2		
Conflicting Flow All	145	139	139	142	277	0	277	0	0	0	0	0
Stage 1	139	139	-	0	0	-	-	-	-	-	-	-
Stage 2	6	0	-	142	277	-	-	-	-	-	-	-
Critical Hdwy	7.42	7.17	6.2	7.1	6.8	7.2	4.6	-	-	4.1	-	-
Critical Hdwy Stg 1	6.42	6.17	-	6.1	5.8	-	-	-	-	-		-
Critical Hdwy Stg 2	6.42	6.17	-	6.1	5.8	-	-	-	-	-	-	-
Follow-up Hdwy	3.788	4.603	3.3	3.5	4.27	4.2	2.65	-	-	2.2	-	-
Pot Cap-1 Maneuver	760	647	915	832	586	-	1054	-	-	-	-	-
Stage 1	797	673	-	-	-	-	-	-	-	-	-	
Stage 2	943	-	-	866	633	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	647	915	826	586	-	1054	-	-	-	-	-
Mov Cap-2 Maneuver	-	647	-	826	586	-	-	-	-	-	-	-
Stage 1	797	673	-	-	-	-	-	-	-	-	-	-
Stage 2	943	-	-	858	633	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s							0			0		
HCM LOS										-		
Minor Lane/Major Mvr	nt	NBL	NBT	NRD I	EBLn1\	MRI n1	SBL	SBT	SBR			
Capacity (veh/h)	TIL.	1054	IGN	ו אומאו		VDEIII	JDL	ופט	ODIN			
HCM Lane V/C Ratio		1054	-		_	-	-	-				
	1	0	-	-	-	-	0	-	-			
HCM Control Delay (s HCM Lane LOS)	A		-	-	-	A					
	.\	A 0	-	-	-	-	А	-	-			
HCM 95th %tile Q(veh	1)	0	-	-	-	-	-	-	-			

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol., veh/h	0		7	34	126	4	4	5	36	6	11	2
Future Vol. veh/h	ő		7	34	126	4	4	5	36	6	11	2
Conflicting Peds, #/hr	0		0	0	0	0	0	0	0	0	0	0
Sign Control	Free		Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	- 100	-	None	-		None	-	-	None	-	-	None
Storage Length		-	-			-			-			-
Veh in Median Storage	. # -	0		-	0	-		0	-	-	0	
Grade, %	_	0			0			0	-		0	
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	2	0	0	1	0	0	25	3	0	11	0
Mvmt Flow	0	164	7	35	131	4	4	5	38	6	11	2
Major/Minor I	Major1			Major2			Minor1	_	N	Minor2		
Conflicting Flow All	135	0	0	171	0	0	378	373	168	392	374	133
Stage 1	100	-	-		-	-	168	168	-	203	203	-
Stage 2							210	205		189	171	
Critical Hdwy	4.1	-		4.1	_		7.1	6.75	6.23	7.1	6.61	6.2
Critical Hdwy Stg 1							6.1	5.75	-	6.1	5.61	-
Critical Hdwy Stg 2		-	-		-	-	6.1	5.75	_	6.1	5.61	
Follow-up Hdwy	2.2	-		2.2			3.5	4.225	3.327	3.5	4.099	3.3
Pot Cap-1 Maneuver	1462	-		1418		-	583	523	874	571	543	922
Stage 1	-	-	-	-		-	839	718	-	804	717	-
Stage 2	-	-		-			797	691	-	817	740	
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1462	-	-	1418	-	-	560	509	874	531	528	922
Mov Cap-2 Maneuver	-	-	-	-	-	-	560	509	-	531	528	-
Stage 1	-	-	-	-	-	-	839	718	-	804	698	-
Stage 2	-	-	-	-	-	-	761	672	-	776	740	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			1.6			10			11.7		
HCM LOS							В			В		
										Ī		
Minor Lane/Major Mvm	nt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SRI n1			
Capacity (veh/h)		774	1462	LUI	LDIX	1418	WD1	VVDIV.	554			
HCM Lane V/C Ratio		0.061	1402			0.025		-	0.036			
HCM Control Delay (s)		10	0			7.6	0		11.7			
HCM Lane LOS		В	A			7.0 A	A	-	В			
HCM 95th %tile Q(veh))	0.2	0	-		0.1	-	_	0.1			

Switch Phase

5.0

22.5

32.0

3.5

1.0

3.0

Max

7.0

0

11.0 11.0

58.2% 58.2%

27.5 27.5

5.0

22.5

32.0

3.5

1.0

0.0

4.5

3.0

Max

7.0

0

30.3 0.63

0.23 5.2

0.0

5.2

5.2

5.0

15.8

815

0 0.23

333.4

	•	-	7	1	+		1	†	-	1	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
ane Configurations		4			4		1,52	4			4	-UD.K
Fraffic Volume (vph)	13	73	118	19	58	2	83	376	32	5	156	13
Future Volume (vph)	13	73	118	19	58	2	83	376	32	5	156	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.922	1.00	1.00	0.997	1.00	1.00	0.991	1.00	1.00	0.990	1.00
Fit Protected	^	0.997	^	_	0.988	0	^	0.992	0	•	0.999	^
Satd. Flow (prot)	0	1724	0	0	1872	0	0	1266	0	0	1296	0
Flt Permitted		0.976	_		0.881		_	0.921			0.990	
Satd. Flow (perm)	0	1688	0	0	1669	0	0	1176	0	0	1285	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		128			2			9			10	
ink Speed (k/h)		50			50			70			60	
Link Distance (m)		1346.1			271.7			1953.3			357.4	
Travel Time (s)		96.9			19.6			100.5			21.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	1%	0%	0%	0%	0%	62%	0%	0%	50%	0%
Adj. Flow (vph)	14	79	128	21	63	2	90	409	35	5	170	14
Shared Lane Traffic (%)	17	, 3	,_0	-	- 55	_	- 00	,00	- 55			
Lane Group Flow (vph)	0	221	0	0	86	0	0	534	0	0	189	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
	Leit		Rigilt	Left		Rigiit	Left		Right	Leit		Rigit
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0 4.8			0.0 4.8	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)	0.0	9.4		0.0	9.4		0.0	9.4		0.0	9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Type Detector 2 Channel		OITEX			OITEX			OITEX			OITEX	
		0.0			0.0			0.0			0.0	
Detector 2 Extend (s)	_	0.0		_	0.0		_	0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

Lanes, Volumes, Timings 8: Burnside Line & Division Road W 2031 Future Background A.M. 09-25-2024

HCM 2010 TWSC 9: Industrial Road & Hurlwood Lane 2031 Future Background A.M. 09-25-2024

Splits and Phases: 8: Burnside Line	& Division Road W	
↑ ø2	4 04	
32s	23 s	
№ Ø6	₩ Ø8	
32 s	23·s	
32 s	23·s	

Intersection							
Int Delay, s/veh	0.7						
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	EDL.	<u>EDI</u>	WD1	MDIX	SDL	SDR 7	
Traffic Vol., veh/h	0	T	318	49	32	0	
Future Vol, veh/h	0	140	318	49	32	0	
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Free	Free	Free	Free	Stop	Stop	
RT Channelized	riee -	None	riee -	None	Зюр	None	
Storage Length	0	None -	-	NONE -	0	0	
		0	0	-	0	-	
Veh in Median Storage		0			0		
Grade, %	-		0	-		-	
Peak Hour Factor	92	92	92	92	92	92	
Heavy Vehicles, %	2	2	2	2	2	2	
Mvmt Flow	0	152	346	53	35	0	
Major/Minor I	Major1	N	Major2	1	Minor2		
Conflicting Flow All	399	0		0	525	373	
Stage 1	_	-		-	373	-	
Stage 2					152		
Critical Hdwy	4.12				6.42	6.22	
Critical Hdwy Stg 1	7.12				5.42	0.22	
Critical Hdwy Stg 2				_	5.42	_	
Follow-up Hdwy	2.218			- :	3.518		
Pot Cap-1 Maneuver	1160			-	513	673	
Stage 1	1100				696	0/3	
		-	-			-	
Stage 2	-	-	-	-	876	-	
Platoon blocked, %		-	-	-			
Mov Cap-1 Maneuver	1160	-	-	-	513	673	
Mov Cap-2 Maneuver	-	-	-	-	579	-	
Stage 1	-	-	-	-	696	-	
Stage 2	-	-	-	-	876	-	
Approach	EB		WB		SB		
HCM Control Delay, s	0		0		11.6		
HCM LOS	U		U		В		
HCW LOS					D		
Minor Lane/Major Mvm	nt	EBL	EBT	WBT	WBR:	SBLn1:	
Capacity (veh/h)		1160	-	-	-	579	
HCM Lane V/C Ratio		-	-	-	-	0.06	
HCM Control Delay (s)		0	-	-	-	11.6	
HCM Lane LOS		Ā				В	
HCM 95th %tile Q(veh))	0	-	-	-	0.2	
	,	,				0.2	

Intersection							
Int Delay, s/veh	3.5						
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	*	7	1		002	4	
Traffic Vol. veh/h	159	0	84	189	0	126	
Future Vol. veh/h	159	0	84	189	0	126	
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Stop	Stop	Free	Free	Free	Free	
RT Channelized	Stop		riee -		riee	None	
Storage Length	0	0	-	NONE -	-	None -	
Veh in Median Storage		-	0	-	-	0	
Grade, %	9,# 0	-	0	-	-	0	
	92			92		92	
Peak Hour Factor		92	92		92		
Heavy Vehicles, %	2	2	2	2	2	2	
Mvmt Flow	173	0	91	205	0	137	
Major/Minor	Minor1	N	Major1		Major2		
Conflicting Flow All	331	194	0	0	296	0	
Stage 1	194	194	-	-	290	-	
					- :	-	
Stage 2	137	-	-	-			
Critical Hdwy	6.42	6.22	-	-	4.12	-	
Critical Hdwy Stg 1	5.42	-	-	-	-	-	
Critical Hdwy Stg 2	5.42	-	-	-	-	-	
Follow-up Hdwy	3.518		-	-	2.218	-	
Pot Cap-1 Maneuver	664	847	-	-	1265	-	
Stage 1	839	-	-	-	-	-	
Stage 2	890	-	-	-	-	-	
Platoon blocked, %			-	-		-	
Mov Cap-1 Maneuver	664	847	-	-	1265	-	
Mov Cap-2 Maneuver	664	-		-	-	-	
Stage 1	839	-		-	-	-	
Stage 2	890						
Otage 2	030						
Approach	WB		NB		SB		
HCM Control Delay, s	12.3		0		0		
HCM LOS	В						
						0.01	
Minor Lane/Major Mvm	nt	NBT		VBLn1V		SBL	
Capacity (veh/h)		-	-	664	-	1265	
HCM Lane V/C Ratio		-	-	0.26	-	-	
		-	-	12.3	0	0	
HCM Control Delay (s)							
HCM Control Delay (s) HCM Lane LOS		-	-	В	Α	Α	
		-	-	B 1	A -	A 0	

	۶	→	•	•	+	•	1	†	<i>></i>	1	ţ	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	^	7	*	↑	7	*	^	7	*	1	
Traffic Volume (vph)	72	40	273	380	2	96	188	284	87	41	224	23
Future Volume (vph)	72	40	273	380	2	96	188	284	87	41	224	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		75.0	100.0		0.0	75.0		65.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.986	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1900	1568	1770	1900	1615	1805	1863	1429	1805	1746	0
Flt Permitted	0.757			0.569			0.460			0.504		
Satd. Flow (perm)	1438	1900	1568	1060	1900	1615	874	1863	1429	958	1746	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			290			145			200		6	
Link Speed (k/h)		50			60			60			60	
Link Distance (m)		140.4			136.5			65.5			1953.3	
Travel Time (s)		10.1			8.2			3.9			117.2	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	3%	2%	0%	0%	0%	2%	13%	0%	8%	0%
Adj. Flow (vph)	77	43	290	404	2	102	200	302	93	44	238	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	77	43	290	404	2	102	200	302	93	44	262	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	C I +Ex	CI+Ex	CI+Ex	C I +Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel					0.7							
Detector 2 Extend (s)		0.0	_		0.0	_		0.0	_		0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	

Lanes, Volumes, Timings

2031 Future Background P.M.

1: Burnside Line & Industrial Road/Brodie Drive

09-25-2024

	•	-	*	•	+	*	1	1	-	1	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	25.0	25.0	5.0	25.0	
Minimum Split (s)	9.5	21.0	21.0	9.5	21.0	21.0	9.5	31.0	31.0	9.5	31.0	
Total Split (s)	9.9	21.0	21.0	28.0	39.1	39.1	9.8	31.5	31.5	9.5	31.2	
Total Split (%)	11.0%	23.3%	23.3%	31.1%	43.4%	43.4%	10.9%	35.0%	35.0%	10.6%	34.7%	
Maximum Green (s)	5.4	15.0	15.0	23.5	33.1	33.1	5.3	25.5	25.5	5.0	25.2	
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	6.0	6.0	4.5	6.0	6.0	4.5	6.0	6.0	4.5	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes											
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Min	Min	None	Min	Min	None	Min	Min	None	Min	
Act Effct Green (s)	21.9	15.0	15.0	39.5	30.2	30.2	34.0	29.4	29.4	31.6	25.1	
Actuated g/C Ratio	0.26	0.18	0.18	0.47	0.36	0.36	0.40	0.35	0.35	0.37	0.30	
v/c Ratio	0.19	0.13	0.56	0.63	0.00	0.15	0.49	0.47	0.15	0.11	0.50	
Control Delay	16.2	32.1	9.0	20.4	18.0	1.9	22.8	27.0	0.5	16.4	29.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	16.2	32.1	9.0	20.4	18.0	1.9	22.8	27.0	0.5	16.4	29.1	
LOS	В	С	Α	С	В	Α	С	С	Α	В	С	
Approach Delay		12.8			16.7			21.4			27.3	
Approach LOS		В			В			С			С	
Queue Length 50th (m)	7.0	6.3	0.0	45.7	0.3	0.0	21.4	43.1	0.0	4.3	36.1	
Queue Length 95th (m)	14.5	16.2	21.9	70.5	1.7	4.8	39.8	73.8	0.0	11.4	63.8	
Internal Link Dist (m)		116.4			112.5			41.5			1929.3	
Turn Bay Length (m)	25.0		75.0	100.0			75.0		65.0	40.0		
Base Capacity (vph)	395	336	516	689	742	719	407	646	626	406	523	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.19	0.13	0.56	0.59	0.00	0.14	0.49	0.47	0.15	0.11	0.50	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 84.9
Natural Cycle: 75
Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.63
Intersection Signal Delay: 19.1
Intersection Capacity Utilization 72.7% Intersection LOS: B
ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: Burnside Line & Industrial Road/Brodie Drive



Lanes, Volumes, Timings

Analysis Period (min) 15

2031 Future Background P.M. 09-25-2024

2: Burnside Line & Highway 11 Westbound On-Ramp

	•	•	4	†	↓	1
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				†	↑	7
Traffic Volume (vph)	0	0	0	873	560	293
Future Volume (vph)	0	0	0	873	560	293
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	1863	1863	1509
Flt Permitted						
Satd. Flow (perm)	0	0	0	1863	1863	1509
Link Speed (k/h)	50			50	50	
Link Distance (m)	185.9			51.5	174.3	
Travel Time (s)	13.4			3.7	12.5	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	0%	2%	2%	7%
Adj. Flow (vph)	0	0	0	891	571	299
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	891	571	299
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	100	100	100			100
Sign Control	Free			Free	Free	
Intersection Summary						
	Other					
Control Type: Unsignalized						
Intersection Capacity Utilizat	tion 49.3%			IC	U Level	of Service
Apply of Deviced (sole) 45						

Lanes, Volumes, Timings 3: Burnside Line & Highway 11 Westbound 2031 Future Background P.M. 09-25-2024

Lane Group WBL WBR NBT NBR SBL SBT
Lane Configurations 🦎 🏌 🏌 🔥
Traffic Volume (vph) 193 202 671 274 0 560
Future Volume (vph) 193 202 671 274 0 560
Ideal Flow (vphpl) 1900 1900 1900 1900 1900 1900
Storage Length (m) 0.0 0.0 80.0 0.0
Storage Lanes 1 1 1 0
Taper Length (m) 7.5 7.5
Lane Util, Factor 1.00 1.00 1.00 1.00 1.00 1.00
Frt 0.850 0.850
Fit Protected 0.950
Satd. Flow (prot) 1752 1599 1863 1615 0 1863
Fit Permitted 0.950
Satd. Flow (perm) 1752 1599 1863 1615 0 1863
Right Turn on Red Yes Yes
Satd. Flow (RTOR) 206 280
Link Speed (k/h) 50 60 60
Link Distance (m) 104.8 160.3 51.5
Travel Time (s) 7.5 9.6 3.1
Peak Hour Factor 0.98 0.98 0.98 0.98 0.98 0.98
Heavy Vehicles (%) 3% 1% 2% 0% 0% 2%
Adj. Flow (vph) 197 206 685 280 0 571
Shared Lane Traffic (%)
Lane Group Flow (vph) 197 206 685 280 0 571
Enter Blocked Intersection No No No No No No
Lane Alignment Left Right Left Right Left Left
Median Width(m) 3.6 0.0 0.0
Link Offset(m) 0.0 0.0 0.0
Crosswalk Width(m) 4.8 4.8 4.8
Two way Left Turn Lane
Headway Factor 1.00 1.00 1.00 1.00 1.00 1.00
Turning Speed (k/h) 25 15 15 25
Number of Detectors 1 1 2 1 2
Detector Template Left Right Thru Right Thru
Trailing Detector (m) 0.0 0.0 0.0 0.0 0.0
Detector 1 Position(m) 0.0 0.0 0.0 0.0 0.0
Detector 1 Size(m) 2.0 2.0 0.6 2.0 0.6
Detector 1 Type CI+Ex CI+Ex CI+Ex CI+Ex CI+Ex
Detector 1 Channel
Detector 1 Extend (s) 0.0 0.0 0.0 0.0 0.0
Detector 1 Queue (s) 0.0 0.0 0.0 0.0 0.0
Detector 1 Delay (s) 0.0 0.0 0.0 0.0 0.0
Detector 2 Position(m) 9.4 9.4
Detector 2 Size(m) 0.6 0.6
Detector 2 Type CI+Ex CI+Ex
Detector 2 Channel
Detector 2 Extend (s) 0.0 0.0
Turn Type Perm Perm NA Perm NA
Protected Phases 6 2

Synchro 11 Report Page 4 Lanes, Volumes, Timings 3: Burnside Line & Highway 11 Westbound 2031 Future Background P.M. 09-25-2024

	•	•	†	-	-	ţ	
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	
Permitted Phases	4	4		6			
Detector Phase	4	4	6	6		2	
Switch Phase							
Minimum Initial (s)	10.0	10.0	20.0	20.0		20.0	
Minimum Split (s)	16.1	16.1	27.3	27.3		27.3	
Total Split (s)	24.0	24.0	61.0	61.0		61.0	
Total Split (%)	28.2%	28.2%	71.8%	71.8%		71.8%	
Maximum Green (s)	17.9	17.9	53.7	53.7		53.7	
Yellow Time (s)	4.5	4.5	4.5	4.5		4.5	
All-Red Time (s)	1.6	1.6	2.8	2.8		2.8	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	
Total Lost Time (s)	6.1	6.1	7.3	7.3		7.3	
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.2	3.2		3.2	
Recall Mode	None	None	None	None		None	
Act Effct Green (s)	12.4	12.4	27.2	27.2		27.2	
Actuated g/C Ratio	0.23	0.23	0.51	0.51		0.51	
v/c Ratio	0.49	0.39	0.72	0.29		0.60	
Control Delay	24.4	6.3	15.3	2.0		12.4	
Queue Delay	0.0	0.0	0.0	0.0		0.0	
Total Delay	24.4	6.3	15.3	2.0		12.4	
LOS	С	Α	В	Α		В	
Approach Delay	15.1		11.4			12.4	
Approach LOS	В		В			В	
Queue Length 50th (m)	16.1	0.0	44.1	0.0		33.6	
Queue Length 95th (m)	43.0	15.2	95.7	9.1		72.8	
Internal Link Dist (m)	80.8		136.3			27.5	
Turn Bay Length (m)				80.0			
Base Capacity (vph)	608	689	1734	1522		1734	
Starvation Cap Reductn	0	0	0	0		0	
Spillback Cap Reductn	0	0	0	0		0	
Storage Cap Reductn	0	0	0	0		0	
Reduced v/c Ratio	0.32	0.30	0.40	0.18		0.33	
Intersection Summary							
Area Type:	Other						
Cycle Length: 85							
Actuated Cycle Length: 53	5						
Natural Cycle: 55							
Control Type: Semi Act-Und	coord						
Maximum v/c Ratio: 0.72							
Intersection Signal Delay: 1	2.5			In	tersection	LOS: B	
Intersection Capacity Utiliza				IC	CU Level o	f Service E	3
Analysis Period (min) 15							
, , ,							
Splits and Phases: 3: But	rnside Line	& Highwa	ay 11 We	stbound			
OH							4

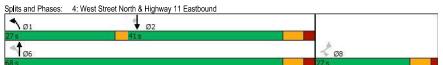


	•	*	1	Ť	↓	4
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	*	7	*		<u> </u>	7
Traffic Volume (vph)	184	157	228	759	631	124
Future Volume (vph)	184	157	228	759	631	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	55.0			40.0
Storage Lanes	1	1	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.850	,	1.00	1.00	0.850
Fit Protected	0.950	0.000	0.950			0.000
Satd. Flow (prot)	1736	1583	1787	1881	1863	1583
Flt Permitted	0.950	1000	0.188	1001	1000	1000
Satd. Flow (perm)	1736	1583	354	1881	1863	1583
Right Turn on Red	1700	Yes	554	1001	1003	Yes
Satd. Flow (RTOR)		165				70
Link Speed (k/h)	50	100		60	60	10
Link Distance (m)	154.2			160.8	176.6	
Travel Time (s)	11.1			9.6	10.6	
		0.05	0.05			0.05
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	2%	1%	1%	2%	2%
Adj. Flow (vph)	194	165	240	799	664	131
Shared Lane Traffic (%)	401	405	040	700	001	404
Lane Group Flow (vph)	194	165	240	799	664	131
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	0.0	0.0	0.0	9.4	9.4	0.0
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel				O1. LX	J1. L∧	
Detector 2 Extend (s)				0.0	0.0	
	Perm	Perm	nm±nt	NA	NA	Perm
Turn Type	Perm	Penn	pm+pt 1	NA 6	NA 2	Penn
Protected Phases			1	6	2	

	*	*	1	1	↓	4
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	8	8	6			2
Detector Phase	8	8	1	6	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	7.0	20.0	20.0	20.0
Minimum Split (s)	18.0	18.0	10.0	41.0	41.0	41.0
Total Split (s)	27.0	27.0	27.0	68.0	41.0	41.0
Total Split (%)	28.4%	28.4%	28.4%	71.6%	43.2%	43.2%
Maximum Green (s)	20.8	20.8	24.0	60.9	33.9	33.9
Yellow Time (s)	4.5	4.5	3.0	4.5	4.5	4.5
All-Red Time (s)	1.7	1.7	0.0	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	3.0	7.1	7.1	7.1
Lead/Lag		0	Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.2	3.2	3.2
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	14.0	14.0	51.9	47.7	33.7	33.7
Actuated g/C Ratio	0.19	0.19	0.69	0.63	0.45	0.45
v/c Ratio	0.60	0.13	0.53	0.67	0.40	0.18
Control Delay	37.1	7.8	9.4	12.7	28.8	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.1	7.8	9.4	12.7	28.8	8.6
LOS	57.1 D	7.0 A	3.4 A	12.7 B	20.0 C	Α.
Approach Delay	23.6		А	12.0	25.5	
Approach LOS	23.0 C			12.0 B	23.5 C	
Queue Length 50th (m)	26.5	0.0	10.3	64.4	78.3	4.8
Queue Length 95th (m)	51.3	15.5	25.0	127.9	#182.0	18.7
Internal Link Dist (m)	130.2	10.0	20.0	136.8	152.6	10.1
Turn Bay Length (m)	100.2		55.0	100.0	102.0	40.0
Base Capacity (vph)	485	561	706	1540	849	759
Starvation Cap Reductn	403	0	700	1540	049	0
Spillback Cap Reductn	0	0	0	0	0	0
· · · · · · · · · · · · · · · · · · ·	0	0	0	0	0	0
Storage Cap Reductn Reduced v/c Ratio	0.40	0.29	0.34	0.52	0.78	0.17
	0.40	0.29	0.34	0.52	0.78	0.17
Intersection Summary						
Area Type:	Other					
Cycle Length: 95						
Actuated Cycle Length: 75.	.2					
Natural Cycle: 70						
Control Type: Semi Act-Und	coord					
Maximum v/c Ratio: 0.80						
Intersection Signal Delay: 1	8.8			li	ntersectio	n LOS: B
Intersection Capacity Utiliza	30 50/			li li	CU Level	of Service C
	ation /0.5%					
	ation 70.5%			Ų.	2010	
Analysis Period (min) 15 # 95th percentile volume			ieue may			

Lanes, Volumes, Timings
4: West Street North & Highway 11 Eastbound

2031 Future Background P.M. 09-25-2024



Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road

2031 Future Background P.M.

	•	-	*	1		*	1	†	1	1	Ţ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	†	7	7	f)		1/4	^	7	7	^	7
Traffic Volume (vph)	252	253	264	427	252	198	251	806	425	89	667	176
Future Volume (vph)	252	253	264	427	252	198	251	806	425	89	667	176
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	115.0		0.0	100.0		120.0	110.0		50.0
Storage Lanes	1		1	1		0	2		1	1		1
Taper Length (m)	70.0			65.0			80.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98	1.00								
Frt			0.850		0.934				0.850			0.850
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1900	1599	1787	1765	0	3502	3539	1599	1805	3505	1583
Flt Permitted	0.187	1000	1000	0,321	11.00		0.950	0000	1000	0.147	0000	1000
Satd. Flow (perm)	352	1900	1575	603	1765	0	3502	3539	1599	279	3505	1583
Right Turn on Red	002	1000	Yes	000	1700	Yes	0002	0000	Yes	210	0000	Yes
Satd. Flow (RTOR)			281		25	100			452			161
Link Speed (k/h)		50	201		70			50	702		50	101
Link Opeca (km)		186.6			853.6			529.0			469.5	
Travel Time (s)		13.4			43.9			38.1			33.8	
Confl. Peds. (#/hr)		10.4	2	2	70.0			30.1			33.0	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	0.34	1%	1%	1%	0.34	0%	2%	1%	0.34	3%	2%
Adj. Flow (vph)	268	269	281	454	268	211	267	857	452	95	710	187
Shared Lane Traffic (%)	200	209	201	404	200	211	201	037	432	90	710	107
Lane Group Flow (vph)	268	269	281	454	479	0	267	857	452	95	710	187
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	Leit	3.6	Rigili	Leit	3.6	Rigiit	Leit	7.2	Rigiti	Leit	7.2	Rigit
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
		4.0			4.0			4.0			4.0	
Two way Left Turn Lane	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	0	15	25	0	15	25	0	15	25	0	15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	CI+Ex	CI+Ex	C I +Ex	C I +Ex		C I +Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	C I +Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Synchro 11 Report Page 8

Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road 2031 Future Background P.M. 09-25-2024

	۶	→	*	1	+	*	1	†	1	1	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6					8	4		4
Detector Phase	5	2	2	1	6		3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0		7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	12.0	27.2	27.2	12.0	33.2		11.5	21.0	21.0	11.5	22.5	22.5
Total Split (s)	42.0	35.0	35.0	49.0	42.0		23.0	50.0	50.0	16.0	43.0	43.0
Total Split (%)	28.0%	23.3%	23.3%	32.7%	28.0%		15.3%	33.3%	33.3%	10.7%	28.7%	28.7%
Maximum Green (s)	37.0	27.8	27.8	44.0	34.8		19.0	42.0	42.0	12.0	35.0	35.0
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	2.0	2.2	2.2	2.0	2.2		1.0	3.5	3.5	1.0	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.2	7.2	5.0	7.2		4.0	8.0	8.0	4.0	8.0	8.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.6	3.6	3.0	3.6		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	None	None	None	None	None
Walk Time (s)					7.0			7.0	7.0			
Flash Dont Walk (s)					19.0			6.0	6.0			
Pedestrian Calls (#/hr)					0			0	0			
Act Effct Green (s)	51.6	28.4	28.4	65.1	36.8		14.9	36.6	36.6	44.9	31.3	31.3
Actuated g/C Ratio	0.40	0.22	0.22	0.51	0.29		0.12	0.28	0.28	0.35	0.24	0.24
v/c Ratio	0.71	0.64	0.50	0.79	0.92		0.66	0.85	0.58	0.45	0.83	0.37
Control Delay	38.7	56.7	8.7	32.5	67.3		64.3	53.3	6.7	31.6	56.7	11.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.7	56.7	8.7	32.5	67.3		64.3	53.3	6.7	31.6	56.7	11.7
LOS	D	Е	Α	С	Е		Е	D	Α	С	E	В
Approach Delay		34.3			50.4			41.8			45.8	
Approach LOS		С			D			D			D	
Queue Length 50th (m)	44.1	66.5	0.0	80.6	120.9		35.5	110.6	0.0	14.7	92.7	5.2
Queue Length 95th (m)	83.1	#120.0	26.6	118.8	#219.0		57.2	162.5	28.8	31.3	#144.8	28.3
Internal Link Dist (m)		162.6			829.6			505.0			445.5	
Turn Bay Length (m)	50.0			115.0			100.0		120.0	110.0		50.0
Base Capacity (vph)	590	422	568	716	522		525	1173	832	247	972	555
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.64	0.49	0.63	0.92		0.51	0.73	0.54	0.38	0.73	0.34

Intersection Summary Area Type: Cycle Length: 150
Actuated Cycle Length: 128.5 Natural Cycle: 90 Control Type: Semi Act-Uncoord Maximum v/c Ratio: 0.92 Intersection Signal Delay: 43.2
Intersection Capacity Utilization 88.6%

Intersection LOS: D ICU Level of Service E

> Synchro 11 Report Page 10

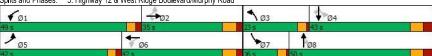
Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road

2031 Future Background P.M.

09-25-2024

Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Highway 12 & West Ridge Boulevard/Murphy Road



Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol, veh/h	368	5	0	3	3	3	2	0	0	2	0	302
Future Vol, veh/h	368	5	0	3	3	3	2	0	0	2	0	302
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage	e,# -	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	18	25	0	0	100	0	0	0	0	0	0	27
Mvmt Flow	409	6	0	3	3	3	2	0	0	2	0	336
Major/Minor	Minor2		ľ	Minor1		ľ	Major1		N	/lajor2		
Conflicting Flow All	179	176	168	179	344	0	336	0	0	0	0	0
Stage 1	172	172	-	4	4	-	-	-	-	_	-	-
Stage 2	7	4	-	175	340	-	-	-	-	-	-	-
Critical Hdwy	7.28	6.75	6.2	7.1	7.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.28	5.75	-	6.1	6.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.28	5.75	-	6.1	6.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.662	4.225	3.3	3.5	4.9	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	749	678	881	787	449	-	1235		-	-	-	-
Stage 1	794	715	-	1024	731	-	-	-	-	-	-	-
Stage 2	975	849	-	832	497	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	677	881	781	448	-	1235	-	-	-	-	-
Mov Cap-2 Maneuver	-	677	-	781	448	-	-	-	-	-	-	-
Stage 1	792	715	-	1022	730	-	-	-	-	-	-	-
Stage 2	969	847	-	826	497	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s							7.9					
HCM LOS	-			-								
Minor Lane/Major Mvn	nt	NBL	NBT	NRR I	EBLn1\	VRI n1	SBL	SBT	SBR			
Capacity (veh/h)		1235	INDI	.101(1	_3_1111	JEIII	ODL	ODI	ODIN			
HCM Lane V/C Ratio		0.002	-									
HCM Control Delay (s	١	7.9	0	-				-				
HCM Lane LOS		7.5 A	A									
HCM 95th %tile Q(veh	Λ	0	_			-	-	-				
HOM JOHN JOHN Q(VEH	1	U							_			

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol, veh/h	4	223	13	37	283	15	21	20	72	6	6	2
Future Vol., veh/h	4	223	13	37	283	15	21	20	72	6	6	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage	,# -	0	-	-	0	-	-	0	-	-	0	
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	2	0	0	1	0	0	0	0	0	20	0
Mvmt Flow	4	240	14	40	304	16	23	22	77	6	6	2
Major/Minor N	Major1			Major2			Minor1		- 1	Minor2		
Conflicting Flow All	320	0	0	254	0	0	651	655	247	697	654	312
Stage 1	-	-	-		-	-	255	255		392	392	-
Stage 2	-				-		396	400		305	262	
Critical Hdwy	4.1			4.1	-	-	7.1	6.5	6.2	7.1	6.7	6.2
Critical Hdwy Stg 1							6.1	5.5	-	6.1	5.7	-
Critical Hdwy Stg 2	-	_	-	-	_	_	6.1	5.5		6.1	5.7	
Follow-up Hdwy	2.2			2.2			3.5	4	3.3	3.5	4.18	3.3
Pot Cap-1 Maneuver	1251	-	-	1323	-	-	384	388	797	358	364	733
Stage 1	-			-			754	700	-	637	576	-
Stage 2			-		-		633	605		709	660	
Platoon blocked, %							-000				- 550	
Mov Cap-1 Maneuver	1251	-	-	1323	-	-	366	372	797	299	349	733
Mov Cap-2 Maneuver	-	-	-	-	-		366	372	-	299	349	-
Stage 1	-	-	_	-	-	-	751	697		634	555	-
Stage 2	-			-	-		601	583		618	657	
, in the second												
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.9			13.2			15.7		
HCM LOS				0.0			В			C		
Minor Lane/Major Mvm	t I	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR :	SBLn1			
Capacity (veh/h)		561	1251		_	1323	-	-	350			
HCM Lane V/C Ratio		0.217	0.003		-	0.03	-		0.043			
HCM Control Delay (s)		13.2	7.9	0	_	7.8	0	_	15.7			
HCM Lane LOS		13.2 B	Α.	A	-	Α.	A	-	13.7 C			
HCM 95th %tile Q(veh)		0.8	0	-	_	0.1	-	_	0.1			
TO THE OUT TO THE CREATER		0.0	0			0.1			0.1			

Lanes, Volumes, Timings 8: Burnside Line & Division Road W 2031 Future Background P.M. 09-25-2024

Lane Group		۶	→	*	•	←	•	1	†	~	1	ţ	1
Traffic Volume (vph)	Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Future Volume (vph) 12	Lane Configurations		4			4			4			4	
Ideal Flow (yphpl)	Traffic Volume (vph)	12	142	153	21	108	3	202	173	63	5	89	26
Lane Util. Factor	Future Volume (vph)	12	142	153	21	108	3	202	173	63	5	89	26
Fit	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Fit Profected 0,988 0,998 0,947 0,975 0,098 Satd. Flow (proft) 0 1744 0 0 1849 0 0 0 1795 0 0 1571 0 0,986 Fit Permitted 0,985 0,916 0,795 0,986 Satd. Flow (perm) 0 1722 0 0 0 1707 0 0 1461 0 0 1552 0 988 Satd. Flow (perm) 7 98 7 98 7 98 7 98 Satd. Flow (RTOR) 98 2 2 2 22 28 Link Speed (kih) 50 50 50 50 50 Solith R Dislance (m) 1346.1 271.7 1955.3 357.4 Travel Time (s) 96.9 196.6 140.6 25.7 Travel Time (s) 96.9 196.6 25.7 Travel Time (s) 186.7 Travel Time (s) 96.9 196.6 2 20 15 Travel Time (s) 186.7 Travel Time (s) 186	Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Satic Flow (prot)	Frt		0.933			0.997			0.981			0.970	
Fit Permitted	Flt Protected		0.998			0.992			0.977			0.998	
Satid. Flow (perm) 0	Satd. Flow (prot)	0	1744	0	0	1849	0	0	1795	0	0	1571	0
Right Tum on Red	Flt Permitted		0.985			0.916			0.795			0.986	
Satd. Flow (RTOR)	Satd. Flow (perm)	0	1722	0	0	1707	0	0	1461	0	0	1552	0
Link Speed (k/h)	Right Turn on Red			Yes			Yes			Yes			Yes
Link Distance (m)	Satd. Flow (RTOR)		98			2			22			28	
Travel Time (s)	Link Speed (k/h)		50			50			50			50	
Peak Hour Factor 0.94 0.	Link Distance (m)		1346.1			271.7			1953.3			357.4	
Heavy Vehicles (%)	Travel Time (s)		96.9			19.6			140.6			25.7	
Adj. Flow (vph)	Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Shared Lane Traffic (%) Lane Group Flow (wph) 0 327 0 0 140 0 0 0 466 0 0 128 0 0 0 0 0 0 0 0 0	Heavy Vehicles (%)	0%	2%	1%	0%	2%	0%	1%	1%	4%	0%	23%	0%
Shared Lane Traffic (%) Lane Group Flow (vph) 0 327 0 0 140 0 0 466 0 0 128 0		13	151	163	22		3	215	184	67	5	95	28
Lane Group Flow (vph)													
Left Left Right Right Left Right Right Left Right		0	327	0	0	140	0	0	466	0	0	128	0
Left Left Right Right Left Right Right Left Right	Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Median Width(m) 0.0 0.0 0.0 3.6 3.6 Link Offset(m) 0.0 0.0 0.0 0.0 0.0 Crosswalk Width(m) 4.8 4.8 4.8 4.8 4.8 Two way Left Turn Lane Headway Factor 1.00													
Link Offset(m) 0.0 0.0 0.0 0.0 Crosswalk Width(m) 4.8 4.8 4.8 4.8 Two way Left Turn Lane Headway Factor 1.00<				3			3			3		3.6	3
Crosswalk Width(m)			0.0			0.0			0.0			0.0	
Two way Left Turn Lane Headway Factor 1.00						4.8							
Headway Factor													
Turning Speed (k/h) 100		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Number of Detectors 1 2 1 0 1 0 0 0 0 0 0		100		100	100		100	100		100	100		100
Leading Detector (m) 2.0 10.0 2.0 10.0 2.0 10.0 Trailing Detector (m) 0.0		1	2		1	2		1	2		1	2	
Trailing Detector (m) 0.0	Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Trailing Detector (m) 0.0	Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Detector 1 Position(m) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0													
Detector 1 Size(m) 2.0 0.6 2.0 0.6 2.0 0.6 2.0 0.6 2.0 0.6													
Detector 1 Type			0.6			0.6			0.6			0.6	
Detector 1 Channel		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Queue (s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0													
Detector 1 Queue (s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0			0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m) 9.4 9.4 9.4 9.4	,												
Detector 2 Size(m) 0.6 0.6 0.6 0.6 Detector 2 Type CI+Ex CI+Ex CI+Ex CI+Ex Detector 2 Channel VIIII Type VIIII Type 0.0 0.0 0.0 0.0 Turn Type Perm NA Perm NA Perm NA Protected Phases 4 8 2 6 Permitted Phases 4 8 2 6 Detector Phase 4 4 8 2 2 6			9.4			9.4			9.4			9.4	
Detector 2 Type CI+Ex													
Detector 2 Channel Detector 2 Extend (s) 0.0 <td></td>													
Detector 2 Extend (s) 0.0 0.0 0.0 0.0 Turn Type Perm NA Perm NA Perm NA Protected Phases 4 8 2 6 Permitted Phases 4 8 2 6 Detector Phase 4 4 8 2 2 6			JX			J/			J^			-, - /	
Turn Type Perm NA Perm NA Perm NA Perm NA Protected Phases 4 8 2 6 Permitted Phases 4 8 2 6 Detector Phase 4 4 8 2 2 6 6			0.0			0.0			0.0			0.0	
Protected Phases 4 8 2 6 Permitted Phases 4 8 2 6 Detector Phase 4 4 8 8 2 2 6 6		Perm			Perm			Perm			Perm		
Permitted Phases 4 8 2 6 Detector Phase 4 4 8 8 2 2 6 6		. 01111			. 51111			1 01111			. 51111		
Detector Phase 4 4 8 8 2 2 6 6		Δ	-		8			2			6	J	
2000007770000			1			ρ			2			6	
	Switch Phase	7	-		0						0	J	

Synchro 11 Report Page 16 Lanes, Volumes, Timings 8: Burnside Line & Division Road W

2031 Future Background P.M.

	•	-	*	1	•	•	1	1	-	1	↓	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	23.0	23.0		23.0	23.0		32.0	32.0		32.0	32.0	
Total Split (%)	41.8%	41.8%		41.8%	41.8%		58.2%	58.2%		58.2%	58.2%	
Maximum Green (s)	18.5	18.5		18.5	18.5		27.5	27.5		27.5	27.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		12.0			12.0			28.4			28.4	
Actuated g/C Ratio		0.24			0.24			0.57			0.57	
v/c Ratio		0.67			0.34			0.55			0.14	
Control Delay		18.2			16.6			10.5			5.6	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		18.2			16.6			10.5			5.6	
LOS		В			В			В			Α	
Approach Delay		18.2			16.6			10.5			5.6	
Approach LOS		В			В			В			Α	
Queue Length 50th (m)		17.9			10.2			21.0			3.5	
Queue Length 95th (m)		38.0			21.3			58.1			12.5	
Internal Link Dist (m)		1322.1			247.7			1929.3			333.4	
Turn Bay Length (m)												
Base Capacity (vph)		708			642			848			903	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.46			0.22			0.55			0.14	
Intersection Summary												
Area Type: Cycle Length: 55	Other											
Actuated Cycle Length: 49.4	4											
Natural Cycle: 55	4											
Control Type: Semi Act-Und	no ord											
Maximum v/c Ratio: 0.67	Journ											
Intersection Signal Delay: 1	2.1			l.	ntersection	108. B						
Intersection Capacity Utiliza					CU Level		. D					
Analysis Period (min) 15	10011 37.0%			I	o Level (JI SELVICE	טי					
Analysis Period (min) 15												
Splits and Phases: 8: Bui	rnside Line	& Division	Road V	/								
< †						- " s	A.					



-						
Intersection						
Int Delay, s/veh	1.1					
		EDT	MOT	WDD	OD:	ODD
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	ħ	↑	₽		٦	7
Traffic Vol, veh/h	0	127	462	37	58	0
Future Vol, veh/h	0	127	462	37	58	0
Conflicting Peds, #/hr		0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	0
Veh in Median Storag	e,# -	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mymt Flow	0	138	502	40	63	0
WWITH TOW	U	100	302	70	00	U
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	542	0	-	0	660	522
Stage 1	-	-	-	-	522	-
Stage 2	-	-	-	-	138	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-			5.42	-
Critical Hdwy Stg 2	_	_	_	-	5.42	_
Follow-up Hdwy	2.218				3.518	
Pot Cap-1 Maneuver	1027	_	_		428	555
Stage 1	1027				595	JJJ
			-		889	-
Stage 2	-	-	-		009	-
Platoon blocked, %	4007	-	-	-	400	CCC
Mov Cap-1 Maneuver		-	-	-	428	555
Mov Cap-2 Maneuver		-	-	-	503	-
Stage 1	-	-	-	-	595	-
Stage 2	-	-	-	-	889	-
Approach	EB		WB		SB	
HCM Control Delay, s			0		13.2	
HCM LOS	. 0		- 0		В	
110111 200						
Minor Lane/Major Mvi	mt	EBL	EBT	WBT	WBR	SBLn1 S
Capacity (veh/h)		1027	-	-	-	503
HCM Lane V/C Ratio		-	-	-		0.125
HCM Control Delay (s	s)	0	-	-	-	13.2
HCM Lane LOS		Α	-	-	-	В
HCM 95th %tile O(vel	h)	0	_			0.4

Intersection							
Int Delay, s/veh	4.3						
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	YUDE	WDIX	10N	ואטול	ODL	- € 1	
Traffic Vol., veh/h	199	0	179	193	0	109	
Future Vol, veh/h	199	0	179	193	0	109	
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Stop	Stop	Free	Free	Free	Free	
RT Channelized	Stop _	None	1166	None	1166	None	
Storage Length	0	0		NONE -		-	
Veh in Median Storage		-	0			0	
Grade. %	0	-	0			0	
Peak Hour Factor	92	92	92	92	92	92	
Heavy Vehicles, %	2	2	2	2	2	2	
Mymt Flow	216	0	195	210	0	118	
WWW.III.C. IOW	210	U	190	210	0	110	
	Minor1		Major1		Major2		
Conflicting Flow All	418	300	0	0	405	0	
Stage 1	300	-	-	-	-	-	
Stage 2	118	-	-	-	-	-	
Critical Hdwy	6.42	6.22	-	-	4.12	-	
Critical Hdwy Stg 1	5.42	-	-	-	-	-	
Critical Hdwy Stg 2	5.42	-	-	-	-	-	
Follow-up Hdwy			-	-	2.218	-	
Pot Cap-1 Maneuver	591	740	-	-	1154	-	
Stage 1	752	-	-	-	-	-	
Stage 2	907	-	-	-	-	-	
Platoon blocked, %			-	-		-	
Mov Cap-1 Maneuver	591	740	-	-	1154	-	
Mov Cap-2 Maneuver	591	-	-	-	-	-	
Stage 1	752	-	-	-	-	-	
Stage 2	907	-	-	-	-	-	
Approach	WB		NB		SB		
HCM Control Delay, s	14.6		0		0		
HCM LOS	14.6 B		U		0		
I ICIVI LUO	В						
Minor Lane/Major Mvn	nt	NBT	NBR	WBLn1V	VBLn2	SBL	SBT
Capacity (veh/h)		-	-	591	-	1154	-
HCM Lane V/C Ratio		-	-	0.366	-	-	-
HCM Control Delay (s))	-	-	14.6	0	0	-
HCM Lane LOS		-	-	В	Α	Α	-
HCM 95th %tile Q(veh)	-	-	1.7	-	0	-

2033 Future Background A.M. 09-25-2024

Lanes, Volumes, Timings
1: Burnside Line & Industrial Road/Brodie Drive

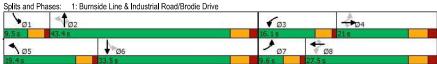
	٠				10000	•	20			1	1	
		-	1	1	26,8100		1	Ť	1	*	\psi	*
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	^	7	7	↑	7	7	↑	7	7	1	
Traffic Volume (vph)	47	30	128	228	5	39	320	278	82	36	242	45
Future Volume (vph)	47	30	128	228	5	39	320	278	82	36	242	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		75.0	100.0		0.0	75.0		65.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.977	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1900	1615	1736	1900	1615	1805	1439	1468	1805	1522	0
Flt Permitted	0.754			0.581			0.358			0.574		
Satd. Flow (perm)	1433	1900	1615	1061	1900	1615	680	1439	1468	1091	1522	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			255			200			200		11	
Link Speed (k/h)		50			60			60			60	
Link Distance (m)		140.4			136.5			65.5			1953.3	
Travel Time (s)		10.1			8.2			3.9			117.2	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	4%	0%	0%	0%	32%	10%	0%	26%	0%
Adj. Flow (vph)	52	33	141	251	5	43	352	305	90	40	266	49
Shared Lane Traffic (%)												
Lane Group Flow (vph)	52	33	141	251	5	43	352	305	90	40	315	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4	0.0	0.0	9.4	0.0	0.0	9.4	0.0	0.0	9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel		J. L.			31. LX			51. LX			JI: LA	
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4	1 01111	3	8	7 01111	5	2	7 01111	1	6	

Synchro 11 Report Page 1

Lanes, Volumes, Timings
1: Burnside Line & Industrial Road/Brodie Drive

2033 Future Background A.M. 09-25-2024

	•	\rightarrow	*	1	•	*	1	Ť	-	1	Ţ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	25.0	25.0	5.0	25.0	
Minimum Split (s)	9.5	21.0	21.0	9.5	21.0	21.0	9.5	31.0	31.0	9.5	31.0	
Total Split (s)	9.6	21.0	21.0	16.1	27.5	27.5	19.4	43.4	43.4	9.5	33.5	
Total Split (%)	10.7%	23.3%	23.3%	17.9%	30.6%	30.6%	21.6%	48.2%	48.2%	10.6%	37.2%	
Maximum Green (s)	5.1	15.0	15.0	11.6	21.5	21.5	14.9	37.4	37.4	5.0	27.5	
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	6.0	6.0	4.5	6.0	6.0	4.5	6.0	6.0	4.5	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Min	Min	None	Min	Min	None	Min	Min	None	Min	
Act Effct Green (s)	21.6	15.0	15.0	31.9	24.8	24.8	46.1	39.0	39.0	32.2	25.7	
Actuated g/C Ratio	0.25	0.17	0.17	0.37	0.29	0.29	0.53	0.45	0.45	0.37	0.30	
v/c Ratio	0.14	0.10	0.29	0.53	0.01	0.07	0.65	0.47	0.12	0.09	0.69	
Control Delay	20.1	32.3	1.5	25.4	26.0	0.2	18.2	21.3	0.3	11.8	35.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	20.1	32.3	1.5	25.4	26.0	0.2	18.2	21.3	0.3	11.8	35.5	
LOS	С	С	Α	С	С	Α	В	С	Α	В	D	
Approach Delay		10.3			21.8			17.3			32.8	
Approach LOS		В			С			В			С	
Queue Length 50th (m)	5.8	5.0	0.0	31.9	0.7	0.0	34.6	40.1	0.0	3.2	48.0	
Queue Length 95th (m)	13.9	13.5	0.0	54.5	3.5	0.0	53.5	65.3	0.0	8.0	78.0	
Internal Link Dist (m)		116.4			112.5			41.5			1929.3	
Turn Bay Length (m)	25.0		75.0	100.0			75.0		65.0	40.0		
Base Capacity (vph)	378	328	489	479	540	602	552	657	779	444	489	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.14	0.10	0.29	0.52	0.01	0.07	0.64	0.46	0.12	0.09	0.64	
Intersection Summary												
	Other											
Cycle Length: 90												
Actuated Cycle Length: 87												
Natural Cycle: 75												
Control Type: Semi Act-Unc	oord											
Maximum v/c Ratio: 0.69												
Intersection Signal Delay: 20					ntersection							
Intersection Capacity Utiliza	tion 71.6%			IC	CU Level	of Service	e C					
Analysis Period (min) 15												



Lanes, Volumes, Timings 2: Burnside Line & Highway 11 Westbound On-Ramp 2033 Future Background A.M.

	•	*	1	†	ļ	1
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				↑	^	7
Traffic Volume (vph)	0	0	0	997	343	245
Future Volume (vph)	0	0	0	997	343	245
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	1638	1810	1214
Flt Permitted						
Satd. Flow (perm)	0	0	0	1638	1810	1214
Link Speed (k/h)	50			70	60	
Link Distance (m)	185.9			51.5	174.3	
Travel Time (s)	13.4			2.6	10.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	16%	5%	33%
Adj. Flow (vph)	0	0	0	1049	361	258
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1049	361	258
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	

Intersection Summary

Other Area Type:

Control Type: Unsignalized
Intersection Capacity Utilization 55.8%
Analysis Period (min) 15

ICU Level of Service B

09-25-2024

Lanes, Volumes, Timings 3: Burnside Line & Highway 11 Westbound 2033 Future Background A.M. 09-25-2024

	•	•	†	1	1	ţ
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	*	1		1		†
Traffic Volume (vph)	159	259	739	179	0	343
Future Volume (vph)	159	259	739	179	0	343
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		80.0	0.0	
Storage Lanes	1	1		1	0	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950					
Satd. Flow (prot)	1787	1583	1638	1509	0	1810
Flt Permitted	0.950					
Satd. Flow (perm)	1787	1583	1638	1509	0	1810
Right Turn on Red	1701	Yes	1000	Yes	,	1010
Satd. Flow (RTOR)		218		188		
Link Speed (k/h)	50	210	60	100		60
Link Distance (m)	104.8		160.3			51.5
Travel Time (s)	7.5		9.6			3.1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	2%	16%	0.95 7%	0.95	5%
Adi. Flow (vph)	167	273	778	7% 188	0%	361
	107	213	118	188	U	301
Shared Lane Traffic (%)	407	070	770	400	0	204
Lane Group Flow (vph)	167	273	778	188		361
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1		2
Detector Template	Left	Right	Thru	Right		Thru
Leading Detector (m)	2.0	2.0	10.0	2.0		10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0
Detector 1 Size(m)	2.0	2.0	0.6	2.0		0.6
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex
Detector 1 Channel	OI LX	51 - EA	31 - LA	31. EX		J X
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)	0.0	0.0	9.4	0.0		9.4
Detector 2 Size(m)			0.6			0.6
			CI+Ex			CI+Ex
Detector 2 Type			OI+EX			OI+EX
Detector 2 Channel			0.0			0.0
Detector 2 Extend (s)	-	_	0.0	_		0.0
Turn Type	Perm	Perm	NA	Perm		NA
Protected Phases			6			2

Synchro 11 Report Page 3

Lanes, Volumes, Timings 3: Burnside Line & Highway 11 Westbound

Lane Group Permitted Phases Detector Phase

Switch Phase Minimum Initial (s)

Total Split (s)

Total Split (%)

Yellow Time (s)

All-Red Time (s)

Lead/Lag Lead-Lag Optimize? Vehicle Extension (s)

Recall Mode

v/c Ratio

Control Delay

Queue Delay

Total Delay

Approach Delay

Approach LOS Queue Length 50th (m)

Queue Length 95th (m)

Internal Link Dist (m)

Turn Bay Length (m)

Base Capacity (vph)

Starvation Cap Reductn

Spillback Cap Reductn

Storage Cap Reductn Reduced v/c Ratio

Intersection Summary

Analysis Period (min) 15

Intersection Capacity Utilization 66.3%

Area Type: Cycle Length: 85 Actuated Cycle Length: 61.3 Natural Cycle: 60 Control Type: Semi Act-Uncoord Maximum v/c Ratio: 0.85 Intersection Signal Delay: 15.8

LOS

Minimum Split (s)

Maximum Green (s)

Lost Time Adjust (s)

Total Lost Time (s)

Act Effct Green (s)

Actuated g/C Ratio

WBL WBR

9.7

16.1

24.0

17.6

4.5

1.9

0.0

6.4

3.0

None

12.4

0.20

0.55

12.1

0.0

12.1 21.0

В

5.3 62.0

30.4 133.6

632

0.43

4

9.7

16.1

24.0

17.6

4.5

1.9

0.0

6.4

3.0

None

12.4

0.20

0.46

29.6

0.0

29.6

18.7

17.0

44.4

80.8

543

0

0

0.31

Other

С

28.2% 28.2%

NBT NBR

20.0

27.3

61.0

71.8%

53.7

4.5

2.8

0.0

7.3

3.2

None

34.4

0.56

0.85

21.0

0.0

17.2

136.3

1412

0.55

6

20.0

27.3

61.0

53.7

4.5

2.8

0.0

7.3

3.2

None

34.4

0.56

0.20

1.6

0.0

1.6

0.0

6.9

1326

0

0.14

71.8%

SBL SBT

2

20.0

27.3

61.0

71.8%

53.7

4.5

2.8

0.0

7.3

3.2

None

34.4

0.56

0.36

8.1

0.0

8.1

8.1

18.8

39.8

27.5

1560

0.23

0

0

2033 Future Background A.M. 09-25-2024

Splits and Phases: 3: Burnside Line & Highway 11 Westbound



Intersection LOS: B

ICU Level of Service C

Lanes, Volumes, Timings 4: West Street North & Highway 11 Eastbound 2033 Future Background A.M. 09-25-2024

	•	*	1	†	Ţ	1
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	*	7	*	↑	<u> </u>	7
Traffic Volume (vph)	287	125	103	626	452	50
Future Volume (vph)	287	125	103	626	452	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	55.0	1900	1000	40.0
Storage Lanes	1	1	1			40.0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	
Fit Protected	0.050	0.850	0.050			0.850
	0.950	1504	0.950	1007	1045	1440
Satd. Flow (prot)	1327	1524	1787	1827	1845	1442
Flt Permitted	0.950	450:	0.316	400=	4045	4440
Satd. Flow (perm)	1327	1524	594	1827	1845	1442
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		132				44
Link Speed (k/h)	50			60	60	
Link Distance (m)	154.2			160.8	176.6	
Travel Time (s)	11.1			9.6	10.6	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	36%	6%	1%	4%	3%	12%
Adi. Flow (vph)	302	132	108	659	476	53
Shared Lane Traffic (%)	002	102	100	000	110	
Lane Group Flow (vph)	302	132	108	659	476	53
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswa l k Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel	CITEX	CITEX	CITEX	CITEX	CITEX	CITEX
	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Extend (s)						
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	pm+pt	NA	NA	Perm
Protected Phases			1	6	2	
				,		

Lanes, Volumes, Timings 4: West Street North & Highway 11 Eastbound

8

10.0

18.0

38.0

31.8

4.5

1.7

0.0

6.2

3.0

None

20.4

0.30

0.75

35.0

0.0

35.0

25.9

34.4

75.1

130.2

666

0.45

Other

0

0

С

С

42.2% 42.2%

Lane Group Permitted Phases Detector Phase

Switch Phase Minimum Initial (s)

Total Split (s)

Total Split (%)

Yellow Time (s)

All-Red Time (s)

Lead/Lag

Recall Mode

v/c Ratio

Control Delay

Queue Delay

Total Delay

Approach Delay

Approach LOS

Queue Length 50th (m)

Queue Length 95th (m)

Internal Link Dist (m)

Turn Bay Length (m)

Base Capacity (vph)

Starvation Cap Reductn

Spillback Cap Reductn

Storage Cap Reductn Reduced v/c Ratio

Intersection Summary

Analysis Period (min) 15

Intersection Capacity Utilization 59.9%

Area Type: Cycle Length: 90 Actuated Cycle Length: 67.2 Natural Cycle: 75 Control Type: Semi Act-Uncoord Maximum v/c Ratio: 0.75 Intersection Signal Delay: 22.3

LOS

Minimum Split (s)

Maximum Green (s)

Lost Time Adjust (s)

Total Lost Time (s)

Lead-Lag Optimize?

Vehicle Extension (s)

Act Effct Green (s)

Actuated g/C Ratio

EBR

10.0

18.0

38.0

31.8

4.5

1.7

0.0

6.2

3.0

None

20.4

0.30

0.24

5.2

0.0

5.2

0.0

11.8

831

0.16

Α

NBL

7.0 20.0

10.0

10.0

8.0 44.9

2.0

0.0

0.0

2.0

Lead

Yes

3.0

None

38.1

0.57

0.23

9.3

0.0

9.3 20.9

5.8

16.4 133.2

487

0.22

11.1%

NBT

6

41.0

52.0

4.5

2.6

0.0

7.1

3.2

None

32.7

0.49

0.74

20.9

0.0

19.3

64.1

136.8

1288

0.51

57.8%

SBT

20.0

41.0

42.0

46.7%

34.9

4.5

2.6

0.0

7.1

Lag

Yes

3.2

None

25.5

0.38

0.68

25.6

0.0

25.6

23.7

53.3

105.2

152.6

1017

0.47

Intersection LOS: C

ICU Level of Service B

С

2

SBR

2

20.0

41.0

42.0

34.9

4.5

2.6

0.0

7.1

Lag

Yes

3.2

None

25.5

0.38

0.09

7.4

0.0

7.4

0.8

8.3

40.0

815

0

0

0.07

46.7%

2033 Future Background A.M. 09-25-2024

Splits and Phases: 4: West Street North & Highway 11 Eastbound **↑**Ø1 **₩** Ø2 ₹ø6 Ø8 Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road 2033 Future Background A.M. 09-25-2024

	۶	-	*	1	•	•	1	†	1	1	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	^	7	7	1		1/1	^	7	7	† †	7
Traffic Volume (vph)	130	168	157	284	253	141	175	439	395	103	714	205
Future Volume (vph)	130	168	157	284	253	141	175	439	395	103	714	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	115.0		0.0	100.0		120.0	110.0		50.0
Storage Lanes	1		1	1		0	2		1	1		1
Taper Length (m)	70.0			65.0			80.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt			0.850		0.946				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1881	1583	1787	1763	0	3467	3574	1568	1736	3471	1568
Flt Permitted	0.360			0.536			0.950			0.487	•	
Satd. Flow (perm)	677	1881	1583	1008	1763	0	3467	3574	1568	890	3471	1568
Right Turn on Red	J. 1	1001	Yes			Yes	0.07	00, 1	Yes	000	0 1	Yes
Satd. Flow (RTOR)			162		27	. 00			407			187
Link Speed (k/h)		60	102		60			70	101		70	101
Link Distance (m)		186.6			853.6			529.0			469.5	
Travel Time (s)		11.2			51.2			27.2			24.1	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	2%	1%	3%	0.57	1%	1%	3%	4%	4%	3%
Adj. Flow (vph)	134	173	162	293	261	145	180	453	407	106	736	211
Shared Lane Traffic (%)	104	173	102	200	201	170	100	700	701	100	730	211
Lane Group Flow (vph)	134	173	162	293	406	0	180	453	407	106	736	211
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	Leit	3.6	rtigrit	Len	3.6	ragni	Len	7.2	rtigitt	Leit	7.2	rtigiit
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		4.0			4.0			4.0			4.0	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	25	1.00		100	1.00		25	1.00	1.00	25	1.00	100
Turning Speed (k/h) Number of Detectors	25 1	2	15	100	2	15	25 1	2	15	25 1	2	100
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)			0.0	0.0			0.0	0.0	0.0	0.0		
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel	^ ^	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	

Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road 2033 Future Background A.M. 09-25-2024

	•	-	•	1	←	•	1	†	1	1	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2		2	6					8	4		4
Detector Phase	5	2	2	1	6		3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0		7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	12.0	27.2	27.2	12.0	33.2		11.5	21.0	21.0	11.5	22.5	22.5
Total Split (s)	12.0	39.0	39.0	17.0	44.0		12.0	42.0	42.0	12.0	42.0	42.0
Total Split (%)	10.9%	35.5%	35.5%	15.5%	40.0%		10.9%	38.2%	38.2%	10.9%	38.2%	38.2%
Maximum Green (s)	7.0	31.8	31.8	12.0	36.8		8.0	34.0	34.0	8.0	34.0	34.0
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	2.0	2.2	2.2	2.0	2.2		1.0	3.5	3.5	1.0	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.2	7.2	5.0	7.2		4.0	8.0	8.0	4.0	8.0	8.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.6	3.6	3.0	3.6		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	None	None	None	None	None
Walk Time (s)					7.0			7.0	7.0			
Flash Dont Walk (s)					19.0			6.0	6.0			
Pedestrian Calls (#/hr)					0			0	0			
Act Effct Green (s)	32.8	23.4	23.4	42.0	28.1		8.0	28.2	28.2	37.3	25.4	25.4
Actuated g/C Ratio	0.35	0.25	0.25	0.45	0.30		0.09	0.30	0.30	0.40	0.27	0.27
v/c Ratio	0.42	0.37	0.31	0.53	0.74		0.60	0.42	0.54	0.25	0.78	0.37
Control Delay	21.1	32.2	6.5	21.4	37.0		52.7	28.5	5.8	17.5	37.8	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.1	32.2	6.5	21.4	37.0		52.7	28.5	5.8	17.5	37.8	7.9
LOS	С	С	Α	С	D		D	С	Α	В	D	Α
Approach Delay		20.1			30.4			23.8			29.7	
Approach LOS		С			С			С			С	
Queue Length 50th (m)	14.2	26.8	0.0	34.3	63.2		16.4	35.5	0.0	10.7	64.0	3.2
Queue Length 95th (m)	29.4	49.9	15.7	62.5	108.7		#36.1	57.5	22.5	24.6	98.3	21.4
Internal Link Dist (m)		162.6			829.6			505.0			445.5	
Turn Bay Length (m)	50.0			115.0			100.0		120.0	110.0		50.0
Base Capacity (vph)	322	650	653	561	722		301	1322	836	432	1284	697
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.27	0.25	0.52	0.56		0.60	0.34	0.49	0.25	0.57	0.30

Intersection Summary Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 93.1
Natural Cycle: 80
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.78

Intersection Signal Delay: 26.6 Intersection LOS: C Intersection Capacity Utilization 78.1% ICU Level of Service D

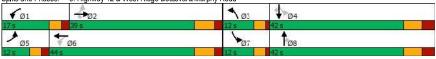
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road 2033 Future Background A.M. 09-25-2024

Queue shown is maximum after two cycles.

Splits and Phases: 5: Highway 12 & West Ridge Boulevard/Murphy Road



Synchro 11 Report Synchro 11 Report Page 10 Page 9

Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol, veh/h	250	4	2	0	10	0	0	0	0	0	0	258
Future Vol, veh/h	250	4	2	0	10	0	0	0	0	0	0	258
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage	e,# -	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	32	67	0	0	30	100	50	0	100	0	50	30
Mvmt Flow	272	4	2	0	11	0	0	0	0	0	0	280
Major/Minor	Minor2		N	Minor1		N	Major1		N	/lajor2		
Conflicting Flow All	146	140	140	143	280	0	280	0	0	0	0	0
Stage 1	140	140	-	0	0	-	-	-	-	_	-	-
Stage 2	6	0		143	280				-			
Critical Hdwy	7.42	7.17	6.2	7.1	6.8	7.2	4.6	_	-	4.1		
Critical Hdwy Stg 1	6.42	6.17	-	6.1	5.8	-		-	-	-	-	-
Critical Hdwy Stg 2	6.42	6.17	_	6.1	5.8	-	-	-	-	-	-	-
Follow-up Hdwy	3.788	4.603	3.3	3.5	4.27	4.2	2.65	-		2.2	-	
Pot Cap-1 Maneuver	759	646	913	831	584	-	1051		-	-	-	-
Stage 1	796	672	-	-	-	-	-	-	-	-		-
Stage 2	943	-		865	631		-		-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	646	913	824	584	-	1051	-	-	-	-	-
Mov Cap-2 Maneuver	-	646	-	824	584	-	-	-	-	-	-	-
Stage 1	796	672	-	-	-	-	-	-	-	-	-	-
Stage 2	943	-	-	857	631	-	-	-	-	-	-	-
Ţ												
Approach	EB			WB			NB			SB		
HCM Control Delay, s							0			0		
HCM LOS	-											
Minor Lane/Major Mvn	nt	NBL	NBT	NBR I	EBLn1V	VBLn1	SBL	SBT	SBR			
Capacity (veh/h)		1051	-	-		-	-	-	-			
HCM Lane V/C Ratio		-	-	-		-		-				
HCM Control Delay (s)	0	_	-	_	_	0	_				
HCM Lane LOS	,	A					Ā					
HCM 95th %tile Q(veh	ı)	0	_	_	_	_	-	_	_			
	,	0										

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol., veh/h	0	163	8	35	131	4	4	5	38	6	11	2
Future Vol, veh/h	0	163	8	35	131	4	4	5	38	6	11	2
Conflicting Peds. #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	- 1100	-	None	- 1100	-	None	Otop -	- Olop	None	- Otop	- Olop	None
Storage Length			-			-			-			-
Veh in Median Storage,		0		-	0			0			0	_
Grade. %	, # -	0			0			0			0	
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	2	0	0	1	0	0	25	3	0	11	0
Mymt Flow	0	170	8	36	136	4	4	5	40	6	11	2
WIVIIIL FIOW	U	170	Ö	30	130	4	4	5	40	0	- 11	2
Major/Minor N	/lajor1			Major2			Minor1		1	Minor2		
Conflicting Flow All	140	0	0	178	0	0	391	386	174	407	388	138
Stage 1	-	-			-		174	174	-	210	210	-
Stage 2	-	-	-	-	-	-	217	212	-	197	178	-
Critical Hdwy	4.1	-	_	4.1	-	-	7.1	6.75	6.23	7.1	6.61	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.75	-	6.1	5.61	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.75	-	6.1	5.61	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4.225	3.327	3.5	4.099	3.3
Pot Cap-1 Maneuver	1456	-	-	1410	-	-	572	514	867	558	533	916
Stage 1	-			-			833	713	-	797	712	-
Stage 2	_	-	-	-	-	-	790	686	-	809	735	-
Platoon blocked, %			-		-	-						
Mov Cap-1 Maneuver	1456	-	-	1410	_	-	549	500	867	517	518	916
Mov Cap-2 Maneuver	-		-	-	-		549	500	-	517	518	-
Stage 1	-	-	-	-	-	-	833	713		797	692	_
Stage 2	-		-				753	667		766	735	-
Jan												
A	ED			MP			ND			0.0		
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			1.6			10			11.9		
HCM LOS							В			В		
Minor Lane/Major Mvmt	t	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)		769	1456			1410			542			
HCM Lane V/C Ratio		0.064	-		-	0.026		-	0.037			
HCM Control Delay (s)		10	0	-	_	7.6	0	-	11.9			
HCM Lane LOS		В	A			Α.	Ā		В			
HCM 95th %tile Q(veh)		0.2	0	_	_	0.1	-	_	0.1			
nom oour route Q(veri)		0.2	U			0.1			0.1			

Switch Phase

2033 Future Background A.M.

5.0

22.5

32.0

1.0

3.0

Max

7.0 11.0 11.0 0 30.3 0.63 0.24 5.4 0.0 5.4 5.4 5.3 16.6 333.4 812 0 0 0.24

5.0

22.5

32.0 58.2% 58.2% 27.5 27.5 3.5

3.5

1.0 0.0 4.5

3.0

Max

	•	-	*	1	-	•	1	†	1	1	↓	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4	*****		4		-00-	4	- JD. N
Traffic Volume (vph)	14	76	122	20	60	2	87	382	33	5	161	14
Future Volume (vph)	14	76	122	20	60	2	87	382	33	5	161	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1,00	1.00	1.00	1.00
Frt	1.00	0.922	1.00	1.00	0.997	1.00	1.00	0.991	1.00	1.00	0.990	1.00
Fit Protected		0.922			0.988			0.991			0.999	
Satd. Flow (prot)	0	1724	0	0	1872	0	0	1268	0	0	1297	0
Fit Permitted	U	0.975	U	U	0.868	U	U	0.916	U	U	0.990	U
	_		_	_		0	0			0		
Satd. Flow (perm)	0	1686	0	0	1644	0	0	1172	0	0	1285	0
Right Turn on Red		100	Yes			Yes			Yes		4.0	Yes
Satd. Flow (RTOR)		133			2			9			11	
Link Speed (k/h)		50			50			70			60	
Link Distance (m)		1346.1			271.7			1953.3			357.4	
Travel Time (s)		96.9			19.6			100.5			21.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	1%	0%	0%	0%	0%	62%	0%	0%	50%	0%
Adj. Flow (vph)	15	83	133	22	65	2	95	415	36	5	175	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	231	0	0	89	0	0	546	0	0	195	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	2011	0.0	g. it	LUIT	0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		7.0			4.0			4.0			4.0	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	1.00	1.00	1.00		1.00	1.00	25	1.00	1.00		1.00	
Turning Speed (k/h)		_	15	25	0	15		^	15	25	0	15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel		J. LA			J. LA			0. LA			J	
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
	renn	NA 4		reiili	NA 8		remi	NA 2		reiiii	NA 6	
Protected Phases		4		_	8			2			б	
Permitted Phases	4			8			2			6		

Lanes, Volumes, Timings 8: Burnside Line & Division Road W 2033 Future Background A.M. 09-25-2024

HCM 2010 TWSC 9: Industrial Road & Hurlwood Lane 2033 Future Background A.M. 09-25-2024

Splits and Phases:	8: Burnside Line & Division Road W		
₫ ø2		→ _{Ø4}	
32 s		23 s	
↓ Ø6		₹ø8	
32 s		23·s	

Intersection							
Int Delay, s/veh	0.7						
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	T T	<u></u>	₩ <u>Б</u> 1	וטוזי	SDL T	JDK 7	
Traffic Vol., veh/h	0	T	318	51	33	0	
Future Vol. veh/h	0	140	318	51	33	0	
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Free	Free	Free	Free	Stop	Stop	
RT Channelized	1100	None	1100		Olop	None	
Storage Length	0	-	-	-	0	0	
Veh in Median Storage		0	0	_	0	-	
Grade. %	ν, π -	0	0	_	0	_	
Peak Hour Factor	92	92	92	92	92	92	
Heavy Vehicles, %	2	2	2	2	2	2	
Mymt Flow	0	152	346	55	36	0	
minut 10W	0	102	070	- 00	- 00	U	
	Major1		Major2		Minor2		
Conflicting Flow All	401	0	-	0	526	374	
Stage 1	-	-	-	-	374	-	
Stage 2	-	-	-	-	152	-	
Critical Hdwy	4.12	-	-	-	6.42	6.22	
Critical Hdwy Stg 1	-	-	-	-	5.42	-	
Critical Hdwy Stg 2	-	-	-	-	5.42	-	
Follow-up Hdwy	2.218	-	-	-			
Pot Cap-1 Maneuver	1158	-	-	-	512	672	
Stage 1	-	-	-	-	696	-	
Stage 2	-	-	-	-	876	-	
Platoon blocked, %		-	-	-			
Mov Cap-1 Maneuver	1158	-	-	-	512	672	
Mov Cap-2 Maneuver	-	-	-	-	579	-	
Stage 1	-	-	-	-	696	-	
Stage 2	-	-	-	-	876	-	
Approach	EB		WB		SB		
HCM Control Delay, s	0		0		11.6		
HCM LOS	0		U		В		
110.111 E00					U		
Minor Lane/Major Mvn	nt	EBL	EBT	WBT	WBR	SBLn1:	SBLn2
Capacity (veh/h)		1158	-	-	-	579	-
HCM Lane V/C Ratio		-	-	-	-	0.00=	-
HCM Control Delay (s))	0	-	-	-	11.6	0
HCM Lane LOS		Α	-	-	-	В	Α
HCM 95th %tile Q(veh)	0	-	-	-	0.2	-

Intersection							
Int Delay, s/veh	3.5						
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	7	7	1	- INDIX	002	4	
Traffic Vol, veh/h	159	0	87	189	0	129	
Future Vol., veh/h	159	0	87	189	0	129	
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Stop	Stop	Free	Free	Free	Free	
RT Channelized	Olop	None	-		-		
Storage Length	0	0		NONE -		None -	
Veh in Median Storage		-	0	-	-	0	
Grade. %	s, # 0 0	-	0			0	
Peak Hour Factor	92	92	92	92	92	92	
	2	92	92	92	92	92	
Heavy Vehicles, % Mymt Flow	173	0	95	205	0	140	
MVMt Flow	1/3	U	95	205	U	140	
Major/Minor	Minor1	N	Major1		Major2		
Conflicting Flow All	338	198	0	0	300	0	
Stage 1	198	-	-	-	-	-	
Stage 2	140	-		-	-	-	
Critical Hdwy	6.42	6.22		_	4.12	_	
Critical Hdwy Stg 1	5.42	-		-	-	-	
Critical Hdwy Stg 2	5.42	_		-	_	-	
Follow-up Hdwy	3.518				2.218	-	
Pot Cap-1 Maneuver	658	843	_		1261		
Stage 1	835	-			1201		
Stage 2	887						
Platoon blocked, %	007	_		_	_	_	
Mov Cap-1 Maneuver	658	843		-	1261		
Mov Cap-1 Maneuver	658	043			1201	-	
	835			-	-	-	
Stage 1		-	-	-	-	-	
Stage 2	887	-	-	-	-	-	
Approach	WB		NB		SB		
HCM Control Delay, s	12.4		0		0		
HCM LOS	В				Ū		
TIOM EGG							
Minor Lane/Major Mvm	nt	NBT		WBLn1V		SBL	
Capacity (veh/h)		-	-	658	-	1261	
HCM Lane V/C Ratio		-	-	0.263	-	-	
HCM Control Delay (s)		-	-	12.4	0	0	
HCM Lane LOS		-	-	В	Α	Α	
HCM 95th %tile Q(veh)	-	-	1.1		0	
							_

	•	-	*	1	•	*	1	†	1	1	ţ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	^	7	7	^	7	7	^	7	7	1	
Traffic Volume (vph)	73	40	275	395	2	100	189	296	90	42	234	23
Future Volume (vph)	73	40	275	395	2	100	189	296	90	42	234	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		75.0	100.0		0.0	75.0		65.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1900	1568	1770	1900	1615	1805	1863	1429	1805	1748	0
Flt Permitted	0.757			0.569			0.444			0.483		
Satd. Flow (perm)	1438	1900	1568	1060	1900	1615	844	1863	1429	918	1748	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			293			145			200		5	
Link Speed (k/h)		50			60			60			60	
Link Distance (m)		140.4			136.5			65.5			1953.3	
Travel Time (s)		10.1			8.2			3.9			117.2	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	3%	2%	0%	0%	0%	2%	13%	0%	8%	0%
Adj. Flow (vph)	78	43	293	420	2	106	201	315	96	45	249	24
Shared Lane Traffic (%)					_							
Lane Group Flow (vph)	78	43	293	420	2	106	201	315	96	45	273	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	3
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel								,				
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	

Lanes, Volumes, Timings

2033 Future Background P.M.

1: Burnside Line & Industrial Road/Brodie Drive

	٠	-	*	1	+	*	1	†	1	1	Ţ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	25.0	25.0	5.0	25.0	
Minimum Split (s)	9.5	21.0	21.0	9.5	21.0	21.0	9.5	31.0	31.0	9.5	31.0	
Total Split (s)	9.9	21.0	21.0	28.0	39.1	39.1	9.8	31.5	31.5	9.5	31.2	
Total Split (%)	11.0%	23.3%	23.3%	31.1%	43.4%	43.4%	10.9%	35.0%	35.0%	10.6%	34.7%	
Maximum Green (s)	5.4	15.0	15.0	23.5	33.1	33.1	5.3	25.5	25.5	5.0	25.2	
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	6.0	6.0	4.5	6.0	6.0	4.5	6.0	6.0	4.5	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Min	Min	None	Min	Min	None	Min	Min	None	Min	
Act Effct Green (s)	21.9	15.0	15.0	40.0	30.7	30.7	34.0	29.4	29.4	31.6	25.1	
Actuated g/C Ratio	0.26	0.18	0.18	0.47	0.36	0.36	0.40	0.34	0.34	0.37	0.29	
v/c Ratio	0.20	0.13	0.57	0.64	0.00	0.16	0.51	0.49	0.15	0.12	0.53	
Control Delay	16.3	32.4	9.1	20.8	18.0	2.1	23.5	27.7	0.5	16.6	30.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	16.3	32.4	9.1	20.8	18.0	2.1	23.5	27.7	0.5	16.6	30.0	
LOS	В	С	Α	С	В	Α	С	С	Α	В	С	
Approach Delay		12.8			17.1			22.1			28.1	
Approach LOS		В			В			С			С	
Queue Length 50th (m)	7.1	6.3	0.0	48.1	0.3	0.0	21.9	46.0	0.0	4.5	38.6	
Queue Length 95th (m)	14.7	16.2	22.2	73.9	1.7	5.5	40.2	77.2	0.0	11.6	67.1	
Internal Link Dist (m)		116.4			112.5			41.5			1929.3	
Turn Bay Length (m)	25.0		75.0	100.0			75.0		65.0	40.0		
Base Capacity (vph)	392	334	517	691	737	715	395	642	624	391	520	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.20	0.13	0.57	0.61	0.00	0.15	0.51	0.49	0.15	0.12	0.53	

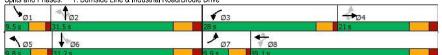
Intersection Summary

Intersection Summary
Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 85.4
Natural Cycle: 75
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.64
Intersection Signal Delay: 19.6
Intersection Capacity Utilization 73.6%
Analysis Period (min) 15

Intersection LOS: B
ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: Burnside Line & Industrial Road/Brodie Drive



Lanes, Volumes, Timings

2033 Future Background P.M. 09-25-2024

2: Burnside Line & Highway 11 Westbound On-Ramp

	•	*	1	†	↓	4
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				†	↑	7
Traffic Volume (vph)	0	0	0	901	579	299
Future Volume (vph)	0	0	0	901	579	299
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	1863	1863	1509
Flt Permitted						
Satd. Flow (perm)	0	0	0	1863	1863	1509
Link Speed (k/h)	50			50	50	
Link Distance (m)	185.9			51.5	174.3	
Travel Time (s)	13.4			3.7	12.5	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	0%	2%	2%	7%
Adj. Flow (vph)	0	0	0	919	591	305
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	919	591	305
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	-
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	100	100	100			100
Sign Control	Free			Free	Free	
Intersection Summary						
Area Type:	Other					

Area Type: Other Control Type: Unsignalized Intersection Capacity Utilization 50.8% Analysis Period (min) 15

ICU Level of Service A

Lanes, Volumes, Timings
3: Burnside Line & Highway 11 Westbound

Protected Phases

2033 Future Background P.M. 09-25-2024

SBT Lane Group Lane Configurations **↑** 579 Traffic Volume (vph) 201 697 205 285 Future Volume (vph) 201 205 697 285 0 579 Ideal Flow (vphpl) 1900 1900 1900 1900 1900 1900 Storage Length (m) 0.0 0.0 80.0 0.0 Storage Lanes Taper Length (m) 7.5 7.5 Lane Util. Factor 1.00 1.00 1.00 1.00 1.00 1.00 0.850 0.850 Flt Protected 0.950 Satd. Flow (prot) 1752 1599 1863 1615 1863 0 Flt Permitted 0.950 Satd, Flow (perm) 1752 1599 1863 1615 0 1863 Right Turn on Red Yes Yes Satd. Flow (RTOR) 209 291 Link Speed (k/h) 50 60 Link Distance (m) 104.8 160.3 51.5 7.5 0.98 Travel Time (s) 9.6 3.1 0.98 Peak Hour Factor 0.98 0.98 0.98 0.98 Heavy Vehicles (%) 3% 1% 2% 0% 2% Adj. Flow (vph) 205 209 711 291 0 591 Shared Lane Traffic (%) Lane Group Flow (vph) 205 209 711 291 0 591 Enter Blocked Intersection No No No Lane Alignment Left Right Left Right Left Left Median Width(m) 0.0 3.6 0.0 Link Offset(m) 0.0 0.0 0.0 Crosswalk Width(m) 4.8 Two way Left Turn Lane Headway Factor 1.00 1.00 1.00 1.00 1.00 1.00 Turning Speed (k/h) 25 15 15 25 Number of Detectors Detector Template Left Riaht Thru Right Thru Leading Detector (m) 2.0 2.0 2.0 10.0 Trailing Detector (m) 0.0 0.0 0.0 0.0 0.0 Detector 1 Position(m) 0.0 0.0 0.0 0.0 0.0 Detector 1 Size(m) 2.0 2.0 0.6 2.0 0.6 Detector 1 Type CI+Ex CI+Ex CI+Ex CI+Ex CI+Ex Detector 1 Channel Detector 1 Extend (s) 0.0 0.0 0.0 Detector 1 Queue (s) 0.0 0.0 0.0 0.0 0.0 Detector 1 Delay (s) 0.0 0.0 0.0 0.0 0.0 Detector 2 Position(m) 9.4 9.4 Detector 2 Size(m) 0.6 0.6 Detector 2 Type CI+Ex CI+Ex Detector 2 Channel Detector 2 Extend (s) 0.0 0.0 Turn Type Perm Perm NA NA

2

Synchro 11 Report Page 4 Lanes, Volumes, Timings
3: Burnside Line & Highway 11 Westbound

2033 Future Background P.M. 09-25-2024

	1	*	†	-	1	ļ
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Permitted Phases	4	4		6		
Detector Phase	4	4	6	6		2
Switch Phase						
Minimum Initial (s)	10.0	10.0	20.0	20.0		20.0
Minimum Split (s)	16.1	16.1	27.3	27.3		27.3
Total Split (s)	24.0	24.0	61.0	61.0		61.0
Total Split (%)	28.2%	28.2%	71.8%	71.8%		71.8%
Maximum Green (s)	17.9	17.9	53.7	53.7		53.7
Yellow Time (s)	4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	1.6	1.6	2.8	2.8		2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	6.1	6.1	7.3	7.3		7.3
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.2	3.2		3.2
Recall Mode	None	None	None	None		None
Act Effct Green (s)	12.6	12.6	28.4	28.4		28.4
Actuated g/C Ratio	0.23	0.23	0.52	0.52		0.52
v/c Ratio	0.51	0.40	0.74	0.30		0.61
Control Delay	25.7	6.4	15.7	1.9		12.5
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	25.7	6.4	15.7	1.9		12.5
LOS	C	A	В	A		В
Approach Delay	16.0		11.7			12.5
Approach LOS	В		В			В
Queue Length 50th (m)	17.5	0.0	48.0	0.0		35.9
Queue Length 95th (m)	46.2	15.8	101.1	9.0		75.6
Internal Link Dist (m)	80.8	,0.0	136.3	- 0.0		27.5
Turn Bay Length (m)	55.0			80.0		
Base Capacity (vph)	595	681	1757	1540		1757
Starvation Cap Reductn	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0		0
Storage Cap Reductn	0	0	0	0		0
Reduced v/c Ratio	0.34	0.31	0.40	0.19		0.34
Intersection Summary						
Area Type:	Other					
Cycle Length: 85						
Actuated Cycle Length: 54.	9					
Natural Cycle: 55						
Control Type: Semi Act-Und	coord					
Maximum v/c Ratio: 0.74	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					
Intersection Signal Delay: 1	2.8			ln:	tersection	LOS: B
Intersection Capacity Utiliza					U Level c	
				10	O LOVOI C	, JOI VICE
nalysis Period (min) 15			av 11 Wa		5 E010 1 C	7 301 VIOC



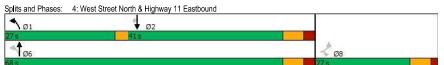


	•	7	1	†	Ţ	4
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	*	1	*	^		7
Traffic Volume (vph)	192	163	237	788	653	128
Future Volume (vph)	192	163	237	788	653	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	55.0			40.0
Storage Lanes	1	1	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.850	1.00	,,,,,	,,,,,	0.850
Flt Protected	0.950	0.000	0.950			0.000
Satd. Flow (prot)	1736	1583	1787	1881	1863	1583
Flt Permitted	0.950	1000	0.168	1001	1000	1000
Satd. Flow (perm)	1736	1583	316	1881	1863	1583
Right Turn on Red	1730	Yes	310	1001	1003	Yes
						69
Satd. Flow (RTOR)	E0.	172		60	60	69
Link Speed (k/h)	50			60	60	
Link Distance (m)	154.2			160.8	176.6	
Travel Time (s)	11.1			9.6	10.6	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	2%	1%	1%	2%	2%
Adj. Flow (vph)	202	172	249	829	687	135
Shared Lane Traffic (%)						
Lane Group Flow (vph)	202	172	249	829	687	135
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	Ŭ
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25	1.00	1.00	15
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	2.0
Detector 1 Type	C I +Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel				OI LA	OI LX	
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	nmint	NA	NA	Perm
	Perm	Perm	pm+pt			Perm
Protected Phases			1	6	2	

	•	*	1	†	↓	4
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	8	8	6			2
Detector Phase	8	8	1	6	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	7.0	20.0	20.0	20.0
Minimum Split (s)	18.0	18.0	10.0	41.0	41.0	41.0
Total Split (s)	27.0	27.0	27.0	68.0	41.0	41.0
Total Split (%)	28.4%	28.4%	28.4%	71.6%	43.2%	43.2%
Maximum Green (s)	20.8	20.8	24.0	60.9	33.9	33.9
Yellow Time (s)	4.5	4.5	3.0	4.5	4.5	4.5
All-Red Time (s)	1.7	1.7	0.0	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	3.0	7.1	7.1	7.1
Lead/Lag		0	Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.2	3.2	3.2
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	14.4	14.4	52.8	48.7	34.3	34.3
Actuated g/C Ratio	0.19	0.19	0.69	0.64	0.45	0.45
v/c Ratio	0.62	0.39	0.57	0.69	0.82	0.18
Control Delay	38.1	7.7	11.5	13.5	31.0	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.1	7.7	11.5	13.5	31.0	9.1
LOS	D	A	В	В	C	A
Approach Delay	24.1			13.0	27.4	
Approach LOS	C			В	C	
Queue Length 50th (m)	28.0	0.0	11.0	69.9	84.7	5.4
Queue Length 95th (m)	53.8	15.9	31.5	138.1	#195.1	19.8
Internal Link Dist (m)	130.2	,0.0	00	136.8	152.6	10.0
Turn Bay Length (m)	100.2		55.0	100.0	102.0	40.0
Base Capacity (vph)	477	559	684	1513	834	747
Starvation Cap Reductn	0	0	0	0	004	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.31	0.36	0.55	0.82	0.18
Intersection Summary						
Area Type:	Other					
Cycle Length: 95						
Actuated Cycle Length: 76.5	5					
Natural Cycle: 70						
Control Type: Semi Act-Unc	oord					
Maximum v/c Ratio: 0.82						
Intersection Signal Delay: 20	0.0			li	ntersectio	n LOS: C
Intersection Capacity Utiliza				Į(CU Level	of Service C
Analysis Period (min) 15						
# 95th percentile volume e	exceeds ca	pacity, qu	ieue mav	be longe	۲.	
Queue shown is maximu			20uy	cgo		

Lanes, Volumes, Timings
4: West Street North & Highway 11 Eastbound

2033 Future Background P.M. 09-25-2024



Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road

2033 Future Background P.M.

	•	-	*	1		*	1	†	1	1	Ţ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	-	↑	7	*	1		1/4	ተተ	7	*	^	1
Traffic Volume (vph)	261	262	274	440	260	203	261	838	436	91	694	183
Future Volume (vph)	261	262	274	440	260	203	261	838	436	91	694	183
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	115.0		0.0	100.0		120.0	110.0		50.0
Storage Lanes	1		1	1		0	2		1	1		1
Taper Length (m)	70.0			65.0			80.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98	1.00								
Frt			0.850		0.934				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1900	1599	1787	1765	0	3502	3539	1599	1805	3505	1583
Flt Permitted	0.150			0.290			0.950			0.132		
Satd. Flow (perm)	282	1900	1575	545	1765	0	3502	3539	1599	251	3505	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			278		24				464			161
Link Speed (k/h)		50			70			50			50	
Link Distance (m)		186.6			853.6			529.0			469.5	
Travel Time (s)		13.4			43.9			38.1			33.8	
Confl. Peds. (#/hr)			2	2								
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	0%	1%	1%	1%	0%	0%	2%	1%	0%	3%	2%
Adj. Flow (vph)	278	279	291	468	277	216	278	891	464	97	738	195
Shared Lane Traffic (%)												
Lane Group Flow (vph)	278	279	291	468	493	0	278	891	464	97	738	195
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6	Ŭ		7.2	Ŭ		7.2	Ŭ
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	- 0.0	9.4	0.0	- 0.0	9.4		- 0.0	9.4	- 0.0	- 0.0	9.4	5.0
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel		01 · LA			J1: LX			31. LX			31. LX	
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
DOTOGOT Z EXICITO (3)		0.0			0.0			0.0			0.0	

Synchro 11 Report Page 8

Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road 2033 Future Background P.M. 09-25-2024

Lane Group		•	→	*	1	+	•	1	†	1	-	ļ	1
Protected Phases 5	Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases 2	Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm	pm+pt	NA	Perm
Detector Phase 5	Protected Phases		2		1	6		3	8			4	
Switch Phase Minimum Initial (s) 7.0 20.0 20.0 7.0 20.0 7.0 20.0 7.0 10	Permitted Phases	2		2	6					8	4		4
Minimum Initial (s)	Detector Phase	5	2	2	1	6		3	8	8	7	4	4
Minimum Split (s) 12.0 27.2 27.2 12.0 33.2 11.5 21.0 21.0 11.5 22.5 22.5 Total Split (%) 28.0% 23.3% 23.3% 32.7% 28.0% 15.3% 33.3% 33.3% 10.7% 28.7% 28.7% Maximum Green (s) 37.0 27.8 27.8 44.0 34.8 19.0 42.0 42.0 12.0 35.0 3	Switch Phase												
Total Split (s)	Minimum Initial (s)												
Total Split (%) 28.0% 23.3% 23.3% 32.7% 28.0% 15.3% 33.3% 33.3% 10.7% 28.7% 28.7% Maximum Green (s) 37.0 27.8 27.8 44.0 34.8 19.0 42.0 42.0 42.0 12.0 35.0 35.0 35.0 35.0 35.0 35.0 35.0 35.0 35.0 35.0 35.0 4.5 4	Minimum Split (s)												
Maximum Green (s) 37.0 27.8 27.8 44.0 34.8 19.0 42.0 42.0 12.0 35.0 35.0 Yellow Time (s) 3.0 5.0 5.0 3.0 5.0 3.0 4.5 4.5 4.5 4.5 4.5 Al-Red Time (s) 2.0 2.2 2.2 2.0 2.2 1.0 3.5 3.5 1.0 3.5 3.5 3.5 1.0 3.5 3.													
Yellow Time (s) 3.0 5.0 5.0 3.0 5.0 3.0 4.5 4.5 3.0 4.5 4.5 All-Red Time (s) 2.0 2.2 2.0 2.2 1.0 3.5 3.5 1.0 3.5 3.5 Lost Time (s) 0.0 <													
All-Red Time (s)					44.0								
Lost Time Adjust (s) 0.0	Yellow Time (s)	3.0	5.0		3.0			3.0	4.5	4.5	3.0	4.5	
Total Lost Time (s)	All-Red Time (s)		2.2		2.0			1.0		3.5		3.5	
Lead Lag												0.0	
Lead-Lag Optimize? Yes	Total Lost Time (s)	5.0		7.2	5.0	7.2		4.0	8.0	8.0	4.0	8.0	8.0
Vehicle Extension (s) 3.0 3.6 3.6 3.0 3.6 3.0 3.2 3.0 3.0 3.0 3.0 3.0					Lead								
Recall Mode	Lead-Lag Optimize?								Yes	Yes			
Walk Time (s) 7.0 7.0 7.0 7.0 Flash Dort Walk (s) 19.0 6.0 6.0 6.0 Pedestrian Calls (#/hr) 0 <		3.0	3.6	3.6	3.0	3.6		3.0	3.0	3.0	3.0	3.0	3.0
Flash Dont Walk (s)	Recall Mode	None	None	None	None			None	None		None	None	None
Pedestrian Calls (#/hr) 0 0 0 Act Effct Green (s) 52.1 27.9 27.9 66.1 36.9 15.4 38.1 38.1 46.1 32.3 32.3 Actuated g/C Ratio 0.40 0.21 0.21 0.50 0.28 0.12 0.29 0.25 0.25 0.25 Vic Ratio 0.77 0.69 0.53 0.82 0.96 0.68 0.87 0.59 0.48 0.85 0.38 Control Delay 47.4 60.5 10.5 36.2 76.5 65.9 55.0 6.7 33.1 58.8 12.8 Queue Delay 0.0	Walk Time (s)												
Act Effet Green (s) 52.1 27.9 27.9 66.1 36.9 15.4 38.1 38.1 46.1 32.3 32.3 Actuated g/C Ratio 0.40 0.21 0.21 0.50 0.28 0.12 0.29 0.29 0.35 0.25 0.25 0.26 0.67 Ratio 0.77 0.69 0.53 0.82 0.96 0.68 0.87 0.59 0.48 0.85 0.38 0.60 0.60 0.60 0.77 0.69 0.53 0.82 0.96 0.68 0.87 0.59 0.48 0.85 0.38 0.60 0.60 0.77 0.69 0.53 0.82 0.96 0.68 0.87 0.59 0.48 0.85 0.38 0.82 0.96 0.68 0.87 0.59 0.48 0.85 0.38 0.82 0.96 0.68 0.87 0.59 0.48 0.85 0.38 0.82 0.96 0.68 0.87 0.59 0.48 0.85 0.38 0.82 0.96 0.68 0.87 0.59 0.48 0.85 0.38 0.82 0.96 0.68 0.87 0.59 0.48 0.85 0.38 0.82 0.96 0.69 0.69 0.69 0.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Flash Dont Walk (s)												
Actuated g/C Ratio 0.40 0.21 0.21 0.50 0.28 0.12 0.29 0.29 0.35 0.25 0.25 v/c Ratio 0.77 0.69 0.53 0.82 0.96 0.68 0.87 0.59 0.48 0.85 0.38 Control Delay 47.4 60.5 10.5 36.2 76.5 65.9 55.0 6.7 33.1 58.8 12.8 Queue Delay 0.0 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>-</td> <td>-</td> <td></td> <td></td> <td></td>									-	-			
v/c Ratio 0.77 0.69 0.53 0.82 0.96 0.68 0.87 0.59 0.48 0.85 0.38 Control Delay 47.4 60.5 10.5 36.2 76.5 65.9 55.0 6.7 33.1 58.8 12.8 Queue Delay 0.0	Act Effct Green (s)												
Control Delay 47.4 60.5 10.5 36.2 76.5 65.9 55.0 6.7 33.1 58.8 12.8 Queue Delay 0.0 0.	Actuated g/C Ratio		0.21	0.21	0.50						0.35	0.25	
Queue Delay 0.0 <th< td=""><td>v/c Ratio</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>	v/c Ratio												
Total Delay 47.4 60.5 10.5 36.2 76.5 65.9 55.0 6.7 33.1 58.8 12.8 LOS D E B D E E D A C E B Approach Delay 39.0 56.9 43.1 47.7 T Approach LOS D E D T D D T A 38.4 118.4 0.0 15.3 99.5 7.0 Queue Length 95th (m) 92.0 #15.4 31.5 12.9 99.5 7.0 Queue Length 95th (m) 50.0 15.0 15.0 <	Control Delay				36.2								
LOS D E B D E E D A C E B Approach LOS D E D E D													
Approach Delay 39.0 56.9 43.1 47.7 Approach LOS D E D D Queue Length 50th (m) 55.2 73.6 3.0 88.6 ~139.4 38.4 118.4 0.0 15.3 99.5 7.0 Queue Length 95th (m) 92.0 #127.8 31.7 127.2 #232.9 59.4 #178.8 29.3 31.6 #154.4 31.5 Internal Link Dist (m) 162.6 829.6 505.0 445.5 445.5 Turn Bay Length (m) 50.0 115.0 100.0 120.0 110.0 50.0 Base Capacity (vph) 566 411 558 697 513 514 1149 832 237 953 547 Starvation Cap Reductn 0		47.4	60.5	10.5	36.2	76.5		65.9		6.7		58.8	12.8
Approach LOS D E D D D Queue Length 50th (m) 55.2 73.6 3.0 88.6 ~139.4 38.4 118.4 0.0 15.3 99.5 7.0 Queue Length 95th (m) 92.0 #127.8 31.7 127.2 #232.9 59.4 #178.8 29.3 31.6 #15.4 31.5 Internal Link Dist (m) 162.6 829.6 505.0 445.5 445.5 Turn Bay Length (m) 50.0 115.0 100.0 120.0 110.0 50.0 Base Capacity (vph) 566 411 558 697 513 514 1149 832 237 953 547 Starvation Cap Reductn 0	LOS	D		В	D			Е		Α	С		В
Queue Length 50th (m) 55.2 73.6 3.0 88.6 ~139.4 38.4 118.4 0.0 15.3 99.5 7.0 Queue Length 95th (m) 92.0 #127.8 31.7 127.2 #232.9 59.4 #178.8 29.3 31.6 #154.4 31.5 Internal Link Dist (m) 162.6 829.6 505.0 445.5	Approach Delay		39.0			56.9			43.1			47.7	
Queue Length 95th (m) 92.0 #127.8 31.7 127.2 #232.9 59.4 #178.8 29.3 31.6 #154.4 31.5 Internal Link Dist (m) 162.6 829.6 505.0 445.5	Approach LOS					_						_	
Internal Link Dist (m) 162.6 829.6 505.0 445.5 Turn Bay Length (m) 50.0 115.0 100.0 120.0 110.0 50.0 Base Capacity (vph) 566 411 558 697 513 514 1149 832 237 953 547 Starvation Cap Reductn 0 </td <td>Queue Length 50th (m)</td> <td></td>	Queue Length 50th (m)												
Turn Bay Length (m) 50.0 115.0 100.0 120.0 110.0 50.0 Base Capacity (vph) 566 411 558 697 513 514 1149 832 237 953 547 Starvation Cap Reductn 0<	Queue Length 95th (m)	92.0	#127.8	31.7	127.2	#232.9		59.4	#178.8	29.3	31.6	#154.4	31.5
Base Capacity (vph) 566 411 558 697 513 514 1149 832 237 953 547 Starvation Cap Reductn 0 <td>Internal Link Dist (m)</td> <td></td> <td>162.6</td> <td></td> <td></td> <td>829.6</td> <td></td> <td></td> <td>505.0</td> <td></td> <td></td> <td>445.5</td> <td></td>	Internal Link Dist (m)		162.6			829.6			505.0			445.5	
Starvation Cap Reductn 0	Turn Bay Length (m)				115.0			100.0			110.0		50.0
Spillback Cap Reductn 0	Base Capacity (vph)	566	411	558	697	513		514	1149	832	237	953	547
Storage Cap Reductn 0 0 0 0 0 0 0 0 0 0 0	Starvation Cap Reductn											0	
		-	-	-	-	-		-	-	-	-	-	
Reduced v/c Ratio 0.49 0.68 0.52 0.67 0.96 0.54 0.78 0.56 0.41 0.77 0.36													
10 0.00 0.01 0.10 0.00 0.01 0.00 0.01 0.00 0.01 0.00 0.01 0.00 0.01 0.00 0.01 0.00 0.0	Reduced v/c Ratio	0.49	0.68	0.52	0.67	0.96		0.54	0.78	0.56	0.41	0.77	0.36

Intersection Summary	
Area Type:	Other
Cycle Length: 150	
Actuated Cycle Length:	131.1
Natural Cycle: 90	
Control Type: Semi Act-	Uncoord
Maximum v/c Ratio: 0.96	3
Intersection Signal Delay	v: 46.3

Intersection Capacity Utilization 90.2%

Intersection LOS: D ICU Level of Service E

Synchro 11 Report Page 10

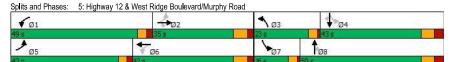
Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road

2033 Future Background P.M.

- Analysis Period (min) 15

 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.

 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.



Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol. veh/h	374	5	0	3	3	3	2	0	0	2	0	305
Future Vol. veh/h	374	5	0	3	3	3	2	0	0	2	0	305
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	Clop	- Clop	None	- Otop	- Otop	None	-	- 100	None	-	- 100	None
Storage Length			-			-			-			-
Veh in Median Storage		0			0	_	_	0	_	_	0	_
Grade, %	υ, π -	0			0			0			0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	18	25	0	0	100	0	90	0	90	0	0	27
Mymt Flow	416	6	0	3	3	3	2	0	0	2	0	339
WWW. FIOW	410	0	U	3	3	3	2	U	U	2	U	339
Major/Minor	Minor2		ا	Minor1		ا	Major1		N	//ajor2		
Conflicting Flow All	181	178	170	181	347	0	339	0	0	0	0	0
Stage 1	174	174		4	4	-	-	-	-	-	-	-
Stage 2	7	4		177	343	-	-	-	-	-	-	-
Critical Hdwy	7.28	6.75	6.2	7.1	7.5	6.2	4.1	-		4.1	-	-
Critical Hdwy Stg 1	6.28	5.75		6.1	6.5	-		-		-	-	-
Critical Hdwy Stg 2	6.28	5.75		6.1	6.5	-	-	-	-	-	-	-
Follow-up Hdwy		4.225	3.3	3.5	4.9	3.3	2.2	-		2.2	-	-
Pot Cap-1 Maneuver	746	676	879	785	447	-	1231	_		-	-	-
Stage 1	792	713	-	1024	731	-	-	-		-	-	-
Stage 2	975	849		829	495	_	_	_	_	_	_	_
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	-	675	879	779	446	-	1231	-	-	-	-	-
Mov Cap-2 Maneuver		675	-	779	446		-					
Stage 1	790	713	-	1022	730	-	-	_	-	-	_	-
Stage 2	969	847		823	495							
5.0.95 2	550	.,		525								
				VAUE			NE			0.5		
Approach	EB			WB			NB			SB		
HCM Control Delay, s							7.9					
HCM LOS	-			-								
Minor Lane/Major Mvn	nt	NBL	NBT	NBR I	EBLn1V	VBLn1	SBL	SBT	SBR			
Capacity (veh/h)		1231	-	-	-	-	-	-	-			
HCM Lane V/C Ratio		0.002	-	-	-	-	-	-	-			
HCM Control Delay (s)	7.9	0	-	-		-	-	-			
HCM Lane LOS	,	Α	A					-				
HCM 95th %tile Q(veh	1)	0	_	-	-	-	-	-				
70110 0(1011	,											

Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol. veh/h	4	232	14	39	294	16	22	21	75	6	6	2
Future Vol. veh/h	4	232	14	39	294	16	22	21	75	6	6	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-		-	-		-		-	-	-		-
Veh in Median Storage	.# -	0	_	-	0	-		0	_	-	0	-
Grade. %	, -	0			0			0			0	
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	2	0	0	1	0	0	0	0	0	20	0
Mymt Flow	4	249	15	42	316	17	24	23	81	6	6	2
	-	L 10	- 13	12	010	- "			- 01			
Major/Minor N	Major1			Major2			Minor1		N	/linor2		
Conflicting Flow All	333	0	0	264	0	0	678	682	257	726	681	325
Stage 1	333	-	-	204	-	-	265	265	201	409	409	323
Stage 2			-	- :	_		413	417	-	317	272	-
Critical Hdwy	4.1		-	4.1	-		7.1	6.5	6.2	7.1	6.7	6.2
Critical Hdwy Stg 1	4.1		-	4.1			6.1	5.5	0.2	6.1	5.7	0.2
Critical Hdwy Stg 2	-	-		-	-	-	6.1	5.5	-	6.1	5.7	-
Follow-up Hdwy	2.2	-	-	2.2	-		3.5	3.5	3.3	3.5	4.18	3.3
Pot Cap-1 Maneuver	1238	-	-	1312	-	-	369	375	3.3 787	343	351	721
Stage 1	1238	-	-	1312		-	745	693	/8/ -	623	566	121
Stage 1	-	-	-	-	-		620	595	-	698	653	_
	-	-	-	-	-	-	020	292	-	098	003	-
Platoon blocked, %	1000	-	-	1212	-	-	254	250	707	204	220	704
Mov Cap-1 Maneuver	1238	-	-	1312	-	-	351	359 359	787	284 284	336 336	721
Mov Cap-2 Maneuver	-	-	-	-	-	-	351		-			-
Stage 1	-	-	-	-	-	-	742	690	-	621	544	-
Stage 2	-	-	-	-	-	-	587	572	-	604	650	-
Approach	EB			WB			NB			SB		
Approach												
HCM Control Delay, s	0.1			0.9			13.6			16.3		
HCM LOS							В			С		
Minor Long/Major Minor		NIDI 154	EDI	EDT	EDD	MDI	WDT	WDD	CDI »4			
Minor Lane/Major Mvm	l I	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR				
Capacity (veh/h)		545	1238	-	-	1312	-	-	335			
HCM Lane V/C Ratio		0.233	0.003	-	-	0.032	-	-	0.0.0			
HCM Control Delay (s)		13.6	7.9	0	-	7.8	0	-	16.3			
HCM Lane LOS		В	Α	Α	-	Α	Α	-	С			
HCM 95th %tile Q(veh)		0.9	0	-	-	0.1	-	-	0.1			

Lanes, Volumes, Timings 8: Burnside Line & Division Road W 2033 Future Background P.M. 09-25-2024

	۶	→	*	•	←	•	1	†	~	1	ţ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (vph)	12	147	159	22	113	3	210	178	65	5	92	27
Future Volume (vph)	12	147	159	22	113	3	210	178	65	5	92	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.932			0.997			0.981			0.970	
Flt Protected		0.998			0.992			0.977			0.998	
Satd. Flow (prot)	0	1742	0	0	1849	0	0	1795	0	0	1571	0
Flt Permitted		0.986			0.912			0.791			0.986	
Satd. Flow (perm)	0	1722	0	0	1700	0	0	1454	0	0	1552	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		99			2			22			29	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1346.1			271.7			1953.3			357.4	
Travel Time (s)		96.9			19.6			140.6			25.7	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	2%	1%	0%	2%	0%	1%	1%	4%	0%	23%	0%
Adj. Flow (vph)	13	156	169	23	120	3	223	189	69	5	98	29
Shared Lane Traffic (%)			,,,,			•						
Lane Group Flow (vph)	0	338	0	0	146	0	0	481	0	0	132	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	2011	0.0	i ug.i.	2011	0.0	i ugiit	Lon	3.6	· ugiit	Lon	3.6	rugiit
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	100	1,00	100	100	1,00	100	100	1100	100	100	,,,,,	100
Number of Detectors	1	2	100	1	2	100	1	2	100	1	2	100
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel	OITEX	CITEX		OITEX	CITEX		CITEX	OITEX		OITEX	OITEX	
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)	0.0	9.4		0.0	9.4		0.0	9.4		0.0	9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Type Detector 2 Channel		OITEX			CITEX			CITEX			CITEX	
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
	D			De			Derm			Derm		
Turn Type	Perm	NA 4		Perm	NA 8		Perm	NA 2		Perm	NA 6	
Protected Phases		4			В			2			ь	
Permitted Phases	4			8			2	0		6	^	
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												

Synchro 11 Report Page 16 ↓ Ø6

Lanes, Volumes, Timings 8: Burnside Line & Division Road W 2033 Future Background P.M. 09-25-2024

	٠	-	*	1	•	•	1	†	1	-	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	23.0	23.0		23.0	23.0		32.0	32.0		32.0	32.0	
Total Split (%)	41.8%	41.8%		41.8%	41.8%		58.2%	58.2%		58.2%	58.2%	
Maximum Green (s)	18.5	18.5		18.5	18.5		27.5	27.5		27.5	27.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		12.2			12.2			28.2			28.2	
Actuated g/C Ratio		0.25			0.25			0.57			0.57	
v/c Ratio		0.68			0.35			0.57			0.15	
Control Delay		18.6			16.7			11.1			5.7	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		18.6			16.7			11.1			5.7	
LOS		В			В			В			A	
Approach Delay		18.6			16.7			11.1			5.7	
Approach LOS		В			В			В			Α	
Queue Length 50th (m)		18.8			10.7			22.8			3.8	
Queue Length 95th (m)		39.6			22.2			61.4			12.8	
Internal Link Dist (m)		1322.1			247.7			1929.3			333.4	
Turn Bay Length (m)												
Base Capacity (vph)		709			641			838			897	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.48			0.23			0.57			0.15	
Intersection Summary												
Area Type:	Other											
Cycle Length: 55												
Actuated Cycle Length: 49	.4											
Natural Cycle: 55												
Control Type: Semi Act-Un	coord											
Maximum v/c Ratio: 0.68												
Intersection Signal Delay:	13.5			ıl	ntersection	LOS: B						
Intersection Capacity Utiliz	ation 58.4%			Į(CU Level	of Service	е В					
Analysis Period (min) 15												
Splits and Phases: 8: Bu	ırnside Line	& Division	n Road W	ı								
opilio and + hadde. U. be						12	1 Ø4					
1.02						100	-04					

₹ø8

Intersection						
Int Delay, s/veh	4.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	*	7	ĵ.			4
Traffic Vol, veh/h	199	0	184	193	0	112
Future Vol, veh/h	199	0	184	193	0	112
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None		None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage	, # 0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	216	0	200	210	0	122
Major/Minor N	Minor1	1	Major1	1	Major2	
Conflicting Flow All	427	305	0	0	410	0
Stage 1	305	-	-	-	- 10	-
Stage 2	122	-				
Critical Hdwy	6.42	6.22			4.12	
Critical Hdwy Stg 1	5.42	-				
Critical Hdwy Stg 2	5.42	_			_	
Follow-up Hdwy		3.318			2.218	-
Pot Cap-1 Maneuver	584	735			1149	-
Stage 1	748	-			-	
Stage 2	903	-	_	-	-	-
Platoon blocked, %						
Mov Cap-1 Maneuver	584	735	-		1149	
Mov Cap-2 Maneuver	584	-			-	
Stage 1	748	-	_	-	_	-
			_		-	-
	903	-				
Stage 2	903	-				
Stage 2			NR		SR	
Stage 2 Approach	WB	-	NB		SB	
Stage 2 Approach HCM Control Delay, s	WB 14.7	-	NB 0		SB 0	
Stage 2 Approach HCM Control Delay, s	WB					
Stage 2 Approach HCM Control Delay, s HCM LOS	WB 14.7 B		0		0	
Stage 2 Approach HCM Control Delay, s HCM LOS Minor Lane/Major Mvm	WB 14.7 B	NBT	0	VBLn1V	0 VBLn2	SBL
Stage 2 Approach HCM Control Delay, s HCM LOS Minor Lane/Major Mvm Capacity (veh/h)	WB 14.7 B		0	584	0	SBL 1149
Stage 2 Approach HCM Control Delay, s HCM LOS Minor Lane/Major Mvm Capacity (velv/h) HCM Lane V/C Ratio	WB 14.7 B	NBT	0	584 0.37	0 VBLn2 -	1149
Stage 2 Approach HCM Control Delay, s HCM LOS Minor Lane/Major Mvm Capacity (veh/h) HCM Lane V/C Ratio HCM Control Delay (s)	WB 14.7 B	NBT -	NBRV	584 0.37 14.7	0 VBLn2 - - 0	1149 - 0
Stage 2 Approach HCM Control Delay, s HCM LOS Minor Lane/Major Mvm Capacity (velv/h) HCM Lane V/C Ratio	WB 14.7 B	NBT -	0 NBRV	584 0.37	0 VBLn2 -	1149

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	7	↑	1	71011)	7
Traffic Vol, veh/h	0	127	462	39	60	0
Future Vol. veh/h	0	127	462	39	60	0
Conflicting Peds, #/hr	0	0	402	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	riee -		Free -			
		None		None	-	None
Storage Length	0	-	-	-	0	0
Veh in Median Storage		0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	138	502	42	65	0
Major/Minor	Major1	,	Major2		Minor	
_					Minor2	500
Conflicting Flow All	544	0	-	0	661	523
Stage 1	-	-	-	-	523	-
Stage 2	-	-	-	-	138	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-		-	3.518	3.318
Pot Cap-1 Maneuver	1025	-		-	427	554
Stage 1	-	-		-	595	-
Stage 2	_	_		-	889	_
Platoon blocked, %		-			000	
Mov Cap-1 Maneuver	1025	-	_		427	554
Mov Cap-1 Maneuver	1025	-	-		502	554
				-		
Stage 1	-	-	-		595	-
Stage 2	-	-	-	-	889	-
Approach	EB		WB		SB	
HCM Control Delay, s	0		0		13.2	
HCM LOS	U		U		В	
TICIWI ECO						
Minor Lane/Major Mvm	nt	EBL	EBT	WBT	WBR	SBLn1:
Capacity (veh/h)		1025	-	-	-	502
HCM Lane V/C Ratio		-				0.13
HCM Control Delay (s)		0	-	-	-	13.2
HCM Lane LOS		Ā				В
HCM 95th %tile Q(veh	1	0				0.4

Lanes, Volumes, Timings

2035 Future Background A.M. 09-25-2024

1: Burnside Line & Industrial Road/Brodie Drive

	•	-	*	1	•	•	1	†	~	1	ţ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	^	7	7	^	7	7	^	7	7	1	
Traffic Volume (vph)	48	30	129	237	5	40	321	289	85	38	252	45
Future Volume (vph)	48	30	129	237	5	40	321	289	85	38	252	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		75.0	100.0		0.0	75.0		65.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.977	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1900	1615	1736	1900	1615	1805	1439	1468	1805	1520	0
Flt Permitted	0.754			0.580			0.345			0.568		
Satd. Flow (perm)	1433	1900	1615	1060	1900	1615	656	1439	1468	1079	1520	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			255			200			200		10	
Link Speed (k/h)		50			60			60			60	
Link Distance (m)		140.4			136.5			65.5			1953.3	
Travel Time (s)		10.1			8.2			3.9			117.2	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	4%	0%	0%	0%	32%	10%	0%	26%	0%
Adj. Flow (vph)	53	33	142	260	5	44	353	318	93	42	277	49
Shared Lane Traffic (%)												
Lane Group Flow (vph)	53	33	142	260	5	44	353	318	93	42	326	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	9
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	
Detector 1 Channel	O, EX	O, EX	O, Ex	01. EX	01.2%	O - E/(OI LX	OI. EX	O, LX	OI LX	OI LA	
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)	0.0	9.4	0.0	0.0	9.4	0.0	0.0	9.4	0.0	0.0	9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel		OI · LX			SILEX			OI LX			OI LEX	
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	ртт+рт 7	NA 4	renn	рпт+рt 3	NA 8	renn	ртт+рt 5	2	renn	рт+рі 1	NA 6	
Froiected Phases	- /	4		3	ð		0			1	0	

Synchro 11 Report Page 1 Lanes, Volumes, Timings
1: Burnside Line & Industrial Road/Brodie Drive

2035 Future Background A.M. 09-25-2024

	•	→	*	1	+	*	1	†	-	1	Ţ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	25.0	25.0	5.0	25.0	
Minimum Split (s)	9.5	21.0	21.0	9.5	21.0	21.0	9.5	31.0	31.0	9.5	31.0	
Total Split (s)	9.6	21.0	21.0	16.1	27.5	27.5	19.4	43.4	43.4	9.5	33.5	
Total Split (%)	10.7%	23.3%	23.3%	17.9%	30.6%	30.6%	21.6%	48.2%	48.2%	10.6%	37.2%	
Maximum Green (s)	5.1	15.0	15.0	11.6	21.5	21.5	14.9	37.4	37.4	5.0	27.5	
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	6.0	6.0	4.5	6.0	6.0	4.5	6.0	6.0	4.5	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Min	Min	None	Min	Min	None	Min	Min	None	Min	
Act Effct Green (s)	21.6	15.0	15.0	32.0	24.9	24.9	46.3	39.2	39.2	32.4	25.9	
Actuated g/C Ratio	0.25	0.17	0.17	0.37	0.29	0.29	0.53	0.45	0.45	0.37	0.30	
v/c Ratio	0.14	0.10	0.29	0.55	0.01	0.07	0.66	0.49	0.12	0.10	0.71	
Control Delay	20.2	32.4	1.5	26.1	26.2	0.2	18.6	21.6	0.3	11.8	36.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	20.2	32.4	1.5	26.1	26.2	0.2	18.6	21.6	0.3	11.8	36.7	
LOS	С	С	Α	С	С	Α	В	С	Α	В	D	
Approach Delay		10.3			22.4			17.6			33.8	
Approach LOS		В			С			В			С	
Queue Length 50th (m)	5.9	5.0	0.0	33.3	0.7	0.0	34.8	42.3	0.0	3.4	50.4	
Queue Length 95th (m)	14.2	13.5	0.0	56.5	3.5	0.0	53.8	68.8	0.0	8.2	81.6	
Internal Link Dist (m)		116.4			112.5			41.5			1929.3	
Turn Bay Length (m)	25.0		75.0	100.0			75.0		65.0	40.0		
Base Capacity (vph)	377	326	489	478	540	602	544	655	777	442	486	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.14	0.10	0.29	0.54	0.01	0.07	0.65	0.49	0.12	0.10	0.67	
Intersection Summary												
Area Type:	Other											
Cycle Length: 90												
Actuated Cycle Length: 87	.3											
Natural Cycle: 75												
Control Type: Semi Act-Un	coord											
Maximum v/c Ratio: 0.71												
Intersection Signal Delay: 2					ntersectio							
Intersection Capacity Utiliz	ation 72.2%			IC	CU Level	of Service	e C					
Analysis Period (min) 15												



Lanes, Volumes, Timings 2: Burnside Line & Highway 11 Westbound On-Ramp 2035 Future Background A.M.

09-25-2024

	•	*	1	†	↓	1
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				†	^	7
Traffic Volume (vph)	0	0	0	1026	355	253
Future Volume (vph)	0	0	0	1026	355	253
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	1638	1810	1214
Flt Permitted						
Satd. Flow (perm)	0	0	0	1638	1810	1214
Link Speed (k/h)	50			70	60	
Link Distance (m)	185.9			51.5	174.3	
Travel Time (s)	13.4			2.6	10.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	16%	5%	33%
Adj. Flow (vph)	0	0	0	1080	374	266
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1080	374	266
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	
Intersection Summary						
	Other					
Control Type: Unsignalized						

Control Type: Unsignalized Intersection Capacity Utilization 57.3% Analysis Period (min) 15 ICU Level of Service B Lanes, Volumes, Timings 3: Burnside Line & Highway 11 Westbound 2035 Future Background A.M. 09-25-2024

	1	*	†	-	-	ļ
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	*	7	†	7		*
Traffic Volume (vph)	166	261	765	186	0	355
Future Volume (vph)	166	261	765	186	0	355
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	1000	80.0	0.0	1000
Storage Lanes	1	1		1	0.0	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.850	1.00	0.850	1.00	1.00
Fit Protected	0.950	0.000		0.000		
Satd. Flow (prot)	1787	1583	1638	1509	0	1810
Satd. Flow (prot) Fit Permitted	0.950	1000	1030	1508	U	1010
		4500	1638	1500	_	1010
Satd. Flow (perm)	1787	1583	1638	1509	0	1810
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		206		196		_
Link Speed (k/h)	50		60			60
Link Distance (m)	104.8		160.3			51.5
Travel Time (s)	7.5		9.6			3.1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	2%	16%	7%	0%	5%
Adj. Flow (vph)	175	275	805	196	0	374
Shared Lane Traffic (%)						
Lane Group Flow (vph)	175	275	805	196	0	374
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6	rtigrit	0.0	rtigrit	Leit	0.0
	0.0					
Link Offset(m)			0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1		2
Detector Template	Left	Right	Thru	Right		Thru
Leading Detector (m)	2.0	2.0	10.0	2.0		10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0
Detector 1 Size(m)	2.0	2.0	0.6	2.0		0.6
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex
Detector 1 Channel	OIILX	OITEX	OIYEX	OI. LX		O · LX
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0
		0.0		0.0		0.0
Detector 1 Queue (s)	0.0		0.0			
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			CI+Ex			CI+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type						
	Perm	Perm	NA	Perm		NA

Synchro 11 Report Page 3

Lanes, Volumes, Timings 3: Burnside Line & Highway 11 Westbound

↑ø6

2035 Future Background A.M. 09-25-2024

Lanes, i	Volumes,	Timin	gs			
4. West	Street No	orth &	Highway	11 F	asthou	r

2035 Future Background A.M. 09-25-2024

	1		†	-	6	1	
l 0	. ▼	963		, NDD	CDI.	CDT	
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	
Permitted Phases	4	4	^	6		_	
Detector Phase	4	4	6	6		2	
Switch Phase							
Minimum Initial (s)	9.7	9.7	20.0	20.0		20.0	
Minimum Split (s)	16.1	16.1	27.3	27.3		27.3	
Total Split (s)	24.0	24.0	61.0	61.0		61.0	
Total Split (%)	28.2%	28.2%	71.8%	71.8%		71.8%	
Maximum Green (s)	17.6	17.6	53.7	53.7		53.7	
Yellow Time (s)	4.5	4.5	4.5	4.5		4.5	
All-Red Time (s)	1.9	1.9	2.8	2.8		2.8	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	
Total Lost Time (s)	6.4	6.4	7.3	7.3		7.3	
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.2	3.2		3.2	
Recall Mode	None	None	None	None		None	
Act Effct Green (s)	12.7	12.7	36.0	36.0		36.0	
Actuated g/C Ratio	0.20	0.20	0.57	0.57		0.57	
v/c Ratio	0.49	0.57	0.86	0.21		0.36	
Control Delay	31.0	13.6	22.3	1.6		8.2	
Queue Delay	0.0	0.0	0.0	0.0		0.0	
Total Delay	31.0	13.6	22.3	1.6		8.2	
LOS	C C	В	22.5 C	Α.		0.2 A	
Approach Delay	20.4	U	18.3			8.2	
Approach LOS	20.4 C		10.3 B			0.2 A	
Queue Length 50th (m)	18.9	7.0	68.1	0.0		20.3	
	46.3	33.5	143.8	7.0		41.4	
Queue Length 95th (m)		33.5		7.0			
Internal Link Dist (m)	80.8		136.3	00.0		27.5	
Turn Bay Length (m)	507	040	4000	80.0		4505	
Base Capacity (vph)	527	612	1380	1302		1525	
Starvation Cap Reductn	0	0	0	0		0	
Spillback Cap Reductn	0	0	0	0		0	
Storage Cap Reductn	0	0	0	0		0	
Reduced v/c Ratio	0.33	0.45	0.58	0.15		0.25	
Intersection Summary							
Area Type:	Other						
Cycle Length: 85							
Actuated Cycle Length: 63.	3						
Natural Cycle: 60							
Control Type: Semi Act-Und	coord						
Maximum v/c Ratio: 0.86							
Intersection Signal Delay: 1	6.7			ln:	tersection	n LOS: B	
Intersection Capacity Utiliza	tion 67.8%			IC	U Level	of Service (C
Analysis Period (min) 15							
Splits and Phases: 3: But	rnside Line	& Highwa	ay 11 We	stbound			
₩ Ø2							₹ Ø4
61s							24·s

	•	*	1	†	ļ	1
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	*	1	*	^	<u> </u>	7
Traffic Volume (vph)	298	130	107	649	469	52
Future Volume (vph)	298	130	107	649	469	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	55.0	1300	1300	40.0
Storage Lanes	1	1	33.0			40.0
		l I				1
Taper Length (m)	7.5	4.00	7.5	4.00	4.00	4.00
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1327	1524	1787	1827	1845	1442
Flt Permitted	0.950		0.296			
Satd. Flow (perm)	1327	1524	557	1827	1845	1442
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		137				44
Link Speed (k/h)	50			60	60	
Link Distance (m)	154.2			160.8	176.6	
Travel Time (s)	11.1			9.6	10.6	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	36%	6%	1%	4%	3%	12%
Adj. Flow (vph)	314	137	113	683	494	55
Shared Lane Traffic (%)						
Lane Group Flow (vph)	314	137	113	683	494	55
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25	1.00	1.00	15
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	9.4	9.4	0.0
Detector 2 Position(m)				0.6		
Detector 2 Size(m)					0.6	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	pm+pt	NA	NA	Perm
Protected Phases			1	6	2	

Lanes, Volumes, Timings 4: West Street North & Highway 11 Eastbound

8

10.0

18.0

38.0

31.8

4.5

1.7

0.0

6.2

3.0

None

21.2

0.31

0.77

36.2

0.0

36.2

26.8

37.4

78.5

130.2

654

0

0

0.48

Other

D

С

42.2% 42.2%

Lane Group Permitted Phases

Detector Phase

Minimum Split (s)

Maximum Green (s)

Lost Time Adjust (s)

Total Lost Time (s)

Lead-Lag Optimize?

Vehicle Extension (s)

Act Effct Green (s)

Actuated g/C Ratio

Switch Phase Minimum Initial (s)

Total Split (s)

Total Split (%)

Yellow Time (s)

All-Red Time (s)

Lead/Lag

Recall Mode

v/c Ratio

Control Delay

Queue Delay

Total Delay

Approach Delay

Approach LOS

Queue Length 50th (m)

Queue Length 95th (m)

Internal Link Dist (m)

Turn Bay Length (m)

Base Capacity (vph)

Starvation Cap Reductn

Spillback Cap Reductn

Storage Cap Reductn Reduced v/c Ratio

Intersection Summary

Analysis Period (min) 15

Intersection Capacity Utilization 61.8%

Area Type: Cycle Length: 90 Actuated Cycle Length: 68.6 Natural Cycle: 75 Control Type: Semi Act-Uncoord Maximum v/c Ratio: 0.77 Intersection Signal Delay: 23.5

LOS

EBR

10.0

18.0

38.0

31.8

4.5

1.7

0.0

6.2

3.0

None

21.2

0.31

0.24

5.2

0.0

5.2

Α

0.0

11.9

820

0.17

NBL

7.0 20.0

10.0

10.0

8.0

2.0

0.0

0.0

2.0

Lead

Yes

3.0

None

38.7

0.56

0.25

9.7

0.0

9.7

6.4

17.2 141.3

466

0.24

11.1%

NBT

6

41.0

52.0

44.9

4.5

2.6

0.0

7.1

3.2

None

33.3

0.49

0.77

22.5

0.0

22.5

20.7

70.4

136.8

1266

0.54

57.8%

SBT

20.0

41.0

42.0

46.7%

34.9

4.5

2.6

0.0

7.1

Lag

Yes

3.2

None

26.0

0.38

0.71

26.7

0.0

26.7

24.8

57.9

110.4

152.6

997

0.50

Intersection LOS: C

ICU Level of Service B

2

SBR

2

20.0

41.0

42.0

34.9

4.5

2.6

0.0

7.1

Lag

Yes

3.2

None

26.0

0.38

0.10

7.7

0.0

7.7

1.0

8.6

40.0

800

0

0

0.07

46.7%

2035 Future Background A.M. 09-25-2024

Splits and P	hases: 4: West Street North & H	ighway 11 Eastbound		
101	Ø2			
10 s	42s		1	
₹ ø6				
52 s			38 s	

Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road 2035 Future Background A.M.

	•	→	*	1		*	1	†	1	1	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	↑	7	7	f)		1/4	^	7	*	^	7
Traffic Volume (vph)	135	174	163	292	260	145	182	457	405	106	743	213
Future Volume (vph)	135	174	163	292	260	145	182	457	405	106	743	213
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	115.0		0.0	100.0		120.0	110.0		50.0
Storage Lanes	1		1	1		0	2		1	1		1
Taper Length (m)	70.0		•	65.0		·	80.0		•	100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.850	1.00	0.946	1.00	0.07	0.00	0.850	1.00	0.00	0.850
Flt Protected	0.950		0.000	0.950	0.040		0.950		0.000	0.950		0.000
Satd. Flow (prot)	1787	1881	1583	1787	1763	0	3467	3574	1568	1736	3471	1568
Flt Permitted	0.346	1001	1000	0.525	1700	· ·	0.950	3314	1300	0.436	3471	1500
Satd. Flow (perm)	651	1881	1583	988	1763	0	3467	3574	1568	797	3471	1568
Right Turn on Red	001	1001	Yes	500	1700	Yes	3407	3314	Yes	131	J47 I	Yes
Satd. Flow (RTOR)			168		27	168			418			187
Link Speed (k/h)		60	100		60			70	410		70	10/
Link Speed (k/ll) Link Distance (m)		186.6			853.6			529.0			469.5	
		11.2			51.2			27.2			24.1	
Travel Time (s)	0.07	0.97	0.97	0.07	0.97	0.97	0.07	0.97	0.07	0.97	0.97	0.97
Peak Hour Factor	0.97			0.97			0.97		0.97			
Heavy Vehicles (%)	1%	1%	2%	1%	3%	0%	1%	1%	3%	4%	4%	3%
Adj. Flow (vph)	139	179	168	301	268	149	188	471	418	109	766	220
Shared Lane Traffic (%)	400	470	400	004	447		400	474	440	400	700	000
Lane Group Flow (vph)	139	179	168	301	417	0	188	471	418	109	766	220
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	100		15	25		15	25		100
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	

Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road 2035 Future Background A.M. 09-25-2024

	•	-	*	1	←	*	1	†	1	1	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2		2	6					8	4		4
Detector Phase	5	2	2	1	6		3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0		7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	12.0	27.2	27.2	12.0	33.2		11.5	21.0	21.0	11.5	22.5	22.5
Total Split (s)	12.0	39.0	39.0	17.0	44.0		12.0	42.0	42.0	12.0	42.0	42.0
Total Split (%)	10.9%	35.5%	35.5%	15.5%	40.0%		10.9%	38.2%	38.2%	10.9%	38.2%	38.2%
Maximum Green (s)	7.0	31.8	31.8	12.0	36.8		8.0	34.0	34.0	8.0	34.0	34.0
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	2.0	2.2	2.2	2.0	2.2		1.0	3.5	3.5	1.0	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.2	7.2	5.0	7.2		4.0	8.0	8.0	4.0	8.0	8.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.6	3.6	3.0	3.6		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	None	None	None	None	None
Walk Time (s)					7.0			7.0	7.0			
Flash Dont Walk (s)					19.0			6.0	6.0			
Pedestrian Calls (#/hr)					0			0	0			
Act Effct Green (s)	33.3	23.9	23.9	42.6	28.6		8.0	26.7	26.7	38.3	26.4	26.4
Actuated g/C Ratio	0.35	0.25	0.25	0.45	0.30		0.08	0.28	0.28	0.40	0.28	0.28
v/c Ratio	0.44	0.38	0.32	0.55	0.76		0.64	0.47	0.56	0.27	0.79	0.38
Control Delay	22.2	32.7	6.4	22.3	38.3		55.0	30.1	6.1	17.9	38.5	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.2	32.7	6.4	22.3	38.3		55.0	30.1	6.1	17.9	38.5	8.5
LOS	С	С	Α	С	D		Е	С	Α	В	D	Α
Approach Delay		20.6			31.6			25.1			30.4	
Approach LOS		С			С			С			С	
Queue Length 50th (m)	15.5	28.8	0.0	37.2	68.2		18.0	38.0	0.0	11.4	68.8	4.5
Queue Length 95th (m)	30.3	51.7	15.9	64.3	112.3		#38.6	60.0	22.8	25.0	103.0	23.8
Internal Link Dist (m)		162.6			829.6			505.0			445.5	
Turn Bay Length (m)	50.0			115.0			100.0		120.0	110.0		50.0
Base Capacity (vph)	313	639	649	551	709		296	1298	835	405	1261	688
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.28	0.26	0.55	0.59		0.64	0.36	0.50	0.27	0.61	0.32

Intersection Summary Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 94.7
Natural Cycle: 80
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.79

Intersection Signal Delay: 27.6 Intersection LOS: C Intersection Capacity Utilization 79.4% ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road 2035 Future Background A.M. 09-25-2024

Page 10

Queue shown is maximum after two cycles.



Synchro 11 Report Synchro 11 Report Page 9

Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol, veh/h	253	4	2	0	10	0	0	0	0	0	0	262
Future Vol, veh/h	253	4	2	0	10	0	0	0	0	0	0	262
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage	e,# -	0	-	-	0	-	-	0	-	-	0	
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	32	67	0	0	30	100	50	0	100	0	50	30
Mvmt Flow	275	4	2	0	11	0	0	0	0	0	0	285
Major/Minor	Minor2		N	Minor1		N	Major1		N	/lajor2		
Conflicting Flow All	149	143	143	146	285	0	285	0	0	0	0	0
Stage 1	143	143		0	0	-		-	-	-	-	
Stage 2	6	0		146	285	-						
Critical Hdwv	7.42	7.17	6.2	7.1	6.8	7.2	4.6	_		4.1	-	-
Critical Hdwy Stg 1	6.42	6.17	-	6.1	5.8	-		-		-		
Critical Hdwy Stg 2	6.42	6.17	-	6.1	5.8	-	-	-	-	-	-	-
Follow-up Hdwy	3.788	4.603	3.3	3.5	4.27	4.2	2.65	-		2.2	-	
Pot Cap-1 Maneuver	755	644	910	827	580	-	1046	-		-	-	
Stage 1	793	670		-	-	-	-	-		-	-	
Stage 2	943			861	628	-	-	-		-		
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	644	910	820	580	-	1046	-	-	-	-	-
Mov Cap-2 Maneuver	-	644	-	820	580	-	-	-	-	-	-	-
Stage 1	793	670	-	-	-	-	-	-	-	-	-	-
Stage 2	943	-	-	853	628	-	-	-	-	-	-	-
, in the second												
Approach	EB			WB			NB			SB		
HCM Control Delay, s							0			0		
HCM LOS	_						U			U		
110111 200												
Min 1 /M - i M	4	NIDI	NDT	NDD	-DL 4\	MDI 4	ODI	ODT	ODD			
Minor Lane/Major Mvr	nt	NBL	NBT	INBK I	EBLn1\	ARTUI	SBL	SBT	SBR			
Capacity (veh/h)		1046	-	-	-	-	-	-	-			
HCM Lane V/C Ratio		-	-	-	-		-	-	-			
HCM Control Delay (s)	0	-	-	-	-	0	-	-			
HCM Lane LOS		Α	-	-	-	-	Α	-	-			
HCM 95th %tile Q(veh	1)	0	-	-	-	-	-	-	-			

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol, veh/h	0	170	8	37	136	4	4	5	39	7	12	2
Future Vol, veh/h	0	170	8	37	136	4	4	5	39	7	12	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-		-		-		-		-	
Veh in Median Storage,	,# -	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	2	0	0	1	0	0	25	3	0	11	0
Mvmt Flow	0	177	8	39	142	4	4	5	41	7	13	2
Major/Minor N	/lajor1		- 1	Major2			Minor1		ı	Minor2		
Conflicting Flow All	146	0	0	185	0	0	411	405	181	426	407	144
Stage 1	_	-	-	-		-	181	181	-	222	222	
Stage 2			-	-	-	-	230	224		204	185	
Critical Hdwy	4.1			4.1			7.1	6.75	6.23	7.1	6.61	6.2
Critical Hdwy Stg 1				- "-			6.1	5.75	-	6.1	5.61	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.75	-	6.1	5.61	
Follow-up Hdwy	2.2			2.2			3.5	4.225	3.327	3.5	4.099	3.3
Pot Cap-1 Maneuver	1448	-	-	1402	-		555	501	859	542	520	909
Stage 1	-			- 102			825	708	-	785	703	-
Stage 2			-	-			777	678	-	803	730	
Platoon blocked, %								0.0				
Mov Cap-1 Maneuver	1448			1402	_	-	531	486	859	500	504	909
Mov Cap-2 Maneuver	-			-			531	486	-	500	504	-
Stage 1	_	-	_	-	-	_	825	708	_	785	682	-
Stage 2			-	-	-		738	658	-	759	730	-
										. 50	. 50	
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			1.6			10.1			12.2		
HCM LOS	U			1.0			В			В		
Minor Lane/Major Mvm	t	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SRI n1			
		759	1448	LUI	LDI	1402	1101	WDIX.	525			
Capacity (veh/h)		0.066		-	-	0.027	-	-	0.042			
HCM Central Delay (a)		10.1	-	-	-	7.6	0		12.2			
HCM Control Delay (s) HCM Lane LOS		10.1 B	0 A		-	7.6 A	A	-	12.2 B			
HCM 95th %tile O(veh)		0.2	A 0	-	-	0.1	А	-	0.1			

2035 Future Background A.M. 09-25-2024

	•	\rightarrow	*	1	—	•	1	Ť	1	1	ļ	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Lane Configurations		4			4			4			4	
Traffic Volume (vph)	14	79	127	20	63	2	90	387	34	5	166	14
Future Volume (vph)	14	79	127	20	63	2	90	387	34	5	166	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.922			0.997			0.991			0.990	
Flt Protected		0.997			0.988			0.991			0.999	
Satd. Flow (prot)	0	1724	0	0	1872	0	0	1270	0	0	1296	(
Flt Permitted		0.976			0.869			0.914			0.990	
Satd. Flow (perm)	0	1688	0	0	1646	0	0	1171	0	0	1284	(
Right Turn on Red			Yes			Yes			Yes			Ye
Satd. Flow (RTOR)		135			2			9			11	
Link Speed (k/h)		50			50			70			60	
Link Distance (m)		1346.1			271.7			1953.3			357.4	
Travel Time (s)		96.9			19.6			100.5			21.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.9
Heavy Vehicles (%)	0%	2%	1%	0%	0%	0%	0%	62%	0%	0%	50%	
Adi, Flow (vph)	15	86	138	22	68	2	98	421	37	5	180	
Shared Lane Traffic (%)	10	00	100	22	00	_	30	721	01	U	100	
Lane Group Flow (vph)	0	239	0	0	92	0	0	556	0	0	200	- (
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	
Median Width(m)	Leit	0.0	rtigrit	Leit	0.0	rtigrit	Leit	3.6	Nigrit	Leit	3.6	rtigii
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswa l k Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		4.0			4.0			4.0			4.0	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.0
	25	1.00	1.00	25	1.00	1.00	25	1.00	1.00	25	1.00	
Turning Speed (k/h)	25 1	2	15	25 1	2	15	25 1	2	15	25 1	2	18
Number of Detectors												
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												SBR 14 1400 1.00 0 0 Yes 0.92 0% 15 0 No Right

	٠	-	*	1	•	•	1	†	1	1	Ţ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	23.0	23.0		23.0	23.0		32.0	32.0		32.0	32.0	
Total Split (%)	41.8%	41.8%		41.8%	41.8%		58.2%	58.2%		58.2%	58.2%	
Maximum Green (s)	18.5	18.5		18.5	18.5		27.5	27.5		27.5	27.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		8.9			8.9			30.3			30.3	
Actuated g/C Ratio		0.18			0.18			0.63			0.63	
v/c Ratio		0.57			0.30			0.75			0.25	
Control Delay		13.3			17.7			17.4			5.5	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		13.3			17.7			17.4			5.5	
LOS		В			В			В			A	
Approach Delay		13.3			17.7			17.4			5.5	
Approach LOS		В			В			В			Α	
Queue Length 50th (m)		7.5			6.5			25.7			5.5	
Queue Length 95th (m)		22.3			15.5			#97.3			17.3	
Internal Link Dist (m)		1322.1			247.7			1929.3			333.4	
Turn Bay Length (m)												
Base Capacity (vph)		735			638			738			810	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.33			0.14			0.75			0.25	
Intersection Summary												
Area Type:	Other											
Cycle Length: 55												
Actuated Cycle Length: 48.	.3											
Natural Cycle: 60												
Control Type: Semi Act-Uni	coord											
Maximum v/c Ratio: 0.75												
Intersection Signal Delay: 1	14.3			Ir	ntersection	LOS: B						
Intersection Capacity Utiliza				I	CU Level	of Service	В					
Analysis Period (min) 15												
# 95th percentile volume	exceeds ca	pacity, qu	eue mav	be longe	r.							
Queue shown is maximu												

Lanes, Volumes, Timings 8: Burnside Line & Division Road W 2035 Future Background A.M. 09-25-2024

HCM 2010 TWSC 2035 Future Background A.M. 9: Industrial Road & Hurlwood Lane 09-25-2024

Splits and Phases:	8: Burnside Line & Division Road W		
↑ Ø2		→ _{Ø4}	
32 s		23 s	
₽ Ø6		₹ Ø8	
20 e		72 c	

Intersection							
Int Delay, s/veh	0.7						
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	ሻ	↑	1	,,,,,,	ħ	7	
Traffic Vol, veh/h	0	140	318	53	34	0	
Future Vol. veh/h	0	140	318	53	34	0	
Conflicting Peds, #/hr	0	0	0.0	0	0	0	
Sign Control	Free	Free	Free	Free	Stop	Stop	
RT Channelized	-	None	-	None	-	None	
Storage Length	0	-			0	0	
Veh in Median Storage	•	0	0	-	0	-	
Grade. %	-	0	0		0	-	
Peak Hour Factor	92	92	92	92	92	92	
Heavy Vehicles, %	2	2	2	2	2	2	
Mymt Flow	0	152	346	58	37	0	
		102	010	- 00	- 01	v	
	Major1		Major2		Minor2		
Conflicting Flow All	404	0	-	0	527	375	
Stage 1	-	-	-	-	375	-	
Stage 2	-	-	-	-	152	-	
Critical Hdwy	4.12	-	-	-	6.42	6.22	
Critical Hdwy Stg 1	-	-	-	-	5.42	-	
Critical Hdwy Stg 2	-	-	-	-	5.42	-	
Follow-up Hdwy	2.218	-	-	-	3.518	3.318	
Pot Cap-1 Maneuver	1155	-	-	-	512	671	
Stage 1	-	-	-		695	-	
Stage 2	-	-	-	-	876	-	
Platoon blocked, %		-	-	-			
Mov Cap-1 Maneuver	1155	-	-	-	512	671	
Mov Cap-2 Maneuver	-	-	-	-	579	-	
Stage 1	-	-	_	-	695	-	
Stage 2					876	-	
5.035 2					0.0		
Approach	EB		WB		SB		
HCM Control Delay, s	0		0		11.6		
HCM LOS					В		
Minor Lane/Major Mvm	nt	EBL	EBT	WBT	WRR	SBLn1 SB	l n2
Capacity (veh/h)		1155	-	-	7701	579	-
HCM Lane V/C Ratio		1100			-	0.064	-
HCM Control Delay (s)		0	-	-	-	11.6	0
HCM Lane LOS		A			-	11.0 B	A
	١	A 0	-	-	-	0.2	Α -
HCM 95th %tile Q(veh))	U	-	-	-	0.2	-

3.5

159

0

2 2

346 201

6.42 6.22

3.518 3.318

-

5.42

5.42

651

651

833

882

В

WBL WBR NBT NBR

0 0 0

0

-

0 90 189

Stop Stop Free Free Free Free

0

92 92

0

-

651 840 - - 1258 -

201 - - - -

- None - None - None

0 -

2 2 2 2

0 303

- 4.12

- - 2.218

.

NBT NBRWBLn1WBLn2 SBL SBT

- 1258

0 0

A A

-

- - 651

- 0.265

- 12.5

- 1.1

В

- -

0 98 205 0 145

0

0 133 0 133

0

Intersection Int Delay, s/veh

Movement

Lane Configurations Traffic Vol, veh/h

Conflicting Peds, #/hr

Veh in Median Storage, # 0

Future Vol, veh/h

RT Channelized

Storage Length

Peak Hour Factor

Heavy Vehicles, %

Stage 1

Stage 2 Critical Hdwy

Critical Hdwy Stg 1

Critical Hdwy Stg 2

Pot Cap-1 Maneuver

Stage 1 Stage 2

Platoon blocked, % Mov Cap-1 Maneuver

Mov Cap-2 Maneuver

Stage 1

Stage 2

HCM Control Delay, s 12.5

Minor Lane/Major Mvmt

Capacity (veh/h)

HCM Lane LOS

HCM Lane V/C Ratio

HCM Control Delay (s)

HCM 95th %tile Q(veh)

Approach

HCM LOS

Follow-up Hdwy

Grade, %

Mvmt Flow

Major/Minor
Conflicting Flow All

Sign Control

ı			

Lane Group EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBT Lane Configurations 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	SBR
Lane Configurations 7 7 7 7 7 7 7 1	
Traffic Volume (vph) 73 40 400 411 2 104 316 308 94 44 243	23
Future Volume (vph) 73 40 400 411 2 104 316 308 94 44 243	23
Ideal Flow (vphpl) 1900 1900 1900 1900 1900 1900 1900 190	1900
Storage Length (m) 25.0 75.0 100.0 0.0 75.0 65.0 40.0	0.0
Storage Lanes 1 1 1 1 1 1 1 1	0
Taper Length (m) 7.5 7.5 7.5 7.5	
Lane Util. Factor 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	1.00
Frt 0.850 0.850 0.850 0.987	
Fit Protected 0.950 0.950 0.950 0.950	
Satd. Flow (prot) 1805 1900 1568 1770 1900 1615 1805 1863 1429 1805 1747	0
Flt Permitted 0.757 0.568 0.392 0.562	
Satd. Flow (perm) 1438 1900 1568 1058 1900 1615 745 1863 1429 1068 1747	0
Right Turn on Red Yes Yes Yes	Yes
Satd. Flow (RTOR) 404 200 200 5	
Link Speed (k/h) 50 60 60 60	
Link Distance (m) 140.4 136.5 65.5 1953.3	
Travel Time (s) 10.1 8.2 3.9 117.2	
Peak Hour Factor 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94	0.94
Heavy Vehicles (%) 0% 0% 3% 2% 0% 0% 0% 2% 13% 0% 8%	0%
Adj. Flow (vph) 78 43 426 437 2 111 336 328 100 47 259	24
Shared Lane Traffic (%)	
Lane Group Flow (vph) 78 43 426 437 2 111 336 328 100 47 283	0
Enter Blocked Intersection No	No
	Right
Median Width(m) 3.6 3.6 3.6 Link Offset(m) 0.0 0.0 0.0	
Link Offset(m) 0.0 0.0 0.0 0.0 Crosswalk Width(m) 4.8 4.8 4.8 4.8	
Crosswark Width(m) 4.8 4.8 4.8 4.8 Two way Left Turn Lane Yes	
Headway Factor 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	1.00
Turning Speed (k/h) 25 15 25 15 25 15 25	1.00
Number of Detectors 1 2 1 1 2 1 1 2 1 1 2 1 1 2	10
Detector Template Left Thru Right Left Thru Right Left Thru Right Left Thru	
Leading Detector (m) 2.0 10.0 2.0 2.0 10.0 2.0 2.0 10.0 2.0 2.0 10.0	
Trailing Detector (m) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	
Detector 1 Position(m) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	
Detector 1 Size(m) 2.0 0.6 2.0 2.0 0.6 2.0 2.0 0.6 2.0 2.0 0.6	
Detector 1 Type CI+Ex CI	
Detector 1 Channel	
Detector 1 Extend (s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	
Detector 1 Queue (s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	
Detector 1 Delay (s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	
Detector 2 Position(m) 9.4 9.4 9.4 9.4	
Detector 2 Size(m) 0.6 0.6 0.6 0.6	
Detector 2 Type CI+Ex CI+Ex CI+Ex CI+Ex	
Detector 2 Channel	
Detector 2 Extend (s) 0.0 0.0 0.0 0.0	
Turn Type pm+pt NA Perm pm+pt NA Perm pm+pt NA Perm pm+pt NA	
Protected Phases 7 4 3 8 5 2 1 6	

4 4

Lanes, Volumes, Timings

2035 Future Total P.M. 09-26-2024

1: Burnside Line & Industrial Road/Brodie Drive

1. Burnside Line &	Line & Industrial Road/Brodie Drive											
	•	→	+	•	+	*	1	1	1	1	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBI
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	25.0	25.0	5.0	25.0	
Minimum Split (s)	9.5	21.0	21.0	9.5	21.0	21.0	9.5	31.0	31.0	9.5	31.0	
Total Split (s)	10.4	21.0	21.0	21.5	32.1	32.1	15.0	38.0	38.0	9.5	32.5	
Total Split (%)	11.6%	23.3%	23.3%	23.9%	35.7%	35.7%	16.7%	42.2%	42.2%	10.6%	36.1%	
Maximum Green (s)	5.9	15.0	15.0	17.0	26.1	26.1	10.5	32.0	32.0	5.0	26.5	
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	6.0	6.0	4.5	6.0	6.0	4.5	6.0	6.0	4.5	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Min	Min	None	Min	Min	None	Min	Min	None	Min	
Act Effct Green (s)	22.3	15.0	15.0	37.6	27.8	27.8	41.7	34.5	34.5	31.7	25.2	
Actuated g/C Ratio	0.25	0.17	0.17	0.43	0.31	0.31	0.47	0.39	0.39	0.36	0.29	
v/c Ratio	0.20	0.13	0.71	0.75	0.00	0.17	0.70	0.45	0.15	0.11	0.56	
Control Delay	18.2	32.8	11.9	29.1	22.5	0.6	25.0	23.7	0.5	14.1	31.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	18.2	32.8	11.9	29.1	22.5	0.6	25.0	23.7	0.5	14.1	31.6	
LOS	В	С	В	С	С	Α	С	С	Α	В	С	
Approach Delay		14.5			23.3			21.2			29.1	
Approach LOS		В			С			С			С	
Queue Length 50th (m)	8.1	6.6	3.4	57.4	0.3	0.0	37.7	46.0	0.0	4.4	42.4	
Queue Length 95th (m)	16.9	16.1	33.3	#91.0	2.0	0.0	58.6	71.6	0.0	10.4	68.3	
Internal Link Dist (m)		116.4			112.5			41.5			1929.3	
Turn Bay Length (m)	25.0		75.0	100.0			75.0		65.0	40.0		
Base Capacity (vph)	389	323	602	587	598	645	478	743	690	425	527	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
0 0 1	•	•		•	•	•		•	•	•	•	

ntersection	Summary

Storage Cap Reductn Reduced v/c Ratio

Other Area Type:

Cycle Length: 90

Actuated Cycle Length: 88.3

Natural Cycle: 80

Control Type: Semi Act-Uncoord Maximum v/c Ratio: 0.75

Intersection LOS: C ICU Level of Service E

0.71

0.74

0.00

0.17

0.70

0.44

0.14 0.11 0.54

Intersection Signal Delay: 21.2 Intersection Capacity Utilization 82.1%

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

0.20

0.13

Queue shown is maximum after two cycles.

Lanes, Volumes, Timings 1: Burnside Line & Industrial Road/Brodie Drive 2035 Future Total P.M. 09-26-2024

Page 3

Splits and Phases: 1: Burnside Line & Industrial Road/Brodie Drive **₽**Ø4 Tø2 **√**Ø3 **≯**Ø7 ₹ Ø8 **↑**Ø5 Ø6

Synchro 11 Report Synchro 11 Report Page 2

Lanes, Volumes, Timings 2: Burnside Line & Highway 11 Westbound On-Ramp 2035 Future Total P.M. 09-26-2024

	•	*	1	†	†	4
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				^	^	7
Traffic Volume (vph)	0	0	0	1057	655	373
Future Volume (vph)	0	0	0	1057	655	373
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	1863	1863	1509
Flt Permitted						
Satd. Flow (perm)	0	0	0	1863	1863	1509
Link Speed (k/h)	50			50	50	
Link Distance (m)	185.9			51.5	174.3	
Travel Time (s)	13.4			3.7	12.5	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	0%	2%	2%	7%
Adj. Flow (vph)	0	0	0	1079	668	381
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1079	668	381
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	100	100	100			100
Sign Control	Free			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilizat	ion 59.0%			IC	U Level o	of Service
Analysis Period (min) 15						
. , ,						

Lanes, Volumes, Timings 3: Burnside Line & Highway 11 Westbound 2035 Future Total P.M. 09-26-2024

	1	*	†	1	1	Ţ
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	*	7	<u></u>	7		A
Traffic Volume (vph)	209	226	832	296	0	655
Future Volume (vph)	209	226	832	296	0	655
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	1900	80.0	0.0	1000
Storage Lanes	1	1		1	0.0	
Taper Length (m)	7.5	1			7.5	
		4.00	4.00	4.00		4.00
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950					
Satd. Flow (prot)	1752	1599	1863	1615	0	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1752	1599	1863	1615	0	1863
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		187		302		
Link Speed (k/h)	50		60			60
Link Distance (m)	241.7		160.3			51.5
Travel Time (s)	17.4		9.6			3.1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	3%	1%	2%	0.90	0.90	2%
Adi. Flow (vph)	213	231	849	302	0%	668
Shared Lane Traffic (%)	213	231	049	302	U	000
	040	004	040	200	0	000
Lane Group Flow (vph)	213	231	849	302	0	668
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1		2
Detector Template	Left	Right	Thru	Right		Thru
Leading Detector (m)	2.0	2.0	10.0	2.0		10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0
	0.0	0.0	0.0	0.0		0.0
Detector 1 Position(m)						
Detector 1 Size(m)	2.0	2.0	0.6	2.0		0.6
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	C I +Ex		CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			CI+Ex			CI+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Perm	Perm	NA	Perm		NA
Protected Phases	Felill	Feiill	6	Fellil		2
Protected Phases			0			

Synchro 11 Report Page 4

Lanes, Volumes, Timings
3: Burnside Line & Highway 11 Westbound

2035 Future Total P.M. 09-26-2024

Lanes, Volumes, Timings 4: West Street North & Highway 11 Eastbound 2035 Future Total P.M. 09-26-2024

	۶	*	1	†	ļ	4	
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	l
Lane Configurations	*	7	7	^	^	7	Г
Traffic Volume (vph)	235	170	247	891	722	145	
Future Volume (vph)	235	170	247	891	722	145	;
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900)
Storage Length (m)	0.0	0.0	55.0			40.0)
Storage Lanes	1	1	1			1	
Taper Length (m)	7.5		7.5				
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00)
Frt		0.850				0.850)
Flt Protected	0.950		0.950				
Satd. Flow (prot)	1736	1583	1787	1881	1863	1583	,
Flt Permitted	0.950		0.118				
Satd. Flow (perm)	1736	1583	222	1881	1863	1583	,
Right Turn on Red		Yes				Yes	;
Satd. Flow (RTOR)		179				78	}
Link Speed (k/h)	50			60	60		
Link Distance (m)	214.0			160.8	176.6		
Travel Time (s)	15.4			9.6	10.6		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	;
Heavy Vehicles (%)	4%	2%	1%	1%	2%	2%)
Adj. Flow (vph)	247	179	260	938	760	153	,
Shared Lane Traffic (%)							
Lane Group Flow (vph)	247	179	260	938	760	153	,
Enter Blocked Intersection	No	No	No	No	No	No)
Lane Alignment	Left	Right	Left	Left	Left	Right	t
Median Width(m)	3.6			3.6	3.6	, i	
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	4.8			4.8	4.8		
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00)
Turning Speed (k/h)	25	15	25			15	;
Number of Detectors	1	1	1	2	2	1	
Detector Template	Left	Right	Left	Thru	Thru	Right	t
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	2.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0)
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0)
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	2.0)
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0)
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0)
Detector 2 Position(m)				9.4	9.4		
Detector 2 Size(m)				0.6	0.6		
Detector 2 Type				CI+Ex	CI+Ex		
Detector 2 Channel							
Detector 2 Extend (s)				0.0	0.0		
	_	_			NA	Danna	1
Turn Type	Perm	Perm	pm+pt	NA	INA	Perm	

	1	*	†	1	-	↓	
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	
Permitted Phases	4	4		6			
Detector Phase	4	4	6	6		2	
Switch Phase							
Minimum Initial (s)	10.0	10.0	20.0	20.0		20.0	
Minimum Split (s)	16.1	16.1	27.3	27.3		27.3	
Total Split (s)	24.0	24.0	61.0	61.0		61.0	
Total Split (%)	28.2%	28.2%	71.8%	71.8%		71.8%	
Maximum Green (s)	17.9	17.9	53.7	53.7		53.7	
Yellow Time (s)	4.5	4.5	4.5	4.5		4.5	
All-Red Time (s)	1.6	1.6	2.8	2.8		2.8	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	
Total Lost Time (s)	6.1	6.1	7.3	7.3		7.3	
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.2	3.2		3.2	
Recall Mode	None	None	None	None		None	
Act Effct Green (s)	13.4	13.4	35.0	35.0		35.0	
Actuated g/C Ratio	0.21	0.21	0.56	0.56		0.56	
v/c Ratio	0.57	0.47	0.82	0.29		0.64	
Control Delay	31.8	11.0	18.3	1.6		12.4	
Queue Delay	0.0	0.0	0.0	0.0		0.0	
Total Delay	31.8	11.0	18.3	1.6		12.4	
LOS	C	В	В	A		В	
Approach Delay	20.9		14.0	,,		12.4	
Approach LOS	C		В			В	
Queue Length 50th (m)	22.7	4.2	70.1	0.0		46.9	
Queue Length 95th (m)	55.6	26.1	133.9	8.4		88.2	
Internal Link Dist (m)	217.7	2011	136.3	0.,		27.5	
Turn Bay Length (m)	217.7		100.0	80.0		21.0	
Base Capacity (vph)	530	614	1579	1415		1579	
Starvation Cap Reductn	0	0	0	0		0	
Spillback Cap Reductn	0	0	0	0		0	
Storage Cap Reductn	0	0	0	0		0	
Reduced v/c Ratio	0.40	0.38	0.54	0.21		0.42	
	0.70	0.00	0.04	0.21		0.72	
Intersection Summary							
Area Type:	Other						
Cycle Length: 85							
Actuated Cycle Length: 62	.7						
Natural Cycle: 60							
Control Type: Semi Act-Ur	ncoord						
Maximum v/c Ratio: 0.82							
Intersection Signal Delay:					tersection		
Intersection Capacity Utiliz	ation 68.9%			IC	U Level of	Service C	
Analysis Period (min) 15							
Splits and Phases: 3: Bu	urnside Line	& Highwa	ay 11 Wes	stbound			
1 00							>
♥ Ø2							√ Ø4
61s							43

Lanes, Volumes, Timings

2035 Future Total P.M. 09-26-2024

4: West Street North & Highway 11 Eastbound

	•	*	1	†	↓	4
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	8	8	6			2
Detector Phase	8	8	1	6	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	7.0	20.0	20.0	20.0
Minimum Split (s)	18.0	18.0	10.0	41.0	41.0	41.0
Total Split (s)	25.0	25.0	24.0	70.0	46.0	46.0
Total Split (%)	26.3%	26.3%	25.3%	73.7%	48.4%	48.4%
Maximum Green (s)	18.8	18.8	21.0	62.9	38.9	38.9
Yellow Time (s)	4.5	4.5	3.0	4.5	4.5	4.5
All-Red Time (s)	1.7	1.7	0.0	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	3.0	7.1	7.1	7.1
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.2	3.2	3.2
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	16.0	16.0	58.8	54.7	38.8	38.8
Actuated g/C Ratio	0.19	0.19	0.70	0.65	0.46	0.46
v/c Ratio	0.75	0.40	0.66	0.77	0.88	0.20
Control Delay	48.5	8.1	20.2	15.9	36.6	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.5	8.1	20.2	15.9	36.6	9.0
LOS	D	A	C	В	D	A
Approach Delay	31.6			16.8	32.0	
Approach LOS	C			В	C	
Queue Length 50th (m)	39.7	0.0	18.7	103.5	116.1	7.1
Queue Length 95th (m)	#78.2	17.4	44.6	161.8	#222.0	21.3
Internal Link Dist (m)	190.0		,	136.8	152.6	
Turn Bay Length (m)	100.0		55.0	100.0	102.0	40.0
Base Capacity (vph)	392	496	550	1422	873	783
Starvation Cap Reductn	0	0	0	0	0/0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.36	0.47	0.66	0.87	0.20
	0.00	0.00	0.71	0.00	0.01	0.20
Intersection Summary Area Type:	Other					
Cycle Length: 95	Other					
Cycle Lengtn: 95 Actuated Cycle Length: 84	1					
Natural Cycle: 70	s.I					
	anard					
Control Type: Semi Act-Un	icoora					
Maximum v/c Ratio: 0.88	04.0					- 1 00: 0
Intersection Signal Delay:					ntersectio	
Intersection Capacity Utiliz	ation 79.1%				CU Level	of Service
Analysis Period (min) 15						

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Lanes, Volumes, Timings 4: West Street North & Highway 11 Eastbound 2035 Future Total P.M. 09-26-2024

Splits and Phases: 4: West Street North & Highway 11 Eastbound **↑**Ø1 ₩ Ø2 **↑**ø6 ₹ ø8

Synchro 11 Report Page 8

	۶	-	*	-	-		1	†	1	1	↓	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	^	7	*	1		77	† †	7	1	^	7
Traffic Volume (vph)	272	307	285	499	290	221	272	872	591	111	722	191
Future Volume (vph)	272	307	285	499	290	221	272	872	591	111	722	191
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0	1000	0.0	115.0	1000	0.0	100.0		120.0	110.0	1000	50.0
Storage Lanes	1		1	1		0.0	2		1	1		1
Taper Length (m)	70.0		•	65.0		Ū	80.0		•	100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00	1.00	0.98	1.00	1.00	1.00	0.01	0.00	1.00	1.00	0.00	1.00
Frt			0.850	1.00	0.935				0.850			0.850
Flt Protected	0.950		0.030	0.950	0.955		0.950		0.000	0.950		0.000
Satd. Flow (prot)	1787	1900	1599	1787	1766	0	3502	3539	1599	1805	3505	1583
	0.167	1900	1099	0.161	1700	U	0.950	3339	1099	0.129	3303	1000
Flt Permitted		4000	4575		4700	0		2520	4500		2505	4500
Satd. Flow (perm)	314	1900	1575	303	1766	0	3502	3539	1599	245	3505	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			208		30				605			186
Link Speed (k/h)		50			70			50			50	
Link Distance (m)		186.6			853.6			529.0			469.5	
Travel Time (s)		13.4			43.9			38.1			33.8	
Confl. Peds. (#/hr)			2	2								
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	0%	1%	1%	1%	0%	0%	2%	1%	0%	3%	2%
Adj. Flow (vph)	289	327	303	531	309	235	289	928	629	118	768	203
Shared Lane Traffic (%)												
Lane Group Flow (vph)	289	327	303	531	544	0	289	928	629	118	768	203
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6	J		7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		4.0			7.0			4.0			7.0	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	1.00	1.00	25	1.00	1.00	25	1.00	1.00	25	1.00	1.00
Number of Detectors	20	2	13	1	2	15	1	2	1	1	2	15
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
			Right						Right			Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel		J1 · L∧			J1. L∧			J1. L∧			JI. LX	
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

	•	\rightarrow	*	1		•	1	Ť	-	1	↓	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6					8	4		4
Detector Phase	5	2	2	1	6		3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0		7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	12.0	27.2	27.2	12.0	33.2		11.5	21.0	21.0	11.5	22.5	22.5
Total Split (s)	27.0	31.4	31.4	41.0	45.4		18.0	46.1	46.1	11.5	39.6	39.6
Total Split (%)	20.8%	24.2%	24.2%	31.5%	34.9%		13.8%	35.5%	35.5%	8.8%	30.5%	30.5%
Maximum Green (s)	22.0	24.2	24.2	36.0	38.2		14.0	38.1	38.1	7.5	31.6	31.6
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	2.0	2.2	2.2	2.0	2.2		1.0	3.5	3.5	1.0	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.2	7.2	5.0	7.2		4.0	8.0	8.0	4.0	8.0	8.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.6	3.6	3.0	3.6		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	None	None	None	None	None
Walk Time (s)					7.0			7.0	7.0			
Flash Dont Walk (s)					19.0			6.0	6.0			
Pedestrian Calls (#/hr)					0			0	0			
Act Effct Green (s)	45.7	24.0	24.0	65.6	38.9		13.5	36.8	36.8	42.4	30.9	30.9
Actuated g/C Ratio	0.36	0.19	0.19	0.52	0.31		0.11	0.29	0.29	0.33	0.24	0.24
v/c Ratio	0.85	0.91	0.65	0.95	0.97		0.78	0.91	0.70	0.68	0.90	0.39
Control Delay	56.8	81.3	22.9	60.2	73.0		70.9	56.7	8.4	46.0	61.9	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.8	81.3	22.9	60.2	73.0		70.9	56.7	8.4	46.0	61.9	9.5
LOS	Е	F	С	Е	E		Е	Е	Α	D	Е	Α
Approach Delay		54.4			66.7			42.5			50.4	
Approach LOS		D			Е			D			D	
Queue Length 50th (m)	55.0	87.6	22.7	117.7	~142.8		39.6	126.3	4.7	19.8	106.3	3.5
Queue Length 95th (m)	#98.9	#145.2	56.5	#188.6	#219.6		#58.7	#163.4	41.6	#39.6	#141.8	24.0
Internal Link Dist (m)		162.6			829.6			505.0			445.5	
Turn Bay Length (m)	50.0			115.0			100.0		120.0	110.0		50.0
Base Capacity (vph)	375	362	469	578	561		387	1064	904	174	873	534
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.90	0.65	0.92	0.97		0.75	0.87	0.70	0.68	0.88	0.38
Intersection Summary												
Area Type:	Other											
Cycle Length: 130												
Actuated Cycle Length: 12	27											
Natural Cycle: 90												
Control Type: Semi Act-U	ncoord											
Maximum v/c Ratio: 0.97												
Intersection Signal Delay:	51.7			l	ntersectio	n LOS: D						
Intersection Capacity Utiliz)		ŀ	CU Level	of Service	F					

Synchro 11 Report Page 10

Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road 2035 Future Total P.M.

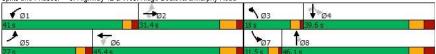
09-26-2024

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Highway 12 & West Ridge Boulevard/Murphy Road



Lanes, Volumes, Timings 6: Uhthoff Line & Murphy Road 2035 Future Total P.M. 09-26-2024

	۶	-	•	1	•	•	1	†	1	-	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (vph)	577	5	0	3	3	3	2	0	0	2	0	331
Future Volume (vph)	577	5	0	3	3	3	2	0	0	2	0	331
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.955						0.866	
Flt Protected		0.953			0.984			0.950				
Satd. Flow (prot)	0	1534	0	0	1339	0	0	1805	0	0	1297	0
Flt Permitted		0.953			0.984			0.950				
Satd. Flow (perm)	0	1534	0	0	1339	0	0	1805	0	0	1297	0
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		853.6			117.8			131.4			177.2	
Travel Time (s)		61.5			8.5			7.9			10.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	18%	25%	0%	0%	100%	0%	0%	0%	0%	0%	0%	27%
Adj. Flow (vph)	641	6	0	3	3	3	2	0	0	2	0	368
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	647	0	0	9	0	0	2	0	0	370	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 66.1%
Analysis Period (min) 15

ICU Level of Service C

Synchro 11 Report Page 12

HCM 95th %tile Q(veh)

Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol, veh/h	577	5	0	3	3	3	2	0	0	2	0	331
Future Vol, veh/h	577	5	0	3	3	3	2	0	0	2	0	331
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-		-	-
Veh in Median Storage	:,# -	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	18	25	0	0	100	0	0	0	0	0	0	27
Mvmt Flow	641	6	0	3	3	3	2	0	0	2	0	368
Major/Minor	Minor2		-	Minor1		- 1	Major1		1	Major2		
Conflicting Flow All	195	192	184	195	376	0	368	0	0	0	0	0
Stage 1	188	188		4	4		-	-			-	
Stage 2	7	4		191	372	-	-	-	-	-	-	
Critical Hdwy	7.28	6.75	6.2	7.1	7.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.28	5.75	-	6.1	6.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.28	5.75		6.1	6.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.662	4.225	3.3	3.5	4.9	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	731	664	864	769	429	-	1202	-		-	-	-
Stage 1	778	703	-	1024	731	-	-	-	-	-	-	-
Stage 2	975	849	-	815	478	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	663	864	763	428	-	1202	-	-	-	-	-
Mov Cap-2 Maneuver	-	663	-	763	428	-	-	-	-	-	-	-
Stage 1	776	703	-	1022	730	-	-	-	-	-	-	-
Stage 2	969	847	-	809	478	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s							8					
HCM LOS							-					
Minor Lane/Major Mvm	nt	NBL	NBT	NRR I	EBLn1\	VRI n1	SBL	SBT	SBR			
Capacity (veh/h)		1202	1101	-			-	-	-			
HCM Lane V/C Ratio		0.002							- :			
HCM Control Delay (s)		8	0	-			-					
HCM Lane LOS		A	A									
HCM 95th %tile O(veh)	١	0										

	۶	→	*	•	+	•	1	1	1	1	Ţ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (vph)	4	242	14	40	306	17	23	45	78	7	43	2
Future Volume (vph)	4	242	14	40	306	17	23	45	78	7	43	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.993			0.994			0.928			0.995	
Flt Protected		0.999			0.995			0.992			0.993	
Satd. Flow (prot)	0	1850	0	0	1863	0	0	1749	0	0	1612	0
Flt Permitted		0.999			0.995			0.992			0.993	
Satd. Flow (perm)	0	1850	0	0	1863	0	0	1749	0	0	1612	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		350.0			1346.1			1393.8			405.2	
Travel Time (s)		25.2			96.9			100.4			29.2	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	2%	0%	0%	1%	0%	0%	0%	0%	0%	20%	0%
Adj. Flow (vph)	4	260	15	43	329	18	25	48	84	8	46	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	279	0	0	390	0	0	157	0	0	56	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	100		100	100		100	100		100	100		100
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
	Other											
Control Type: Unsignalized												
Intersection Capacity Utilizati	ion 55.0%			IC	CU Level o	of Service	Α					
Analysis Period (min) 15												

Intersection Int Delay, s/veh

	۶	→	*	•	+	•	1	†	~	1	Ţ	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (vph)	13	153	166	23	117	3	218	182	68	5	95	28
Future Volume (vph)	13	153	166	23	117	3	218	182	68	5	95	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.932			0.997			0.980			0.970	
Flt Protected		0.998			0.992			0.977			0.998	
Satd. Flow (prot)	0	1742	0	0	1849	0	0	1793	0	0	1571	0
Flt Permitted		0.985			0.907			0.786			0.986	
Satd. Flow (perm)	0	1720	0	0	1690	0	0	1443	0	0	1552	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		99			2			22			30	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1346.1			271.7			1953.3			357.4	
Travel Time (s)		96.9			19.6			140.6			25.7	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	2%	1%	0%	2%	0%	1%	1%	4%	0%	23%	0%
Adj. Flow (vph)	14	163	177	24	124	3	232	194	72	5	101	30
Shared Lane Traffic (%)		,,,,								•		•
Lane Group Flow (vph)	0	354	0	0	151	0	0	498	0	0	136	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	100		100	100		100	100		100	100		100
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel	OI LA	OI LX		O, Ex	O, Ex		OI LA	O, EX		OI - EX	O, Ex	
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)	0.0	9.4		0.0	9.4		0.0	9.4		0.0	9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel		OI LX			OI LX			OI: LX			OI LX	
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	1 Citil	4		i ciiii	8		1 01111	2		1 Cilli	6	
Permitted Phases	4	7		8			2			6	J	
Detector Phase	4	4		8	8		2	2		6	6	

Lane Configurations	Traffic Vol, veh/h	12 14 12 14 10 0 0 10 0 10 0 0 0 10 0 0 0 10 0 0 0 10 0 0 10 0 0 0	40 0 Free - - - 93 0 43	306 306 0 Free - 0 0 93	17 0 Free None - - - 93 0	23 0 Stop - - - 93 0	45 45 0 Stop - 0 0 93	78 0 Stop None - - - 93 0	7 0 Stop - - - - 93 0	43 43 0 Stop - - 0 0 93 20	2 0 Stop None - - 93	
Traffic Vol, veh/h	Future Vol, veh/h Conflicting Peds, #/hr Sign Control RTC Channelized Storage Length Veh in Median Storage, # - Grade, % - Peak Hour Factor Heavy Vehicles, % 0 Mvmt Flow 4 2 Major/Minor Major1 Conflicting Flow All Stage 1 - Stage 2 - Critical Hdwy Stg 1 - Critical Hdwy Stg 1 Critical Hdwy Stg 2 Follow-up Hdwy 2.2 Pot Cap-1 Maneuver Stage 1 - Stage 1 - Stage 2 - Platoon blocked, % Mov Cap-1 Maneuver 1223	12 14 0 0 0 ee Free - None 0 0 - 0 0 - 0 23 93 2 0 60 15	40 0 Free - - - 93 0 43	306 0 Free - 0 0 93 1	17 0 Free None - - - 93 0	23 0 Stop - - - 93 0	45 45 0 Stop - 0 0 93	78 0 Stop None - - - 93 0	7 0 Stop - - - - 93 0	43 43 0 Stop - - 0 0 93 20	2 0 Stop None - - 93	
Conflicting Peds, #hr 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Conflicting Peds, #/hr Sign Control Free Fr	0 0 ee Free - None 0 0 - 0 0 - 0 33 93 2 0 60 15	93 0 	0 Free - 0 0 93 1	0 Free None - - - 93 0	0 Stop - - - - - 93 0	0 Stop - - 0 0 93 0	0 Stop None - - - 93 0	0 Stop - - - - 93 0	0 Stop - - 0 0 93 20	0 Stop None - - - 93	
Sign Control Free RTCE Free RTCE RTCE Free RTCE RTCE RTCE RTCE RTCE RTCE RTCE RTCE	Sign Control Free	ee Free - None - 0 0 0 2 0 0 5 0 0 5 0 0 5 0 0 5 0 15	Free 93 0 43	Free - 0 0 93 1	Free None - - - 93 0	Stop - - - - 93 0	Stop 0 0 93	Stop None - - - 93 0	Stop 93 0	Stop 0 0 93 20	Stop None - - - 93	
RT Channelized - None - None - None - None - None - None Storage Length - None Storage Length - None - None - None - None Storage Length - None - None Storage Length - None - None - None - None - None Storage Length - None - N	RT Channelized Storage Length - Veh in Median Storage, # - Grade, % - Peak Hour Factor 93 Heavy Vehicles, % 0 Mvmt Flow 4 2 Major/Minor Major1 Conflicting Flow All 347 Stage 1 - Stage 2 - Critical Hdwy Stg 1 - Critical Hdwy Stg 1 - Critical Hdwy Stg 2 - Follow-up Hdwy 2.2 Pot Cap-1 Maneuver 1223 Stage 1 - Stage 2 - Platon blocked, % Mov Cap-1 Maneuver 1223	- None 0 - 0 - 03 93 2 0 60 15	- - - 93 0 43	0 0 0 93 1	None - - - 93 0	- - - 93 0	0 0 0 93	None - - - 93 0	93	0 0 0 93 20	None - - 93	
Storage Length	Storage Length	0 - 0 - 03 93 2 0 60 15	93 0 43	0 0 93 1	- - 93 0	- - - 93 0	0 0 93 0	- - - 93 0	- - 93 0	0 0 93 20	93	
Veh in Median Storage, # - 0 0 0 0 0 - 0 - 0 -	Veh in Median Storage, # - Grade, % - Peak Hour Factor 93 Heavy Vehicles, % 0 Mwnt Flow 4 2 Major/Minor Major1 Conflicting Flow All 347 348 Stage 1 - - Stage 2 - - Critical Hdwy Stg 1 - - Critical Hdwy Stg 2 - - Follow-up Hdwy 2 - Poll Cap-1 Maneuver 3tage 1 - Stage 2 - - Platoon blocked, % Wov Cap-1 Maneuver 1223	0 - 0 - 93 93 2 0 60 15	93 0 43	0 0 93 1	93 0	93 0	0 0 93 0	93 0	93 0	0 0 93 20	93	
Grade, % - 0	Grade, %	0 - 93 93 2 0 60 15	93 0 43	93 1	93 0	93 0	93 0	93 0	93 0	93 20	93	
Peak Hour Factor 93	Peak Hour Factor 93 Heavy Vehicles, % 0 Mvmt Flow 4 2 Major/Minor Major1 Conflicting Flow All Stage 1 Stage 2 - Critical Howy - - Critical Howy Stg 1 Critical Howy Stg 2 - Follow-up Howy 2.2 - Follow-up Howy 2.2 - Pot Cap-1 Maneuver 1223 - Stage 1 Stage 2 - Flaton blocked, % - Mov Cap-1 Maneuver 1223	93 93 2 0 60 15	93 0 43	93	93 0	93 0	93	93 0	93 0	93 20	93	
Heavy Vehicles, %	Heavy Vehicles, % 0 Mvmt Flow 4 2	2 0 60 15	0 43	1	0	0	0	0	0	20		
Mymit Flow 4 260 15 43 329 18 25 48 84 8 46 2 Major/Minor Major1 Major2 Minor1 Minor2 Conflicting Flow All 347 0 0 275 0 0 724 709 268 766 707 338 Stage 1 - - - - - 276 276 - 424 424 - Stage 2 - - - - 448 433 - 342 283 - Critical Hdwy Stg 1 - - - - 6.1 5.5 - 6.1 5.7 - Critical Hdwy Stg 2 - - - - 6.1 5.5 - 6.1 5.7 - Critical Hdwy Stg 2 - - - - 6.1 5.5 - 6.1 5.7 - Follow-up Hdwy	Mvmt Flow 4 2 Major/Minor Major1 Conflicting Flow All 347 Stage 1 - Stage 2 - Critical Hdwy 4.1 Critical Hdwy Stg 1 - Critical Hdwy Stg 2 - Follow-up Hdwy 2.2 Pot Cap-1 Maneuver 1223 Stage 1 - Stage 2 - Platoon blocked, % Mov Cap-1 Maneuver 1223	60 15	43								0	
Major/Minor Major1 Major2 Minor1 Minor2 Conflicting Flow All 347 0 0 275 0 0 724 709 268 766 707 338 Stage 1 - - - - 276 276 - 424 424 - Stage 2 - - - - 448 433 - 342 283 - Critical Hdwy 4.1 - 4.1 - 7.1 6.5 6.2 7.1 6.7 6.2 Critical Hdwy Stg 1 - - - - 6.1 5.5 - 6.1 5.7 - Follow-up Hdwy 2.2 - 2.2 - 3.5 4 3.3 3.5 4.18 3.3 Stage 1 - - - - 735 685 - 612 557 - Stage 2 - - - - <td>Major/Minor Major1 Conflicting Flow All Stage 1 347 Stage 2 - Critical Hdwy 4.1 Critical Hdwy Stg 1 - Critical Hdwy Stg 2 - Follow-up Hdwy 2.2 Pot Cap-1 Maneuver 1223 Stage 1 - Stage 2 - Platoon blocked, % Mov Cap-1 Maneuver Mov Cap-1 Maneuver 1223</td> <td></td> <td></td> <td>329</td> <td>18</td> <td>25</td> <td>48</td> <td>84</td> <td>8</td> <td>40</td> <td></td> <td></td>	Major/Minor Major1 Conflicting Flow All Stage 1 347 Stage 2 - Critical Hdwy 4.1 Critical Hdwy Stg 1 - Critical Hdwy Stg 2 - Follow-up Hdwy 2.2 Pot Cap-1 Maneuver 1223 Stage 1 - Stage 2 - Platoon blocked, % Mov Cap-1 Maneuver Mov Cap-1 Maneuver 1223			329	18	25	48	84	8	40		
Conflicting Flow All 347 0 0 275 0 0 724 709 268 766 707 338 Stage 1 276 276 - 424 424 Stage 2 448 433 - 342 283 - Critical Hdwy 4.1 - 4.1 7.1 6.5 6.2 7.1 6.7 6.2 Critical Hdwy Stg 1 6.1 5.5 - 6.1 5.7 - Critical Hdwy Stg 2 2.2 - 3.5 4 3.3 3.5 4.18 3.3 Pot Cap-1 Maneuver 1223 - 1300 - 344 362 776 322 339 709 Stage 1 735 685 - 612 557 - Stage 2 594 585 - 677 646 - Platon blocked, % Mov Cap-1 Maneuver 1223 - 1300 - 295 346 776 248 324 709 Mov Cap-2 Maneuver 1223 - 1300 - 295 346 - 248 324 - Stage 1 594 585 - 610 534 - Stage 1 594 585 - 677 646 - Platon blocked, % Mov Cap-2 Maneuver 1223 - 1300 - 295 346 776 248 324 709 Mov Cap-2 Maneuver 595 346 - 248 324 - 514 514 514 514 514 514 514 514 514 514	Conflicting Flow All Stage 1	0 0	Major2							40	2	
Conflicting Flow All 347 0 0 275 0 0 724 709 268 766 707 338 Stage 1 276 276 - 424 424 Stage 2 448 433 - 342 283 - Critical Hdwy 4.1 - 4.1 7.1 6.5 6.2 7.1 6.7 6.2 Critical Hdwy Stg 1 6.1 5.5 - 6.1 5.7 - Critical Hdwy Stg 2 2.2 - 3.5 4 3.3 3.5 4.18 3.3 Pot Cap-1 Maneuver 1223 - 1300 - 344 362 776 322 339 709 Stage 1 735 685 - 612 557 - Stage 2 594 585 - 677 646 - Platon blocked, % Mov Cap-1 Maneuver 1223 - 1300 - 295 346 776 248 324 709 Mov Cap-2 Maneuver 1223 - 1300 - 295 346 - 248 324 - Stage 1 594 585 - 610 534 - Stage 1 594 585 - 677 646 - Platon blocked, % Mov Cap-2 Maneuver 1223 - 1300 - 295 346 776 248 324 709 Mov Cap-2 Maneuver 595 346 - 248 324 - 514 514 514 514 514 514 514 514 514 514	Conflicting Flow All Stage 1	0 0	Major2									
Conflicting Flow All 347 0 0 275 0 0 724 709 268 766 707 338 Stage 1 276 276 - 424 424 Stage 2 448 433 - 342 283 - Critical Hdwy 4.1 - 4.1 7.1 6.5 6.2 7.1 6.7 6.2 Critical Hdwy Stg 1 6.1 5.5 - 6.1 5.7 - Critical Hdwy Stg 2 2.2 - 3.5 4 3.3 3.5 4.18 3.3 Pot Cap-1 Maneuver 1223 - 1300 - 344 362 776 322 339 709 Stage 1 735 685 - 612 557 - Stage 2 594 585 - 677 646 - Platon blocked, % Mov Cap-1 Maneuver 1223 - 1300 - 295 346 776 248 324 709 Mov Cap-2 Maneuver 1223 - 1300 - 295 346 - 248 324 - Stage 1 594 585 - 610 534 - Stage 1 594 585 - 677 646 - Platon blocked, % Mov Cap-2 Maneuver 1223 - 1300 - 295 346 776 248 324 709 Mov Cap-2 Maneuver 595 346 - 248 324 - 514 514 514 514 514 514 514 514 514 514	Conflicting Flow All Stage 1	0 0	IVIAIUIZ		N	Ainor1		A	linor?			
Stage 1	Stage 1 - Stage 2 -	0 0		0			700			707	220	
Stage 2	Stage 2		2/5								338	
Critical Howy 4.1 - 4.1 - 7.1 6.5 6.2 7.1 6.7 6.2 Critical Howy Stg 1 - - - - 6.1 5.5 - 6.1 5.7 - Critical Howy Stg 2 - - - 6.1 5.5 - 6.1 5.7 - Follow-up Hdwy 2.2 - 2.2 - 3.5 4 3.3 3.5 4.18 3.3 Pot Cap-1 Maneuver 1223 - 1300 - 344 362 776 322 339 709 Stage 1 - - - - 735 685 - 612 557 - Stage 2 - - - - 594 585 - 677 646 - Platoon blocked, % - - - - - 295 346 776 248 324 709 Mov Cap-2 Maneuver - - - 295 346 - 248 324	Critical Hdwy 4.1 Critical Hdwy Stg 1 - Critical Hdwy Stg 2 - Follow-up Hdwy 2.2 Pot Cap-1 Maneuver 1223 Stage 1 - Stage 2 - Platoon blocked, % Mov Cap-1 Maneuver 1223	-	-								-	
Critical Hdwy Stg 1	Critical Hdwy Stg 1 - Critical Hdwy Stg 2 - Follow-up Hdwy 2.2 Pot Cap-1 Maneuver 1223 Stage 1 - Stage 2 - Platoon blocked, % Mov Cap-1 Maneuver 1223											
Critical Hdwy Stg 2 - - - 6.1 5.5 - 6.1 5.7 - Follow-up Hdwy 2.2 - 2.2 - 3.5 4 3.3 3.5 4.18 3.3 Pot Cap-1 Maneuver 1223 - 1300 - 344 362 776 322 339 709 Stage 1 - - - 594 585 - 612 557 - Stage 2 - - - 594 585 - 677 646 - Platoon blocked, % - - - 594 585 - 677 646 - Platoon blocked, % -	Critical Hdwy Stg 2										6.2	
Follow-up Hdwy 2.2 - 2.2 - 3.5 4 3.3 3.5 4.18 3.3 Pot Cap-1 Maneuver 1223 - 1300 - 344 362 776 322 339 709 Stage 1 735 685 - 612 557 - Stage 2 594 585 - 677 646 - Platon blocked, % Mov Cap-1 Maneuver 1223 - 1300 - 295 346 776 248 324 709 Mov Cap-2 Maneuver 295 346 776 248 324 - Stage 1 732 682 - 610 534 - Stage 2 594 585 - 677 646 - Mov Cap-2 Maneuver 595 346 - 596 346 -	Follow-up Howy 2.2 Pot Cap-1 Maneuver 1223 Stage 1 - Stage 2 Platoon blocked, % Mov Cap-1 Maneuver 1223			-	-						-	
Pot Cap-1 Maneuver 1223 - 1300 - 344 362 776 322 339 709 Stage 1 - - - - 735 685 - 612 557 - Stage 2 - - - - 594 585 - 677 646 - Platoon blocked, % - <td>Pot Cap-1 Maneuver 1223 Stage 1 - Stage 2 - Platoon blocked, % Mov Cap-1 Maneuver 1223</td> <td>-</td> <td></td> <td>-</td> <td>-</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Pot Cap-1 Maneuver 1223 Stage 1 - Stage 2 - Platoon blocked, % Mov Cap-1 Maneuver 1223	-		-	-							
Stage 1 - - - - 735 685 - 612 557 - Stage 2 - - - - 594 585 - 677 646 - Platoon blocked, % -	Stage 1 - Stage 2 - Platoon blocked, % Mov Cap-1 Maneuver 1223			-	-							
Stage 2 - - - - 594 585 - 677 646 - Platoon blocked, % - - - - - - 295 346 776 248 324 709 Mov Cap-2 Maneuver - - - 295 346 - 248 324 - Stage 1 - - - - 732 682 - 610 534 - Stage 2 - - - - 519 561 - 559 643 - Approach EB WB NB SB HCM Control Delay, s 0.1 0.9 16.3 18.7 HCM LOS C C	Stage 2 - Platoon blocked, % Mov Cap-1 Maneuver 1223	-		-	-							
Platon blocked, %	Platoon blocked, % Mov Cap-1 Maneuver 1223											
Mov Cap-1 Maneuver 1223 - 1300 - 295 346 776 248 324 709 Mov Cap-2 Maneuver - - - - 295 346 - 248 324 - Stage 1 - - - - 732 682 - 610 534 - Stage 2 - - - - - 519 561 - 559 643 - Approach EB WB NB SB - <td>Mov Cap-1 Maneuver 1223</td> <td>-</td> <td></td> <td></td> <td></td> <td>594</td> <td>585</td> <td>-</td> <td>6//</td> <td>646</td> <td>-</td> <td></td>	Mov Cap-1 Maneuver 1223	-				594	585	-	6//	646	-	
Mov Cap-2 Maneuver - - - 295 346 - 248 324 - Stage 1 - - - - 732 682 - 610 534 - Stage 2 - - - - 519 561 - 559 643 - Approach EB WB NB SB HCM Control Delay, s 0.1 0.9 16.3 18.7 HCM LOS C C						005	0.10	770	0.40	004	700	
Stage 1 - - - - 732 682 - 610 534 - Stage 2 - - - - 519 561 - 559 643 - Approach EB WB NB SB HCM Control Delay, s 0.1 0.9 16.3 18.7 HCM LOS C C												
Stage 2 - - - - 519 561 - 559 643 - Approach EB WB NB SB HCM Control Delay, s 0.1 0.9 16.3 18.7 HCM LOS C C C			-		-						-	
Approach EB WB NB SB HCM Control Delay, s 0.1 0.9 16.3 18.7 HCM LOS C C C			-	-	-						-	
HCM Control Delay, s 0.1 0.9 16.3 18.7 HCM LOS C C	Stage 2 -		-	-	-	519	561	-	559	643	-	
HCM Control Delay, s 0.1 0.9 16.3 18.7 HCM LOS C C												
HCM LOS C C	Approach EB		WB			NB			SB			
HCM LOS C C	HCM Control Delay, s 0.1		0.9			16.3			18.7			
						С			С			
NE L MI M L ND 4 FD FDT FDD WID WITH WITH AND AD 4												
	AC I MA A A A NO	4 EDI	EDT	EDD.	MDI	MOT	MDD (DI 4				
Minor Lane/Major Mvmt NBLn1 EBL EBT EBR WBL WBT WBR SBLn1												
Capacity (veh/h) 473 1223 1300 318												
HCM Lane V/C Ratio 0.332 0.004 0.033 0.176												
HCM Control Delay (s) 16.3 8 0 - 7.9 0 - 18.7												
HCM Lane LOS												
	HCM 95th %tile Q(veh)	.4 0	-	-	0.1	-	-	0.6				

Synchro 11 Report Page 16

Lanes, Volumes, Timings 8: Burnside Line & Division Road W

Lane Group

Total Split (s)

Total Split (%)

Yellow Time (s)

All-Red Time (s)

Minimum Initial (s)

Minimum Split (s)

Maximum Green (s)

EBT

5.0

22.5

23.0

3.5

1.0

5.0

22.5

23.0

18.5 18.5

3.5

1.0

Splits and Phases: 8: Burnside Line & Division Road W

₹ ø2

₩ Ø6

41.8% 41.8%

EBR WBL

5.0

22.5

23.0

18.5

3.5

1.0

41.8% 41.8%

WBT WBR

5.0

22.5

23.0

18.5

3.5

1.0

NBT

5.0

22.5

32.0

27.5

3.5

1.0

5.0

22.5

32.0

58.2% 58.2%

27.5

3.5

1.0

→Ø4 ₹ Ø8

2035 Future Total P.M. 09-26-2024

5.0

22.5

32.0

27.5

3.5

1.0

58.2%

5.0

22.5

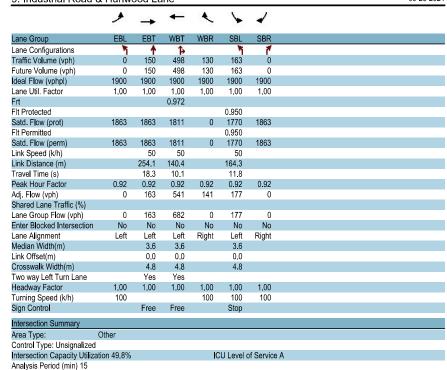
32.0

27.5

3.5

1.0

58.2%



All-Red Time (S)	1.0	1.0	1.0	1.0	1.0	0 1.0	1.0	1.0	
Lost Time Adjust (s)		0.0		0.0		0.0		0.0	
Total Lost Time (s)		4.5		4.5		4.5		4.5	
Lead/Lag									
Lead-Lag Optimize?									
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.	0 3.0	3.0	3.0	
Recall Mode	None	None	None	None	Ma	x Max	Max	Max	
Walk Time (s)	7.0	7.0	7.0	7.0	7.	0 7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	0 11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0		0 0	0		
Act Effct Green (s)		12.6		12.6		28.0		28.0	
Actuated g/C Ratio		0.25		0.25		0.56		0.56	
v/c Ratio		0.69		0.35		0.61		0.15	
Control Delay		19.3		16.7		12.0		5.8	
Queue Delay		0.0		0.0		0.0		0.0	
Total Delay		19.3		16.7		12.0		5.8	
LOS		В		В		В		Α	
Approach Delay		19.3		16.7		12.0		5.8	
Approach LOS		В		В		В		Α	
Queue Length 50th (m)		20.3		11.1		25.0		4.0	
Queue Length 95th (m)		42.2		23.0		65.3		13.0	
Internal Link Dist (m)	1	322.1		247.7		1929.3		333.4	
Turn Bay Length (m)									
Base Capacity (vph)		707		635		823		888	
Starvation Cap Reductn		0		0		0		0	
Spillback Cap Reductn		0		0		0		0	
Storage Cap Reductn		0		0		0		0	
Reduced v/c Ratio		0.50		0.24		0.61		0.15	
Intersection Summary									
Area Type:	Other								
Cycle Length: 55									
Actuated Cycle Length: 49	.6								
Natural Cycle: 55									
Control Type: Semi Act-Un	coord								
Maximum v/c Ratio: 0.69									
Intersection Signal Delay:				ntersection					
Intersection Capacity Utiliz	ation 64.2%			CU Level of	Service C				
Analysis Period (min) 15									

3.1

Int Delay, s/veh

Lanes, Volumes, Timings
10: Uhthoff Line & Industrial Road

	1	•	†	1	-	ļ
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	*	7	1			4
Traffic Volume (vph)	199	36	387	193	23	138
Future Volume (vph)	199	36	387	193	23	138
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.955			
Flt Protected	0.950					0.993
Satd. Flow (prot)	1770	1583	1779	0	0	1850
Flt Permitted	0.950					0.993
Satd. Flow (perm)	1770	1583	1779	0	0	1850
Link Speed (k/h)	50		80			80
Link Distance (m)	229.6		177.2			917.5
Travel Time (s)	16.5		8.0			41.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	216	39	421	210	25	150
Shared Lane Traffic (%)						
Lane Group Flow (vph)	216	39	631	0	0	175
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6	Ĭ	0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	100	100		100	100	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type: C	ther					
Control Type: Unsignalized						
Intersection Capacity Utilizati	on 49.8%			IC	U Level	of Service
Analysis Period (min) 15						

int Dolay, 3/Von	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	1	↑	1		1	7
Traffic Vol, veh/h	0	150	498	130	163	0
Future Vol, veh/h	0	150	498	130	163	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized		None	-		-	None
Storage Length	0	-	-	-	0	0
Veh in Median Storage		0	0	_	0	-
Grade. %	-, π = -	0	0	_	0	
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
	0	163		141	177	
Mvmt Flow	0	163	541	141	177	0
Major/Minor	Major1	1	Major2		Minor2	
Conflicting Flow All	682	0	-	0	775	612
Stage 1	-	-	_	-	612	-
Stage 2		-			163	
Critical Hdwy	4.12	-			6.42	6.22
					5.42	0.22
Critical Hdwy Stg 1	-	-	-	-		
Critical Hdwy Stg 2	-	-	-	-	5.42	
Follow-up Hdwy	2.218	-	-	-	3.518	
Pot Cap-1 Maneuver	911	-	-	-	366	493
Stage 1	-	-	-	-	541	-
Stage 2	-	-	-	-	866	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	911	-	-	-	366	493
Mov Cap-2 Maneuver	-	-	-	-	452	-
Stage 1	-	-	-	-	541	-
Stage 2	-	-	-	-	866	-
Approach	EB		WB		SB	
HCM Control Delay, s	0		0		18	
HCM LOS					С	
Minay Lana/Mais - Mina		EBL	EBT	WBT	WDD	SBLn1 :
Minor Lane/Major Mvn	11				WBR	
Capacity (veh/h)		911	-	-	-	452
HCM Lane V/C Ratio		-	-	-	-	0.392
HCM Control Delay (s)		0	-	-	-	18
HCM Lane LOS		Α	-	-	-	С
HCM 95th %tile Q(veh)	0	-	-	-	1.8

Synchro 11 Report Page 20

Intersection							
Int Delay, s/veh	6						
• •		14/05	NID-	UBE	001	0.0.5	
Movement	WBL	WBR	NBT	NBR	SBL	SBT	ĺ
Lane Configurations	ሻ	7	1→			4	
Traffic Vol, veh/h	199	36	387	193	23	138	
Future Vol, veh/h	199	36	387	193	23	138	
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Stop	Stop	Free	Free	Free	Free	
RT Channelized	-	None	-	None		None	
Storage Length	0	0	-	-	-	-	
Veh in Median Storage	e,# 0	-	0	-	-	0	
Grade, %	0	-	0	-	-	0	
Peak Hour Factor	92	92	92	92	92	92	
Heavy Vehicles, %	2	2	2	2	2	2	
Mymt Flow	216	39	421	210	25	150	
	Minor1		Major1		Major2		
Conflicting Flow All	726	526	0	0	631	0	
Stage 1	526	-	-	-	-	-	
Stage 2	200	-	-	-	-	-	
Critical Hdwy	6.42	6.22	-	-	4.12	-	
Critical Hdwy Stg 1	5.42	-	-	-	-	-	
Critical Hdwy Stg 2	5.42	-	-	-	-	-	
Follow-up Hdwy	3.518	3.318	-	-	2.218	-	
Pot Cap-1 Maneuver	391	552	-	-	951		
Stage 1	593	-		-	-	-	
Stage 2	834	_		_	-	-	
Platoon blocked, %				-		-	
Mov Cap-1 Maneuver	380	552			951	_	
Mov Cap-2 Maneuver	380	- 002	-		-	-	
Stage 1	593			_			
Stage 2	810					-	
Stage 2	010		-				
Approach	WB		NB		SB		
HCM Control Delay, s	24.1		0		1.3		
HCM LOS	С						
Minor Lane/Major Mvn	nt	NBT	NBR\	WBLn1V		SBL	
Capacity (veh/h)		-	-	380	552	951	
HCM Lane V/C Ratio		-	-	0.569	0.071	0.026	
HCM Control Delay (s))	-	-	26.3	12	8.9	
HCM Lane LOS		-	-	D	В	Α	
HCM 95th %tile Q(veh)	-	-	3.4	0.2	0.1	
	,						

	1	•	†	1	1	ļ
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		1			ર્ન
Traffic Volume (vph)	22	12	164	36	18	107
Future Volume (vph)	22	12	164	36	18	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.953		0.976			
Flt Protected	0.969					0.993
Satd. Flow (prot)	1720	0	1818	0	0	1850
Flt Permitted	0.969					0.993
Satd. Flow (perm)	1720	0	1818	0	0	1850
Link Speed (k/h)	50		50			50
Link Distance (m)	148.7		226.2			1393.8
Travel Time (s)	10.7		16.3			100.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	24	13	178	39	20	116
Shared Lane Traffic (%)						
Lane Group Flow (vph)	37	0	217	0	0	136
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	100	100		100	100	
Sign Control	Stop		Free			Free
Intersection Summary						
	Other					
Control Type: Unsignalized						
Intersection Capacity Utiliza	tion 30.8%			IC	U Level	of Service
Analysis Period (min) 15						

Synchro 11 Report Page 23 Synchro 11 Report Page 22

2035 Future Total P.M. 09-26-2024

Intersection						
Int Delay, s/veh	1.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
		WDK		NDN	ODL	
Lane Configurations	Y	40	1	00	40	4
Traffic Vol, veh/h	22	12	164	36	18	107
Future Vol, veh/h	22	12	164	36	18	107
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-		-	
Storage Length	0	-	-	-	-	-
Veh in Median Storage		-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mymt Flow	24	13	178	39	20	116
Major/Minor	Minaud		Aniord		Maiar	
	Minor1 354	198	Major1	0	Major2	
Conflicting Flow All			0	U	217	0
Stage 1	198	-	-	-	-	-
Stage 2	156	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	644	843	-	-	1353	-
Stage 1	835	-	-	-	-	-
Stage 2	872	-	-	-	-	-
Platoon blocked, %	0,2					-
Mov Cap-1 Maneuver	634	843		-	1353	_
Mov Cap-2 Maneuver	634	-			1000	
Stage 1	835	-				
		-	-	-	-	-
Stage 2	858	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s	10.5		0		1.1	
HCM LOS	В					
Minor Lane/Major Mvm	nt.	NBT	NIDDI	VBLn1	SBL	SBT
	IL					
Capacity (veh/h)		-	-	695	1353	-
HCM Lane V/C Ratio		-	-	0.053		-
HCM Control Delay (s)		-	-	10.5	7.7	0
HCM Lane LOS		-	-	В	Α	Α
HCM 95th %tile Q(veh)	-	-	0.2	0	-

	1	1	†	-	-	1
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		1			4
Traffic Volume (vph)	22	0	199	36	0	129
Future Volume (vph)	22	0	199	36	0	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.979			
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	1824	0	0	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	1824	0	0	1863
Link Speed (k/h)	50		50			50
Link Distance (m)	142.7		363.5			226.2
Travel Time (s)	10.3		26.2			16.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	24	0	216	39	0	140
Shared Lane Traffic (%)						
Lane Group Flow (vph)	24	0	255	0	0	140
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	100	100		100	100	
Sign Control	Stop		Free			Free
Intersection Summary						
	Other					
Control Type: Unsignalized						
Intersection Capacity Utiliza	tion 22.7%			IC	U Level	of Service
Analysis Period (min) 15						

Synchro 11 Report
Page 24

Synchro 11 Report
Page 25

Lanes, Volumes, Timings 13: Uhthoff Line & South Site Access

	1	*	†	1	-	↓	
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	W		1			र्स	
Traffic Volume (vph)	56	12	224	162	18	133	
Future Volume (vph)	56	12	224	162	18	133	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	0.976		0.943				
Flt Protected	0.960					0.994	
Satd. Flow (prot)	1745	0	1757	0	0	1852	
Flt Permitted	0.960					0.994	
Satd. Flow (perm)	1745	0	1757	0	0	1852	
Link Speed (k/h)	50		50			50	
Link Distance (m)	353.0		917.5			363.5	
Travel Time (s)	25.4		66.1			26.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	61	13	243	176	20	145	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	74	0	419	0	0	165	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Right	Left	Left	
Median Width(m)	3.6		0.0			0.0	
Link Offset(m)	0.0		0.0			0.0	
Crosswalk Width(m)	4.8		4.8			4.8	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (k/h)	100	100		100	100		
Sign Control	Stop		Free			Free	
Intersection Summary							
	Other						
Control Type: Unsignalized							
Intersection Capacity Utilizat	ion 32.6%			IC	U Level	of Service A	Α
Analysis Period (min) 15							

t Delay, s/veh overment WBL WBR NBT NBR SBL SBT ane Configurations araffic Vol, veh/h 22 0 199 36 0 129 onflicting Peds, #hr 0 0 0 0 0 0 0 0 gn Control Stop Stop Free Free Free Free To Channelized - None - None - None orage Length 0							
WBL WBR NBT NBR SBL SBT NBR NBT NBR	Intersection						
ane Configurations araffic Vol, veh/h	Int Delay, s/veh	0.6					
ane Configurations araffic Vol, veh/h	Movement	WBL	WBR	NBT	NBR	SBL	SBT
raffic Vol, veh/h							
uture Vol, veh/h uture Vol, veh/h officiting Peds, #/hr officitin			0		36	0	
onflicting Peds, #/hr 0 None None </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>							
gn Control Stop Stop Free Free Free Free T Channelized None N							
T Channelized	Sign Control	-					
torage Length 0	RT Channelized						
ch in Median Storage, # 0 - 0 - 0 - 0 orade, % 0 - 0 - 0 - 0 - 0 orade, % 0 - 0 - 0 - 0 - 0 orade, % 0 - 0 - 0 - 0 orade, % 0 0 - 0 - 0 - 0 orade, % 0 0 - 0 - 0 - 0 orade, % 0 0 - 0 - 0 - 0 orade, % 0 0 - 0 - 0 - 0 orade, % 0 0 - 0 - 0 orade, % 0 0 0 292 92 92 92 92 eavy Vehicles, % 2 2 2 2 2 2 2 2 vmt Flow 24 0 216 39 0 140 ajor/Minor Minor1 Major1 Major2 onflicting Flow All 376 236 0 0 255 0 orade, and a conflicting Flow All 376 236 0 0 255 0 orade, and a conflicting Flow All 376 236 0 0 255 0 orade, and a conflicting Flow All 376 236							
rade, % 0 - 0 - 0 - 0 0 0 0 0 0 0 0 0 0 0 0 0			_	0			0
eak Hour Factor 92	Grade. %		_	-			
eavy Vehicles, % 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2							
Application							
ajor/Minor Minor1 Major1 Major2 Onflicting Flow All 376 236 0 0 255 0							
onflicting Flow All 376 236 0 0 255 0 Stage 1 236 -	WWITH FIOW	24	U	210	Jø	U	140
onflicting Flow All 376 236 0 0 255 0 Stage 1 236 -							
Stage 1	Major/Minor	Minor1	1	Major1		Major2	
Stage 2 140 -	Conflicting Flow All	376	236	0	0	255	0
ritical Hdwy 6.42 6.22 - 4.12 - 1	Stage 1	236	-	-	-	-	-
ritical Hdwy Stg 1 5.42	Stage 2	140	-	-	-	-	-
ritical Hdwy Stg 2 5.42	Critical Hdwy	6.42	6.22	-	-	4.12	-
ritical Hdwy Stg 2 5.42	Critical Hdwy Stg 1	5.42	-	-	-	-	-
Dollow-up Hdwy 3.518 3.318 - 2.218 -	Critical Hdwy Stg 2	5.42	-	-	-	-	-
Stage 1	Follow-up Hdwy	3.518	3.318		-	2.218	-
Stage 1 803 -	Pot Cap-1 Maneuver	625	803	-	-	1310	_
Stage 2			-		-		_
Altonomorphic Altonomorphi			-	_	_	_	_
ov Cap-1 Maneuver ov Cap-2 Maneuver ov Cap-		001					
ov Cap-2 Maneuver Stage 1 625 stage 1		625	803			1310	
Stage 1 803 -					_	1010	-
Stage 2 887 - -							
Deproach WB NB SB CM Control Delay, s 11 0 0 0				_		_	
CM Control Delay, s 11 0 0 CM LOS B B B Inor Lane/Major Mvmt NBT NBRWBLn1 SBL SBT apacity (veh/h) - 625 1310 - CBM Lane V/C Ratio - 0.038 CM Control Delay (s) - 11 0 - CM Lane LOS - 11 0 - CM Lane LOS - B A B A CM CONTROL DELAY (S) - B A CM Lane LOS - B B B A CM LANE LOS - B B B B B B B B B B B B B B B B B B	Stage 2	007					•
CM Control Delay, s 11 0 0 CM LOS B B B Inor Lane/Major Mvmt NBT NBRWBLn1 SBL SBT apacity (veh/h) - 625 1310 - CBM Lane V/C Ratio - 0.038 CM Control Delay (s) - 11 0 - CM Lane LOS - 11 0 - CM Lane LOS - B A B A CM CONTROL DELAY (S) - B A CM Lane LOS - B B B A CM LANE LOS - B B B B B B B B B B B B B B B B B B							
CM LOS B sinor Lane/Major Mvmt NBT NBRWBLn1 SBL SBT apacity (veh/h) - 625 1310 - CM Lane V/C Ratio - 0.038 - - CM Control Delay (s) - 11 0 - CM Lane LOS - B A -	Approach	WB		NB		SB	
inor Lane/Major Mvmt NBT NBRWBLn1 SBL SBT apacity (veh/h) - 625 1310 - CM Lane V/C Ratio - 0.038 CM Control Delay (s) - 11 0 - CM Lane LOS - B A	HCM Control Delay, s	11		0		0	
apacity (veh/h) 625 1310 - CM Lane V/C Ratio - 0.038 CM Control Delay (s) - 11 0 - CM Lane LOS - B A -	HCM LOS	В					
apacity (veh/h) 625 1310 - CM Lane V/C Ratio - 0.038 CM Control Delay (s) - 11 0 - CM Lane LOS - B A							
apacity (veh/h) 625 1310 - CM Lane V/C Ratio - 0.038 CM Control Delay (s) - 11 0 - CM Lane LOS - B A	Minor Long/Major Myn	mt	NDT	NIDDI	MDI 51	CDI	CDT
CM Lane V/C Ratio - 0.038 CM Control Delay (s) - 11 0 CM Lane LOS - B A		nι					
CM Control Delay (s) - - 11 0 - CM Lane LOS - - B A -							
CM Lane LOS B A -			-	-			
)	-	-			-
CM 95th %tile Q(veh) 0.1 0 -			-	-			
	HCM 95th %tile Q(veh	1)	-	-	0.1	0	-

Synchro 11 Report Page 26

Intersection						
Int Delay, s/veh	1.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		₽			ર્ન
Traffic Vol, veh/h	56	12	224	162	18	133
Future Vol, veh/h	56	12	224	162	18	133
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-		-	
Storage Length	0	-	-	-	-	-
Veh in Median Storage		-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	61	13	243	176	20	145
Major/Minor	Minor1	N	Major1		Major2	
Conflicting Flow All	516	331	0	0	419	0
Stage 1	331	-	-	-	+ 13	-
Stage 2	185	-				
Critical Hdwy	6.42	6.22			4.12	-
Critical Hdwy Stg 1	5.42	0.22			4.12	-
Critical Hdwy Stg 2	5.42	-	-		-	-
Follow-up Hdwy	3.518			-	2.218	-
Pot Cap-1 Maneuver	519	711			1140	-
Stage 1	728	711		-	1140	-
Stage 2	847	-				-
Platoon blocked, %	047	-			-	
	509	714	-	-	1110	-
Mov Cap-1 Maneuver		711	-	-	1140	-
Mov Cap-2 Maneuver	509	-	-	-	-	-
Stage 1	728	-	-	-	-	-
Stage 2	831	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s	12.8		0		1	
HCM LOS	В					
Min and an albania		NDT	NDD	MDLd	OD	ODT
Minor Lane/Major Mvn	nt	NBT	NBKV	VBLn1	SBL	SBT
Capacity (veh/h)		-	-	536	1140	-
HCM Lane V/C Ratio		-		0.138		-
HCM Control Delay (s)		-	-	12.8	8.2	0
HCM Lane LOS		-	-	В	Α	Α
HCM 95th %tile Q(veh)	-	-	0.5	0.1	-

Lanes, Volumes, Timings

1: Burnside Line & Industrial Road/Brodie Drive

2040 Future Background A.M. 09-25-2024

	٠	-	•	1	•	•	1	†	-	-	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	^	7	1	↑	7	7	^	7	7	1>	
Traffic Volume (vph)	48	30	131	261	6	44	324	319	94	42	278	47
Future Volume (vph)	48	30	131	261	6	44	324	319	94	42	278	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		75.0	100.0		0.0	75.0		65.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.978	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1900	1615	1736	1900	1615	1805	1439	1468	1805	1520	0
Flt Permitted	0.753			0.581			0.308			0.551		Ť
Satd. Flow (perm)	1431	1900	1615	1061	1900	1615	585	1439	1468	1047	1520	0
Right Turn on Red			Yes	,		Yes			Yes	,		Yes
Satd. Flow (RTOR)			255			200			200		10	. 30
Link Speed (k/h)		50			60			60			60	
Link Distance (m)		140.4			136.5			65.5			1953.3	
Travel Time (s)		10.1			8.2			3.9			117.2	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	4%	0%	0%	0%	32%	10%	0%	26%	0%
Adj. Flow (vph)	53	33	144	287	7	48	356	351	103	46	305	52
Shared Lane Traffic (%)	55	33	177	201	,	70	330	331	100	70	303	52
Lane Group Flow (vph)	53	33	144	287	7	48	356	351	103	46	357	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	Leit	3.6	rtigrit	Leit	3.6	rtigrit	Leit	3.6	rtigrit	Leit	3.6	ragnt
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes			4.0			4.0			4.0	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	1.00	1.00	25	1.00	1.00	25	1.00	1.00	25	1.00	1.00
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	13
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
\ /	2.0	0.6	2.0	2.0		2.0	2.0	0.6	2.0	2.0	0.6	
Detector 1 Size(m)					0.6							
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	
Detector 1 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			C I +Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	

Synchro 11 Report Page 28

Lanes, Volumes, Timings

2040 Future Background A.M. 09-25-2024

1: Burnside Line & Industrial Road/Brodie Drive

	۶	→	*	•	•	*	1	†	-	-	ļ	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	25.0	25.0	5.0	25.0	
Minimum Split (s)	9.5	21.0	21.0	9.5	21.0	21.0	9.5	31.0	31.0	9.5	31.0	
Total Split (s)	9.6	21.0	21.0	16.1	27.5	27.5	19.4	43.4	43.4	9.5	33.5	
Total Split (%)	10.7%	23.3%	23.3%	17.9%	30.6%	30.6%	21.6%	48.2%	48.2%	10.6%	37.2%	
Maximum Green (s)	5.1	15.0	15.0	11.6	21.5	21.5	14.9	37.4	37.4	5.0	27.5	
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	6.0	6.0	4.5	6.0	6.0	4.5	6.0	6.0	4.5	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Min	Min	None	Min	Min	None	Min	Min	None	Min	
Act Effct Green (s)	21.6	15.0	15.0	32.1	25.0	25.0	46.6	39.5	39.5	32.6	26.1	
Actuated g/C Ratio	0.25	0.17	0.17	0.37	0.29	0.29	0.53	0.45	0.45	0.37	0.30	
v/c Ratio	0.14	0.10	0.30	0.61	0.01	0.08	0.70	0.54	0.13	0.11	0.78	
Control Delay	20.4	32.6	1.5	27.8	26.3	0.2	20.2	22.8	0.4	11.8	40.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	20.4	32.6	1.5	27.8	26.3	0.2	20.2	22.8	0.4	11.8	40.9	
LOS	С	С	Α	С	С	Α	С	С	Α	В	D	
Approach Delay		10.3			23.9			18.8			37.6	
Approach LOS		В			С			В			D	
Queue Length 50th (m)	6.0	5.0	0.0	37.8	0.9	0.0	35.1	48.1	0.0	3.8	56.8	
Queue Length 95th (m)	14.2	13.5	0.0	62.7	4.5	0.0	54.3	77.2	0.0	8.8	#99.6	
Internal Link Dist (m)		116.4			112.5			41.5			1929.3	
Turn Bay Length (m)	25.0		75.0	100.0			75.0		65.0	40.0		
Base Capacity (vph)	374	325	487	478	541	603	518	653	775	432	484	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.14	0.10	0.30	0.60	0.01	80.0	0.69	0.54	0.13	0.11	0.74	

Intersection Summary

Intersection Summary
Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 87.7
Natural Cycle: 75
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 22.9
Intersection Capacity Utilization 73.7%
Analysis Pacied (mix) 15

Intersection LOS: C ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Lanes, Volumes, Timings 1: Burnside Line & Industrial Road/Brodie Drive 2040 Future Background A.M. 09-25-2024

Synchro 11 Report

Page 3



Lanes, Volumes, Timings 2: Burnside Line & Highway 11 Westbound On-Ramp 2040 Future Background A.M.

09-25-2024

	•	*	1	Ť	Ţ	1
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				^	^	7
Traffic Volume (vph)	0	0	0	1103	388	273
Future Volume (vph)	0	0	0	1103	388	273
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	1638	1810	1214
Flt Permitted						
Satd. Flow (perm)	0	0	0	1638	1810	1214
Link Speed (k/h)	50			70	60	
Link Distance (m)	185.9			51.5	174.3	
Travel Time (s)	13.4			2.6	10.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	16%	5%	33%
Adj. Flow (vph)	0	0	0	1161	408	287
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1161	408	287
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	
Intersection Summary						
Area Type:	Other					

Area Type: Other Control Type: Unsignalized Intersection Capacity Utilization 61.4% Analysis Period (min) 15

ICU Level of Service B

Lanes, Volumes, Timings 3: Burnside Line & Highway 11 Westbound 2040 Future Background A.M. 09-25-2024

	1	*	†	-	-	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	*	7	<u></u>	7		<u> </u>
Traffic Volume (vph)	183	268	835	205	0	388
Future Volume (vph)	183	268	835	205	0	388
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	1000	80.0	0.0	1000
Storage Lanes	1	1		1	0.0	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.850	1.00	0.850	1.00	1.00
Fit Protected	0.950	0.000		0.000		
Satd. Flow (prot)	1787	1583	1638	1509	0	1810
Satd. Flow (prot) Fit Permitted	0.950	1003	1038	1509	U	1010
		4500	1000	1500	0	1010
Satd. Flow (perm)	1787	1583	1638	1509	0	1810
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		176		216		
Link Speed (k/h)	50		60			60
Link Distance (m)	104.8		160.3			51.5
Travel Time (s)	7.5		9.6			3.1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	2%	16%	7%	0%	5%
Adj. Flow (vph)	193	282	879	216	0	408
Shared Lane Traffic (%)						
Lane Group Flow (vph)	193	282	879	216	0	408
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6	rugilt	0.0	rugiit	Lon	0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
	4.8		4.8			4.8
Two way Left Turn Lane	4.00	4.00	4.00	4.00	4.00	4.00
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1		2
Detector Template	Left	Right	Thru	Right		Thru
Leading Detector (m)	2.0	2.0	10.0	2.0		10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0
Detector 1 Size(m)	2.0	2.0	0.6	2.0		0.6
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex
Detector 1 Channel	O LA	OI - EX	31 - LA	31. EX		JIX
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0
	0.0	0.0		0.0		
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			CI+Ex			CI+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Perm	Perm	NA	Perm		NA
Protected Phases			6			2

Synchro 11 Report Page 4

Lanes, Volumes, Timings 3: Burnside Line & Highway 11 Westbound 2040 Future Background A.M. 09-25-2024

5. Darriside Line (a i ligitive	4 y 1 1 1	/ CStDC	Julia		
<u> </u>	1	1	1	1	1	ļ
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Permitted Phases	4	4		6		
Detector Phase	4	4	6	6		2
Switch Phase						_
Minimum Initial (s)	9.7	9.7	20.0	20.0		20.0
Minimum Split (s)	16.1	16.1	27.3	27.3		27.3
Total Split (s)	24.0	24.0	61.0	61.0		61.0
Total Split (%)	28.2%	28.2%	71.8%	71.8%		71.8%
Maximum Green (s)	17.6	17.6	53.7	53.7		53.7
Yellow Time (s)	4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	1.9	1.9	2.8	2.8		2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	6.4	6.4	7.3	7.3		7.3
Lead/Lag	0.4	0.4	1.5	1.5		7.5
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.2	3.2		3.2
Recall Mode	None	None	None	None		None
Act Effct Green (s)	13.5	13.5	41.9	41.9		41.9
Actuated g/C Ratio	0.19	0.19	0.60	0.60		0.60
v/c Ratio	0.19	0.19	0.89	0.00		0.00
	35.1	18.8	25.2	1.5		8.2
Control Delay	0.0	0.0	0.0			
Queue Delay	35.1	18.8	25.2	0.0 1.5		0.0 8.2
Total Delay LOS	35.1 D	18.8 B	25.2 C	1.5 A		8.2 A
	_	В		А		
Approach Delay	25.4		20.6			8.2
Approach LOS	C	40.0	C	0.0		Α
Queue Length 50th (m)	25.4	13.3	89.0	0.0		24.7
Queue Length 95th (m)	50.8	41.3	#201.2	7.4		45.8
Internal Link Dist (m)	80.8		136.3	00.0		27.5
Turn Bay Length (m)			400:	80.0		
Base Capacity (vph)	472	547	1284	1229		1419
Starvation Cap Reductn	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0		0
Storage Cap Reductn	0	0	0	0		0
Reduced v/c Ratio	0.41	0.52	0.68	0.18		0.29

Intersection Summary	
Area Type:	Other
Cycle Length: 85	

Cycle Length: 85
Actuated Cycle Length: 69.7
Natural Cycle: 65
Control Type: Semi Act-Uncoord
Maximum v/o Ratio: 0.89
Intersection Signal Delay: 19.2
Intersection Capacity Uff

Intersection LOS: B ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Synchro 11 Report Page 6 Lanes, Volumes, Timings 3: Burnside Line & Highway 11 Westbound 2040 Future Background A.M. 09-25-2024



Protected Phases

6

2

	•	*	1	†	ļ	4
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	8	8	6			2
Detector Phase	8	8	1	6	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	7.0	20.0	20.0	20.0
Minimum Split (s)	18.0	18.0	10.0	41.0	41.0	41.0
Total Split (s)	38.0	38.0	10.0	52.0	42.0	42.0
Total Split (%)	42.2%	42.2%	11.1%	57.8%	46.7%	46.7%
Maximum Green (s)	31.8	31.8	8.0	44.9	34.9	34.9
Yellow Time (s)	4.5	4.5	2.0	4.5	4.5	4.5
All-Red Time (s)	1.7	1.7	0.0	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	2.0	7.1	7.1	7.1
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.2	3.2	3.2
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	24.1	24.1	40.8	35.3	28.1	28.1
Actuated g/C Ratio	0.33	0.33	0.55	0.48	0.38	0.38
v/c Ratio	0.79	0.25	0.32	0.85	0.77	0.10
Control Delay	38.6	5.0	11.1	28.4	30.5	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.6	5.0	11.1	28.4	30.5	8.4
LOS	D	A	В	С	С	Α
Approach Delay	28.4			25.9	28.3	
Approach LOS	C			C	C	
Queue Length 50th (m)	46.8	0.0	8.4	92.6	73.6	1.6
Queue Length 95th (m)	#95.1	12.4	18.7	#168.8	124.8	9.5
Internal Link Dist (m)	130.2			136.8	152.6	
Turn Bay Length (m)			55.0	. 50.0		40.0
Base Capacity (vph)	608	781	404	1183	929	747
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.19	0.31	0.63	0.58	0.08
Intersection Summary						
Area Type:	Other					
Cycle Length: 90						
Actuated Cycle Length: 73.6	3					
Natural Cycle: 80						
Control Type: Semi Act-Unc	oord					
Maximum v/c Ratio: 0.85						
Intersection Signal Delay: 27	7.3			li	ntersectio	n LOS: C
Intersection Capacity Utiliza						of Service C
Analysis Period (min) 15						
# 95th percentile volume e						
	exceeds ca	Dacity, or	ieue mav	be longe		

Lanes, Volumes, Timings 4: West Street North & Highway 11 Eastbound 2040 Future Background A.M. 09-25-2024



Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road

2040 Future Background A.M.

	•	-	*	1	-	•	1	1	1	1	Ţ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	†	7	*	f)		44	^	7	*	^	7
Traffic Volume (vph)	149	189	180	314	279	153	201	504	433	113	820	235
Future Volume (vph)	149	189	180	314	279	153	201	504	433	113	820	235
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	115.0		0.0	100.0		120.0	110.0		50.0
Storage Lanes	1		1	1		0	2		1	1		1
Taper Length (m)	70.0		•	65.0		=	80.0		•	100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt	1100	1100	0.850	1100	0.947	1100	0.07	0.00	0.850	1100	0.00	0.850
Flt Protected	0.950		0.000	0.950	0.011		0.950		0.000	0.950		0.000
Satd. Flow (prot)	1787	1881	1583	1787	1765	0	3467	3574	1568	1736	3471	1568
Flt Permitted	0.296	1001	1505	0.495	1700	· ·	0.950	3314	1300	0.393	3471	1500
Satd. Flow (perm)	557	1881	1583	931	1765	0	3467	3574	1568	718	3471	1568
Right Turn on Red	331	1001	Yes	931	1703	Yes	3407	3374	Yes	710	3471	Yes
Satd. Flow (RTOR)			186		27	168			446			187
Link Speed (k/h)		60	100		60			70	440		70	107
Link Distance (m)		186.6			853.6			529.0			469.5	
Travel Time (s)		11.2			51.2			27.2			24.1	
	0.07		0.97	0.97	0.97	0.97	0.07	0.97	0.97	0.97	0.97	0.97
Peak Hour Factor	0.97	0.97					0.97					
Heavy Vehicles (%)	1%	1%	2%	1%	3%	0%	1%	1%	3%	4%	4%	3%
Adj. Flow (vph)	154	195	186	324	288	158	207	520	446	116	845	242
Shared Lane Traffic (%)	454	405	400	004	440		007	500	446	440	0.45	040
Lane Group Flow (vph)	154	195	186	324	446	0	207	520		116	845	242
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	100		15	25		15	25		100
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
	3				, , , , , , , , , , , , , , , , , , ,			0		'	7	

Synchro 11 Report Page 10

Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road 2040 Future Background A.M.

	•	-	*	1	•		1	†	1	1	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2		2	6					8	4		4
Detector Phase	5	2	2	1	6		3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0		7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	12.0	27.2	27.2	12.0	33.2		11.5	21.0	21.0	11.5	22.5	22.5
Total Split (s)	12.0	39.0	39.0	17.0	44.0		12.0	42.0	42.0	12.0	42.0	42.0
Total Split (%)	10.9%	35.5%	35.5%	15.5%	40.0%		10.9%	38.2%	38.2%	10.9%	38.2%	38.2%
Maximum Green (s)	7.0	31.8	31.8	12.0	36.8		8.0	34.0	34.0	8.0	34.0	34.0
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	2.0	2.2	2.2	2.0	2.2		1.0	3.5	3.5	1.0	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.2	7.2	5.0	7.2		4.0	8.0	8.0	4.0	8.0	8.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.6	3.6	3.0	3.6		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	None	None	None	None	None
Walk Time (s)					7.0			7.0	7.0			
Flash Dont Walk (s)					19.0			6.0	6.0			
Pedestrian Calls (#/hr)					0			0	0			
Act Effct Green (s)	34.4	25.1	25.1	44.2	30.0		8.1	29.1	29.1	40.7	28.8	28.8
Actuated g/C Ratio	0.35	0.26	0.26	0.45	0.30		0.08	0.30	0.30	0.41	0.29	0.29
v/c Ratio	0.55	0.41	0.34	0.62	0.80		0.73	0.49	0.57	0.31	0.83	0.41
Control Delay	26.3	33.9	6.3	25.1	42.1		61.9	30.8	6.0	18.7	41.0	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.3	33.9	6.3	25.1	42.1		61.9	30.8	6.0	18.7	41.0	9.9
LOS	С	С	Α	С	D		Е	С	Α	В	D	Α
Approach Delay		22.1			34.9			26.8			32.6	
Approach LOS		С			С			С			С	
Queue Length 50th (m)	18.6	33.3	0.0	43.7	79.0		21.5	44.7	0.0	13.0	82.1	8.0
Queue Length 95th (m)	33.3	55.7	16.6	69.6	122.8		#44.2	66.5	23.9	26.4	116.2	29.3
Internal Link Dist (m)		162.6			829.6			505.0			445.5	
Turn Bay Length (m)	50.0			115.0			100.0		120.0	110.0		50.0
Base Capacity (vph)	282	614	642	524	683		284	1247	837	382	1211	668
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.32	0.29	0.62	0.65		0.73	0.42	0.53	0.30	0.70	0.36

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 98.4
Natural Cycle: 90
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.83

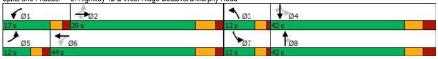
Intersection Signal Delay: 29.7 Intersection LOS: C Intersection Capacity Utilization 82.7% ICU Level of Service E

Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.

Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road 2040 Future Background A.M. 09-25-2024

Queue shown is maximum after two cycles.

Splits and Phases: 5: Highway 12 & West Ridge Boulevard/Murphy Road



Synchro 11 Report Synchro 11 Report Page 13 Page 12

Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol, veh/h	260	5	2	0	11	0	0	0	0	0	0	272
Future Vol. veh/h	260	5	2	0	11	0	0	0	0	0	Õ	272
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length		-	-			-						-
Veh in Median Storage	e.# -	0	-	-	0	-	-	0	-	-	0	
Grade, %	-	0			0	-		0			0	
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	32	67	0	0	30	100	50	0	100	0	50	30
Mvmt Flow	283	5	2	0	12	0	0	0	0	0	0	296
Majay/Minay	Minor			Aim au 4			Majaut			Aniar0		
	Minor2	440		Minor1	000		Major1			Major2		
Conflicting Flow All	154	148	148	152	296	0	296	0	0	0	0	0
Stage 1	148	148	-	0	0	-	-	-	-	-	-	•
Stage 2	6	0	-	152	296	-	-	-	-	-	-	-
Critical Hdwy	7.42	7.17	6.2	7.1	6.8	7.2	4.6	-	-	4.1	-	-
Critical Hdwy Stg 1	6.42	6.17	-	6.1	5.8	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.42	6.17	-	6.1	5.8	-	-	-	-	-	-	-
Follow-up Hdwy	3.788	4.603	3.3	3.5	4.27	4.2	2.65	-	-	2.2	-	
Pot Cap-1 Maneuver	749	639	904	820	572	-	1036	-	•	-	-	-
Stage 1	788	666	-	-	-	-	-	-	-	-	-	-
Stage 2	943	-	-	855	621	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	639	904	813	572	-	1036	-	-	-	-	-
Mov Cap-2 Maneuver	-	639	-	813	572	-	-	-	-	-	-	-
Stage 1	788	666	-	-	-	-	-	-	-	-	-	-
Stage 2	943	-	-	846	621	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s							0			0		
HCM LOS	-			-								
		ND	NDT	NDD.	-DI (1	MDI 1	ODI	0.0.7	000			
Minor Lane/Major Mvm	nt	NBL	NBT	NBR I	EBLn1\	WBLn1	SBL	SBT	SBR			
Capacity (veh/h)		1036	-	-	-	-	-	-	-			
HCM Lane V/C Ratio		-	-	-	-	-	-	-	-			
HCM Control Delay (s)		0	-	-	-	-	0	-	-			
HCM Lane LOS		Α	-	-	-	-	Α	-	-			
HCM 95th %tile O(veh	1	0										

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol, veh/h	0	187	9	40	150	5	5	6	43	7	13	2
Future Vol, veh/h	0	187	9	40	150	5	5	6	43	7	13	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage	e,# -	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	2	0	0	1	0	0	25	3	0	11	0
Mvmt Flow	0	195	9	42	156	5	5	6	45	7	14	2
Major/Minor	Major1			Major2			Minor1		N	Minor2		
Conflicting Flow All	161	0	0	204	0	0	451	445	200	468	447	159
Stage 1	101	-	U	204	-	-	200	200	200	243	243	109
Stage 1		-		-			251	245	-	225	204	-
Stage 2 Critical Hdwy	4.1		-	4.1			7.1	6.75	6.23	7.1	6.61	6.2
Critical Hdwy Stg 1	4.1			4.1	-		6.1	5.75	0.23	6.1	5.61	0.2
Critical Howy Stg 1 Critical Howy Stg 2	-	-	-	-	-	-	6.1	5.75	-	6.1	5.61	-
, ,	2.2	-	-	2.2	-	-	3.5	4.225	3.327	3.5	4.099	3.3
Follow-up Hdwy	1430		-	1380	-	-		4.225				
Pot Cap-1 Maneuver	1430	-	-		-	-	522	695	838	509	493 688	892
Stage 1		-	-	-	-	-	806		-	765		-
Stage 2	-	-	-	-	-	-	758	663	-	782	716	-
Platoon blocked, %	4.400	-	-	4200	-	-	407	450	020	405	477	000
Mov Cap-1 Maneuver	1430	-	-	1380	-	-	497	459	838	465	477	892
Mov Cap-2 Maneuver	-	-	-	-	-	-	497	459	-	465	477	-
Stage 1	-	-	-	-	-	-	806	695	-	765	665	-
Stage 2	-	-	-	-	-	-	716	641	-	734	716	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			1.6			10.4			12.6		
HCM LOS							В			В		
Minor Lane/Major Mvm	nt I	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	QRI n1			
	IL I		1430					WDK				
Capacity (veh/h)		725		-	-	1380	-	_	494			
HCM Caretar Dalay (a)		0.078	-	-	-	0.03	-		0.046			
HCM Control Delay (s)		10.4	0	-	-	7.7	0	-	12.6			
HCM Lane LOS	,	В	A	-	-	A	Α	-	В			
HCM 95th %tile Q(veh)	0.3	0	-	-	0.1	-	-	0.1			

Switch Phase

	•	-	7	1	•	*	1	†	1	1	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (vph)	16	87	141	22	69	2	99	403	38	6	180	16
Future Volume (vph)	16	87	141	22	69	2	99	403	38	6	180	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.922			0.997			0.991			0.990	
Flt Protected		0.997			0.988			0.991			0.998	
Satd. Flow (prot)	0	1724	0	0	1872	0	0	1276	0	0	1299	0
Flt Permitted		0.975			0.854			0.903			0.985	
Satd, Flow (perm)	0	1686	0	0	1618	0	0	1162	0	0	1282	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		135			2			10			11	
Link Speed (k/h)		50			50			70			60	
Link Distance (m)		1346.1			271.7			1953.3			357.4	
Travel Time (s)		96.9			19.6			100.5			21.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	1%	0%	0%	0%	0%	62%	0%	0%	50%	0%
Adj. Flow (vph)	17	95	153	24	75	2	108	438	41	7	196	17
Shared Lane Traffic (%)			,,,,			_	,,,,	100			100	
Lane Group Flow (vph)	0	265	0	0	101	0	0	587	0	0	220	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	2011	0.0	rugin	2011	0.0	, again	Lon	3.6	i ugiit	Lon	3.6	· ugiii
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		1.0										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	1.00	15	25	1100	15	25	1100	15	25	,,,,,	15
Number of Detectors	1	2		1	2		1	2	,,,	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel	O, Ex	O, Ex		OI LA	O, EX		O, Ex	O) · EX		OI LX	O, Ex	
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4		0.0	9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel		OI · LX			OI. EX			OI LA			OI LX	
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	1 01111	4		1 01111	8		1 01111	2		1 01111	6	
Permitted Phases	4	7		8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Dotottoi i ilase	-	-		U	0					U	J	

Synchro 11 Report Page 18

Lanes, Volumes, Timings 8: Burnside Line & Division Road W 2040 Future Background A.M. 09-25-2024

HCM 2010 TWSC 9: Industrial Road & Hurlwood Lane 2040 Future Background A.M. 09-25-2024

Splits and Phases:	8: Burnside Line & Division Road W		
↑ ø₂		 ♣ Ø4	
32 s		23 s	
↓ Ø6		▼ Ø8	
32 s		23·s	

Interception							
Intersection	0.8						
Int Delay, s/veh							
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	7	^	1		, J	7	
Traffic Vol, veh/h	0	140	318	58	38	0	
Future Vol, veh/h	0	140	318	58	38	0	
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Free	Free	Free	Free	Stop	Stop	
RT Channelized	-	None	-	None	-	None	
Storage Length	0	-	-	-	0	0	
Veh in Median Storage	e,# -	0	0	-	0	-	
Grade, %	-	0	0	-	0	-	
Peak Hour Factor	92	92	92	92	92	92	
Heavy Vehicles, %	2	2	2	2	2	2	
Mvmt Flow	0	152	346	63	41	0	
Majay/Minay	Majaut		Anion		Ainau^		
	Major1		Major2		Minor2	070	
Conflicting Flow All	409	0	-	0	530	378	
Stage 1	-	-	-	-	378	-	
Stage 2	-	-	-	-	152	-	
Critical Hdwy	4.12	-	-	-	6.42	6.22	
Critical Hdwy Stg 1	-	-	-	-	5.42	-	
Critical Hdwy Stg 2	-	-	-	-	5.42		
Follow-up Hdwy	2.218	-	-	-	3.518		
Pot Cap-1 Maneuver	1150	-	-	-	510	669	
Stage 1	-	-	-	-	693	-	
Stage 2	-	-	-	-	876	-	
Platoon blocked, %		-	-	-			
Mov Cap-1 Maneuver	1150	-	-	-	510	669	
Mov Cap-2 Maneuver	-	-	-	-	577	-	
Stage 1	-	-	-	-	693	-	
Stage 2	-	-	-	-	876	-	
Approach	EB		WB		SB		
HCM Control Delay, s	0		0		11.7		
HCM LOS	U		U		11.7 B		
I IOWI LUO					В		
Minor Lane/Major Mvm	nt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)		1150	-	-	-	577	-
HCM Lane V/C Ratio		-		-		0.072	-
HCM Control Delay (s)		0	-	-	-	11.7	0
HCM Lane LOS		Α	-	-	-	В	Α
HCM 95th %tile Q(veh)	0	-	-	-	0.2	-
	,						

Intersection							
Int Delay, s/veh	3.5						١
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	*	1	1			4	
Traffic Vol., veh/h	159	0	97	189	0	143	
Future Vol. veh/h	159	0	97	189	0	143	
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Stop	Stop	Free	Free	Free	Free	
RT Channelized	- 1.5				-		
Storage Length	0	0		-		-	
Veh in Median Storage			0		-	0	
Grade, %	0	-	0			0	
Peak Hour Factor	92	92	92	92	92	92	
Heavy Vehicles, %	2	2	2	2	2	2	
Mymt Flow	173	0	105	205	0	155	
WWITHTIOW	175	U	100	200	U	100	
	Minor1		//ajor1		Major2		
Conflicting Flow All	363	208	0	0	310	0	
Stage 1	208	-	-	-	-	-	
Stage 2	155	-	-	-	-	-	
Critical Hdwy	6.42	6.22	-	-	4.12	-	
Critical Hdwy Stg 1	5.42	-	-	-	-		
Critical Hdwy Stg 2	5.42	-	-	-	-	-	
Follow-up Hdwy	3.518	3.318	-	-	2.218	-	
Pot Cap-1 Maneuver	636	832	-	_	1250	_	
Stage 1	827	-	-	-	-		
Stage 2	873	-	_	_	_	-	
Platoon blocked, %	0.0						
Mov Cap-1 Maneuver	636	832	_		1250	_	
Mov Cap-1 Maneuver	636	- 002	-		-		
Stage 1	827	-	-				
Stage 2	873	-					
Staye 2	013	-					
Approach	WB		NB		SB		
HCM Control Delay, s	12.8		0		0		
HCM LOS	В						
Minor Lane/Major Mvm	nt	NBT	NBRV	VBLn1V	VBLn2	SBL	
Capacity (veh/h)		-		636	-	1250	
HCM Lane V/C Ratio				0.272		1230	
HCM Control Delay (s)		-	-	12.8	0	0	
HCM Lane LOS			-	12.0 B	A	A	
HCM 95th %tile Q(veh)	١	-	-	1.1		0	
HOW SOUL YOUR CO(VELL)	,			1.1		U	

	۶	→	•	•	•	•	1	†	~	1	ţ	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	^	7	7	†	7	*	^	7	7	1	
Traffic Volume (vph)	74	41	282	454	2	114	193	340	103	49	268	24
Future Volume (vph)	74	41	282	454	2	114	193	340	103	49	268	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		75.0	100.0		0.0	75.0		65.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1900	1568	1770	1900	1615	1805	1863	1429	1805	1747	0
Flt Permitted	0.757			0.568			0.386			0.407		
Satd. Flow (perm)	1438	1900	1568	1058	1900	1615	733	1863	1429	773	1747	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			300			145			200		5	
Link Speed (k/h)		50			60			60			60	
Link Distance (m)		140.4			136.5			65.5			1953.3	
Travel Time (s)		10.1			8.2			3.9			117.2	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	3%	2%	0%	0%	0%	2%	13%	0%	8%	0%
Adj. Flow (vph)	79	44	300	483	2	121	205	362	110	52	285	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	79	44	300	483	2	121	205	362	110	52	311	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			C I +Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	

Lanes, Volumes, Timings

2040 Future Background P.M.

1: Burnside Line & Industrial Road/Brodie Drive

09-25-2024

	•	-	*	1	•	*	1	†	-	1	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	25.0	25.0	5.0	25.0	
Minimum Split (s)	9.5	21.0	21.0	9.5	21.0	21.0	9.5	31.0	31.0	9.5	31.0	
Total Split (s)	9.9	21.0	21.0	28.0	39.1	39.1	9.8	31.5	31.5	9.5	31.2	
Total Split (%)	11.0%	23.3%	23.3%	31.1%	43.4%	43.4%	10.9%	35.0%	35.0%	10.6%	34.7%	
Maximum Green (s)	5.4	15.0	15.0	23.5	33.1	33.1	5.3	25.5	25.5	5.0	25.2	
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	6.0	6.0	4.5	6.0	6.0	4.5	6.0	6.0	4.5	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Min	Min	None	Min	Min	None	Min	Min	None	Min	
Act Effct Green (s)	21.9	15.0	15.0	41.6	32.3	32.3	33.9	29.3	29.3	31.6	25.1	
Actuated g/C Ratio	0.25	0.17	0.17	0.48	0.37	0.37	0.39	0.34	0.34	0.36	0.29	
v/c Ratio	0.21	0.13	0.58	0.72	0.00	0.18	0.58	0.58	0.18	0.15	0.61	
Control Delay	16.4	33.0	9.2	23.1	18.0	3.0	27.1	30.3	0.6	17.5	33.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	16.4	33.0	9.2	23.1	18.0	3.0	27.1	30.3	0.6	17.5	33.2	
LOS	В	С	Α	С	В	Α	С	С	Α	В	С	
Approach Delay		13.0			19.1			24.5			30.9	
Approach LOS		В			В			С			С	
Queue Length 50th (m)	7.2	6.8	0.0	58.1	0.3	0.0	23.9	57.5	0.0	5.6	47.7	
Queue Length 95th (m)	14.8	16.6	22.4	88.4	1.7	7.9	40.9	89.9	0.0	12.9	77.1	
Internal Link Dist (m)		116.4			112.5			41.5			1929.3	
Turn Bay Length (m)	25.0		75.0	100.0			75.0		65.0	40.0		
Base Capacity (vph)	384	327	518	698	729	709	351	629	615	339	510	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.21	0.13	0.58	0.69	0.00	0.17	0.58	0.58	0.18	0.15	0.61	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 87
Natural Cycle: 80
Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.72
Intersection Signal Delay: 21.7
Intersection Capacity Utilization 77.2%

Intersection LOS: C ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: Burnside Line & Industrial Road/Brodie Drive



Lanes, Volumes, Timings

2040 Future Background P.M. 09-25-2024

2: Burnside Line & Highway 11 Westbound On-Ramp

	•	•	1	†	ļ	1
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				↑	↑	7
Traffic Volume (vph)	0	0	0	1012	651	324
Future Volume (vph)	0	0	0	1012	651	324
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	1863	1863	1509
Flt Permitted						
Satd. Flow (perm)	0	0	0	1863	1863	1509
Link Speed (k/h)	50			50	50	
Link Distance (m)	185.9			51.5	174.3	
Travel Time (s)	13.4			3.7	12.5	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	0%	2%	2%	7%
Adj. Flow (vph)	0	0	0	1033	664	331
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1033	664	331
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	100	100	100			100
Sign Control	Free			Free	Free	
Intersection Summary						
Area Type:	Other					
Cantral Trans. Unaismalisma						

Control Type: Unsignalized Intersection Capacity Utilization 56.6%

Analysis Period (min) 15

ICU Level of Service B

Lanes, Volumes, Timings 3: Burnside Line & Highway 11 Westbound

2040 Future Background P.M.

09-25-2024

	1	*	†	-	1	Ţ
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	*	7	A	7		<u> </u>
Traffic Volume (vph)	231	217	795	327	0	651
Future Volume (vph)	231	217	795	327	0	651
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	1000	80.0	0.0	1000
Storage Lanes	1	1		1	0.0	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.850	1.00	0.850	1.00	1.00
Flt Protected	0.950	0.000		0.000		
	1752	1599	1863	1615	0	1863
Satd. Flow (prot)		1099	1003	1013	U	1003
Flt Permitted	0.950	4500	4000	4045	_	4000
Satd. Flow (perm)	1752	1599	1863	1615	0	1863
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		203		334		
Link Speed (k/h)	50		60			60
Link Distance (m)	104.8		160.3			51.5
Travel Time (s)	7.5		9.6			3.1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	3%	1%	2%	0%	0%	2%
Adj. Flow (vph)	236	221	811	334	0	664
Shared Lane Traffic (%)						
Lane Group Flow (vph)	236	221	811	334	0	664
Enter Blocked Intersection	No	No	No	No	No	No.
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6	Nigill	0.0	rignt	Leit	0.0
\ /						
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1		2
Detector Template	Left	Right	Thru	Right		Thru
Leading Detector (m)	2.0	2.0	10.0	2.0		10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0
Detector 1 Size(m)	2.0	2.0	0.6	2.0		0.6
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex
Detector 1 Channel	OITEX	OI LEX	OI! LX	OI! LX		OI! LX
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0
\ /	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)						
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			CI+Ex			CI+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Perm	Perm	NA	Perm		NA
Protected Phases			6			2

Synchro 11 Report Page 4

Lanes, Volumes, Timings 3: Burnside Line & Highway 11 Westbound

2040 Future Background P.M. 09-25-2024

rmitted Phases		1	*	†	-	-	ļ
# dector Phase 4 4 6 6 2	Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
witch Phase nimum Initial (s) 10.0 10.0 20.0 20.0 20.0 20.0 atal Split (s) 16.1 16.1 27.3 27.3 27.3 tal Split (s) 24.0 61.0 61.0 61.0 61.0 tal Split (%) 28.2% 28.2% 71.8% 71.8% 71.8% ximum Green (s) 17.9 17.9 53.7 53.7 53.7 Red Time (s) 4.5 4.5 4.5 4.5 4.5 Red Time (s) 1.6 1.6 2.8 2.8 2.8 2.8 st Time Adjust (s) 0.0 0.0 0.0 0.0 0.0 tal Lost Time (s) 6.1 6.1 7.3 7.3 7.3 7.3 ad/Lag ad-Lag Optimize? whicle Extension (s) 3.0 3.0 3.2 3.2 3.2 call Mode None None None None None None None tefficial teffict Green (s) 13.8 13.8 34.1 34.1 34.1 tuated g/C Ratio 0.22 0.22 0.55 0.55 0.55 c Ratio 0.61 0.43 0.79 0.32 0.65 introl Delay 32.2 8.5 17.5 1.7 12.9 telue Delay 0.0 0.0 0.0 0.0 0.0 tal Delay 32.2 8.5 17.5 1.7 12.9 steue Delay 0.7 12.9 12.9 proach Delay 20.7 12.9 12.9 proach Delay 20.7 12.9 12.9 proach Delay 20.7 12.9 12.9 intelle Length 50th (m) 24.8 1.7 66.1 0.0 47.4 seue Length 95th (m) 61.6 20.7 122.4 8.8 87.3 ernal Link Dist (m) 80.8 136.3 27.5 mr Bay Length (m) 61.6 20.7 122.4 8.8 87.3 erral Link Dist (m) 80.8 136.3 27.5 mr Bay Length (m) 61.6 20.7 122.4 8.8 87.3 erral Link Dist (m) 80.8 136.3 27.5 mr Bay Length (m) 61.6 20.7 122.4 8.8 87.3 erral Link Dist (m) 80.8 136.3 27.5 mr Bay Length (m) 80.0 0.5 10.23 0.42 eresection Summary ea Type: Other role Length: 62.1 tutural Cycle: 60 nntrol Type: Semi Act-Uncoord	Permitted Phases	4	4		6		
nimum Initial (s) 10.0 10.0 20.0 20.0 20.0 nimum Split (s) 16.1 16.1 27.3 27.3 27.3 27.3 27.3 tal Split (s) 24.0 24.0 61.0 61.0 61.0 61.0 61.0 28.2% 28.2% 71.8% 71.8% 71.8% aximum Green (s) 17.9 17.9 53.7 53.7 53.7 16low Time (s) 4.5 4.5 4.5 4.5 4.5 4.5 4.5 4.5 4.5 4.5	Detector Phase	4	4	6	6		2
nimum Split (s) 16.1 16.1 27.3 27.3 27.3 27.3 tal Split (s) 24.0 24.0 61.0 61.0 61.0 61.0 tal Split (s) 28.2% 28.2% 71.8	Switch Phase						
tal Split (s)	Minimum Initial (s)	10.0	10.0	20.0	20.0		20.0
tal Split (%) 28.2% 28.2% 71.8% 71.8% 71.8% ximum Green (s) 17.9 17.9 53.7 53.7 53.7 53.7 s3.7 s3.7 s3.7 s3.7 s3.7 s3.7 s3.7 s	Minimum Split (s)	16.1	16.1	27.3	27.3		27.3
aximum Green (s) 17.9 17.9 53.7 53.7 53.7 low Time (s) 4.5 4.5 4.5 4.5 4.5 4.5 4.5 4.5 etc. Time (s) 1.6 1.6 1.6 2.8 2.8 2.8 2.8 st Time Adjust (s) 0.0 0.0 0.0 0.0 0.0 0.0 lotal Lost Time (s) 6.1 6.1 7.3 7.3 7.3 7.3 ad/Lag ad-Lag Optimize? hincke Extension (s) 3.0 3.0 3.2 3.2 3.2 locall Mode None None None None None None Leffet Green (s) 13.8 13.8 13.1 34.1 34.1 34.1 lotated g/C Ratio 0.22 0.22 0.55 0.55 0.55 locall Mode None None None None None None None Non	Total Split (s)	24.0	24.0	61.0	61.0		61.0
## A	Total Split (%)	28.2%	28.2%	71.8%	71.8%		71.8%
-Red Time (s)	Maximum Green (s)	17.9	17.9	53.7	53.7		53.7
st Time Adjust (s) 0.0 0.0 0.0 0.0 0.0 0.0 tal Lost Time (s) 6.1 6.1 7.3 7.3 7.3 7.3 7.3 add/Lag ad-Lag Optimize? hicke Extension (s) 3.0 3.0 3.2 3.2 3.2 call Mode None None None None None None tal Effet Green (s) 13.8 13.8 34.1 34.1 34.1 tuated g/C Ratio 0.22 0.22 0.55 0.55 0.55 0.55 0.55 0.55	Yellow Time (s)	4.5	4.5	4.5	4.5		4.5
tal Lost Time (s) 6.1 6.1 7.3 7.3 7.3 ad/Lag ad/Lag ad/Lag potimize? thicle Extension (s) 3.0 3.0 3.2 3.2 3.2 boal Mode None None None None None None t Effet Green (s) 13.8 13.8 13.4 1 34.1 34.1 34.1 tuated g/C Ratio 0.22 0.22 0.55 0.55 0.55 Ratio 0.61 0.43 0.79 0.32 0.65 birtrol Delay 32.2 8.5 17.5 1.7 12.9 birtrol Delay 32.2 8.5 17.5 1.7 1.7 12.9 birtrol Delay 32.2 8.5 17.5 1.7 17.7 12.9 birtrol Delay 32.2 8.5 17.5 1.7 1.7 12.9 birtrol Delay 32.2 8.5 17.5 1.7 1.7 12.9 bi	All-Red Time (s)	1.6	1.6	2.8			2.8
ad/Lag ad-Lag Optimize? hirlofe Extension (s)	Lost Time Adjust (s)	0.0		0.0			0.0
ad-Lag Optimize? hicle Extension (s) 3.0 3.0 3.2 3.2 3.2 scall Mode None None None None None t Effet Green (s) 13.8 13.8 34.1 34.1 34.1 tuated g/C Ratio 0.22 0.22 0.55 0.55 0.55 Ratio 0.61 0.43 0.79 0.32 0.65 introl Delay 32.2 8.5 17.5 1.7 12.9 seue Delay 0.0 0.0 0.0 0.0 0.0 tal Delay 32.2 8.5 17.5 1.7 12.9 SC C A B A B B proposch Delay 20.7 12.9 12.9 proposch LOS C B B seue Length 50th (m) 24.8 1.7 66.1 0.0 47.4 seue Length 95th (m) 61.6 20.7 122.4 8.8 87.3 semal Link Dist (m) 80.8 136.3 27.5 m Bay Length (m) se Capacity (vph) 534 629 1590 1428 1590 arvation Cap Reducth 0 0 0 0 0 silback Cap Reducth 0 0 0 0 0 0 0 silback Cap Reducth 0 0 0 0 0 0 0 silback Cap Reducth 0 0 0 0 0 0 0 0 silback Cap Reducth 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Total Lost Time (s)	6.1	6.1	7.3	7.3		7.3
thicke Extension (s) 3.0 3.0 3.2 3.2 3.2 3.2 call Mode None None None None None None None Non	Lead/Lag						
None None None None None None LEffct Green (s) 13.8 13.8 34.1 34	Lead-Lag Optimize?						
t Effct Green (s) 13.8 13.8 34.1 34.1 34.1 34.1 tuated g/C Ratio 0.22 0.22 0.55 0.55 0.55 0.55 shall on the control Delay 0.6 10.43 0.79 0.32 0.65 shrotol Delay 32.2 8.5 17.5 1.7 12.9 sheue Delay 0.0 0.0 0.0 0.0 0.0 1.0 0.0 1.0 0.0 1.0 0.0 1.0 0.0 1.0 0.0 0	Vehicle Extension (s)	3.0	3.0	3.2	3.2		3.2
truated g/C Ratio 0.22 0.22 0.55 0.55 0.55 Ratio 0.61 0.43 0.79 0.32 0.65 Incrol Delay 32.2 8.5 17.5 1.7 12.9 Incrol Delay 0.0 0.0 0.0 0.0 0.0 Ital Delay 32.2 8.5 17.5 1.7 12.9 Ital Delay 32.2 8.5 17.5 1.7 17.7 12.9 Ital Delay 32.2 8.5 17.5 17.7 12.9 Ital Delay 32.2 8.5 17.5 17.7 17.7 12.9 Ital Delay 32.2 8.5 17.5 17.7 17.7 12.9	Recall Mode	None	None	None	None		None
Ratio 0.61 0.43 0.79 0.32 0.65 Introl Delay 32.2 8.5 17.5 1.7 12.9 0.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Act Effct Green (s)	13.8	13.8	34.1	34.1		34.1
Second Carlot	Actuated g/C Ratio			0.55			
Select S	v/c Ratio						
tal Delay 32.2 8.5 17.5 1.7 12.9 NS C A B A B Proach Delay 20.7 12.9 12.9 12.9 12.9 12.9 12.9 12.9 12.9	Control Delay	32.2	8.5	17.5			12.9
DESTRUCTOR Color	Queue Delay						
proach Delay 20.7 12.9 12.9 proach LOS C B B B leue Length 50th (m) 24.8 1.7 66.1 0.0 47.4 leue Length 95th (m) 61.6 20.7 122.4 8.8 87.3 lemal Link Dist (m) 80.8 136.3 27.5 lemal Link Dist (m) 80.8 136.3 27.5 lemal Link Dist (m) 80.8 136.3 127.5 lemal Link Dist (m) 80.0 lemal Link	Total Delay						
Proach LOS	LOS	С	Α		Α		
leue Length 50th (m) 24.8 1.7 66.1 0.0 47.4 leue Length 95th (m) 61.6 20.7 122.4 8.8 87.3 ermal Link Dist (m) 80.8 136.3 27.5 m Bay Length (m) 80.8 136.3 27.5 m Bay Length (m) 80.0 sec Capacity (vph) 534 629 1590 1428 1590 arvation Cap Reducth 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Approach Delay						
leue Length 95th (m) 61.6 20.7 122.4 8.8 87.3 ernal Link Dist (m) 80.8 136.3 27.5 mrn Bay Length (m) 80.8 136.3 27.5 mrn Bay Length (m) 80.0 se Capacity (vph) 534 629 1590 1428 1590 arvation Cap Reductn 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Approach LOS	С		В			
ernal Link Dist (m) 80.8 136.3 27.5 rn Bay Length (m) 80.0 see Capacity (vph) 534 629 1590 1428 1590 arvation Cap Reductn 0 0 0 0 0 0 iillback Cap Reductn 0 0 0 0 0 0 orage Cap Reductn 0 0 0 0 0 0 orage Cap Reductn 0 0 0 0 0 0 0 orage Cap Reductn 0 0 0 0 0 0 0 orage Cap Reductn 0 0.44 0.35 0.51 0.23 0.42 ersection Summary ea Type: Other role Length: 85 tutated Cycle Length: 62.1 tutard Cycle: 60 ontrol Type: Semi Act-Uncoord	Queue Length 50th (m)	24.8	1.7	66.1	0.0		47.4
rn Bay Length (m) 80.0 see Capacity (vph) 534 629 1590 1428 1590 arvation Cap Reductn 0 0 0 0 0 0 orage Cap Reductn 0 0 0 0 0 0 orage Cap Reductn 0 0 0 0 0 0 oduced v/c Ratio 0.44 0.35 0.51 0.23 0.42 ersection Summary ea Type: Other rcle Length: 85 tuated Cycle Length: 62.1 stural Cycle: 60 ontrol Type: Semi Act-Uncoord	Queue Length 95th (m)		20.7		8.8		
see Capacity (vph) 534 629 1590 1428 1590 arvation Cap Reductn 0 0 0 0 0 0 illiback Cap Reductn 0 0 0 0 0 0 orage Cap Reductn 0 0 0 0 0 0 orage Cap Reductn 0 0 0 0 0 0 oduced v/c Ratio 0.44 0.35 0.51 0.23 0.42 ersection Summary ea Type: Other cole Length: 85 tuated Cycle Length: 62.1 tural Cycle: 60 ontrol Type: Semi Act-Uncoord	Internal Link Dist (m)	80.8		136.3			27.5
arvation Cap Reductn 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Turn Bay Length (m)						
iillback Cap Reductn 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Base Capacity (vph)						
prage Cap Reductn 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Starvation Cap Reductn		0	0			-
educed v/c Ratio 0.44 0.35 0.51 0.23 0.42 ersection Summary ea Type: Other cycle Length: 85 tuated Cycle Length: 62.1 tural Cycle: 60 ontrol Type: Semi Act-Uncoord	Spillback Cap Reductn	-					
ersection Summary ea Type: Other role Length: 85 tuated Cycle Length: 62.1 tural Cycle: 60 ntrol Type: Semi Act-Uncoord	Storage Cap Reductn	0		0	0		0
ea Type: Other cle Length: 85 tuated Cycle Length: 62.1 tural Cycle: 60 ntrol Type: Semi Act-Uncoord	Reduced v/c Ratio	0.44	0.35	0.51	0.23		0.42
rcle Length: 85 tuated Cycle Length: 62.1 stural Cycle: 60 ontrol Type: Semi Act-Uncoord	Intersection Summary						
tuated Öycle Length: 62.1 stural Cycle: 60 ontrol Type: Semi Act-Uncoord		Other					
utural Cycle: 60 ontrol Type: Semi Act-Uncoord	Cycle Length: 85						
ontrol Type: Semi Act-Uncoord	Actuated Cycle Length: 62.1						
	Natural Cycle: 60						
	Control Type: Semi Act-Unco	oord					
aximum v/c ratio: 0.79	Maximum v/c Ratio: 0.79						
ersection Signal Delay: 14.5 Intersection LOS: B	Intersection Signal Delay: 14	.5			ln:	tersection	LOS: B
ersection Capacity Utilization 66.4% ICU Level of Service C	Intersection Capacity Utilizati	ion 66.4%)		IC	U Level of	f Service
alysis Period (min) 15	Analysis Period (min) 15						



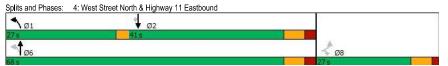


	1	7	1	†	↓	4
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	*	7	*	↑	<u> </u>	7
Traffic Volume (vph)	219	187	272	900	739	144
Future Volume (vph)	219	187	272	900	739	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	55.0	1900	1900	40.0
Storage Lanes	1	1	35.0			40.0
	7.5		7.5			1
Taper Length (m)		1.00		1.00	1.00	1.00
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.050	0.850	0.050			0.850
Flt Protected	0.950	4500	0.950		4000	4500
Satd. Flow (prot)	1736	1583	1787	1881	1863	1583
Flt Permitted	0.950		0.106			
Satd. Flow (perm)	1736	1583	199	1881	1863	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		197				69
Link Speed (k/h)	50			60	60	
Link Distance (m)	154.2			160.8	176.6	
Travel Time (s)	11.1			9.6	10.6	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	2%	1%	1%	2%	2%
Adi. Flow (vph)	231	197	286	947	778	152
Shared Lane Traffic (%)	201	101	200	J-1	110	102
Lane Group Flow (vph)	231	197	286	947	778	152
Enter Blocked Intersection	No	No	No.	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel	CITEX	CITEX	CITEX	CITEX	CITEX	CITEX
	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	pm+pt	NA	NA	Perm
Protected Phases			1	6	2	

•	*	1	1	↓	1
EBL	EBR	NBL	NBT	SBT	SBR
8	8	6			2
8	8	1	6	2	2
10.0	10.0	7.0	20.0	20.0	20.0
18.0	18.0	10.0	41.0	41.0	41.0
27.0	27.0	27.0	68.0	41.0	41.0
28.4%	28.4%	28.4%	71.6%	43.2%	43.2%
20.8	20.8	24.0	60.9	33.9	33.9
4.5	4.5	3.0	4.5	4.5	4.5
1.7	1.7	0.0	2.6	2.6	2.6
0.0	0.0	0.0	0.0	0.0	0.0
6.2	6.2	3.0	7.1	7.1	7.1
		Lead		Lag	Lag
		Yes		Yes	Yes
3.0	3.0	3.0	3.2	3.2	3.2
None	None	None	None	None	None
15.4	15.4	55.2	51.0	34.7	34.7
0.19	0.19	0.69	0.64	0.43	0.43
0.69	0.43	0.71	0.79	0.96	0.21
42.5	7.8	25.0	17.1	49.4	10.6
0.0	0.0	0.0	0.0	0.0	0.0
42.5	7.8	25.0	17.1	49.4	10.6
D	A	C	В	D	В
26.6			19.0	43.1	
C			В	D	
_	0.0	23.7		_	7.6
65.7	17.6	54.9	178.1	#243.2	24.1
			136.8	152.6	
		55.0		.02.0	40.0
458	563		1454	809	727
					0
		-	_		0
0	0	0	0	0	0
0.50	0.35	0.46	0.65	0.96	0.21
Other					
9					
coord					
8.9			lı	ntersectio	n LOS: C
			Į.	CU Level	of Service [
exceeds ca	pacity, gu	ieue mav	be longe	r.	
	EBL 8 8 8 10.0 18.0 27.0 28.4% 20.8 4.5 1.7 0.0 6.2 3.0 None 15.4 0.19 0.69 42.5 0.0 42.5 0.0 42.5 0.0 42.5 0.0 6.2 458 0.0 0.50 Other	BBL BBR 8 8 8 8 8 10.0 10.0 18.0 18.0 27.0 27.0 28.4% 28.4% 20.8 20.8 4.5 4.5 1.7 1.7 0.0 0.0 6.2 6.2 3.0 3.0 None None 15.4 15.4 0.19 0.19 0.69 0.43 42.5 7.8 0.0 0.0 42.5 7.8 0.0 0.0 42.5 7.8 0.0 1.9 0.69 0.43 42.5 7.8 0.0 0.0 42.5 7.8 0.0 0.0 33.8 0.0 65.7 17.6 130.2 458 563 0 0 0 0 0 0 0 0.50 0.35 Other	BBL BBR NBL	BBL BBR NBL NBT 8 8 6 8 8 1 6 10.0 10.0 7.0 20.0 18.0 18.0 10.0 41.0 27.0 27.0 27.0 68.0 28.4% 28.4% 28.4% 71.6% 20.8 20.8 24.0 60.9 4.5 4.5 3.0 4.5 1.7 1.7 0.0 2.6 0.0 0.0 0.0 0.0 6.2 6.2 3.0 7.1 Lead Yes 3.0 3.0 3.0 3.0 3.2 None None None None None 15.4 15.4 55.2 51.0 0.19 0.19 0.69 0.64 0.69 0.43 0.71 0.79 42.5 7.8 25.0 17.1 0.0 0.0 0.0 0.0 0.0 42.5 7.8 25.0 17.1 D A C B 26.6 19.0 C B 33.8 0.0 23.7 97.1 65.7 17.6 54.9 178.1 130.2 136.8 55.0 458 563 621 1454 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	BBL BBR NBL NBT SBT

Synchro 11 Report Page 6

Lanes, Volumes, Timings 4: West Street North & Highway 11 Eastbound 2040 Future Background P.M. 09-25-2024



Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road

299

299

1900

50.0

70.0

1.00

295

1900

1.00

315

315

1900

1.00 0.98 0.850

0.0

490

1900

65.0

1.00

115.0

287

1.00

1900

Lane Group

Lane Configurations

Traffic Volume (vph)

Future Volume (vph)
Ideal Flow (vphpl)

Storage Length (m)

Storage Lanes
Taper Length (m)
Lane Util. Factor

Ped Bike Factor

2040 Future Background P.M.

ኝኝ 300

300

1900

0.08

0.97

100.0

963

222

222

1900

0.0

1.00

09-25-2024 797 479 99 211 1900 1900 1900 120.0 110.0 50.0 100.0 0.95 1.00 1.00 0.95

Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1900	1599	1787	1767	0	3502	3539	1599	1805	3505	1583
Flt Permitted	0.148			0.174			0.950			0.112		
Satd. Flow (perm)	278	1900	1575	327	1767	0	3502	3539	1599	213	3505	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			249		24				505			161
ink Speed (k/h)		50			70			50			50	
ink Distance (m)		186.6			853.6			529.0			469.5	
ravel Time (s)		13.4			43.9			38.1			33.8	
Confl. Peds. (#/hr)			2	2								
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
leavy Vehicles (%)	1%	0%	1%	1%	1%	0%	0%	2%	1%	0%	3%	2%
dj. Flow (vph)	318	314	335	521	305	236	319	1024	510	105	848	224
Shared Lane Traffic (%)												
ane Group Flow (vph)	318	314	335	521	541	0	319	1024	510	105	848	224
Enter Blocked Intersection	No											
.ane Alignment	Left	Left	Right									
Median Width(m)		3.6			3.6			7.2			7.2	
.ink Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
leadway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
urning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
_eading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Frailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road 2040 Future Background P.M. 09-25-2024

	•	→	*	1	+	*	1	†	1	1	↓	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6					8	4		4
Detector Phase	5	2	2	1	6		3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0		7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	12.0	27.2	27.2	12.0	33.2		11.5	21.0	21.0	11.5	22.5	22.5
Total Split (s)	42.0	35.0	35.0	49.0	42.0		23.0	50.0	50.0	16.0	43.0	43.0
Total Split (%)	28.0%	23.3%	23.3%	32.7%	28.0%		15.3%	33.3%	33.3%	10.7%	28.7%	28.7%
Maximum Green (s)	37.0	27.8	27.8	44.0	34.8		19.0	42.0	42.0	12.0	35.0	35.0
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	2.0	2.2	2.2	2.0	2.2		1.0	3.5	3.5	1.0	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.2	7.2	5.0	7.2		4.0	8.0	8.0	4.0	8.0	8.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.6	3.6	3.0	3.6		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	None	None	None	None	None
Walk Time (s)					7.0			7.0	7.0			
Flash Dont Walk (s)					19.0			6.0	6.0			
Pedestrian Calls (#/hr)					0			0	0			
Act Effct Green (s)	55.5	27.0	27.0	72.9	39.3		17.0	42.4	42.4	49.7	35.5	35.5
Actuated g/C Ratio	0.39	0.19	0.19	0.51	0.28		0.12	0.30	0.30	0.35	0.25	0.25
v/c Ratio	0.82	0.87	0.67	0.93	1.07		0.76	0.97	0.61	0.56	0.97	0.43
Control Delay	56.3	81.5	22.3	58.1	107.1		74.3	71.9	7.1	39.7	77.4	17.4
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.3	81.5	22.3	58.1	107.1		74.3	71.9	7.1	39.7	77.4	17.4
LOS	Е	F	С	Е	F		Е	E	А	D	Е	В
Approach Delay		52.7			83.1			54.4			62.7	
Approach LOS	77.4	D	00.0	107.1	F		50.0	D		00.0	E	45.0
Queue Length 50th (m)	77.1	96.5	23.9	127.1	~166.4		50.0	~170.9	1.1	20.2	~148.6	15.8
Queue Length 95th (m)	105.7	#152.5	61.8	#192.2	#279.3		67.7	#225.0	32.8	34.3	#193.4	42.6
Internal Link Dist (m)	50.0	162.6		445.0	829.6		400.0	505.0	400.0	440.0	445.5	50.0
Turn Bay Length (m)	50.0	070	500	115.0	505		100.0	1050	120.0	110.0	070	50.0
Base Capacity (vph)	521	372	508	620	505		469	1052	830	211	873	515
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0.61	0.84	0.66	0.84	1.07		0.68	0.97	0.61	0.50	0.97	0.43
Reduced v/c Ratio	0.01	0.84	0.00	0.84	1.07		80.0	0.97	0.01	0.50	0.97	0.43

Intersection Summary Area Type: Cycle Length: 150
Actuated Cycle Length: 142.5 Natural Cycle: 110 Control Type: Semi Act-Uncoord Maximum v/c Ratio: 1.07 Intersection Signal Delay: 62.0
Intersection Capacity Utilization 97.8%

Intersection LOS: E ICU Level of Service F

> Synchro 11 Report Page 10

Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road

2040 Future Background P.M.

Analysis Period (min) 15

- Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.

 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.



Interception												
Intersection Int Delay, s/veh	0											
•												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol, veh/h	395	6	0	3	3	3	2	0	0	2	0	318
Future Vol, veh/h	395	6	0	3	3	3	2	0	0	2	0	318
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage	e,# -	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	18	25	0	0	100	0	0	0	0	0	0	27
Mvmt Flow	439	7	0	3	3	3	2	0	0	2	0	353
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	188	185	177	188	361	0	353	0	0	0	0	0
Stage 1	181	181	- 111	4	4	-	-	-	-	-	-	-
Stage 2	7	4		184	357			-		-		
Critical Hdwy	7.28	6.75	6.2	7.1	7.5	6.2	4.1			4.1		
Critical Hdwy Stg 1	6.28	5.75	0.2	6.1	6.5	0.2	4.1	-		7.1		
Critical Hdwy Stg 2	6.28	5.75	-	6.1	6.5	-		_	_	-		
Follow-up Hdwy		4.225	3.3	3.5	4.9	3.3	2.2	-		2.2		
Pot Cap-1 Maneuver	738	670	871	777	438	0.0	1217	-				
Stage 1	785	708	0/1	1024	731		1211					
Stage 1	975	849		822	487			_	-			
Platoon blocked, %	313	043		UZZ	401		_		-	_		
Mov Cap-1 Maneuver	-	669	871	770	437	_	1217			_		
Mov Cap-1 Maneuver	_	669	- 071	770	437	-	1411	-		-		
Stage 1	783	708	-	1022	730	-			-	-		
Stage 2	969	847		814	487							
Jiaye Z	303	041		014	407			_				
				ME			NE			0.5		
Approach	EB			WB			NB			SB		
HCM Control Delay, s							8					
HCM LOS	-			-								
Minor Lane/Major Mvn	nt	NBL	NBT	NBR I	EBLn1V	VBLn1	SBL	SBT	SBR			
Capacity (veh/h)		1217	-	-	-		-	-	-			
HCM Lane V/C Ratio		0.002										
HCM Control Delay (s)	8	0	-	_		-	-	-			
HCM Lane LOS	,	Ā	Ā									
HCM 95th %tile Q(veh	1)	0	-	-	-	_	-	-	-			
0011 70110 0(1011	,	0										

		_			_			_				
Intersection												
Int Delay, s/veh	3.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol., veh/h	5	267	16	44	338	18	25	24	86	7	7	2
Future Vol. veh/h	5	267	16	44	338	18	25	24	86	7	7	2
Conflicting Peds. #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	1100	-	None	-	-	None	- Olop	- Otop	None	Olop -	- Olop	None
Storage Length			INOIIC			NONE			INOHE -			NUITE
Veh in Median Storage.		0	-	-	0	-	-	0	-	-	0	_
Grade, %	, m =	0			0			0			0	_
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	2	0	0	1	0	0	0	0	0	20	0
Mymt Flow	5	287	17	47	363	19	27	26	92	8	8	2
WWITH THOW	J	201	17	41	303	פו	21	20	92	0	0	
Major/Minor N	/lajor1			Major2			Minor1			Minor2		
Conflicting Flow All	382	0	0	304	0	0	778	782	296	832	781	373
Stage 1	-	-	-	-	-	-	306	306	-	467	467	-
Stage 2	-	-	-	-	-	-	472	476	-	365	314	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.7	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.7	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.7	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4.18	3.3
Pot Cap-1 Maneuver	1188	-	-	1268	-	-	316	328	748	291	306	678
Stage 1	-	-	-	-	-	-	708	665	-	580	533	-
Stage 2	-	-	-	-	-	-	576	560	-	658	625	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1188	-	-	1268	-	-	297	311	748	230	290	678
Mov Cap-2 Maneuver	-	-	-	-	-	-	297	311	-	230	290	-
Stage 1	-	-	-	-	-	-	704	662	-	577	508	-
Stage 2	-	-		-	-		539	534	-	551	622	-
, in the second												
Annanah	ED			WD			ND			O.D.		
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.9			15.4			18.8		
HCM LOS							С			С		
Minor Lane/Major Mvm	t l	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)		489	1188	-	-	1268	-	-	278			
HCM Lane V/C Ratio		0.297	0.005		-	0.037		-	0.062			
HCM Control Delay (s)		15.4	8	0	-	7.9	0	-	18.8			
HCM Lane LOS		С	Ā	Ā		A	Ā		С			
HCM 95th %tile Q(veh)		1.2	0	-	-	0.1	-	-	0.2			
22 3(1011)												

	•	→	•	1	•	*	1	Ť	1	1	↓	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (vph)	14	169	183	25	130	3	241	194	75	6	104	31
Future Volume (vph)	14	169	183	25	130	3	241	194	75	6	104	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.932			0.998			0.980			0.970	
Flt Protected		0.998			0.992			0.977			0.998	
Satd. Flow (prot)	0	1742	0	0	1851	0	0	1793	0	0	1572	0
Flt Permitted		0.985			0.892			0.776			0.983	-
Satd. Flow (perm)	0	1720	0	0	1664	0	0	1424	0	0	1548	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		99			2			23			33	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1346.1			271.7			1953.3			357.4	
Travel Time (s)		96.9			19.6			140.6			25.7	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	2%	1%	0%	2%	0%	1%	1%	4%	0%	23%	0%
Adi, Flow (vph)	15	180	195	27	138	3	256	206	80	6	111	33
Shared Lane Traffic (%)	10	100	100	_,	100	·	200	200	00	v		00
Lane Group Flow (vph)	0	390	0	0	168	0	0	542	0	0	150	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	Lon	0.0	rugiit	Loit	0.0	ragne	Lon	3.6	rugiti	Loit	3.6	rugiit
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		1.0			1.0			1.0			1.0	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	100	1100	100	100	1100	100	100	1100	100	100	1.00	100
Number of Detectors	1	2	100	1	2	100	1	2	100	1	2	100
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel	OITEX	OITEX		CITEX	OITEX		OITEX	OITEX		CITEX	CITEX	
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)	0.0	9.4		0.0	9.4		0.0	9.4		0.0	9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel		CITEX			CITEX			CITEX			CITEX	
		0.0			0.0			0.0			0.0	
Detector 2 Extend (s)	Dores	NA		Perm	NA		Dorm	NA		Perm	NA	
Turn Type Protected Phases	Perm	NA 4		Perin	NA 8		Perm	NA 2		Perm	NA 6	
	4	4		8	ď		0	2		C	Ö	
Permitted Phases	4			8	8		2	2		6	6	
Detector Phase	4	4		8	ď		2	2		б	b	
Switch Phase												

	•	→	•	1	•	•	1	†	1	1	↓	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	23.0	23.0		23.0	23.0		32.0	32.0		32.0	32.0	
Total Split (%)	41.8%	41.8%		41.8%	41.8%		58.2%	58.2%		58.2%	58.2%	
Maximum Green (s)	18.5	18.5		18.5	18.5		27.5	27.5		27.5	27.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		13.4			13.4			27.7			27.7	
Actuated g/C Ratio		0.27			0.27			0.55			0.55	
v/c Ratio		0.73			0.38			0.68			0.17	
Control Delay		20.9			16.9			15.2			6.1	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		20.9			16.9			15.2			6.1	
LOS		С			В			В			Α	
Approach Delay		20.9			16.9			15.2			6.1	
Approach LOS		С			В			В			Α	
Queue Length 50th (m)		23.8			12.5			31.3			4.8	
Queue Length 95th (m)		48.4			25.3			#90.9			14.2	
Internal Link Dist (m)		1322.1			247.7			1929.3			333.4	
Turn Bay Length (m)												
Base Capacity (vph)		700			618			795			868	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.56			0.27			0.68			0.17	
Intersection Summary												
Area Type:	Other											
Cycle Length: 55												
Actuated Cycle Length: 50.2)											
Natural Cycle: 55												
Control Type: Semi Act-Unc	oord											
Maximum v/c Ratio: 0.73												
Intersection Signal Delay: 16	3.1			Ir	tersection	LOS: B						
Intersection Capacity Utiliza				IC	CU Level o	of Service	e C					
Analysis Period (min) 15												
# 95th percentile volume e	exceeds ca	pacity, qu	eue may	be longer	r.							
Queue shown is maximu												

Lanes, Volumes, Timings 8: Burnside Line & Division Road W 2040 Future Background P.M. 09-25-2024

HCM 2010 TWSC 9: Industrial Road & Hurlwood Lane 2040 Future Background P.M. 09-25-2024

Splits and Phases:	8: Burnside Line & Division Road W		
↑ Ø2		4 04	
32 s		23 s	
↓ Ø6		₹ø8	
32 s		23.s	

Intersection				_	_		
Int Delay, s/veh	1.3						
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	EDL.			WDK	SDL		
Traffic Vol, veh/h	1	↑ 127	1 → 462	44	1	7	
Future Vol, ven/h	0	127	462	44	69	0	
Conflicting Peds, #/hr	0	0	462	0	09	0	
Sign Control	Free	Free	Free	Free	Stop	Stop	
RT Channelized	Free -	None	Free -		Stop	None	
Storage Length	0	None -	-	None -	0	0	
Veh in Median Storage		0	0	-	0	-	
Grade. %	÷, # =	0	0	-	0	-	
Peak Hour Factor	92	92	92	92	92	92	
Heavy Vehicles, %	2	2	2	2	2	2	
Mymt Flow	0	138	502	48	75	0	
WWIIIL FIOW	U	136	302	40	15	U	
	Major1		Major2		Minor2		
Conflicting Flow All	550	0	-	0	664	526	
Stage 1	-	-	-	-	526	-	
Stage 2	-	-	-	-	138	-	
Critical Hdwy	4.12	-	-	-	6.42	6.22	
Critical Hdwy Stg 1	-	-	-	-	5.42	-	
Critical Hdwy Stg 2	-	-	-	-	5.42	-	
Follow-up Hdwy	2.218	-	-	-	3.518	3.318	
Pot Cap-1 Maneuver	1020	-	-	-	426	552	
Stage 1	-	-	-	-	593	-	
Stage 2	-	-	-	-	889	-	
Platoon blocked, %		-	-	-			
Mov Cap-1 Maneuver	1020	-	-	-	426	552	
Mov Cap-2 Maneuver	-	-	-	-	501	-	
Stage 1	-	-	-	-	593	-	
Stage 2	-	-	-	-	889	-	
Approach	EB		WB		SB		
HCM Control Delay, s	0		0		13.4		
HCM Control Delay, s	U		U		13.4 B		
I IOW LOS					В		
Minor Lane/Major Mvn	nt	EBL	EBT	WBT	WBR	SBLn1 S	BLn2
Capacity (veh/h)		1020	-	-	-	501	-
HCM Lane V/C Ratio		-	-	-	-	0.15	-
HCM Control Delay (s)		0	-	-	-	13.4	0
HCM Lane LOS		Α	-	-	-	В	Α
HCM 95th %tile Q(veh)	0	-	-	-	0.5	-

4.3

199

0

465 329 0

329

5.42 -3.518 3.318

556

890

6.42 6.22

-

0 0

0

2 2 2

- -

WBL WBR NBT NBR SBL SBT

Stop Stop Free Free Free Free

0

- None - None - None

92

0 224 210 0 136

0 434

- -

- 2.218

- 1126

NBT NBRWBLn1WBLn2 SBL SBT

- 1126

0 0

-

- - 556

- 1.8

- 0.389

- 15.5

C A A

556 712 - - 1126 -

. . .

0 125

0

2 2

0 125

0 206 193

0 206 193

Intersection

Movement

Int Delay, s/veh

Lane Configurations

Conflicting Peds, #/hr

Veh in Median Storage, # 0

Traffic Vol, veh/h

Future Vol, veh/h

RT Channelized

Storage Length

Peak Hour Factor

Heavy Vehicles, %

Stage 1

Stage 2 Critical Hdwy

Critical Hdwy Stg 1

Critical Hdwy Stg 2

Pot Cap-1 Maneuver

Stage 1 Stage 2 Platoon blocked, % Mov Cap-1 Maneuver

Mov Cap-2 Maneuver

Stage 1 Stage 2

Minor Lane/Major Mvmt

Capacity (veh/h)

HCM Lane LOS

HCM Lane V/C Ratio

HCM Control Delay (s)

HCM 95th %tile Q(veh)

Approach
HCM Control Delay, s
HCM LOS

Follow-up Hdwy

Grade, %

Mvmt Flow

Major/Minor
Conflicting Flow All

Sign Control

104

1900

65.0 40.0

46 307

1900

1900

49

0.0

1900

352

1900

Lanes, Volumes, Timings

Lane Group

Lane Configurations
Traffic Volume (vph)

Future Volume (vph)

Ideal Flow (vphpl)

Storage Length (m)

Detector 2 Channel
Detector 2 Extend (s)

Protected Phases

Turn Type

Storage Lanes

1: Burnside Line & Industrial Road/Brodie Drive

49

1900

25.0

30

1900

134

1900

75.0 100.0

288

1900

1900

49 328

1900

1900

0.0 75.0

Oldrage Laries												U
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.979	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1900	1615	1736	1900	1615	1805	1439	1468	1805	1520	0
Flt Permitted	0.752			0.580			0.269			0.533		
Satd. Flow (perm)	1429	1900	1615	1060	1900	1615	511	1439	1468	1013	1520	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			255			200			200		9	
Link Speed (k/h)		50			60			60			60	
Link Distance (m)		140.4			136.5			65.5			1953.3	
Travel Time (s)		10.1			8.2			3.9			117.2	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	4%	0%	0%	0%	32%	10%	0%	26%	0%
Adj. Flow (vph)	54	33	147	316	8	54	360	387	114	51	337	54
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	33	147	316	8	54	360	387	114	51	391	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	C I +Ex	C I +Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
D-44 0 ObI												

Synchro 11 Report Page 22 C.F. Crozier & Associates Synchro 11 Report
Page 1

0.0

NA

8

Perm pm+pt

0.0

2

NA Perm pm+pt

0.0

NA

6

0.0

4

NA Perm pm+pt

Lanes, Volumes, Timings

2045 Future Background A.M.

1: Burnside Line & I

1: Burnside Line & Industrial Road/Brodie Drive												
	٠	→	•	1	•	•	1	1	1	-	↓	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	25.0	25.0	5.0	25.0	
Minimum Split (s)	9.5	21.0	21.0	9.5	21.0	21.0	9.5	31.0	31.0	9.5	31.0	
Total Split (s)	9.6	21.0	21.0	16.1	27.5	27.5	19.4	43.4	43.4	9.5	33.5	
Total Split (%)	10.7%	23.3%	23.3%	17.9%	30.6%	30.6%	21.6%	48.2%	48.2%	10.6%	37.2%	
Maximum Green (s)	5.1	15.0	15.0	11.6	21.5	21.5	14.9	37.4	37.4	5.0	27.5	
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	6.0	6.0	4.5	6.0	6.0	4.5	6.0	6.0	4.5	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Min	Min	None	Min	Min	None	Min	Min	None	Min	
Act Effct Green (s)	21.6	15.0	15.0	32.3	25.1	25.1	47.0	39.9	39.9	33.0	26.5	
Actuated g/C Ratio	0.24	0.17	0.17	0.37	0.28	0.28	0.53	0.45	0.45	0.37	0.30	
v/c Ratio	0.15	0.10	0.30	0.67	0.01	0.09	0.74	0.60	0.15	0.12	0.85	
Control Delay	20.6	32.8	1.6	30.4	26.4	0.3	22.9	24.1	0.4	11.9	47.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	20.6	32.8	1.6	30.4	26.4	0.3	22.9	24.1	0.4	11.9	47.2	
LOS	С	С	Α	С	С	Α	С	С	Α	В	D	
Approach Delay		10.4			26.0			20.5			43.1	
Approach LOS		В			С			С			D	
Queue Length 50th (m)	6.4	5.2	0.0	44.2	1.1	0.0	35.6	54.8	0.0	4.2	64.5	
Queue Length 95th (m)	14.3	13.5	0.0	69.6	4.7	0.0	#57.0	87.7	0.3	9.5	#114.7	
Internal Link Dist (m)		116.4			112.5			41.5			1929.3	

490

0

0.73

650

0

0.60

602

0

0.09

773

0

0

0.15

423

0.12

0

479

0.82

0

Reduced v/c Ratio
Intersection Summary

Starvation Cap Reductn

Spillback Cap Reductn

Storage Cap Reductn

Internal Link Dist (m) Turn Bay Length (m) Base Capacity (vph)

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 88.3 Natural Cycle: 75

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 25.6

Intersection LOS: C

Intersection Capacity Utilization 75.4% ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

371

0

0

0.15

322

0.10

486

0.30

476

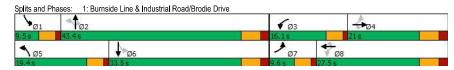
0.66

540

0.01

Queue shown is maximum after two cycles.

C.F. Crozier & Associates Synchro 11 Report Page 2 Lanes, Volumes, Timings 1: Burnside Line & Industrial Road/Brodie Drive 2045 Future Background A.M. 09-25-2024



C.F. Crozier & Associates Synchro 11 Report Page 3 2045 Future Background A.M. 09-25-2024

2: Burnside Line & Highway 11 Westbound On-Ramp

	•	*	1	†	↓	1
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				^	^	7
Traffic Volume (vph)	0	0	0	1187	424	294
Future Volume (vph)	0	0	0	1187	424	294
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850
Fit Protected						
Satd. Flow (prot)	0	0	0	1638	1810	1214
Flt Permitted						
Satd. Flow (perm)	0	0	0	1638	1810	1214
Link Speed (k/h)	50			70	60	
Link Distance (m)	185.9			51.5	174.3	
Travel Time (s)	13.4			2.6	10.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	16%	5%	33%
Adj. Flow (vph)	0	0	0	1249	446	309
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1249	446	309
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	
Intersection Summary						

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 65.8%
Analysis Period (min) 15

ICU Level of Service C

C.F. Crozier & Associates Synchro 11 Report Page 4 Lanes, Volumes, Timings 3: Burnside Line & Highway 11 Westbound 2045 Future Background A.M. 09-25-2024

	•	•	†	1	1	ţ
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	*	7		7		^
Traffic Volume (vph)	202	276	912	226	0	424
Future Volume (vph)	202	276	912	226	0	424
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		80.0	0.0	
Storage Lanes	1	1		1	0.0	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.850	1.00	0.850	1.00	1.00
Flt Protected	0.950	0.000				
Satd. Flow (prot)	1787	1583	1638	1509	0	1810
Flt Permitted	0.950	.000	.000		,	.0.0
Satd, Flow (perm)	1787	1583	1638	1509	0	1810
Right Turn on Red	1707	Yes	1000	Yes	J	1010
Satd. Flow (RTOR)		147		238		
Link Speed (k/h)	50	17/	60	200		60
Link Speed (k/II) Link Distance (m)	104.8		160.3			51.5
Travel Time (s)	7.5		9.6			3.1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
	1%	2%	16%	0.95 7%	0.95	5%
Heavy Vehicles (%)						
Adj. Flow (vph)	213	291	960	238	0	446
Shared Lane Traffic (%)	040	004	000	000	_	440
Lane Group Flow (vph)	213	291	960	238	0	446
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswa l k Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1		2
Detector Template	Left	Right	Thru	Right		Thru
Leading Detector (m)	2.0	2.0	10.0	2.0		10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0
Detector 1 Size(m)	2.0	2.0	0.6	2.0		0.6
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)	0.0	0.0	9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			CI+Ex			CI+Ex
Detector 2 Type Detector 2 Channel			OITEX			OITLX
			0.0			0.0
Detector 2 Extend (s)	D	Derror	0.0	Darre		0.0
Turn Type	Perm	Perm	NA	Perm		NA
Protected Phases			6			2

C.F. Crozier & Associates Synchro 11 Report Page 5

Lanes, Volumes, Timings 3: Burnside Line & Highway 11 Westbound

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

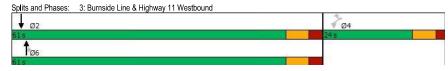
Queue shown is maximum after two cycles.

2045 Future Background A.M. 09-25-2024

	1	*	†	1	1	Ţ
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Permitted Phases	4	4		6		
Detector Phase	4	4	6	6		2
Switch Phase						
Minimum Initial (s)	9.7	9.7	20.0	20.0		20.0
Minimum Split (s)	16.1	16.1	27.3	27.3		27.3
Total Split (s)	24.0	24.0	61.0	61.0		61.0
Total Split (%)	28.2%	28.2%	71.8%	71.8%		71.8%
Maximum Green (s)	17.6	17.6	53.7	53.7		53.7
Yellow Time (s)	4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	1.9	1.9	2.8	2.8		2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	6.4	6.4	7.3	7.3		7.3
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.2	3.2		3.2
Recall Mode	None	None	None	None		None
Act Effct Green (s)	14.3	14.3	47.9	47.9		47.9
Actuated g/C Ratio	0.19	0.19	0.63	0.63		0.63
v/c Ratio	0.64	0.70	0.93	0.23		0.39
Control Delay	39.5	25.3	30.7	1.5		8.3
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	39.5	25.3	30.7	1.5		8.3
LOS	D 24.0	С	C	Α		A
Approach Delay	31.3		24.9			8.3
Approach LOS	C	24.7	110.0	0.0		A
Queue Length 50th (m)	33.0	21.7	116.6	0.0		29.8
Queue Length 95th (m)	55.7	49.7	#232.6	7.7		51.2
Internal Link Dist (m)	80.8		136.3	90.0		27.5
Turn Bay Length (m)	423	487	1183	80.0 1156		1308
Base Capacity (vph)	423	487	1183	1156		1308
Starvation Cap Reductn Spillback Cap Reductn	0	0	0	0		0
Storage Cap Reductn	0	0	0	0		0
Reduced v/c Ratio	0.50	0.60	0.81	0.21		0.34
	0.30	0.00	0.01	0.21		0.54
Intersection Summary Area Type:	Other					
Cycle Length: 85	Olliei					
Actuated Cycle Length: 76	2					
Natural Cycle: 80						
Control Type: Semi Act-Un	coord					
Maximum v/c Ratio: 0.93	loooru					
Intersection Signal Delay: 2	23.0			In	tareaction	n LOS: C
Intersection Capacity Utiliz						of Service
Analysis Period (min) 15	au011 / 0.0%			IC	O Level	or Service

C.F. Crozier & Associates Synchro 11 Report Page 6

Lanes, Volumes, Timings 3: Burnside Line & Highway 11 Westbound 2045 Future Background A.M. 09-25-2024



C.F. Crozier & Associates Synchro 11 Report
Page 7

raye

	•	*	1	†	Ţ	1
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	*	7	*	†	<u> </u>	7
Traffic Volume (vph)	360	158	131	774	565	61
Future Volume (vph)	360	158	131	774	565	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	55.0	1000	1000	40.0
Storage Lanes	1	1	1			40.0
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.850	1.00	1.00	1.00	
	0.050	0.850	0.050			0.850
Fit Protected	0.950	4504	0.950	4007	4045	4440
Satd. Flow (prot)	1327	1524	1787	1827	1845	1442
Flt Permitted	0.950		0.198			
Satd. Flow (perm)	1327	1524	372	1827	1845	1442
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		166				42
Link Speed (k/h)	50			60	60	
Link Distance (m)	154.2			160.8	176.6	
Travel Time (s)	11.1			9.6	10.6	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	36%	6%	1%	4%	3%	12%
Adi, Flow (vph)	379	166	138	815	595	64
	319	100	130	010	393	04
Shared Lane Traffic (%)	070	400	400	045	505	0.4
Lane Group Flow (vph)	379	166	138	815	595	64
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	2.0
Detector 1 Type	C I +Ex	CI+Ex	CI+Ex	C I +Ex	CI+Ex	CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel				SILLX	OI LLX	
				0.0	0.0	
Detector 2 Extend (s)	D	D		0.0	0.0	D
Turn Type	Perm	Perm	pm+pt	NA	NA	Perm
Protected Phases			1	6	2	

	•	120	1200		-	1	
		*	1		+	*	
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	
Permitted Phases	8	8	6			2	
Detector Phase	8	8	1	6	2	2	
Switch Phase							
Minimum Initial (s)	10.0	10.0	7.0	20.0	20.0	20.0	
Minimum Split (s)	18.0	18.0	10.0	41.0	41.0	41.0	
Total Split (s)	38.0	38.0	10.0	52.0	42.0	42.0	
Total Split (%)	42.2%	42.2%	11.1%	57.8%	46.7%	46.7%	
Maximum Green (s)	31.8	31.8	8.0	44.9	34.9	34.9	
Yellow Time (s)	4.5	4.5	2.0	4.5	4.5	4.5	
All-Red Time (s)	1.7	1.7	0.0	2.6	2.6	2.6	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.2	6.2	2.0	7.1	7.1	7.1	
Lead/Lag	0.2	0.2	Lead	7.1	Lag	Lag	
Lead-Lag Optimize?			Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.2	3.2	3.2	
						None	
Recall Mode	None	None	None	None	None		
Act Effct Green (s)	26.9	26.9	44.5	39.2	31.9	31.9	
Actuated g/C Ratio	0.34	0.34	0.56	0.49	0.40	0.40	
v/c Ratio	0.85	0.27	0.40	0.91	0.81	0.11	
Control Delay	45.1	4.8	12.9	35.4	33.6	9.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	45.1	4.8	12.9	35.4	33.6	9.1	
LOS	D	Α	В	D	С	Α	
Approach Delay	32.8			32.1	31.2		
Approach LOS	С			С	С		
Queue Length 50th (m)	61.5	0.0	11.2	126.5	95.1	2.4	
Queue Length 95th (m)	#110.8	13.0	20.4	#208.5	#155.4	10.5	
Internal Link Dist (m)	130.2			136.8	152.6		
Turn Bay Length (m)			55.0			40.0	
Base Capacity (vph)	547	726	354	1064	836	676	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.69	0.23	0.39	0.77	0.71	0.09	
Intersection Summary							
Area Type:	Other						
Cycle Length: 90							
Actuated Cycle Length: 79.	9						
Natural Cycle: 80							
Control Type: Semi Act-Un	coord						
Maximum v/c Ratio: 0.91							
Intersection Signal Delay: 3	2.0			li	ntersectio	n LOS: C	
Intersection Capacity Utiliza						of Service C	
Analysis Period (min) 15					00 2010	J. JUI 1100 U	
# 95th percentile volume		9					

Synchro 11 Report

Lanes, Volumes, Timings 4: West Street North & Highway 11 Eastbound 2045 Future Background A.M. 09-25-2024



C.F. Crozier & Associates Synchro 11 Report Page 10

Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road 2045 Future Background A.M.

	۶	\rightarrow	*	1	•	•	1	Ť	1	1	ţ	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	^	7	*	1		17	ተተ	7	*	^	7
Traffic Volume (vph)	164	206	199	338	300	163	222	557	463	121	905	260
Future Volume (vph)	164	206	199	338	300	163	222	557	463	121	905	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	115.0		0.0	100.0		120.0	110.0		50.0
Storage Lanes	1		1	1		0	2		1	1		1
Taper Length (m)	70.0			65.0			80.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt			0.850		0.947				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1881	1583	1787	1765	0	3467	3574	1568	1736	3471	1568
Flt Permitted	0.249			0.469			0.950			0.353		
Satd, Flow (perm)	468	1881	1583	882	1765	0	3467	3574	1568	645	3471	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			205		27				477			187
Link Speed (k/h)		60			60			70			70	
Link Distance (m)		186.6			853.6			529.0			469.5	
Travel Time (s)		11.2			51.2			27,2			24.1	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	2%	1%	3%	0%	1%	1%	3%	4%	4%	3%
Adj. Flow (vph)	169	212	205	348	309	168	229	574	477	125	933	268
Shared Lane Traffic (%)												
Lane Group Flow (vph)	169	212	205	348	477	0	229	574	477	125	933	268
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6	, in the second		7.2	Ŭ		7.2	Ŭ
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	100		15	25		15	25		100
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel		J/			2. =A			J/			J/	
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2	1 01111	1	6		3	8	1 01111	7	4	1 01111
1 TOLOGICU I HUBCO	J			_ '	U		J	0		'	-	

C.F. Crozier & Associates Synchro 11 Report

Page 11

Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road 2045 Future Background A.M.

	۶	-	*	1	•	*	1	†	1	1	↓	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2		2	6					8	4		4
Detector Phase	5	2	2	1	6		3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0		7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	12.0	27.2	27.2	12.0	33.2		11.5	21.0	21.0	11.5	22.5	22.5
Total Split (s)	12.0	39.0	39.0	17.0	44.0		12.0	42.0	42.0	12.0	42.0	42.0
Total Split (%)	10.9%	35.5%	35.5%	15.5%	40.0%		10.9%	38.2%	38.2%	10.9%	38.2%	38.2%
Maximum Green (s)	7.0	31.8	31.8	12.0	36.8		8.0	34.0	34.0	8.0	34.0	34.0
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	2.0	2.2	2.2	2.0	2.2		1.0	3.5	3.5	1.0	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.2	7.2	5.0	7.2		4.0	8.0	8.0	4.0	8.0	8.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.6	3.6	3.0	3.6		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	None	None	None	None	None
Walk Time (s)					7.0			7.0	7.0			
Flash Dont Walk (s)					19.0			6.0	6.0			
Pedestrian Calls (#/hr)					0			0	0			
Act Effct Green (s)	36.0	26.7	26.7	46.0	31.7		8.1	31.5	31.5	43.2	31.3	31.3
Actuated g/C Ratio	0.35	0.26	0.26	0.45	0.31		80.0	0.31	0.31	0.42	0.31	0.31
v/c Ratio	0.66	0.43	0.36	0.69	0.84		0.84	0.52	0.59	0.35	0.88	0.44
Control Delay	33.5	34.9	6.2	28.6	46.4		74.8	31.7	6.0	19.8	45.1	11.9
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.5	34.9	6.2	28.6	46.4		74.8	31.7	6.0	19.8	45.1	11.9
LOS	С	С	Α	С	D		Е	С	Α	В	D	В
Approach Delay		24.4			38.9			29.8			36.0	
Approach LOS		С			D			С			D	
Queue Length 50th (m)	22.0	38.4	0.0	50.9	91.6		25.9	53.0	0.0	15.1	98.9	12.6
Queue Length 95th (m)	#37.1	60.5	17.3	75.6	#136.8		#50.5	73.7	25.0	28.2	#139.3	36.4
Internal Link Dist (m)		162.6			829.6			505.0			445.5	
Turn Bay Length (m)	50.0			115.0			100.0		120.0	110.0		50.0
Base Capacity (vph)	255	587	635	502	654		272	1193	841	358	1158	647
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.36	0.32	0.69	0.73		0.84	0.48	0.57	0.35	0.81	0.41

Intersection Summary Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 102.5
Natural Cycle: 90
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.88

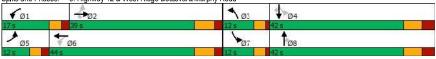
Intersection Signal Delay: 32.9 Intersection LOS: C Intersection Capacity Utilization 86.9% ICU Level of Service E

Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.

C.F. Crozier & Associates Synchro 11 Report Page 12 Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road 2045 Future Background A.M.

Queue shown is maximum after two cycles.

Splits and Phases: 5: Highway 12 & West Ridge Boulevard/Murphy Road



Synchro 11 Report C.F. Crozier & Associates

Page 13

Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol, veh/h	269	5	2	0	13	0	0	0	0	0	0	283
Future Vol, veh/h	269	5	2	0	13	0	0	0	0	0	0	283
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage	e,# -	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	32	67	0	0	30	100	50	0	100	0	50	30
Mvmt Flow	292	5	2	0	14	0	0	0	0	0	0	308
Major/Minor	Minor2		ľ	Minor1		- 1	Major1		N	//ajor2		
Conflicting Flow All	161	154	154	158	308	0	308	0	0	0	0	0
Stage 1	154	154	-	0	0		-	-	-	-	-	
Stage 2	7	0		158	308	-	-	-	-	-	-	-
Critical Hdwy	7.42	7.17	6.2	7.1	6.8	7.2	4.6	-	-	4.1	-	-
Critical Hdwy Stg 1	6.42	6.17	-	6.1	5.8	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.42	6.17	-	6.1	5.8	-	-	-	-	-	-	-
Follow-up Hdwy	3.788	4.603	3.3	3.5	4.27	4.2	2.65	-	-	2.2	-	-
Pot Cap-1 Maneuver	741	634	897	813	563	-	1024	-		-	-	-
Stage 1	782	662	-	-	-	-	-	-	-	-	-	-
Stage 2	942	-	-	849	613	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	634	897	806	563	-	1024	-	-	-	-	-
Mov Cap-2 Maneuver	-	634	-	806	563	-	-	-	-	-	-	-
Stage 1	782	662	-	-	-	-	-	-	-	-	-	-
Stage 2	942	-	-	840	613	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s							0			0		
HCM LOS	-			-								
Minor Lane/Major Mvn	nt	NBL	NBT	NRR I	EBLn1\	VRI n1	SBL	SBT	SBR			
Capacity (veh/h)		1024	1101	HUITI	LUCITIV	VDLIII	ODL	ODI	ODIT			
HCM Lane V/C Ratio		1024	-									
HCM Control Delay (s	١	0	-				0					
HCM Lane LOS)	A	-	-	-	-	A	-	-			
HCM 95th %tile Q(veh	1	0		-			А					
HOW SOUL JOUR CA (VEH	')	0		-	_	-		_				

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4	LDI	1102	4	71011	HUL	4	HUIT	ODL	4	ODIT
Traffic Vol., veh/h	0	207	10	44	166	5	5	7	47	8	14	2
Future Vol. veh/h	0	207	10	44	166	5	5	7	47	8	14	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-		-			-		-	-			-
Veh in Median Storage,	# -	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0		-	0			0	-	-	0	
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	2	0	0	1	0	0	25	3	0	11	0
Mvmt Flow	0	216	10	46	173	5	5	7	49	8	15	2
Major/Minor M	1ajor1			Major2			Minor1		ı	Minor2		
Conflicting Flow All	178	0	0	226	0	0	497	491	221	517	494	176
Stage 1	-	-	-		-	-	221	221		268	268	-
Stage 2	-						276	270		249	226	
Critical Hdwy	4.1	-	-	4.1	-		7.1	6.75	6.23	7.1	6.61	6.2
Critical Hdwy Stg 1	-				-		6.1	5.75	-	6.1	5.61	
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.75	_	6.1	5.61	-
Follow-up Hdwy	2.2		-	2.2	-	-	3.5	4.225	3.327	3.5	4.099	3.3
Pot Cap-1 Maneuver	1410			1354			487	446	816	472	464	872
Stage 1	-	-	-	-	-	-	786	680	-	742	671	-
Stage 2	-		-	-	-		735	646	-	759	700	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1410	-	-	1354	-	-	460	429	816	425	446	872
Mov Cap-2 Maneuver	-	-	-	-	-	-	460	429	-	425	446	-
Stage 1	-	-	-	-	-	-	786	680	-	742	646	-
Stage 2	-	-	-	-	-	-	689	621	-	706	700	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			1.6			10.7			13.3		
HCM LOS							В			В		
Minor Lane/Major Mvmt	. ,	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	QRI n1			
		696	1410	EB1	EBR	1354	WBI	WDR				
Capacity (veh/h)			-					-	457			
HCM Cantrol Dalay (a)		0.088	-	-		0.034 7.8	-		0.055			
HCM Control Delay (s) HCM Lane LOS		10.7 B	0 A	-	-	7.8 A	0 A	-	13.3 B			
HCM Lane LOS HCM 95th %tile Q(veh)		0.3	A 0		-	0.1	A	-	0.2			
HOW 95th 76the Q(Ven)		0.3	U	-	-	0.1	•		0.2			

	٠	-	•	1	•	•	1	†	-	1	Ţ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (vph)	17	96	155	25	76	2	110	420	41	7	196	17
Future Volume (vph)	17	96	155	25	76	2	110	420	41	7	196	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.922			0.998			0.990			0.990	
Flt Protected		0.997			0.988			0.990			0.998	
Satd. Flow (prot)	0	1724	0	0	1873	0	0	1279	0	0	1299	0
Flt Permitted		0.976			0.840			0.892	-		0.983	
Satd. Flow (perm)	0	1688	0	0	1593	0	0	1153	0	0	1279	0
Right Turn on Red	Ū	1000	Yes	•	1000	Yes	•	1100	Yes		1210	Yes
Satd. Flow (RTOR)		136	100		2	100		10	100		11	100
Link Speed (k/h)		50			50			70			60	
Link Distance (m)		1346.1			271.7			1953.3			357.4	
Travel Time (s)		96.9			19.6			100.5			21.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
	0.92	2%	1%	0.92	0.92	0.92	0.92	62%	0.92	0.92	50%	0.92
Heavy Vehicles (%)	18	104	168					457	45	U% 8	213	
Adj. Flow (vph)	18	104	108	27	83	2	120	457	45	8	213	18
Shared Lane Traffic (%)	•	000	•	•	440	•	•	200	•	•	200	•
Lane Group Flow (vph)	0	290	0	.0	112	0	0	622	.0	0	239	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswa l k Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase				- 0			_	_				

	•	-	*	1	•	1	1	†	1	-	↓	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	23.0	23.0		23.0	23.0		32.0	32.0		32.0	32.0	
Total Split (%)	41.8%	41.8%		41.8%	41.8%		58.2%	58.2%		58.2%	58.2%	
Maximum Green (s)	18.5	18.5		18.5	18.5		27.5	27.5		27.5	27.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		10.1			10.1			29.4			29.4	
Actuated g/C Ratio		0.21			0.21			0.61			0.61	
v/c Ratio		0.63			0.34			0.89			0.31	
Control Delay		15.3			17.7			29.6			6.8	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		15.3			17.7			29.6			6.8	
LOS		В			В			С			Α	
Approach Delay		15.3			17.7			29.6			6.8	
Approach LOS		В			В			С			Α	
Queue Length 50th (m)		11.5			8.0			37.4			7.8	
Queue Length 95th (m)		28.9			18.1			#122.5			24.1	
Internal Link Dist (m)		1322.1			247.7			1929.3			333.4	
Turn Bay Length (m)												
Base Capacity (vph)		730			611			702			778	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.40			0.18			0.89			0.31	
Intersection Summary												
	Other											
Cycle Length: 55												
Actuated Cycle Length: 48.5	5											
Natural Cycle: 75												
Control Type: Semi Act-Unc	coord											
Maximum v/c Ratio: 0.89												
Intersection Signal Delay: 2					tersection		_					
Intersection Capacity Utiliza	ition 70.1%			IC	CU Level o	of Service	C					
Analysis Period (min) 15		9		to to								
# 95th percentile volume e	exceeds ca	pacity, qu	eue may	be longe	r.							

Lanes, Volumes, Timings 8: Burnside Line & Division Road W 2045 Future Background A.M. 09-25-2024

HCM 2010 TWSC 9: Industrial Road & Hurlwood Lane 2045 Future Background A.M. 09-25-2024

Splits and Phases:	8: Burnside Line & Division Road	d W	
↑ Ø2		- 104	
32 s		23 s	
Ø6		▼ Ø8	
32 s		23 c	

Intersection							
Int Delay, s/veh	0.9						
Movement	EBL	EBT	MDT	WDD	SBL	SBR	
Lane Configurations	EBL	_EB1	WBT	WBR	SBL	SBR	
Traffic Vol., veh/h	1	T	1 ≽ 318	64	<u>ግ</u> 41	r 0	
Future Vol. veh/h	0	140	318	64	41	0	
Conflicting Peds, #/hr	0	0	0	04	0	0	
Sign Control	Free	Free	Free	Free	Stop	Stop	
RT Channelized		None	riee _		Stop		
Storage Length	0	-		-	0	0	
Veh in Median Storage		0	0	-	0	-	
Grade, %	:,#	0	0	-	0		
Peak Hour Factor	92	92	92	92	92	92	
Heavy Vehicles, %	2	2	2	2	2	2	
Mymt Flow	0	152	346	70	45	0	
WIVIIIL FIOW	U	152	340	70	40	U	
Major/Minor	Major1	1	Major2	1	Minor2		
Conflicting Flow All	416	0	-	0	533	381	
Stage 1	-	-	-	-	381	-	
Stage 2	-	-	-	-	152	-	
Critical Hdwy	4.12	-	-	-	6.42	6.22	
Critical Hdwy Stg 1	-	-		-	5.42		
Critical Hdwy Stg 2	-	-	-	-	5.42	-	
Follow-up Hdwy	2.218	-		-	3.518	3.318	
Pot Cap-1 Maneuver	1143	-	-		507	666	
Stage 1	-	-	-		691		
Stage 2	-	-	-	-	876	-	
Platoon blocked, %		-	-	-			
Mov Cap-1 Maneuver	1143	-	-	-	507	666	
Mov Cap-2 Maneuver	-	-	-		575	-	
Stage 1	-	-	-	-	691		
Stage 2	-	-	-		876	-	
, J							
A	ED		1A/D		O.D.		
Approach	EB		WB		SB		
HCM Control Delay, s	0		0		11.8		
HCM LOS					В		
Minor Lane/Major Mvm	nt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)		1143			-	575	
HCM Lane V/C Ratio		-				0.078	-
HCM Control Delay (s)		0		-	_	11.8	0
HCM Lane LOS		Ā				В	A
HCM 95th %tile Q(veh)	١	0				0.3	
HOW SOUL YOURS OF VEH	1	U				0.3	

Lanes, Volumes, Timings 1: Burnside Line & Industrial Road/Brodie Drive

1: Burnside Line &		iai i\u	u/DIO	ule Dii	ve						03-2	20-2024
	•	→	*	1	←	*	1	†	1	1	Ţ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	↑	7	7	↑	7	7	↑	7	7	1	
Traffic Volume (vph)	75	42	288	501	2	126	197	375	114	54	296	25
Future Volume (vph)	75	42	288	501	2	126	197	375	114	54	296	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		75.0	100.0		0.0	75.0		65.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.988	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1900	1568	1770	1900	1615	1805	1863	1429	1805	1748	0
Flt Permitted	0.757			0.568			0.344			0.316		
Satd. Flow (perm)	1438	1900	1568	1058	1900	1615	654	1863	1429	600	1748	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			306			145			200		5	
Link Speed (k/h)		50			60			60			60	
Link Distance (m)		140.4			136.5			65.5			1953.3	
Travel Time (s)		10.1			8.2			3.9			117.2	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	3%	2%	0%	0%	0%	2%	13%	0%	8%	0%
Adi, Flow (vph)	80	45	306	533	2	134	210	399	121	57	315	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	80	45	306	533	2	134	210	399	121	57	342	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6	,		3.6	J
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	
Detector 1 Channel		-, -,,				-, -,						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)	- 0.0	9.4	- 0.0	0.0	9.4	- 0.0		9.4	- 0.0	- 0.0	9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel		J1. L∧			31. LX			31. LX			31. LX	
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7 pini-pt	4	1 Gill	3	8	1 GIIII	рш+рt 5	2	1 GIIII	рш+рt 1	6	
1 TOTOGOGO F HOSES	- 1	4		3	0		3			ı	U	

C.F. Crozier & Associates Synchro 11 Report Page 24 C.F. Crozier & Associates Synchro 11 Report

Page 1

Lanes, Volumes, Timings 1: Burnside Line & Industrial Road/Brodie Drive 2045 Future Background P.M.

09-25-2024

	•	-	+	1	•	•	1	†	-	-	ļ	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	25.0	25.0	5.0	25.0	
Minimum Split (s)	9.5	21.0	21.0	9.5	21.0	21.0	9.5	31.0	31.0	9.5	31.0	
Total Split (s)	9.9	21.0	21.0	28.0	39.1	39.1	9.8	31.5	31.5	9.5	31.2	
Total Split (%)	11.0%	23.3%	23.3%	31.1%	43.4%	43.4%	10.9%	35.0%	35.0%	10.6%	34.7%	
Maximum Green (s)	5.4	15.0	15.0	23.5	33.1	33.1	5.3	25.5	25.5	5.0	25.2	
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	6.0	6.0	4.5	6.0	6.0	4.5	6.0	6.0	4.5	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Min	Min	None	Min	Min	None	Min	Min	None	Min	
Act Effct Green (s)	21.9	15.0	15.0	42.7	33.4	33.4	33.1	27.4	27.4	31.6	25.1	
Actuated g/C Ratio	0.25	0.17	0.17	0.48	0.38	0.38	0.38	0.31	0.31	0.36	0.28	
v/c Ratio	0.21	0.14	0.59	0.78	0.00	0.19	0.67	0.69	0.21	0.20	0.68	
Control Delay	16.5	33.3	9.3	25.9	18.0	3.7	32.2	35.6	1.2	18.4	36.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	16.5	33.3	9.3	25.9	18.0	3.7	32.2	35.6	1.2	18.4	36.1	
LOS	В	С	Α	С	В	Α	С	D	Α	В	D	
Approach Delay		13.2			21.4			28.9			33.5	
Approach LOS		В			С			С			С	
Queue Length 50th (m)	7.3	7.1	0.0	66.6	0.3	0.0	25.1	66.0	0.0	6.2	54.7	
Queue Length 95th (m)	15.0	16.9	22.7	100.8	1.7	10.0	#46.8	#107.9	1.6	13.8	85.7	
Internal Link Dist (m)		116.4			112.5			41.5			1929.3	
Turn Bay Length (m)	25.0		75.0	100.0			75.0		65.0	40.0		
Base Capacity (vph)	380	323	521	702	728	708	314	581	583	283	504	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.21	0.14	0.59	0.76	0.00	0.19	0.67	0.69	0.21	0.20	0.68	

ľ	ter	SE	ec	tic	on	S	ur	nr	n	aı	

Other Area Type:

Intersection LOS: C ICU Level of Service D

Area I ype: Other
Cycle Length: 90
Actuated Cycle Length: 88.1
Natural Cycle: 80
Control Type: Semi Act-Uncoord
Maximum vic Ratio: 0.78
Intersection Signal Delay: 24.5
Intersection Capacity Utilization 80.2%

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

C.F. Crozier & Associates Synchro 11 Report Page 2 Lanes, Volumes, Timings 1: Burnside Line & Industrial Road/Brodie Drive 2045 Future Background P.M. 09-25-2024

Splits and Phases: 1: Burnside Line & Industrial Road/Brodie Drive Ø2 **₽**Ø4 ÿ3 ₹ Ø8

C.F. Crozier & Associates Synchro 11 Report Page 3 2045 Future Background P.M. 09-25-2024

2: Burnside Line & Highway 11 Westbound On-Ramp

	1	*	1	†	↓	1
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				↑	^	7
Traffic Volume (vph)	0	0	0	1100	709	343
Future Volume (vph)	0	0	0	1100	709	343
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	1863	1863	1509
Flt Permitted						
Satd. Flow (perm)	0	0	0	1863	1863	1509
Link Speed (k/h)	50			50	50	
Link Distance (m)	185.9			51.5	174.3	
Travel Time (s)	13.4			3.7	12.5	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	0%	2%	2%	7%
Adj. Flow (vph)	0	0	0	1122	723	350
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1122	723	350
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	100	100	100			100
Sign Control	Free			Free	Free	
Intersection Summary						

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 61.2%
Analysis Period (min) 15

ICU Level of Service B

C.F. Crozier & Associates Synchro 11 Report Page 4 Lanes, Volumes, Timings 3: Burnside Line & Highway 11 Westbound 2045 Future Background P.M. 09-25-2024

	1	•	†	-	-	Ţ
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	*	7		7		†
Traffic Volume (vph)	255	227	874	361	0	709
Future Volume (vph)	255	227	874	361	0	709
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		80.0	0.0	
Storage Lanes	1	1		1	0.0	
Taper Length (m)	7.5			-	7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.850	1.00	0.850	1.00	1.00
Flt Protected	0.950	0.000		0.000		
Satd. Flow (prot)	1752	1599	1863	1615	0	1863
Flt Permitted	0.950	1000	1000	1013	J	1000
Satd. Flow (perm)	1752	1599	1863	1615	0	1863
Right Turn on Red	17.02	Yes	1003	Yes	U	1003
Satd. Flow (RTOR)		171		368		
Link Speed (k/h)	50	171	60	300		60
	104.8		160.3			51.5
Link Distance (m)						
Travel Time (s)	7.5	0.00	9.6	0.00	0.00	3.1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	3%	1%	2%	0%	0%	2%
Adj. Flow (vph)	260	232	892	368	0	723
Shared Lane Traffic (%)						
Lane Group Flow (vph)	260	232	892	368	0	723
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1		2
Detector Template	Left	Right	Thru	Right		Thru
Leading Detector (m)	2.0	2.0	10.0	2.0		10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0
Detector 1 Size(m)	2.0	2.0	0.6	2.0		0.6
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex
Detector 1 Type Detector 1 Channel	CITEX	OITEX	OITEX	CITEX		OITEX
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0
\ /						
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			CI+Ex			CI+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Perm	Perm	NA	Perm		NA
Protected Phases			6			2

Lanes, Volumes, Timings 3: Burnside Line & Highway 11 Westbound

2045 Future Background P.M. 09-25-2024

	1	*	Ť	-	1	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Permitted Phases	4	4		6		
Detector Phase	4	4	6	6		2
Switch Phase				,		
Minimum Initial (s)	10.0	10.0	20.0	20.0		20.0
Minimum Split (s)	16.1	16.1	27.3	27.3		27.3
Total Split (s)	24.0	24.0	61.0	61.0		61.0
Total Split (%)	28.2%	28.2%	71.8%	71.8%		71.8%
Maximum Green (s)	17.9	17.9	53.7	53.7		53.7
Yellow Time (s)	4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	1.6	1.6	2.8	2.8		2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	6.1	6.1	7.3	7.3		7.3
Lead/Lag	0.1	0.1	7.5	7.0		1.5
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.2	3.2		3.2
Recall Mode	None	None	None	None		None
	14.7	14.7	37.8	37.8		37.8
Act Effct Green (s)	0.22	0.22	0.57	0.57		37.8 0.57
Actuated g/C Ratio						
v/c Ratio	0.67	0.48	0.85	0.34		0.69
Control Delay	36.6	12.4	20.5	1.7		13.8
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	36.6	12.4	20.5	1.7		13.8
LOS	D	В	С	Α		В
Approach Delay	25.2		15.0			13.8
Approach LOS	С		В			В
Queue Length 50th (m)	32.0	6.6	87.1	0.0		60.2
Queue Length 95th (m)	#74.0	29.4	148.3	9.2		100.0
Internal Link Dist (m)	80.8		136.3			27.5
Turn Bay Length (m)				80.0		
Base Capacity (vph)	497	576	1508	1377		1508
Starvation Cap Reductn	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0		0
Storage Cap Reductn	0	0	0	0		0
Reduced v/c Ratio	0.52	0.40	0.59	0.27		0.48
Intersection Summary						
Area Type:	Other					
Cycle Length: 85						
Actuated Cycle Length: 66	5.7					
Natural Cycle: 60						
Control Type: Semi Act-Ur	ncoord					
Maximum v/c Ratio: 0.85						

Maximum v/c Ratio: 0.85 Intersection Signal Delay: 16.7 Intersection Capacity Utilization 71.3%

Intersection LOS: B

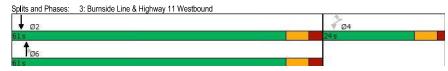
ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

C.F. Crozier & Associates Synchro 11 Report Page 6 Lanes, Volumes, Timings 3: Burnside Line & Highway 11 Westbound 2045 Future Background P.M. 09-25-2024



C.F. Crozier & Associates Synchro 11 Report

Page 7

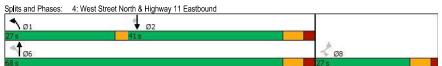
2045	rulure	background P.M.
		09-25-2024

	•	*	1	†	Ţ	1
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	*	7	*	†	<u> </u>	7
Traffic Volume (vph)	241	207	301	991	809	157
Future Volume (vph)	241	207	301	991	809	157
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	55.0	1000	1000	40.0
Storage Lanes	1	1	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.850	1.00	1.00	1.00	0.850
Flt Protected	0.950	0.000	0.950			0.000
Satd. Flow (prot)	1736	1583	1787	1881	1863	1583
Flt Permitted	0.950	1503	0.104	1001	1003	1000
		1583	196	1881	1863	1583
Satd. Flow (perm)	1736		196	1881	1863	
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	F.0	218		00	00	68
Link Speed (k/h)	50			60	60	
Link Distance (m)	154.2			160.8	176.6	
Travel Time (s)	11.1			9.6	10.6	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	2%	1%	1%	2%	2%
Adj. Flow (vph)	254	218	317	1043	852	165
Shared Lane Traffic (%)						
Lane Group Flow (vph)	254	218	317	1043	852	165
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	Ť
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25	1100	1100	15
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
• ()	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)						
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	pm+pt	NA	NA	Perm
Protected Phases			1	6	2	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	
Permitted Phases	8	8	6			2	
Detector Phase	8	8	1	6	2	2	
Switch Phase							
Minimum Initial (s)	10.0	10.0	7.0	20.0	20.0	20.0	
Minimum Split (s)	18.0	18.0	10.0	41.0	41.0	41.0	
Total Split (s)	27.0	27.0	27.0	68.0	41.0	41.0	
Total Split (%)	28.4%	28.4%	28.4%	71.6%	43.2%	43.2%	
Maximum Green (s)	20.8	20.8	24.0	60.9	33.9	33.9	
Yellow Time (s)	4.5	4.5	3.0	4.5	4.5	4.5	
All-Red Time (s)	1.7	1.7	0.0	2.6	2.6	2.6	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.2	6.2	3.0	7.1	7.1	7.1	
Lead/Lag			Lead		Lag	Lag	
Lead-Lag Optimize?			Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.2	3.2	3.2	
Recall Mode	None	None	None	None	None	None	
Act Effct Green (s)	16.5	16.5	57.7	53.5	35.5	35.5	
Actuated g/C Ratio	0.20	0.20	0.69	0.64	0.43	0.43	
v/c Ratio	0.74	0.45	0.75	0.87	1.08	0.23	
Control Delay	46.6	7.8	28.5	22.3	81.8	12.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	46.6	7.8	28.5	22.3	81.8	12.1	
LOS	D	Α	С	C	F	В	
Approach Delay	28.7			23.7	70.5		
Approach LOS	С		04.7	C	E		
Queue Length 50th (m)	39.9	0.0	31.7	130.2	~165.4	9.9	
Queue Length 95th (m)	72.3	18.5	62.3	#255.0	#283.5	28.0	
Internal Link Dist (m)	130.2		EE A	136.8	152.6	40.0	
Turn Bay Length (m)	420	ECO	55.0	1204	704	40.0	
Base Capacity (vph)	439	563	600	1394	791	711	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		-	-	0	
Storage Cap Reductn Reduced v/c Ratio		0.39	0.53	0.75	1.00	0.23	
Reduced V/C Ratio	0.58	0.39	0.53	0.75	1.08	0.23	
Intersection Summary							
Area Type:	Other						
Cycle Length: 95							
Actuated Cycle Length: 83	5						
Natural Cycle: 90							
Control Type: Semi Act-Und	coord						
Maximum v/c Ratio: 1.08							
Intersection Signal Delay: 4				lı	ntersectio	n LOS: D	
Intersection Capacity Utiliza	ation 87.0%			Je	CU Level	of Service	E
Analysis Period (min) 15							
 Volume exceeds capac 			cally infin	ite.			
Queue shown is maximu	um after two	cycles.					
# 95th percentile volume			ieue may	be longe	r.		
Queue shown is maximu	ım after two	cycles.					
0 F 0 ! 0 A!-!-							

Lanes, Volumes, Timings
4: West Street North & Highway 11 Eastbound

Lanes, Volumes, Timings 4: West Street North & Highway 11 Eastbound 2045 Future Background P.M. 09-25-2024



C.F. Crozier & Associates Synchro 11 Report Page 10

Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road

2045 Future Background P.M.

09-25-2024

	•	-	*	1	-	*	1	†	-	1	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	↑	7	*	1		1/4	† †	7	*	^	7
Traffic Volume (vph)	329	321	348	531	309	238	331	1063	513	106	880	232
Future Volume (vph)	329	321	348	531	309	238	331	1063	513	106	880	232
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	115.0		0.0	100.0		120.0	110.0		50.0
Storage Lanes	1		1	1		0	2		1	1		1
Taper Length (m)	70.0			65.0			80.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98									
Frt			0.850		0.935				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1900	1599	1787	1767	0	3502	3539	1599	1805	3505	1583
Flt Permitted	0.144			0.122			0.950			0.114		
Satd. Flow (perm)	271	1900	1575	230	1767	0	3502	3539	1599	217	3505	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			233		24				489			161
Link Speed (k/h)		50			70			50			50	
Link Distance (m)		186.6			853.6			529.0			469.5	
Travel Time (s)		13.4			43.9			38.1			33.8	
Confl. Peds. (#/hr)			2	2								
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	0%	1%	1%	1%	0%	0%	2%	1%	0%	3%	2%
Adj. Flow (vph)	350	341	370	565	329	253	352	1131	546	113	936	247
Shared Lane Traffic (%)												
Lane Group Flow (vph)	350	341	370	565	582	0	352	1131	546	113	936	247
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6	Ŭ		3.6	Ŭ		7.2	Ŭ		7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	0.0	9.4	0.0	0.0	9.4		0.0	9.4	0.0	0.0	9.4	0.0
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel		OI - LA			J1. LA			31. LX			31. LA	
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
DOLOGIO Z ENIGHU (5)		0.0			0.0			0.0			0.0	

C.F. Crozier & Associates Synchro 11 Report

Page 11

Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road 2045 Future Background P.M. 09-25-2024

Lane Group		۶	→	*	•	•	•	1	†	1	-	ţ	1
Protected Phases 5	Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases 2	Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm	pm+pt	NA	Perm
Detector Phase 5	Protected Phases	5	2		1	6		3	8		7	4	
Switch Phase Minimum Initial (s) 7.0 20.0 20.0 7.0 20.0 33.2 11.5 21.0 21.0 11.5 22.5 22.5 7.0 22.0 33.2 11.5 21.0 21.0 11.5 22.5 22.5 7.0 22.0 22.0 33.2 35.0 50.0 50.0 16.0 43	Permitted Phases			2	6					8	4		4
Minimum Initial (s)	Detector Phase	5	2	2	1	6		3	8	8	7	4	4
Minimum Split (s)	Switch Phase												
Total Split (s)	Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0		7.0	10.0	10.0	7.0	10.0	10.0
Total Split (%)	Minimum Split (s)	12.0	27.2	27.2	12.0	33.2		11.5	21.0	21.0	11.5	22.5	22.5
Maximum Green (s) 37.0 27.8 27.8 44.0 34.8 19.0 42.0 42.0 12.0 35.0 35.0 35.0 45.0 30.0 4.5 4.5 35.0 35.0 4.5 4.5 4.5 4.5 4.5 4.5 All-Red Time (s) 2.0 2.2 2.2 2.0 2.2 1.0 3.5 3.5 1.0 3.5 <td></td>													
Yellow Time (s) 3.0 5.0 5.0 3.0 5.0 3.0 4.5 4.5 3.0 4.5 4.5 All-Red Time (s) 2.0 2.2 2.0 2.2 1.0 3.5 3.5 1.0 3.5 3.5 Lost Time (s) 0.0 <	Total Split (%)	28.0%	23.3%	23.3%	32.7%	28.0%		15.3%	33.3%	33.3%	10.7%	28.7%	28.7%
All-Red Time (s) 2.0 2.2 2.2 2.0 2.2 2.0 0.0 0.0 3.5 3.5 1.0 3.5 3.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2	Maximum Green (s)	37.0	27.8	27.8	44.0	34.8		19.0	42.0	42.0	12.0	35.0	35.0
Lost Time Adjust (s) 0.0	Yellow Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	4.5	4.5	3.0	4.5	4.5
Total Lost Time (s) 5.0 7.2 7.2 5.0 7.2 4.0 8.0 8.0 4.0 8.0 8.0 4.0 8.0 8.0 4.0 8.0 8.0 4.0 8.0 8.0 4.0 8.0 8.0 4.0 8.0 4.0 8.0 4.0 8.0 4.0 8.0 4.0 8.0 4.0 8.0 4.0 8.0 4.0 8.0 4.0 8.0 4.0 8.0 4.0 8.0 8.0 4.0 8.0 4.0 8.0 4.0 8.0 8.0 4.0 8.0 8.0 4.0 8.0 8.0 4.0 8.0 8.0 4.0 8.0 8.0 4.0 8.0 8.0 4.0 8.0 8.0 4.0 8.0 8.0 4.0 8.0 8.0 4.0 8.0 8.0 4.0 8.0 8.0 4.0 8.0 8.0 4.0 8.0 8.0 4.0	All-Red Time (s)	2.0	2.2	2.2	2.0	2.2		1.0	3.5	3.5	1.0	3.5	3.5
Lead/Lag Lead Lag Lag Lead Lag Lag Lead Lag La	Lost Time Adjust (s)		0.0		0.0	0.0			0.0	0.0	0.0	0.0	0.0
Lead-Lag Optimize? Yes	Total Lost Time (s)	5.0	7.2	7.2	5.0	7.2		4.0	8.0	8.0	4.0	8.0	8.0
Vehicle Extension (s) 3.0 3.6 3.6 3.0 3.6 3.0 4.0 9.0 3.0 2.2 2.0 6.0 6.0 6.0 4.2 1.1 3.0 2.2 4.2 4.2 1.1 4.1 4.2 4.9 6.3 5.0 3.5 3.0 4.2			Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Recall Mode	Lead-Lag Optimize?		Yes									Yes	
Walk Time (s) 7.0 <	Vehicle Extension (s)	3.0	3.6	3.6	3.0	3.6		3.0	3.0	3.0	3.0	3.0	3.0
Flash Dont Walk (s) Pedestrian Calls (#/hr) Act Effet Green (s) 59.3 27.8 27.8 78.6 42.1 18.1 42.6 42.6 49.6 35.0 35.0 Actuated g/C Ratio 0.40 0.19 0.77 0.98 1.13 0.82 1.12 0.68 0.61 1.14 0.50 Control Delay 62.5 98.2 32.3 74.0 124.7 80.3 114.1 10.8 44.1 126.0 21.1 Queue Delay 62.5 98.2 32.3 74.0 124.7 80.3 114.1 10.8 44.1 126.0 21.1 Queue Delay 62.5 98.2 32.3 74.0 124.7 80.3 114.1 10.8 44.1 126.0 21.1 LOS E F C E F F F F B D F C Approach Delay 63.5 44.1 Approach LOS E F C Approach LOS E C Approach LOS E F C Approach LOS E C Approach LOS E F C Approach LOS Approa	Recall Mode	None	None	None	None	None		None	None	None	None	None	None
Pedestrian Calls (#/hr) 59.3 27.8 78.6 42.1 18.1 42.6 42.6 49.6 35.0 35	Walk Time (s)												
Act Effct Green (s) 59.3 27.8 27.8 78.6 42.1 18.1 42.6 42.6 49.6 35.0 35.0 Actuated g/C Ratio 0.40 0.19 0.19 0.53 0.28 0.12 0.29 0.29 0.33 0.24 0.24 v/c Ratio 0.86 0.96 0.77 0.98 1.13 0.82 1.12 0.68 0.61 1.14 0.50 Control Delay 62.5 98.2 32.3 74.0 124.7 80.3 114.1 10.8 44.1 126.0 21.1 Queue Delay 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Flash Dont Walk (s)												
Actuated g/C Ratio 0.40 0.19 0.19 0.53 0.28 0.12 0.29 0.29 0.33 0.24 0.24 v/c Ratio 0.86 0.96 0.77 0.98 1.13 0.82 1.12 0.68 0.61 1.14 0.50 Control Delay 62.5 98.2 32.3 74.0 124.7 80.3 114.1 10.8 44.1 126.0 21.1 Queue Delay 0.0 0	Pedestrian Calls (#/hr)					0			0				
v/c Ratio 0.86 0.96 0.77 0.98 1.13 0.82 1.12 0.68 0.61 1.14 0.50 Control Delay 62.5 98.2 32.3 74.0 124.7 80.3 114.1 10.8 44.1 126.0 21.1 Queue Delay 0.0<	Act Effct Green (s)												
Control Delay 62.5 98.2 32.3 74.0 124.7 80.3 114.1 10.8 44.1 126.0 21.1 Queue Delay 0.0 <t< td=""><td>Actuated g/C Ratio</td><td></td><td></td><td></td><td>0.53</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	Actuated g/C Ratio				0.53								
Queue Delay 0.0 <th< td=""><td>v/c Ratio</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>	v/c Ratio												
Total Delay 62.5 98.2 32.3 74.0 124.7 80.3 114.1 10.8 44.1 126.0 21.1 LOS E F C E F F F B D F C Approach Delay 63.5 99.7 80.4 98.8 98.8 Approach LOS E F F F F F F F F F F Queue Length 95th (m) 119.3 442.2 157.6 ~207.6 56.0 ~214.3 13.3 22.0 ~180.0 22.2 Queue Length 95th (m) 119.3 #172.0 84.3 #237.5 #310.3 #77.3 #261.8 55.5 37.3 #224.1 51.5 Internal Link Dist (m) 162.6 829.6 505.0 50.0 445.5 Turn Bay Length (m) 50.0 115.0 100.0 120.0 110.0 50.0 50.0 829.6 50.0 120.0 110.0 50.0 50.0 829.6 50.0	Control Delay												
LOS E F C E F F F B D F C Approach LOS E F F F F F F F F F F F Gueue Length 50th (m) 87.7 107.3 42.2 157.6 ~207.6 56.0 ~214.3 13.3 22.0 ~180.0 22.2 Queue Length 95th (m) 119.3 #172.0 84.3 #237.5 #310.3 #77.3 #261.8 55.5 37.3 #224.1 51.5 Internal Link Dist (m) 162.6 829.6 505.0 445.5 Turn Bay Length (m) 50.0 115.0 100.0 120.0 110.0 50.0 Base Capacity (vph) 498 355 483 581 517 447 1013 806 202 824 495 Starvation Cap Reductn 0 0 0 0 0 0 0 0 0 0 0 0 <													
Approach Delay 63.5 99.7 80.4 98.8 Approach LOS E F F F 7 Queue Length 50th (m) 87.7 107.3 42.2 157.6 ~207.6 56.0 ~214.3 13.3 22.0 ~180.0 22.2 Queue Length 95th (m) 119.3 #172.0 84.3 #237.5 #310.3 #77.3 #261.8 55.5 37.3 #224.1 51.5 Internal Link Dist (m) 162.6 829.6 505.0 445.5 Turn Bay Length (m) 50.0 115.0 100.0 120.0 110.0 50.0 Base Capacity (vph) 498 355 483 581 517 447 1013 806 202 824 495 Starvation Cap Reductn 0		62.5	98.2		74.0	124.7		80.3	114.1	10.8	44.1	126.0	21.1
Approach LOS E F F F SE F Queue Length 50th (m) 87.7 107.3 42.2 157.6 ~207.6 56.0 ~214.3 13.3 22.0 ~180.0 22.2 Queue Length 95th (m) 119.3 #172.0 84.3 #237.5 #310.3 #77.3 #261.8 55.5 37.3 #224.1 51.5 Internal Link Dist (m) 162.6 829.6 500.0 445.5 445.5 Turn Bay Length (m) 50.0 115.0 100.0 120.0 110.0 50.0 Base Capacity (vph) 498 355 483 581 517 447 1013 806 202 824 495 Starvation Cap Reductn 0	LOS	E		С	Е			F		В	D		С
Queue Length 50th (m) 87.7 107.3 42.2 157.6 ~207.6 56.0 ~214.3 13.3 22.0 ~180.0 22.2 Queue Length 95th (m) 119.3 #172.0 84.3 #237.5 #310.3 #77.3 #261.8 55.5 37.3 #224.1 51.5 Internal Link Dist (m) 162.6 829.6 505.0 445.5	Approach Delay		63.5			99.7			80.4			98.8	
Queue Length 95th (m) 119.3 #172.0 84.3 #237.5 #310.3 #77.3 #261.8 55.5 37.3 #224.1 51.5 Internal Link Dist (m) 162.6 829.6 505.0 445.5	Approach LOS												
Internal Link Dist (m) 162.6 829.6 505.0 445.5 Turn Bay Length (m) 50.0 115.0 100.0 120.0 110.0 50.0 Base Capacity (vph) 498 355 483 581 517 447 1013 806 202 824 495 Starvation Cap Reductn 0 </td <td></td>													
Turn Bay Length (m) 50.0 115.0 100.0 120.0 110.0 50.0 Base Capacity (vph) 498 355 483 581 517 447 1013 806 202 824 495 Starvation Cap Reductn 0<	Queue Length 95th (m)	119.3	#172.0	84.3	#237.5	#310.3		#77.3	#261.8	55.5	37.3	#224.1	51.5
Base Capacity (vph) 498 355 483 581 517 447 1013 806 202 824 495 Starvation Cap Reductn 0 <td>Internal Link Dist (m)</td> <td></td> <td>162.6</td> <td></td> <td></td> <td>829.6</td> <td></td> <td></td> <td>505.0</td> <td></td> <td></td> <td>445.5</td> <td></td>	Internal Link Dist (m)		162.6			829.6			505.0			445.5	
Starvation Cap Reductn 0	Turn Bay Length (m)	50.0			115.0			100.0		120.0			
Spillback Cap Reductn 0	Base Capacity (vph)	498	355	483	581	517		447	1013	806	202	824	495
Storage Cap Reductn 0 0 0 0 0 0 0 0 0 0 0 0 0 0													
		-		-	-	-		-	-	-	-	-	
Reduced v/c Ratio 0.70 0.96 0.77 0.97 1.13 0.79 1.12 0.68 0.56 1.14 0.50												-	
	Reduced v/c Ratio	0.70	0.96	0.77	0.97	1.13		0.79	1.12	0.68	0.56	1.14	0.50

Intersection Summary

Area Type:

Cycle Length: 150
Actuated Cycle Length: 148.8 Natural Cycle: 150

Control Type: Semi Act-Uncoord Maximum v/c Ratio: 1.14

Intersection Signal Delay: 85.5
Intersection Capacity Utilization 104.5%

Intersection LOS: F ICU Level of Service G

C.F. Crozier & Associates Synchro 11 Report Page 12 Lanes, Volumes, Timings

2045 Future Background P.M.

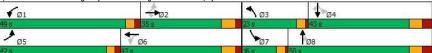
5: Highway 12 & West Ridge Boulevard/Murphy Road

Analysis Period (min) 15

Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 5: Highway 12 & West Ridge Boulevard/Murphy Road



Synchro 11 Report C.F. Crozier & Associates

Page 13

2045 Future Background P.M. 09-25-2024

HCM 2010 TWSC 6: Uhthoff Line & Murphy Road

6: Unthorr Line & N	nurpny r	Roau									09-2	5-2024
	•	-	*	•	•	•	1	†	1	-	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (vph)	412	7	0	4	4	4	2	0	0	2	0	328
Future Volume (vph)	412	7	0	4	4	4	2	0	0	2	0	328
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.955						0.866	
Flt Protected		0.953			0.984			0.950				
Satd. Flow (prot)	0	1533	0	0	1339	0	0	1805	0	0	1297	0
Flt Permitted		0.953			0.984			0.950				
Satd. Flow (perm)	0	1533	0	0	1339	0	0	1805	0	0	1297	0
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		853.6			117.8			131.4			177.2	
Travel Time (s)		61.5			8.5			7.9			10.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	18%	25%	0%	0%	100%	0%	0%	0%	0%	0%	0%	27%
Adj. Flow (vph)	458	8	0	4	4	4	2	0	0	2	0	364
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	466	0	0	12	0	0	2	0	0	366	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type: Unsignalized												
Intersection Capacity Utiliza	ation 56.9%			IC	U Level	of Service	В					
Analysis Period (min) 15												

Intersection												
Int Delay, s/veh	0											
	-											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol, veh/h	412	7	0	4	4	4	2	0	0	2	0	328
Future Vol, veh/h	412	7	0	4	4	4	2	0	0	2	0	328
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage	e,# -	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	18	25	0	0	100	0	0	0	0	0	0	27
Mvmt Flow	458	8	0	4	4	4	2	0	0	2	0	364
Major/Minor	Minor2			Minor1			Major1			//ajor2		
Conflicting Flow All	194	190	182	194	372	0	364	0	0	0	0	0
Stage 1	186	186	182	194	312	-	304	-	-	-	-	-
Stage 1	8	4	-	190	368					-	-	
Critical Hdwy	7.28	6.75	6.2	7.1	7.5	6.2	4.1			4.1		-
	6.28	5.75	0.2	6.1	6.5	0.2	4.1			4.1		
Critical Hdwy Stg 1	6.28	5.75	-	6.1	6.5	-	-	-	-		-	-
Critical Hdwy Stg 2	3.662			3.5	4.9	3.3	2.2		-	2.2		-
Follow-up Hdwy			3.3			3.3		-	-	2.2	-	-
Pot Cap-1 Maneuver	732	666 705	866	770	431		1206	-				-
Stage 1	780 973		-	1024	731 481	-	-	-	-	-	-	-
Stage 2	9/3	849	-	816	481	-	-	-	•	-	-	-
Platoon blocked, %		005	000	700	400		4000	-	-		-	-
Mov Cap-1 Maneuver	-	665	866	762	430	-	1206	-	-	-	-	-
Mov Cap-2 Maneuver	770	665	-	762 1022	430	-		-	-	-	-	-
Stage 1	778	705	-		730	-	-	-	-	-	-	-
Stage 2	965	847	-	807	481	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s							8					
HCM LOS	-			-								
Minor Lane/Major Mvn	a t	NBL	NBT	NDD	EBLn1\	MDI =1	SBL	SBT	SBR			
	iii.					VDLIII						
Capacity (veh/h)		1206	-	-	-	-	-	-	-			
HCM Lane V/C Ratio		0.002	-	-		-	-	-	-			
HCM Control Delay (s))	8	0	-	-	-	-	-	-			
HCM Lane LOS		A	Α	-	-	-	-	-	-			
HCM 95th %tile Q(veh)	0	-	-	-	-	-	-	-			

2045 Future Background P.M. 09-25-2024

HCM 2010 TWSC
TICIVI ZUTU TVV SC
7. I Inthoff Line & Division Road W

2045 Future Background P.M. 09-25-2024

	•	-	*	1	•	*	1	†	-	-	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (vph)	5	295	17	49	373	20	28	26	94	8	8	2
Future Volume (vph)	5	295	17	49	373	20	28	26	94	8	8	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.993			0.994			0.914			0.986	
Flt Protected		0.999			0.994			0.991			0.978	
Satd. Flow (prot)	0	1850	0	0	1862	0	0	1721	0	0	1681	0
Flt Permitted		0.999			0.994			0.991			0.978	
Satd. Flow (perm)	0	1850	0	0	1862	0	0	1721	0	0	1681	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		350.0			1346.1			2901.0			405.2	
Travel Time (s)		25.2			96.9			208.9			29.2	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	2%	0%	0%	1%	0%	0%	0%	0%	0%	20%	0%
Adj. Flow (vph)	5	317	18	53	401	22	30	28	101	9	9	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	340	0	0	476	0	0	159	0	0	20	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	100		100	100		100	100		100	100		100
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
	Other											
Control Type: Unsignalized												
Intersection Capacity Utilizati	on 59.6%			P	CU Level o	of Service	B B					
Analysis Period (min) 15												

Intersection												
Int Delay, s/veh	3.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol, veh/h	5	295	17	49	373	20	28	26	94	8	8	2
Future Vol., veh/h	5	295	17	49	373	20	28	26	94	8	8	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage,	# -	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	2	0	0	1	0	0	0	0	0	20	0
Mvmt Flow	5	317	18	53	401	22	30	28	101	9	9	2
Major/Minor M	lajor1		1	Major2		1	/linor1		N	Minor2		
Conflicting Flow All	423	0	0	335	0	0	860	865	326	919	863	412
Stage 1	-	-	-	-	-	-	336	336	-	518	518	-
Stage 2	-	-	-	-	-	-	524	529	-	401	345	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.7	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.7	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.7	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4.18	3.3
Pot Cap-1 Maneuver	1147	-	-	1236	-	-	278	294	720	254	274	644
Stage 1	-	-	-	-	-	-	682	645	-	544	505	-
Stage 2	-	-	-	-	-	-	540	530	-	630	605	-
Platoon blocked, %		-	-		-	-						
	1147	-	-	1236	-	-	257	276	720	192	257	644
Mov Cap-2 Maneuver	-	-	-	-	-	-	257	276	-	192	257	-
Stage 1	-	-	-	-	-	-	679	642	-	541	477	-
Stage 2	-	-	-	-	-	-	499	500	-	515	602	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.9			17.6			21.5		
HCM LOS							С			С		
Minor Lane/Major Mvmt		NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)		444	1147	-	-	1236	-	-	237			
HCM Lane V/C Ratio		0.358	0.005	-	-	0.043	-	-	0.082			
HCM Control Delay (s)		17.6	8.2	0	-	8	0	-	21.5			
HCM Lane LOS		С	Α	Α	-	Α	Α	-	С			
HCM 95th %tile Q(veh)		1.6	0	-	-	0.1	-	-	0.3			
HCM Control Delay (s) HCM Lane LOS		17.6 C	8.2 A	0 A	-	8 A	0 A	-	21.5 C			

Switch Phase

2045 Future Background P.M.

Lanes, Volumes, Timings 8: Burnside Line & Division Road W

	•	-	*	1	-	*	1	†	1	1	↓	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (vph)	16	187	202	28	143	4	266	207	82	7	113	34
Future Volume (vph)	16	187	202	28	143	4	266	207	82	7	113	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.933			0.997			0.980			0.970	
Flt Protected		0.998			0.992			0.977			0.998	
Satd. Flow (prot)	0	1744	0	0	1849	0	0	1793	0	0	1573	0
Flt Permitted		0.984			0.878	•		0.767	-		0.979	
Satd. Flow (perm)	0	1720	0	0	1636	0	0	1408	0	0	1543	0
Right Turn on Red	-		Yes	-		Yes	-		Yes	-		Yes
Satd. Flow (RTOR)		98			2			23			36	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1346.1			271.7			1953.3			357.4	
Travel Time (s)		96.9			19.6			140.6			25.7	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	2%	1%	0%	2%	0%	1%	1%	4%	0%	23%	0%
Adj. Flow (vph)	17	199	215	30	152	4	283	220	87	7	120	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	431	0	0	186	0	0	590	0	0	163	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	100		100	100		100	100		100	100		100
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	Cl+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	

	1	-	*	1	•	•	1	†	1	1	Ţ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	23.0	23.0		23.0	23.0		32.0	32.0		32.0	32.0	
Total Split (%)	41.8%	41.8%		41.8%	41.8%		58.2%	58.2%		58.2%	58.2%	
Maximum Green (s)	18.5	18.5		18.5	18.5		27.5	27.5		27.5	27.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		14.5			14.5			27.7			27.7	
Actuated g/C Ratio		0.28			0.28			0.54			0.54	
v/c Ratio		0.78			0.40			0.77			0.19	
Control Delay		23.2			17.1			19.5			6.4	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		23.2			17.1			19.5			6.4	
LOS		C			В			В			Α	
Approach Delay		23.2			17.1			19.5			6.4	
Approach LOS		C			В			В			Α	
Queue Length 50th (m)		28.4			14.0			39.7			5.7	
Queue Length 95th (m)		55.9			28.0			#104.9			15.2	
Internal Link Dist (m)		1322.1			247.7			1929.3			333.4	
Turn Bay Length (m)								102010			00011	
Base Capacity (vph)		687			596			771			850	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.63			0.31			0.77			0.19	
Intersection Summary												
Area Type:	Other											
Cycle Length: 55												
Actuated Cycle Length: 51.2												
Natural Cycle: 55												
Control Type: Semi Act-Uno	oord											
Maximum v/c Ratio: 0.78												
Intersection Signal Delay: 18	3.7			lr	ntersection	LOS: B						
Intersection Capacity Utilizat					CU Level		D D					
Analysis Period (min) 15												
# 95th percentile volume e	xceeds ca	pacity, qu	eue mav	be longe	r.							
Queue shown is maximu			,	- 3-								

Lanes, Volumes, Timings 8: Burnside Line & Division Road W 2045 Future Background P.M. 09-25-2024

C.F. Crozier & Associates Synchro 11 Report Page 20

Lanes, Volumes, Timings 9: Industrial Road & Hurlwood Lane 2045 Future Background P.M. 09-25-2024

	•	-	+	1	-	1
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	7	^	1		1	7
Traffic Volume (vph)	0	127	462	49	76	0
Future Volume (vph)	0	127	462	49	76	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.987			
Flt Protected					0.950	
Satd. Flow (prot)	1863	1863	1839	0	1770	1863
Flt Permitted					0.950	
Satd. Flow (perm)	1863	1863	1839	0	1770	1863
Link Speed (k/h)		50	50		50	
Link Distance (m)		254.1	140.4		164.3	
Travel Time (s)		18.3	10.1		11.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	138	502	53	83	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	138	555	0	83	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	100			100	100	100
Sign Control		Free	Free		Stop	
Intersection Summary						
	Other					
Control Type: Unsignalized						
Intersection Capacity Utilizati	ion 38.2%			IC	U Level	of Service
Analysis Period (min) 15						

C.F. Crozier & Associates Synchro 11 Report

Page 21

1.4

Intersection Int Delay, s/veh

Lanes, Volumes, Timings
10: Uhthoff Line & Industrial Road

	•	•	†	~	1	Ţ
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	1	7	1			र्स
Traffic Volume (vph)	199	0	223	193	0	135
Future Volume (vph)	199	0	223	193	0	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.937			
Flt Protected	0.950					
Satd. Flow (prot)	1770	1863	1745	0	0	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1770	1863	1745	0	0	1863
Link Speed (k/h)	50		80			80
Link Distance (m)	229.6		177.2			2901.0
Travel Time (s)	16.5		8.0			130.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	216	0	242	210	0	147
Shared Lane Traffic (%)						
Lane Group Flow (vph)	216	0	452	0	0	147
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0	Ť		0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	100	100		100	100	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utiliza	tion 41.2%			IC	U Level	of Service
Analysis Period (min) 15						

Movement	EBL	EBT	WBT	WBR	SBL	SBR	R
Lane Configurations	1	^	1		1	7	1
Traffic Vol, veh/h	0	127	462	49	76	0	0
Future Vol, veh/h	0	127	462	49	76	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop	р
RT Channelized	-	None	-	None			
Storage Length	0	-	-	-	0	0	0
Veh in Median Storage	e,# -	0	0	_	0		-
Grade, %	-	0	0	-	0		
Peak Hour Factor	92	92	92	92	92	92	2
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	0	138	502	53	83	0	
		100			-		•
	Major1		Major2		Minor2		
Conflicting Flow All	555	0	-	0	667	529	9
Stage 1	-	-	-	-	529	-	-
Stage 2	-	-	-	-	138	-	-
Critical Hdwy	4.12	-	-	-	6.42	6.22	2
Critical Hdwy Stg 1	-	-	-	-	5.42	-	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318	8
Pot Cap-1 Maneuver	1015	-	-	-	424	550	0
Stage 1	-	-	-	-	591	-	-
Stage 2	-	-	-	-	889	-	-
Platoon blocked, %		-	-	-			
Mov Cap-1 Maneuver	1015	-	-	-	424	550	0
Mov Cap-2 Maneuver	-	-	-	-	499		-
Stage 1	-	-	-	-	591		-
Stage 2	-	-	-	-	889		-
Approach	EB		WB		SB		
HCM Control Delay, s	0		0		13.6		
HCM LOS					В		
Minor Lane/Major Mvn	nt	EBL	EBT	WBT	W/RP	SRI n1	1 SBLn2
Capacity (veh/h)	IL.	1015			VVDIX.	499	
HCM Lane V/C Ratio		1015	-	-	-	0.166	
			-	-			
HCM Control Delay (s)		0	-	-	-	13.6	
HCM Lane LOS	,	A	-	-	-	В	
HCM 95th %ti l e Q(veh)	0	-	-	-	0.6	6 -

C.F. Crozier & Associates

Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road

	•	-	*	1	•	•	1	†	~	-	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	14	†	7	44	1		44	^	7	44	^	7
Traffic Volume (vph)	329	321	348	531	309	238	331	1063	513	106	880	232
Future Volume (vph)	329	321	348	531	309	238	331	1063	513	106	880	232
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	115.0		0.0	100.0		120.0	110.0		50.0
Storage Lanes	2		1	2		0	2		1	2		1
Taper Length (m)	70.0			65.0			80.0			100.0		
Lane Util. Factor	0.97	1.00	1.00	0.97	1.00	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor			0.99	1.00								
Frt			0.850		0.935				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3467	1900	1599	3467	1767	0	3502	3539	1599	3502	3505	1583
Flt Permitted	0.112			0.334			0.950			0.119		
Satd. Flow (perm)	409	1900	1577	1216	1767	0	3502	3539	1599	439	3505	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			208		34				403			156
Link Speed (k/h)		50			70			50			50	
Link Distance (m)		186.6			853.6			529.0			469.5	
Travel Time (s)		13.4			43.9			38.1			33.8	
Confl. Peds. (#/hr)			2	2								
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	0%	1%	1%	1%	0%	0%	2%	1%	0%	3%	2%
Adj. Flow (vph)	350	341	370	565	329	253	352	1131	546	113	936	247
Shared Lane Traffic (%)												
Lane Group Flow (vph)	350	341	370	565	582	0	352	1131	546	113	936	247
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2	Ŭ		7.2	Ŭ		7.2	Ŭ		7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
								/				
Detector 2 Channel												

Intersection							
Int Delay, s/veh	4.3						
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	۲	7	f)			4	
Traffic Vol, veh/h	199	0	223	193	0	135	
Future Vol, veh/h	199	0	223	193	0	135	
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Stop	Stop	Free	Free	Free	Free	
RT Channelized	-	None	-	None	-	None	
Storage Length	0	0	-	-	-	-	
Veh in Median Storage	e,# 0	-	0	-	-	0	
Grade, %	0	-	0	-	-	0	
Peak Hour Factor	92	92	92	92	92	92	
Heavy Vehicles, %	2	2	2	2	2	2	
Mvmt Flow	216	0	242	210	0	147	
Major/Minor	Minor1		Major1		Major2		
Conflicting Flow All	494	347	viajor i 0	0	452	0	
Stage 1	347	347	-	-	452	-	
Stage 1	147	-				-	
Critical Hdwy	6.42	6.22	-	-	4.12	-	
Critical Hdwy Stg 1	5.42	0.22				-	
Critical Hdwy Stg 2	5.42	-			-		
Follow-up Hdwy	3.518				2.218	-	
Pot Cap-1 Maneuver	535	696	_		1109	_	
Stage 1	716	-			-		
Stage 2	880	_	_	_	_	_	
Platoon blocked, %	000					-	
Mov Cap-1 Maneuver	535	696	-		1109	_	
Mov Cap-1 Maneuver	535	-	-		-	-	
Stage 1	716	-	-	_	_	_	
Stage 2	880				-	-	
Olugo L	000						
	14/5						
Approach	WB		NB		SB		
HCM Control Delay, s	16.2		0		0		
HCM LOS	С						
Minor Lane/Major Mvn	nt	NBT	NBR\	WBLn1V	VBLn2	SBL	SBT
Capacity (veh/h)		-	-	535	-	1109	-
HCM Lane V/C Ratio		-		0.404	-	1103	-
HCM Control Delay (s))	-	-	16.2	0	0	-
HCM Lane LOS			-	10.2 C	A	A	-
HCM 95th %tile Q(veh)	-	-	1.9		0	_
	1			1.0		0	

Synchro 11 Report Page 24 C.F. Crozier & Associates Synchro 11 Report Lanes, Volumes, Timings

2045 Future Background P.M. Mitigation

5: Highway 12 & West Ridge Boulevard/Murphy Road

09-06-2024

	•	→	7	1	←	1	1	†	1	1	↓	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6					8	4		4
Detector Phase	5	2	2	1	6		3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0		7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	12.0	27.2	27.2	12.0	33.2		11.5	21.0	21.0	11.5	22.5	22.5
Total Split (s)	15.0	43.0	43.0	18.0	46.0		17.4	47.3	47.3	11.7	41.6	41.6
Total Split (%)	12.5%	35.8%	35.8%	15.0%	38.3%		14.5%	39.4%	39.4%	9.8%	34.7%	34.7%
Maximum Green (s)	10.0	35.8	35.8	13.0	38.8		13.4	39.3	39.3	7.7	33.6	33.6
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	2.0	2.2	2.2	2.0	2.2		1.0	3.5	3.5	1.0	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.2	7.2	5.0	7.2		4.0	8.0	8.0	4.0	8.0	8.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.6	3.6	3.0	3.6		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	None	None	None	None	None
Walk Time (s)					7.0			7.0	7.0			
Flash Dont Walk (s)					19.0			6.0	6.0			
Pedestrian Calls (#/hr)					0			0	0			
Act Effct Green (s)	48.0	35.8	35.8	54.0	38.8		13.4	39.5	39.5	44.9	33.5	33.5
Actuated g/C Ratio	0.40	0.30	0.30	0.45	0.32		0.11	0.33	0.33	0.37	0.28	0.28
v/c Ratio	0.84	0.60	0.60	0.71	0.98		0.90	0.97	0.69	0.32	0.96	0.45
Control Delay	42.6	41.3	19.7	26.6	70.5		79.1	60.1	13.8	21.3	62.8	15.9
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.6	41.3	19.7	26.6	70.5		79.1	60.1	13.8	21.3	62.8	15.9
LOS	D	D	В	С	E		Е	E	В	С	Е	В
Approach Delay		34.2			48.9			51.0			50.2	
Approach LOS		С			D			D			D	
Queue Length 50th (m)	26.4	72.3	33.2	44.8	135.9		45.1	145.0	27.9	7.8	120.0	17.3
Queue Length 95th (m)	#50.9	104.2	66.8	58.4	#212.5		#72.6	#193.1	71.1	13.4	#162.9	41.8
Internal Link Dist (m)		162.6			829.6			505.0			445.5	
Turn Bay Length (m)	50.0			115.0			100.0		120.0	110.0		50.0
Base Capacity (vph)	418	567	616	792	594		391	1165	796	362	982	555
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.60	0.60	0.71	0.98		0.90	0.97	0.69	0.31	0.95	0.45

Intersection Summary

Area Type: Oth Cycle Length: 120 Actuated Cycle Length: 119.9 Natural Cycle: 100

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.98

Intersection Signal Delay: 47.1
Intersection Capacity Utilization 95.6%

Intersection LOS: D ICU Level of Service F

C.F. Crozier & Associates Synchro 11 Report Page 2 Lanes, Volumes, Timings

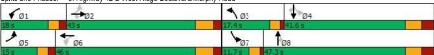
2045 Future Background P.M. Mitigation

5: Highway 12 & West Ridge Boulevard/Murphy Road

09-06-2024

Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Highway 12 & West Ridge Boulevard/Murphy Road



C.F. Crozier & Associates Synchro 11 Report Page 3

Lanes, Volumes, Timings

2031 Future Total A.M. 09-26-2024

1: Burnside Line & Industrial Road/Brodie Drive

	۶	→	•	1	+	•	1	†	~	1	ļ	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	^	7	*	↑	7	7	↑	7	*	1	
Traffic Volume (vph)	47	30	149	219	5	37	326	267	79	35	233	44
Future Volume (vph)	47	30	149	219	5	37	326	267	79	35	233	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		75.0	100.0		0.0	75.0		65.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (m)	7.5			7.5			7.5		·	7.5		-
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.976	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1900	1615	1736	1900	1615	1805	1439	1468	1805	1521	0
Flt Permitted	0.754			0.580			0.377			0.581		·
Satd. Flow (perm)	1433	1900	1615	1060	1900	1615	716	1439	1468	1104	1521	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			255			200			200		11	
Link Speed (k/h)		50			60			60			60	
Link Distance (m)		140.4			136.5			65.5			1953.3	
Travel Time (s)		10.1			8.2			3.9			117.2	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	4%	0%	0%	0%	32%	10%	0%	26%	0%
Adi. Flow (vph)	52	33	164	241	5	41	358	293	87	38	256	48
Shared Lane Traffic (%)												
Lane Group Flow (vph)	52	33	164	241	5	41	358	293	87	38	304	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	
Detector 1 Channel						-,						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	

Synchro 11 Report Page 1 Lanes, Volumes, Timings

2031 Future Total A.M. 09-26-2024

1: Burnside Line & Industrial Road/Brodie Drive

	•	→	*	1	•	*	1	†	1	1	Ţ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	25.0	25.0	5.0	25.0	
Minimum Split (s)	9.5	21.0	21.0	9.5	21.0	21.0	9.5	31.0	31.0	9.5	31.0	
Total Split (s)	9.6	21.0	21.0	15.0	26.4	26.4	19.0	44.5	44.5	9.5	35.0	
Total Split (%)	10.7%	23.3%	23.3%	16.7%	29.3%	29.3%	21.1%	49.4%	49.4%	10.6%	38.9%	
Maximum Green (s)	5.1	15.0	15.0	10.5	20.4	20.4	14.5	38.5	38.5	5.0	29.0	
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	6.0	6.0	4.5	6.0	6.0	4.5	6.0	6.0	4.5	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Min	Min	None	Min	Min	None	Min	Min	None	Min	
Act Effct Green (s)	21.6	15.0	15.0	31.0	23.8	23.8	45.9	38.8	38.8	32.3	25.8	
Actuated g/C Ratio	0.25	0.17	0.17	0.36	0.28	0.28	0.53	0.45	0.45	0.38	0.30	
v/c Ratio	0.14	0.10	0.33	0.52	0.01	0.07	0.64	0.45	0.11	0.08	0.66	
Control Delay	20.1	31.7	2.3	25.5	26.4	0.2	17.5	20.3	0.3	11.2	33.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	20.1	31.7	2.3	25.5	26.4	0.2	17.5	20.3	0.3	11.2	33.2	
LOS	С	С	Α	С	С	Α	В	С	Α	В	С	
Approach Delay		9.9			21.9			16.6			30.7	
Approach LOS		Α			С			В			С	
Queue Length 50th (m)	5.8	4.9	0.0	30.2	0.7	0.0	34.3	37.2	0.0	3.0	44.6	
Queue Length 95th (m)	14.2	13.5	1.9	53.6	3.6	0.0	53.1	60.8	0.0	7.4	72.9	
Internal Link Dist (m)		116.4			112.5			41.5			1929.3	
Turn Bay Length (m)	25.0		75.0	100.0			75.0		65.0	40.0		
Base Capacity (vph)	382	332	492	465	527	592	566	676	795	456	521	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.14	0.10	0.33	0.52	0.01	0.07	0.63	0.43	0.11	0.08	0.58	
Intersection Summary												
Area Type:	Other											
Cycle Length: 90												
Actuated Cycle Length: 85.	9											
Natural Cycle: 75												

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 85.9
Actural Cycle: 75
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.66
Intersection Signal Delay: 19.5
Intersection LOS: B
Intersection Capacity Utilization 71.4%
ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 1: Burnside Line & Industrial Road/Brodie Drive



Lanes, Volumes, Timings
2: Burnside Line & Highway 11 Westbound On-Ramp

2031 Future Total A.M. 09-26-2024 Lanes, Volumes, Timings 3: Burnside Line & Highway 11 Westbound

2031	Future	Total A.M.
		09-26-2024

	*	1	T	¥	4
EBL	EBR	NBL	NBT	SBT	SBR
			^	^	7
0	0	0	978	353	238
0	0	0	978	353	238
1900	1900	1900	1900	1900	1900
1.00	1.00	1.00	1.00	1.00	1.00
					0.850
0	0	0	1638	1810	1214
0	0	0	1638	1810	1214
50			70	60	
185.9			51.5	174.3	
13.4			2.6	10.5	
0.95	0.95	0.95	0.95	0.95	0.95
0%	0%	0%	16%	5%	33%
0	0	0	1029	372	251
0	0	0	1029	372	251
No	No	No	No	No	No
Left	Right	Left	Left	Left	Right
0.0			0.0	0.0	
0.0			0.0	0.0	
4.8			4.8	4.8	
1.00	1.00	1.00	1.00	1.00	1.00
25	15	25			15
Free			Free	Free	
Other					
on 54.8%			IC	U Level	of Service A
	0 0 1900 1.00 0 0 50 185.9 13.4 0.95 0% 0 No Left 0.0 0.0 4.8	0 0 0 1900 1900 1.00 1.00 1.00 1.00 1.00	0 0 0 0 1900 1900 1.00 1.00 1.00 1.00 1.	0 0 0 978 1900 1900 1900 1900 1.00 1.00 1.00 1.00 0 0 0 1638 0 0 0 1638 50 70 185.9 51.5 13.4 2.6 0.95 0.95 0.95 0.95 0% 0% 0% 16% 0 0 0 1029 No No No No No Left Right Left Left 0.0 0.0 0.0 0.0 4.8 4.8 1.00 1.00 1.00 1.00 25 15 25 Free Free	0 0 0 978 353 1900 1900 1900 1900 1900 1.00 1.00 1.00 1.00 1.00 0 0 0 1638 1810 0 0 0 1638 1810 0 0 0 1638 1810 50 70 60 185.9 51.5 174.3 13.4 2.6 10.5 0.95 0.95 0.95 0.95 0.95 0% 0% 0% 16% 5% 0 0 0 1029 372 0 0 0 1029 372 0 0 0 1029 372 No No No No No Left Right Left Left Left 0.0 0.0 0.0 0.0 0.0 0.0 0.0 4.8 4.8 4.8 1.00 1.00 1.00 1.00 1.00 25 15 25 Free Free

	1	*	†	-	1	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	*	7	†	7		<u> </u>
Traffic Volume (vph)	153	256	722	172	0	353
Future Volume (vph)	153	256	722	172	0	353
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	1900	80.0	0.0	1900
Storage Lanes	1	1		1	0.0	
Taper Length (m)	7.5	1			7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
	1.00		1.00	1.00	1.00	1.00
Frt	0.050	0.850		0.850		
Flt Protected	0.950	4500	4000	4500		4040
Satd. Flow (prot)	1787	1583	1638	1509	0	1810
Flt Permitted	0.950					
Satd. Flow (perm)	1787	1583	1638	1509	0	1810
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		227		181		
Link Speed (k/h)	50		60			60
Link Distance (m)	241.7		160.3			51.5
Travel Time (s)	17.4		9.6			3.1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	2%	16%	7%	0.55	5%
Adj. Flow (vph)	161	269	760	181	0 /0	372
Shared Lane Traffic (%)	101	209	700	101	U	312
	161	269	760	181	0	372
Lane Group Flow (vph)						
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1		2
Detector Template	Left	Right	Thru	Right		Thru
Leading Detector (m)	2.0	2.0	10.0	2.0		10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0
Detector 1 Size(m)	2.0	2.0	0.6	2.0		0.0
	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex
Detector 1 Type	CI+EX	CI+EX	CI+EX	CI+EX		CI+EX
Detector 1 Channel		0.0	0.0	0.0		0.0
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			CI+Ex			CI+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Perm	Perm	NA	Perm		NA
Protected Phases	1 01111	1 01111	6	1 01111		2
FIOLECIEU FIIdSES			O			

Synchro 11 Report Page 3

Lanes, Volumes, Timings
3: Burnside Line & Highway 11 Westbound

2031 Future Total A.M. 09-26-2024

Permitted Phases		1	*	†	-	-	ţ
Detector Phase 4	Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Switch Phase Minimum Initial (s) 9.7 9.7 20.0 20.0 20.0 Minimum Initial (s) 9.7 9.7 20.0 20.0 20.0 Minimum Split (s) 16.1 16.1 27.3 27.3 27.3 Total Split (s) 24.0 24.0 61.0 61.0 61.0 Total Split (s) 28.2% 28.2% 71.8% 71.8% 71.8% Maximum Green (s) 17.6 17.6 53.7 53.7 53.7 Yellow Time (s) 4.5 4.5 4.5 4.5 4.5 4.5 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 0.0 Total Lost Time (s) 6.4 6.4 7.3 7.3 7.3 7.3 Recall Mode None None None None None None Act Effet Green (s) 12.2 12.2 33.6 33.6 33.6 Actuated g/C Ratio 0.20 0.20 0.56 0.56 0.56 V/c Ratio 0.44 0.54 0.83 0.20 0.37 Control Delay 28.8 11.0 20.1 1.6 8.3 Queue Delay 0.0 0.0 0.0 0.0 0.0 Total Delay 17.7 16.5 8.3 Approach LOS B B B A A Queue Length 50th (m) 15.8 3.8 58.2 0.0 19.2 Queue Length 95th (m) 15.8 3.8 58.2 0.0 19.2 Queue Length 95th (m) 15.8 3.8 58.2 0.0 19.2 Queue Length 95th (m) 15.8 3.8 58.2 0.0 19.2 Queue Length 95th (m) 15.8 3.8 58.2 0.0 19.2 Queue Length 95th (m) 15.8 3.8 58.2 0.0 19.2 Queue Length 95th (m) 15.8 3.8 58.2 0.0 19.2 Queue Length 95th (m) 15.8 3.8 58.2 0.0 19.2 Queue Length 95th (m) 15.8 3.8 58.2 0.0 19.2 Queue Length 95th (m) 217.7 136.3 27.5 Turn Bay Length (m) 84.9 27.8 127.4 6.8 41.1 Internal Link Dist (m) 217.7 136.3 27.5 Turn Bay Length (m) 84.9 27.8 127.4 6.8 41.1 Internal Cap Reductn 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Permitted Phases	4	4		6		
Minimum Initial (s) 9.7 9.7 20.0 20.0 20.0 Minimum Split (s) 16.1 16.1 27.3 71.8% 4.5 4.5 4.5 4.5 4.5 4.5 4.5 4.5 4.5 4.5 4.5 4.5 </td <td>Detector Phase</td> <td>4</td> <td>4</td> <td>6</td> <td>6</td> <td></td> <td>2</td>	Detector Phase	4	4	6	6		2
Minimum Split (s) 16.1 16.1 27.3 27.3 27.3 Total Split (%) 24.0 24.0 61.0 61.0 61.0 Total Split (%) 28.2% 28.2% 71.8% 71.8% 71.8% Maximum Green (s) 17.6 17.6 53.7 53.7 53.7 Yellow Time (s) 4.5 4.5 4.5 4.5 4.5 All-Red Time (s) 1.9 1.9 2.8 2.8 2.8 Lest Time Adjust (s) 0.0 0.0 0.0 0.0 0.0 Total Lost Time (s) 6.4 6.4 7.3 7.3 7.3 Lead-Lag Optimize? Vehicle Extension (s) 3.0 3.0 3.2 3.2 3.2 Recall Mode None None None None None None None Actuated g/C Ratio 0.20 0.20 0.56 0.56 0.56 Vc Ratio 0.44 0.54 0.83 0.20 0.3 Control	Switch Phase						
Total Split (s)	Minimum Initial (s)	9.7	9.7	20.0	20.0		20.0
Total Split (%) 28.2% 28.2% 71.8% 71.8% 71.8% Maximum Green (s) 17.6 17.6 53.7 53.7 53.7 53.7 53.7 53.7 53.7 53.7	Minimum Split (s)	16.1	16.1	27.3	27.3		27.3
Maximum Green (s) 17.6 17.6 53.7 53.7 53.7 Yellow Time (s) 4.5 4.2 4.2 <td< td=""><td>Total Split (s)</td><td>24.0</td><td>24.0</td><td>61.0</td><td>61.0</td><td></td><td>61.0</td></td<>	Total Split (s)	24.0	24.0	61.0	61.0		61.0
Yellow Time (s)	Total Split (%)	28.2%	28.2%		71.8%		71.8%
All-Red Time (s) 1.9 1.9 2.8 2.8 2.8 2.8 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.0 0.0 0	Maximum Green (s)	17.6	17.6	53.7	53.7		53.7
Lost Time Adjust (s) 0.0 0.0 0.0 0.0 0.0 Total Lost Time (s) 6.4 6.4 7.3 7.3 7.3 7.3 Lead/Lag Lead-Lag Optimize? Vehicle Extension (s) 3.0 3.0 3.2 3.2 3.2 Recall Mode None None None None None None Act Effct Green (s) 12.2 12.2 33.6 33.6 33.6 Actuated g/C Ratio 0.20 0.20 0.56 0.56 0.56 V/c Ratio 0.44 0.54 0.83 0.20 0.37 Control Delay 28.8 11.0 20.1 1.6 8.3 Queue Delay 0.0 0.0 0.0 0.0 0.0 0.0 Total Delay 28.8 11.0 20.1 1.6 8.3 LOS C B C A A A Approach Delay 17.7 16.5 8.3 Approach LOS B B B A Queue Length 50th (m) 15.8 3.8 58.2 0.0 19.2 Queue Length 95th (m) 42.9 27.8 127.4 6.8 41.1 Internal Link Dist (m) 217.7 136.3 27.5 Turn Bay Length (m) 8ase Capacity (vph) 552 646 1430 1340 1580 Starvation Cap Reductn 0 0 0 0 0 0 Spillback Cap Reductn 0 0 0 0 0 0 0 Spillback Cap Reductn 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Yellow Time (s)			4.5			
Total Lost Time (s) 6.4 6.4 7.3 7.3 7.3 7.3 Lead/Lag Lead/Lag Optimize? Vehicle Extension (s) 3.0 3.0 3.2 3.2 3.2 3.2 Recall Mode None None None None None Act Effct Green (s) 12.2 12.2 33.6 33.6 33.6 Actuated g/C Ratio 0.20 0.20 0.56 0.56 0.56 0.56 0.56 0.56 0.56 0.5	All-Red Time (s)						
Lead/Lag Vehicle Extension (s) 3.0 3.0 3.2 3.2 3.2 Recall Mode None Addition 3.3.6 32.7 37.7 10.6 8.3 32.2 20.0 10.0 33.8 38.2 10.0 <	Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Lead-Lag Optimize? Vehicle Extension (s) 3.0 3.0 3.2 3.2 3.2 Recall Mode None None None None None None Act Effet Green (s) 12.2 12.2 33.6 33.6 33.6 33.6 Actuated g/C Ratio 0.20 0.20 0.56 0.56 0.56 Vic Ratio 0.44 0.54 0.83 0.20 0.37 Control Delay 28.8 11.0 20.1 1.6 8.3 Queue Delay 0.0 0.0 0.0 0.0 0.0 0.0 Total Delay 28.8 11.0 20.1 1.6 8.3 Approach LOS B C A A A Approach LOS B B B A Approach LOS B B B A Queue Length 50th (m) 15.8 3.8 58.2 0.0 19.2 Queue Length 50th (m) 21.7 136.3 27.5 Turn Bay Length (m) 80.0 80.0 <	Total Lost Time (s)	6.4	6.4	7.3	7.3		7.3
Vehicle Extension (s) 3.0 3.0 3.2 3.2 3.2 Recall Mode None None	Lead/Lag						
Recall Mode	Lead-Lag Optimize?						
Act Effot Green (s) 12.2 12.2 33.6 33.6 33.6 Actuated g/C Ratio 0.20 0.20 0.56 0.56 0.56 0.56 0.56 0.56 0.56 0.5	Vehicle Extension (s)	3.0		3.2	3.2		3.2
Actuated g/C Ratio 0.20 0.20 0.56 0.56 0.56 0.56 v/c Ratio 0.44 0.54 0.83 0.20 0.37 Control Delay 28.8 11.0 20.1 1.6 8.3 Queue Delay 0.0 0.0 0.0 0.0 0.0 0.0 Total Delay 28.8 11.0 20.1 1.6 8.3 LOS C B C A A A Approach Delay 17.7 16.5 8.3 Approach Delay 17.7 16.5 8.3 Approach LOS B B B A A Queue Length 50th (m) 15.8 3.8 58.2 0.0 19.2 Queue Length 95th (m) 42.9 27.8 127.4 6.8 41.1 Internal Link Dist (m) 217.7 136.3 27.5 Turn Bay Length (m) 88.0 Starvation Cap Reductn 0 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 0 0 Reduced v/c Ratio 0.29 0.42 0.53 0.14 0.24 Intersection Summary Area Type: Other Cycle Length: 60.3 Natural Cycle: 60 Control Type: Semi Act-Uncoord Maximum v/c Ratio: 0.83 Intersection Signal Delay: 15.1 Intersection LOS: B	Recall Mode						
v/c Ratio 0.44 0.54 0.83 0.20 0.37 Control Delay 28.8 11.0 20.1 1.6 8.3 Queue Delay 0.0 0.0 0.0 0.0 0.0 Total Delay 28.8 11.0 20.1 1.6 8.3 LOS C B C A A Approach Delay 17.7 16.5 8.3 Approach LOS B B B A Queue Length 50th (m) 15.8 3.8 58.2 0.0 19.2 Queue Length 95th (m) 42.9 27.8 127.4 6.8 41.1 Internal Link Dist (m) 217.7 136.3 27.5 Turn Bay Length (m) 80.0 80.0 80.0 Base Capacity (vph) 552 646 1430 1340 1580 Starvation Cap Reductn 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0	Act Effct Green (s)		12.2				
Control Delay 28.8 11.0 20.1 1.6 8.3 Queue Delay 0.0 0.0 0.0 0.0 0.0 0.0 LOS C B C A A A Approach LOS B B B C A Approach LOS B B B A Queue Length 50th (m) 15.8 3.8 58.2 0.0 19.2 Queue Length 95th (m) 42.9 27.8 127.4 6.8 41.1 Internal Link Dist (m) 217.7 136.3 27.5 Turn Bay Length (m) Base Capacity (vph) 552 646 1430 1340 1580 Starvation Cap Reducth 0 0 0 0 0 0 Spillback Cap Reducth 0 0 0 0 0 0 Storage Cap Reducth 0 0 0 0 0 0 Storage Cap Reducth 0 0 0 0 0 0 Reduced v/c Ratio 0.29 0.42 0.53 0.14 0.24 Intersection Summary Area Type: Other Cycle Length: 60.3 Natural Cycle: 60 Control Type: Semi Act-Uncoord Maximum w/c Ratio: 0.83 Intersection Signal Delay: 15.1 Intersection LOS: B	Actuated g/C Ratio						
Queue Delay 0.0 0.0 0.0 0.0 0.0 Total Delay 28.8 11.0 20.1 1.6 8.3 LOS C B C A A Approach Delay 17.7 16.5 8.3 Approach LOS B B B A Queue Length 50th (m) 15.8 3.8 58.2 0.0 19.2 Queue Length 95th (m) 42.9 27.8 127.4 6.8 41.1 Internal Link Dist (m) 217.7 136.3 27.5 Turn Bay Length (m) 80.0 80.0 Base Capacity (vph) 552 646 1430 1340 1580 Starvation Cap Reductn 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 0 Reduced v/c Ratio 0.29 0.42 0.53 0.14 0.24 Intersection Summary Area Type: Other <t< td=""><td>v/c Ratio</td><td>0.44</td><td>0.54</td><td>0.83</td><td>0.20</td><td></td><td>0.37</td></t<>	v/c Ratio	0.44	0.54	0.83	0.20		0.37
Total Delay 28.8 11.0 20.1 1.6 8.3 LOS C B C A A Approach Delay 17.7 16.5 8.3 Approach LOS B B B A Queue Length 50th (m) 15.8 3.8 58.2 0.0 19.2 Queue Length 95th (m) 42.9 27.8 127.4 6.8 41.1 Internal Link Dist (m) 217.7 136.3 27.5 Turn Bay Length (m) 80.0 Base Capacity (vph) 552 646 1430 1340 1580 Starvation Cap Reductn 0 0 0 0 0 0 Spillback Cap Reductn 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 0 Reduced v/c Ratio 0.29 0.42 0.53 0.14 0.24 Intersection Summary Area Type: Other Cycle Length: 85 Actuated Cycle: 60 Control Type: Semi Act-Uncoord Maximum v/c Ratio: 0.83 Intersection Signal Delay: 15.1 Intersection LOS: B	Control Delay		11.0	20.1			8.3
LOS C B C A A Approach Delay 17.7 16.5 8.3 Approach LOS B B B A Queue Length 50th (m) 15.8 3.8 58.2 0.0 19.2 Queue Length 95th (m) 42.9 27.8 127.4 6.8 41.1 Internal Link Dist (m) 217.7 136.3 27.5 Turn Bay Length (m) 80.0 Base Capacity (vph) 552 646 1430 1340 1580 Starvation Cap Reductn 0 0 0 0 0 0 0 Spillback Cap Reductn 0 0 0 0 0 0 0 Spillback Cap Reductn 0 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 0 0 Reduced v/c Ratio 0.29 0.42 0.53 0.14 0.24 Intersection Summary Area Type: Other Cycle Length: 60.3 Natural Cycle: 60 Control Type: Semi Act-Uncoord Maximum v/c Ratio: 0.83 Intersection Signal Delay: 15.1 Intersection LOS: B	Queue Delay	0.0	0.0	0.0			0.0
Approach Delay 17.7 16.5 8.3 Approach LOS B B B A Queue Length 50th (m) 15.8 3.8 58.2 0.0 19.2 Queue Length 95th (m) 42.9 27.8 127.4 6.8 41.1 Internal Link Dist (m) 217.7 136.3 27.5 Turn Bay Length (m) 80.0 Base Capacity (vph) 552 646 1430 1340 1580 Starvation Cap Reductn 0 0 0 0 0 0 0 Spillback Cap Reductn 0 0 0 0 0 0 0 Spillback Cap Reductn 0 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 0 0 Reduced v/c Ratio 0.29 0.42 0.53 0.14 0.24 Intersection Summary Area Type: Other Cycle Length: 60.3 Natural Cycle: 60 Control Type: Semi Act-Uncoord Maximum v/c Ratio: 0.83 Intersection Signal Delay: 15.1 Intersection LOS: B	Total Delay	28.8	11.0	20.1	1.6		8.3
Approach LOS B B B A Queue Length 50th (m) 15.8 3.8 58.2 0.0 19.2 Queue Length 95th (m) 42.9 27.8 127.4 6.8 41.1 Internal Link Dist (m) 217.7 136.3 27.5 Turn Bay Length (m) 80.0 Base Capacity (vph) 552 646 1430 1340 1580 Starvation Cap Reductn 0 0 0 0 0 0 Spillback Cap Reductn 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 0 0 Reduced v/c Ratio 0.29 0.42 0.53 0.14 0.24 Intersection Summary Area Type: Other Cycle Length: 85 Actuated Cycle Length: 60.3 Natural Cycle: 60 Control Type: Semi Act-Uncoord Maximum v/c Ratio: 0.83 Intersection Signal Delay: 15.1 Intersection LOS: B	LOS	С	В	С	Α		Α
Queue Length 50th (m) 15.8 3.8 58.2 0.0 19.2 Queue Length 95th (m) 42.9 27.8 127.4 6.8 41.1 Internal Link Dist (m) 217.7 136.3 27.5 Turn Bay Length (m) 80.0 80.0 Base Capacity (vph) 552 646 1430 1340 1580 Starvation Cap Reductn 0 0 0 0 0 Spillback Cap Reductn 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 Reduced v/c Ratio 0.29 0.42 0.53 0.14 0.24 Intersection Summary Area Type: Other Cycle Length: 85 Actuated Cycle Length: 60.3 Natural Cycle: 60 Control Type: Semi Act-Uncoord Maximum v/c Ratio: 0.83 Intersection Signal Delay: 15.1 Intersection LOS: B	Approach Delay	17.7		16.5			8.3
Queue Length 95th (m) 42.9 27.8 127.4 6.8 41.1 Internal Link Dist (m) 217.7 136.3 27.5 Turn Bay Length (m) 80.0 80.0 Base Capacity (vph) 552 646 1430 1340 1580 Starvation Cap Reductn 0 0 0 0 0 Spillback Cap Reductn 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 Reduced v/c Ratio 0.29 0.42 0.53 0.14 0.24 Intersection Summary Area Type: Other Cycle Length: 85 Actuated Cycle Length: 60.3 Natural Cycle: 60 Control Type: Semi Act-Uncoord Maximum v/c Ratio: 0.83 Intersection Signal Delay: 15.1 Intersection LOS: B	Approach LOS	В		В			Α
Internal Link Dist (m)	Queue Length 50th (m)	15.8	3.8	58.2	0.0		
Turn Bay Length (m)	Queue Length 95th (m)	42.9	27.8	127.4	6.8		41.1
Base Capacity (vph) 552 646 1430 1340 1580 Starvation Cap Reductn 0 0 0 0 0 0 Spillback Cap Reductn 0 0 0 0 0 0 Spillback Cap Reductn 0 0 0 0 0 0 Reduced v/c Ratio 0.29 0.42 0.53 0.14 0.24 Intersection Summary Area Type: Other Cycle Length: 85 Actuated Cycle Length: 60.3 Natural Cycle: 60 Control Type: Semi Act-Uncoord Maximum v/c Ratio: 0.83 Intersection Signal Delay: 15.1 Intersection LOS: B	Internal Link Dist (m)	217.7		136.3			27.5
Starvation Cap Reductn 0 0 0 0 Spillback Cap Reductn 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 Reduced v/c Ratio 0.29 0.42 0.53 0.14 0.24 Intersection Summary Area Type: Other Cycle Length: 85 Actuated Cycle Length: 60.3 Natural Cycle: 60 Control Type: Semi Act-Uncoord Maximum v/c Ratio: 0.83 Intersection Signal Delay: 15.1 Intersection LOS: B	Turn Bay Length (m)				80.0		
Spillback Cap Reductn 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 Reduced v/c Ratio 0.29 0.42 0.53 0.14 0.24 Intersection Summary Area Type: Other Cycle Length: 85 Actuated Cycle: 60 Shatural Cycle: 60 Control Type: Semi Act-Uncoord Maximum v/c Ratio: 0.83 Intersection Los: B	Base Capacity (vph)	552	646	1430	1340		1580
Storage Cap Reductn	Starvation Cap Reductn	0	0	0	0		0
Reduced v/c Ratio 0.29 0.42 0.53 0.14 0.24 Intersection Summary Area Type: Other Cycle Length: 85 Actuated Cycle Length: 60.3 Natural Cycle: 60 Control Type: Semi Act-Uncoord Maximum v/c Ratio: 0.83 Intersection Signal Delay: 15.1 Intersection LOS: B	Spillback Cap Reductn	0	0	0	0		0
Intersection Summary Area Type: Other Cycle Length: 85 Actuated Cycle Length: 60.3 Natural Cycle: 60 Control Type: Semi Act-Uncoord Maximum v/c Ratio: 0.83 Intersection Signal Delay: 15.1 Intersection LOS: B	Storage Cap Reductn	0	0	0	0		0
Area Type: Other Cycle Length: 85 Actuated Cycle Length: 60.3 Natural Cycle: 60 Control Type: Semi Act-Uncoord Maximum v/c Ratio: 0.83 Intersection Signal Delay: 15.1 Intersection LOS: B	Reduced v/c Ratio	0.29	0.42	0.53	0.14		0.24
Cycle Length: 85 Actuated Cycle Length: 60.3 Natural Cycle: 60 Control Type: Semi Act-Uncoord Maximum v/c Ratio: 0.83 Intersection Signal Delay: 15.1 Intersection LOS: B	Intersection Summary						
Actuated Čycle Length: 60.3 Natural Cycle: 60 Control Type: Semi Act-Uncoord Maximum v/c Ratio: 0.83 Intersection Signal Delay: 15.1 Intersection LOS: B	Area Type:	Other					
Natural Cycle: 60 Control Type: Semi Act-Uncoord Maximum v/c Ratio: 0.83 Intersection Signal Delay: 15.1 Intersection LOS: B	Cycle Length: 85						
Control Type: Semi Act-Uncoord Maximum v/c Ratio: 0.83 Intersection Signal Delay: 15.1 Intersection LOS: B	Actuated Cycle Length: 60	.3					
Maximum v/c Ratio: 0.83 Intersection Signal Delay: 15.1 Intersection LOS: B	Natural Cycle: 60						
Intersection Signal Delay: 15.1 Intersection LOS: B	Control Type: Semi Act-Un	coord					
	Maximum v/c Ratio: 0.83						
		15.1			In	tersection	LOS: B
intersection Capacity Utilization 65.3% ICO Level of Service C	Intersection Capacity Utiliz)				
	Analysis Period (min) 15						

Splits and Phases: 3: Burnside Line & Highway 11 Westbound



Lanes, Volumes, Timings 4: West Street North & Highway 11 Eastbound 2031 Future Total A.M. 09-26-2024

	•	*	1	†	Ţ	1
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	*	7	*		<u> </u>	7
Traffic Volume (vph)	277	120	99	613	458	49
Future Volume (vph)	277	120	99	613	458	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	55.0	1000	1000	40.0
Storage Lanes	1	1	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.850	1.00	1.00	1.00	0.850
Frt Protected	0.950	0.850	0.950			ს.წეს
		4504		4007	4045	4440
Satd. Flow (prot)	1327	1524	1787	1827	1845	1442
Flt Permitted	0.950		0.313			
Satd. Flow (perm)	1327	1524	589	1827	1845	1442
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		126				42
Link Speed (k/h)	50			60	60	
Link Distance (m)	214.0			160.8	176.6	
Travel Time (s)	15.4			9.6	10.6	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	36%	6%	1%	4%	3%	12%
Adi, Flow (vph)	292	126	104	645	482	52
Shared Lane Traffic (%)	202	120	104	0+0	402	02
Lane Group Flow (vph)	292	126	104	645	482	52
	No	No	No	No	No	No.
Enter Blocked Intersection						
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	2.0
	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Type	CI+EX	CI+EX	CI+EX	CI+EX	CI+EX	CI+EX
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	pm+pt	NA	NA	Perm
Protected Phases	1 01111	1 01111	1	6	2	1 01111
1 TOGOGGI Haded				0		

Lanes, Volumes, Timings
5: Highway 12 & West Ridge Boulevard/Murphy Road

	•	-	*	1	+	*	1	†	1	-	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	^	7	7	4		14	十十	7	7	^	7
Traffic Volume (vph)	125	167	151	336	257	144	168	422	404	102	686	197
Future Volume (vph)	125	167	151	336	257	144	168	422	404	102	686	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	115.0		0.0	100.0		120.0	110.0		50.0
Storage Lanes	1		1	1		0	2		1	1		1
Taper Length (m)	70.0			65.0			80.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt			0.850		0.946				0.850			0.850
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1881	1583	1787	1763	0	3467	3574	1568	1736	3471	1568
Flt Permitted	0.360	1001	1000	0.532	., 00		0.950	00. 1	1000	0.499	0111	1000
Satd. Flow (perm)	677	1881	1583	1001	1763	0	3467	3574	1568	912	3471	1568
Right Turn on Red	011	1001	Yes	1001	1100	Yes	0401	0014	Yes	012	0471	Yes
Satd. Flow (RTOR)			156		27	100			416			187
Link Speed (k/h)		60	100		60			70	710		70	101
Link Distance (m)		186.6			853.6			529.0			469.5	
Travel Time (s)		11.2			51.2			27.2			24.1	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	2%	1%	3%	0.97	1%	1%	3%	4%	4%	3%
Adj. Flow (vph)	129	172	156	346	265	148	173	435	416	105	707	203
Shared Lane Traffic (%)	129	172	130	340	203	140	1/3	433	410	103	101	203
Lane Group Flow (vph)	129	172	156	346	413	0	173	435	416	105	707	203
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	Leit	3.6	Rigiit	Leit	3.6	Right	Leit	7.2	Rigit	Leit	7.2	Rigiii
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		4.0			4.0			4.0			4.0	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	1.00	1.00		1.00	1.00	25	1.00	1.00	25	1.00	100
		0		100	0	15		0			^	100
Number of Detectors	1	2	1	1	2		1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	C I +Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	nmint	NA	Perm	pm+pt	NA		Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	pm+pt 5	2	i Cilli	1	6		3	8		7	4	

	650	*	1		*	
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	8	8	6			2
Detector Phase	8	8	1	6	2	2
Switch Phase					_	
Minimum Initial (s)	10.0	10.0	7.0	20.0	20.0	20.0
Minimum Split (s)	18.0	18.0	10.0	41.0	41.0	41.0
Total Split (s)	38.0	38.0	10.0	52.0	42.0	42.0
Total Split (%)	42.2%	42.2%	11.1%	57.8%	46.7%	46.7%
Maximum Green (s)	31.8	31.8	8.0	44.9	34.9	34.9
Yellow Time (s)	4.5	4.5	2.0	4.5	4.5	4.5
All-Red Time (s)	1.7	1.7	0.0	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	2.0	7.1	7.1	7.1
Lead/Lag		5.2	Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.2	3.2	3.2
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	20.0	20.0	38.1	32.7	25.5	25.5
Actuated g/C Ratio	0.30	0.30	0.57	0.49	0.38	0.38
v/c Ratio	0.74	0.23	0.22	0.72	0.68	0.09
Control Delay	34.4	5.3	9.1	20.0	25.5	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.4	5.3	9.1	20.0	25.5	7.6
LOS	C	Α.	A	20.0 B	23.5 C	Α.
Approach Delay	25,6	- /1	- /1	18.5	23.7	
Approach LOS	23.0 C			В.	23.7 C	
Queue Length 50th (m)	32.8	0.0	5.4	60.6	53.2	0.8
Queue Length 95th (m)	72.1	11.5	16.0	128.8	106.7	8.3
Internal Link Dist (m)	190.0	11.0	10.0	136.8	152.6	0.0
Turn Bay Length (m)	100.0		55.0	100.0	102.0	40.0
Base Capacity (vph)	671	833	488	1294	1025	819
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.15	0.21	0.50	0.47	0.06
	0.44	0.13	0.21	0.00	0.7/	0.00
Intersection Summary						
Area Type:	Other					
Cycle Length: 90						
Actuated Cycle Length: 66	8.8					
Natural Cycle: 75						
Control Type: Semi Act-Ur	ncoord					
Maximum v/c Ratio: 0.74						
Intersection Signal Delay:				l	ntersectio	n LOS: C
Intersection Capacity Utiliz	zation 59.7%			ŀ	CU Level	of Service I
Analysis Period (min) 15						
Splits and Phases: 4: W	est Street N	orth & Hig	ghway 11	Eastbou	nd	
4						3 5
\Ø1						10000
10 s 42 s						
						- 40

Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road

2031 Future Total A.M. 09-26-2024

	•	\rightarrow	*	1	•	*	1	Ť	1	1	ļ	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2		2	6					8	4		4
Detector Phase	5	2	2	1	6		3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0		7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	12.0	27.2	27.2	12.0	33.2		11.5	21.0	21.0	11.5	22.5	22.5
Total Split (s)	12.0	39.0	39.0	17.0	44.0		12.0	42.0	42.0	12.0	42.0	42.0
Total Split (%)	10.9%	35.5%	35.5%	15.5%	40.0%		10.9%	38.2%	38.2%	10.9%	38.2%	38.2%
Maximum Green (s)	7.0	31.8	31.8	12.0	36.8		8.0	34.0	34.0	8.0	34.0	34.0
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	2.0	2.2	2.2	2.0	2.2		1.0	3.5	3.5	1.0	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.2	7.2	5.0	7.2		4.0	8.0	8.0	4.0	8.0	8.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.6	3.6	3.0	3.6		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	None	None	None	None	None
Walk Time (s)					7.0			7.0	7.0			
Flash Dont Walk (s)					19.0			6.0	6.0			
Pedestrian Calls (#/hr)					0			0	0			
Act Effct Green (s)	32.8	23.5	23.5	42.6	28.4		8.0	27.5	27.5	36.6	24.7	24.7
Actuated g/C Ratio	0.35	0.25	0.25	0.46	0.31		0.09	0.30	0.30	0.39	0.27	0.27
v/c Ratio	0.40	0.36	0.30	0.62	0.74		0.58	0.41	0.55	0.24	0.76	0.37
Control Delay	20.4	31.8	6.5	23.5	36.7		51.7	28.6	5.9	17.6	37.5	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.4	31.8	6.5	23.5	36.7		51.7	28.6	5.9	17.6	37.5	7.3
LOS	С	С	Α	С	D		D	С	Α	В	D	Α
Approach Delay		20.0			30.6			23.3			29.4	
Approach LOS		В			С			С			С	
Queue Length 50th (m)	13.3	26.3	0.0	41.3	63.9		15.6	34.0	0.0	10.6	61.0	2.1
Queue Length 95th (m)	28.3	49.7	15.5	74.9	111.1		#34.2	55.3	22.8	24.2	93.6	19.5
Internal Link Dist (m)		162.6			829.6			505.0			445.5	
Turn Bay Length (m)	50.0			115.0			100.0		120.0	110.0		50.0
Base Capacity (vph)	324	653	651	564	724		303	1327	844	435	1289	699
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.26	0.24	0.61	0.57		0.57	0.33	0.49	0.24	0.55	0.29

Intersection Summary Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 92.7
Natural Cycle: 80
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.76

Intersection Signal Delay: 26.4 Intersection LOS: C Intersection Capacity Utilization 80.2% ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road 2031 Future Total A.M. 09-26-2024

Queue shown is maximum after two cycles.



Synchro 11 Report Synchro 11 Report Page 10 Page 9

Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol, veh/h	273	4	2	0	10	0	0	0	0	0	0	331
Future Vol, veh/h	273	4	2	0	10	0	0	0	0	0	0	331
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage	e,# -	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	32	67	0	0	30	100	50	0	100	0	50	30
Mvmt Flow	297	4	2	0	11	0	0	0	0	0	0	360
Major/Minor	Minor2		N	Minor1		N	/lajor1		N	/lajor2		
Conflicting Flow All	186	180	180	183	360	0	360	0	0	0	0	0
Stage 1	180	180	_	0	0	_	_					-
Stage 2	6	0		183	360	-			-			
Critical Hdwy	7.42	7.17	6.2	7.1	6.8	7.2	4.6	_	-	4.1	-	
Critical Hdwy Stg 1	6.42	6.17	-	6.1	5.8	-		-	-	-		-
Critical Hdwy Stg 2	6.42	6.17	-	6.1	5.8	-	-	-	-	-	-	-
Follow-up Hdwy	3.788	4.603	3.3	3.5	4.27	4.2	2.65	-	-	2.2		
Pot Cap-1 Maneuver	713	612	868	783	525	-	976	-	-	-	-	-
Stage 1	757	643		-	-	-		-	-	-	-	
Stage 2	943	-		823	580	-			-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	612	868	777	525	-	976	-	-	-	-	-
Mov Cap-2 Maneuver	-	612	-	777	525	-	-	-	-	-	-	-
Stage 1	757	643	-	-	-	-	-	-	-	-	-	-
Stage 2	943	-	-	815	580	-	-	-	-	-	-	-
·												
Approach	EB			WB			NB			SB		
HCM Control Delay, s							0			0		
HCM LOS	_											
Minor Lane/Major Mvr	w. 6	NBL	NBT	NDD I	EBLn1\	MDI w1	SBL	SBT	SBR			
	TIC .		INDI	ואסולו	LDLIIIV	VDLIII	ODL	ODI				
Capacity (veh/h)		976	-	-	-		-	-	-			
HCM Cartes Delay (١	-	-	-	-	-	-	-	-			
HCM Control Delay (s)	0	-	-	-	-	0	-	-			
HCM Lane LOS	. 1	A	-	-	-	-	Α	-	-			
HCM 95th %tile Q(veh	1)	0	-	-	-	-	-	-	-			

Intersection												
Int Delay, s/veh	2.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	LDL	4	LDIX	WDL	4	WOIL	INDL	4	HUIT	ODL	4	ODIT
Traffic Vol, veh/h	0	157	7	34	126	4	4	16	36	6	15	2
Future Vol. veh/h	0	157	7	34	126	4	4	16	36	6	15	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	- 100	-	None	-	- 100	None	-	-	None	-	-	None
Storage Length			-						-			
Veh in Median Storage	.# -	0	_	-	0	-		0	-	-	0	-
Grade. %	-	0	-		0			0	-		0	
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	2	0	0	1	0	0	25	3	0	11	0
Mvmt Flow	0	164	7	35	131	4	4	17	38	6	16	2
Major/Minor N	Major1		N	Major2			Minor1		1	Minor2		
Conflicting Flow All	135	0	0	171	0	0	380	373	168	398	374	133
Stage 1	-		_	-			168	168	-	203	203	-
Stage 2			-				212	205	-	195	171	
Critical Hdwv	4.1	-	_	4.1	_	-	7.1	6.75	6.23	7.1	6.61	6.2
Critical Hdwy Stg 1		-	-	-	-		6.1	5.75	-	6.1	5.61	
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.75	-	6.1	5.61	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4.225	3.327	3.5	4.099	3.3
Pot Cap-1 Maneuver	1462	-	-	1418	-	-	581	523	874	566	543	922
Stage 1	-	-	-	-	-	-	839	718	-	804	717	-
Stage 2	-	-	-	-	-	-	795	691	-	811	740	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1462	-	-	1418	-	-	555	509	874	517	528	922
Mov Cap-2 Maneuver	-	-	-	-	-	-	555	509	-	517	528	-
Stage 1	-	-	-	-	-	-	839	718	-	804	698	-
Stage 2	-	-	-	-	-	-	755	672	-	758	740	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			1.6			10.6			11.9		
HCM LOS							В			В		
Minor Lane/Major Mvm	t I	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)		701	1462	-	-	1418		-	545			
HCM Lane V/C Ratio		0.083	-	-	-	0.025		-				
HCM Control Delay (s)		10.6	0	-	_	7.6	0	-	11.9			
HCM Lane LOS		В	A	-	-	A	Ā	-	В			
HCM 95th %tile Q(veh)		0.3	0	-	_	0.1	-	-	0.1			
2(1011)												

Lane Group
Lane Configurations
Traffic Volume (vph)

Lanes, Volumes, Timings 8: Burnside Line & Division Road W

Queue shown is maximum after two cycles.

	•	-	7	1	•	*	1	†	1	1	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	23.0	23.0		23.0	23.0		32.0	32.0		32.0	32.0	
Total Split (%)	41.8%	41.8%		41.8%	41.8%		58.2%	58.2%		58.2%	58.2%	
Maximum Green (s)	18.5	18.5		18.5	18.5		27.5	27.5		27.5	27.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		8.6			8.6			30.3			30.3	
Actuated g/C Ratio		0.18			0.18			0.63			0.63	
v/c Ratio		0.54			0.29			0.72			0.23	
Control Delay		12.8			17.6			15.3			5.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		12.8			17.6			15.3			5.2	
LOS		В			В			В			A	
Approach Delay		12.8			17.6			15.3			5.2	
Approach LOS		В			В			В			Α	
Queue Length 50th (m)		6.7			6.0			23.2			5.0	
Queue Length 95th (m)		20.8			14.7			#89.5			15.8	
Internal Link Dist (m)		1322.1			247.7			1929.3			333.4	
Turn Bay Length (m)												
Base Capacity (vph)		735			651			746			815	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.30			0.13			0.72			0.23	
Intersection Summary												
Area Type:	Other											
Cycle Length: 55												
Actuated Cycle Length: 48												
Natural Cycle: 60												
Control Type: Semi Act-Un	coord											
Maximum v/c Ratio: 0.72												
Intersection Signal Delay: 1					ntersection							
Intersection Capacity Utiliza	ation 59.4%			IC	CU Level	of Service	в					
Analysis Period (min) 15												
# 95th percentile volume			eue may	be longe	r.							
Ougue chown ic maxim	um ofter two	o ovoloo										

Traffic Volume (vph)	13	73	118	19	58	2	83	3/6	32	5	156	13
Future Volume (vph)	13	73	118	19	58	2	83	376	32	5	156	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.922			0.997			0.991			0.990	
Flt Protected		0.997			0.988			0.992			0.999	
Satd. Flow (prot)	0	1724	0	0	1872	0	0	1266	0	0	1296	0
Flt Permitted		0.976			0.881			0.921			0.990	
Satd. Flow (perm)	0	1688	0	0	1669	0	0	1176	0	0	1285	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		128			2			9			10	
Link Speed (k/h)		50			50			70			60	
Link Distance (m)		1346.1			271.7			1953.3			357.4	
Travel Time (s)		96.9			19.6			100.5			21.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	1%	0%	0%	0%	0%	62%	0%	0%	50%	0%
Adj. Flow (vph)	14	79	128	21	63	2	90	409	35	5	170	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	221	0	0	86	0	0	534	0	0	189	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	C I +Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												

EBL EBT EBR WBL WBT WBR NBL

4 73

> Synchro 11 Report Page 15

Lanes, Volumes, Timings 8: Burnside Line & Division Road W 2031 Future Total A.M. 09-26-2024

HCM 2010 TWSC 9: Industrial Road & Hurlwood Lane 2031 Future Total A.M. 09-26-2024

¶ø2	₩ 04	
2s	23 s	
Ø6	₩ Ø8	
2s	23 s	

Intersection						
Int Delay, s/veh	0.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	*	↑	13		*	7
Traffic Vol, veh/h	0	162	326	49	32	0
Future Vol, veh/h	0	162	326	49	32	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	
Storage Length	0	-	-	-	0	0
Veh in Median Storage	e,# -	0	0		0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	176	354	53	35	0
Major/Minor	Major1	,	Major2		Minor2	
	407	0		0	557	381
Conflicting Flow All	407	-	-	-	381	381
Stage 1 Stage 2	-				176	-
	4.12	-	-	-	6.42	6.22
Critical Hdwy		-	-			
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	- 0.40
Follow-up Hdwy	2.218	-	-	-	3.518	
Pot Cap-1 Maneuver	1152	-	-	-	491	666
Stage 1	-	-	-	-	691	-
Stage 2	-	-	-	-	855	-
Platoon blocked, %	1150	-	-	-	101	000
Mov Cap-1 Maneuver		-	-	-	491	666
Mov Cap-2 Maneuver	-	-	-	-	566	-
Stage 1	-	-	-	-	691	-
Stage 2	-	-	-	-	855	-
Approach	EB		WB		SB	
HCM Control Delay, s			0		11.8	
HCM LOS	U		U		В	
HOW LOS						
Minor Lane/Major Mvr	nt	EBL	EBT	WBT	WBR	SBLn1:
Capacity (veh/h)		1152	-	-	-	566
HCM Lane V/C Ratio		-	-	-	-	0.061
HCM Control Delay (s)	0	-	-	-	11.8
HCM Lane LOS		Α	-	-	-	В
HCM 95th %tile Q(veh	1)	0	-	-	-	0.2
HCM 95th %tile Q(ver	1)	0	-	-	-	0.2

HCM 95th %tile Q(veh)

- - 1.4 0 0.1

Intersection			_			
Int Delay, s/veh	2.5					
-						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		Þ			4
Traffic Vol, veh/h	48	11	68	17	4	88
Future Vol, veh/h	48	11	68	17	4	88
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	
Storage Length	0	-	-	-	-	-
Veh in Median Storag	e,# 0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	52	12	74	18	4	96
Majay/Minay	Minord		Majart		Majara	
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	187	83	0	0	92	0
Stage 1	83	-	-	-	-	-
Stage 2	104	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518		-	-	2.218	-
Pot Cap-1 Maneuver	802	976	-	-	1503	-
Stage 1	940	-	-	-	-	-
Stage 2	920	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	800	976	-	-	1503	-
Mov Cap-2 Maneuver				-	-	
Stage 1	940	-	-	-	-	_
Stage 2	917					
Olago L	011					
Approach	WB		NB		SB	
HCM Control Delay, s			0		0.3	
HCM LOS	Α					
Minor Lane/Major Mvr	mt	NBT	NRPI	WBLn1	SBL	SBT
	TIC .			828	1503	
Capacity (veh/h)		-	-			-
HCM Lane V/C Ratio	,	-	-	0.077		-
HCM Control Delay (s)	-	-	9.7	7.4	0
HCM Lane LOS		-	-	A	Α	Α
HCM 95th %tile Q(veh	1)	-	-	0.3	0	-

Intersection						
Int Delay, s/veh	1.7					
•		WDD	NDT	NDD	OD	0.0.7
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		ĵ.			ર્ન
Traffic Vol, veh/h	49	0	85	17	0	136
Future Vol, veh/h	49	0	85	17	0	136
Conflicting Peds, #/hr	0	0	_ 0	_ 0	_ 0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage		-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	53	0	92	18	0	148
Majay/Minay	Minaud		Aniou4		MaiarA	
	Minor1		/ajor1		Major2	
Conflicting Flow All	249	101	0	0	110	0
Stage 1	101	-	-	-	-	-
Stage 2	148	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	739	954	-	-	1480	-
Stage 1	923	-	-	-	-	-
Stage 2	880	-	-	-	-	-
Platoon blocked, %				-		-
Mov Cap-1 Maneuver	739	954		-	1480	-
Mov Cap-2 Maneuver	739	-				
Stage 1	923	_		_	_	_
Stage 2	880			_		_
Stage 2	000					
Approach	WB		NB		SB	
HCM Control Delay, s	10.2		0		0	
HCM LOS	В					
		NDT	NDC	A/DI 1	OD	007
Minor Lane/Major Mvm	nt	NBT		WBLn1	SBL	SBT
Capacity (veh/h)		-	-	739	1480	-
HCM Lane V/C Ratio		-	-	0.072	-	-
HCM Control Delay (s)		-	-	10.2	0	-
HCM Lane LOS		-	-	В	Α	-
HCM 95th %tile Q(veh)	-	-	0.2	0	-
(

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y	,,,,,	4		ODL	4
Traffic Vol. veh/h	0	0	101	0	0	185
Future Vol. veh/h	0	0	101	0	0	185
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-		-		-
Veh in Median Storage			0		-	0
Grade. %	0	_	0			0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mymt Flow	0	0	110	0	0	201
IVIVITIL FIOW	0	0	110	U	0	201
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	311	110	0	0	110	0
Stage 1	110	_	_	_	_	_
Stage 2	201			-	-	
Critical Hdwy	6.42	6.22	_	-	4.12	_
Critical Hdwy Stg 1	5.42	-				
Critical Hdwy Stg 2	5.42			_	_	_
Follow-up Hdwy	3.518					
Pot Cap-1 Maneuver	681	943	-		1480	
Stage 1	915	343		-	1400	
Stage 2	833		-			
Platoon blocked, %	033				-	
	004	040	-	-	4400	-
Mov Cap-1 Maneuver	681	943	-	-	1480	-
Mov Cap-2 Maneuver	681	-	-	-	-	
Stage 1	915	-	-	-	-	-
Stage 2	833	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s	0		0		0	
HCM LOS	A		U		U	
I IOWI LUO	А					
Minor Lane/Major Mvn	nt	NBT	NBR\	WBLn1	SBL	SBT
Capacity (veh/h)		-	-	-	1480	-
HCM Lane V/C Ratio					-	
HCM Control Delay (si)	_	-	0	0	_
HCM Lane LOS	,			A	A	_
HCM 95th %tile Q(veh	Λ		-	-	0	_
HOW SOUL WINE COLVER	')	_		_	0	_

Protected Phases

Turn Type

Detector 2 Channel

Detector 2 Extend (s)

0.0

NA

4

Perm pm+pt

Lanes, Volumes, Ti 1: Burnside Line &		ial Roa	ad/Broo	die Dri	ve				2031	Future	e Total 09-2	P.M. 26-2024
	۶	→	*	1	+	•	1	†	~	1	Ţ	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	^	7	7	†	7	7	^	7	7	1	
Traffic Volume (vph)	72	40	288	380	2	96	211	284	87	41	224	23
Future Volume (vph)	72	40	288	380	2	96	211	284	87	41	224	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		75.0	100.0		0.0	75.0		65.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.986	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1900	1568	1770	1900	1615	1805	1863	1429	1805	1746	0
Flt Permitted	0.757			0.569			0.421			0.576		
Satd, Flow (perm)	1438	1900	1568	1060	1900	1615	800	1863	1429	1094	1746	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			306			200			200		6	
Link Speed (k/h)		50			60			60			60	
Link Distance (m)		140.4			136.5			65.5			1953.3	
Travel Time (s)		10.1			8.2			3.9			117.2	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	3%	2%	0%	0%	0%	2%	13%	0%	8%	0%
Adj. Flow (vph)	77	43	306	404	2	102	224	302	93	44	238	24
Shared Lane Traffic (%)					_							
Lane Group Flow (vph)	77	43	306	404	2	102	224	302	93	44	262	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	2011	3.6	. tig.it	2011	3.6			3.6	, tigin		3.6	, agric
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes									110	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	1100	15	25		15	25	1100	15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	
Detector 1 Channel	OI LX	51 - EA	31 - LA	31. EX	O1 - LA	5 LX	51. EX	51. EX	01 - LA	51 - EX	31 - LX	
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)	0.0	9.4	0.0	0.0	9.4	0.0	0.0	9.4	0.0	0.0	9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Type		U⊤⊏X			CITEX			∪I⊤⊏X			CITEX	

0.0

NA

8

Perm pm+pt

0.0

NA

2

Perm pm+pt

6 Synchro 11 Report Page 1

0.0

NA

Lanes, Volumes, Timings

1: Burnside Line & Industrial Road/Brodie Drive

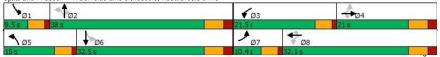
2031 Future Total P.M. 09-26-2024

	٠	→	*	•	+	•	1	1	~	-	ļ	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	25.0	25.0	5.0	25.0	
Minimum Split (s)	9.5	21.0	21.0	9.5	21.0	21.0	9.5	31.0	31.0	9.5	31.0	
Total Split (s)	10.4	21.0	21.0	21.5	32.1	32.1	15.0	38.0	38.0	9.5	32.5	
Total Split (%)	11.6%	23.3%	23.3%	23.9%	35.7%	35.7%	16.7%	42.2%	42.2%	10.6%	36.1%	
Maximum Green (s)	5.9	15.0	15.0	17.0	26.1	26.1	10.5	32.0	32.0	5.0	26.5	
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	6.0	6.0	4.5	6.0	6.0	4.5	6.0	6.0	4.5	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Min	Min	None	Min	Min	None	Min	Min	None	Min	
Act Effct Green (s)	22.3	15.0	15.0	37.1	27.4	27.4	41.2	34.0	34.0	31.5	25.0	
Actuated g/C Ratio	0.26	0.17	0.17	0.42	0.31	0.31	0.47	0.39	0.39	0.36	0.29	
v/c Ratio	0.20	0.13	0.59	0.70	0.00	0.16	0.45	0.42	0.14	0.10	0.52	
Control Delay	17.9	32.5	9.2	26.2	22.0	0.5	17.4	23.1	0.4	14.0	30.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	17.9	32.5	9.2	26.2	22.0	0.5	17.4	23.1	0.4	14.0	30.3	
LOS	В	С	Α	С	С	Α	В	С	Α	В	С	
Approach Delay		13.1			21.0			17.6			27.9	
Approach LOS		В			С			В			С	
Queue Length 50th (m)	7.9	6.6	0.0	51.8	0.3	0.0	23.3	41.7	0.0	4.1	38.4	
Queue Length 95th (m)	16.4	16.0	22.6	79.8	1.9	0.0	38.6	65.9	0.0	10.0	62.9	
Internal Link Dist (m)		116.4			112.5			41.5			1929.3	
Turn Bay Length (m)	25.0		75.0	100.0			75.0		65.0	40.0		
Base Capacity (vph)	394	327	522	589	596	644	498	745	691	435	534	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.20	0.13	0.59	0.69	0.00	0.16	0.45	0.41	0.13	0.10	0.49	
Intersection Summary												
Area Type:	Other											
Cycle Length: 90												
Actuated Cycle Length: 87	.3											
Natural Cycle: 75												
Control Type: Semi Act-Ur	ncoord											
Maximum v/c Ratio: 0.70												
Intersection Signal Delay:	19.2				ntersectio							
Laterack of the Oracle State Circle	Harris 74 00/			14	OLL 1		. D					

Splits and Phases: 1: Burnside Line & Industrial Road/Brodie Drive

Intersection Capacity Utilization 74.0%

Analysis Period (min) 15



ICU Level of Service D

Lanes, Volumes, Timings 2: Burnside Line & Highway 11 Westbound On-Ramp

2031 Future Total P.M. 09-26-2024

Lanes, ˈ	Vol	umes,	Timir	ngs		
3: Burns	side	Line	& Hia	hwav	11	Westbound

2031 Future Total P.M. 09-26-2024

	۶	*	1	†	↓	4	
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations				^	↑	7	
Traffic Volume (vph)	0	0	0	896	575	293	
Future Volume (vph)	0	0	0	896	575	293	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt						0.850	
Flt Protected							
Satd. Flow (prot)	0	0	0	1863	1863	1509	
Flt Permitted							
Satd. Flow (perm)	0	0	0	1863	1863	1509	
Link Speed (k/h)	50			50	50		
Link Distance (m)	185.9			51.5	174.3		
Travel Time (s)	13.4			3.7	12.5		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	
Heavy Vehicles (%)	0%	0%	0%	2%	2%	7%	
Adj. Flow (vph)	0	0	0	914	587	299	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	0	0	914	587	299	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(m)	0.0			0.0	0.0		
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	4.8			4.8	4.8		
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (k/h)	100	100	100			100	
Sign Control	Free			Free	Free		
Intersection Summary							
Area Type:	Other						
Control Type: Unsignalized							
Intersection Capacity Utilizat	ion 50.5%			IC	U Level	of Service	eΑ
Analysis Period (min) 15							

	1	*	†	-	1	ļ
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	*	7	†	7		
Traffic Volume (vph)	193	202	694	274	0	575
Future Volume (vph)	193	202	694	274	0	575
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	1000	80.0	0.0	,,,,,
Storage Lanes	1	1		1	0.0	
Taper Length (m)	7.5	•		•	7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.850	1.00	0.850	1.00	1.00
Flt Protected	0.950	0.000		0.000		
Satd. Flow (prot)	1752	1599	1863	1615	0	1863
10 /		1599	1003	1013	U	1003
Flt Permitted	0.950	1500	1000	1615	0	4000
Satd. Flow (perm)	1752	1599	1863	1615	0	1863
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		206		280		
Link Speed (k/h)	50		60			60
Link Distance (m)	241.7		160.3			51.5
Travel Time (s)	17.4		9.6			3.1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	3%	1%	2%	0%	0%	2%
Adj. Flow (vph)	197	206	708	280	0	587
Shared Lane Traffic (%)						
Lane Group Flow (vph)	197	206	708	280	0	587
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6	rtigill	0.0	ragnt	Leit	0.0
	0.0		0.0			0.0
Link Offset(m)						
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1		2
Detector Template	Left	Right	Thru	Right		Thru
Leading Detector (m)	2.0	2.0	10.0	2.0		10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0
Detector 1 Size(m)	2.0	2.0	0.6	2.0		0.6
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex
Detector 1 Type Detector 1 Channel	OI. LX	31. LX	31. LX	31. LX		31. LX
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			CI+Ex			CI+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Perm	Perm	NA	Perm		NA
Protected Phases			6			2

Synchro 11 Report Page 3

Lanes, Volumes, Timings
3: Burnside Line & Highway 11 Westbound

2031 Future Total P.M. 09-26-2024

	1	*	†	-	1	Ţ	
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	
Permitted Phases	4	4		6			
Detector Phase	4	4	6	6		2	
Switch Phase			Ů				
Minimum Initial (s)	10.0	10.0	20.0	20.0		20.0	
Minimum Split (s)	16.1	16.1	27.3	27.3		27.3	
Total Split (s)	24.0	24.0	61.0	61.0		61.0	
Total Split (%)	28.2%	28.2%	71.8%	71.8%		71.8%	
Maximum Green (s)	17.9	17.9	53.7	53.7		53.7	
Yellow Time (s)	4.5	4.5	4.5	4.5		4.5	
All-Red Time (s)	1.6	1.6	2.8	2.8		2.8	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	
Total Lost Time (s)	6.1	6.1	7.3	7.3		7.3	
Lead/Lag	0.1	0.1	1.3	1.3		1.5	
Lead-Lag Optimize?	2.0	2.0	2.0	3.2		2.2	
Vehicle Extension (s)	3.0	3.0	3.2			3.2	
Recall Mode	None	None	None	None		None	
Act Effct Green (s)	12.5	12.5	28.1	28.1		28.1	
Actuated g/C Ratio	0.23	0.23	0.52	0.52		0.52	
v/c Ratio	0.49	0.39	0.74	0.29		0.61	
Control Delay	25.2	6.4	15.7	1.9		12.4	
Queue Delay	0.0	0.0	0.0	0.0		0.0	
Total Delay	25.2	6.4	15.7	1.9		12.4	
LOS	С	Α	В	Α		В	
Approach Delay	15.6		11.8			12.4	
Approach LOS	В		В			В	
Queue Length 50th (m)	16.6	0.0	47.1	0.0		35.3	
Queue Length 95th (m)	44.3	15.5	100.3	8.9		75.3	
Internal Link Dist (m)	217.7		136.3			27.5	
Turn Bay Length (m)				80.0			
Base Capacity (vph)	599	682	1718	1511		1718	
Starvation Cap Reductn	0	0	0	0		0	
Spillback Cap Reductn	0	0	0	0		0	
Storage Cap Reductn	0	0	0	0		0	
Reduced v/c Ratio	0.33	0.30	0.41	0.19		0.34	
	5.50	0.00	0.11	0.10		0.07	
Intersection Summary							
Area Type:	Other						
Cycle Length: 85							
Actuated Cycle Length: 54	1.5						
Natural Cycle: 60							
Control Type: Semi Act-U	ncoord						
Maximum v/c Ratio: 0.74							
Intersection Signal Delay:	12.7			In	tersection	LOS: B	
Intersection Capacity Utiliz						of Service	В
Analysis Period (min) 15	_a.on oo.2 /0			- 10	5 20101	501 1100	

Splits and Phases: 3: Burnside Line & Highway 11 Westbound



Lanes, Volumes, Timings
4: West Street North & Highway 11 Eastbound

2031 Future Total P.M. 09-26-2024

	•	*	1	†	ļ	1
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	*	7	*	†	4	7
Traffic Volume (vph)	184	157	228	782	646	124
Future Volume (vph)	184	157	228	782	646	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	55.0	.000		40.0
Storage Lanes	1	1	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.850	1.00	1.00	1.00	0.850
Fit Protected	0.950	0.000	0.950			0.000
Satd. Flow (prot)	1736	1583	1787	1881	1863	1583
Flt Permitted	0.950	1303	0.166	1001	1003	1303
Satd. Flow (perm)	1736	1583	312	1881	1863	1583
Right Turn on Red	1/30	Yes	312	1001	1003	Yes
		165				74
Satd. Flow (RTOR)	EO	105		60	60	/4
Link Speed (k/h)	50			60		
Link Distance (m)	214.0			160.8	176.6	
Travel Time (s)	15.4			9.6	10.6	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	2%	1%	1%	2%	2%
Adj. Flow (vph)	194	165	240	823	680	131
Shared Lane Traffic (%)						
Lane Group Flow (vph)	194	165	240	823	680	131
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25	1.00	1.00	15
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel				31. LX	J1. LX	
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	pm+pt	NA	NA	Perm
	Perm	Perm				Perm
Protected Phases			1	6	2	

Lanes, Volumes, Timings 4: West Street North & Highway 11 Eastbound 2031 Future Total P.M.

09-26-2024

	•	*	1	†	Ţ	1
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	8	8	6			2
Detector Phase	8	8	1	6	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	7.0	20.0	20.0	20.0
Minimum Split (s)	18.0	18.0	10.0	41.0	41.0	41.0
Total Split (s)	25.0	25.0	24.0	70.0	46.0	46.0
Total Split (%)	26.3%	26.3%	25.3%	73.7%	48.4%	48.4%
Maximum Green (s)	18.8	18.8	21.0	62.9	38.9	38.9
Yellow Time (s)	4.5	4.5	3.0	4.5	4.5	4.5
All-Red Time (s)	1.7	1.7	0.0	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	3.0	7.1	7.1	7.1
Lead/Lag	0.2	0.2	Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.2	3.2	3.2
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	14.1	14.1	50.6	46.4	32.4	32.4
Actuated g/C Ratio	0.19	0.19	0.68	0.62	0.44	0.44
v/c Ratio	0.19	0.13	0.56	0.70	0.84	0.44
Control Delay	37.8	8.2	11.2	13.3	30.5	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.8	8.2	11.2	13.3	30.5	7.8
LOS	37.8 D	8.2 A	11.2 B	13.3 B	30.5 C	7.8 A
		А	В	_		А
Approach Delay	24.2 C			12.8 B	26.8 C	
Approach LOS		0.0	40.0	_		4.5
Queue Length 50th (m)	27.2	0.0	10.6	69.4	81.7	4.5
Queue Length 95th (m)	54.6	16.4	28.2	125.9	#178.2	17.2
Internal Link Dist (m)	190.0			136.8	152.6	
Turn Bay Length (m)			55.0			40.0
Base Capacity (vph)	455	536	644	1589	1010	892
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.31	0.37	0.52	0.67	0.15
Intersection Summary						
Area Type:	Other					
Cycle Length: 95						
Actuated Cycle Length: 74	1.3					
Natural Cycle: 70						

Actuated Cycle Length: 74.3

Natural Cycle: 70

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 19.7

Intersection Capacity Utilization 71.2%

Intersection LOS: B
ICU Level of Service C

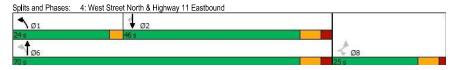
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Lanes, Volumes, Timings 4: West Street North & Highway 11 Eastbound 2031 Future Total P.M.

09-26-2024



Synchro 11 Report Page 7

252

252

1900

50.0

70.0

1.00

0.950

1787

453

0.94

268

268

No

Left

1.00

25

Left

2.0

0.0

0.0

2.0

0.0

0.0

CI+Ex

0.241

265

1900

1.00

50

186.6

13.4

0.94

0%

282

282

No

Left

3.6

0.0

4.8

1 00

Thru

10.0

0.0

0.0

0.6

0.0

0.0

0.0

9.4

0.6

0.0

CI+Ex

CI+Ex

467

467

1900

65.0

1.00

1.00

0.950

1787

0.267

502

0.94

497

497

No

Left

1 00

25

Left

2.0

0.0

0.0

2.0

0.0

0.0

0.0

CI+Ex

260

260

1900

1.00

1765

30

70

853.6

43.9

0.94

277

492

No

Left Right

3.6

0.0

4.8

1.00

Thru

10.0

0.0

0.0

0.6

0.0

0.0

0.0

9.4

0.6

0.0

CI+Ex

CI+Ex

264

264

1900

1.00

0.98

0.850

1599

1575

Yes

229

0.94

281

281

No

Right

1.00

Right

2.0

0.0

0.0

2.0

0.0

0.0

0.0

CI+Ex

15

0.0 115.0

Lane Group Lane Configurations

Traffic Volume (vph)

Future Volume (vph)

Ideal Flow (vphpl)

Storage Length (m)

Storage Lanes Taper Length (m)

Lane Util. Factor

Ped Bike Factor

Satd. Flow (prot)

Satd. Flow (perm)

Right Turn on Red

Satd. Flow (RTOR)

Link Speed (k/h)

Link Distance (m)

Confl. Peds. (#/hr) Peak Hour Factor

Heavy Vehicles (%)

Shared Lane Traffic (%)

Lane Group Flow (vph)

Enter Blocked Intersection

Travel Time (s)

Adj. Flow (vph)

Lane Alignment

Median Width(m)

Crosswalk Width(m)

Turning Speed (k/h)

Number of Detectors Detector Template

Leading Detector (m)

Trailing Detector (m)

Detector 1 Position(m)

Detector 1 Size(m)

Detector 1 Channel Detector 1 Extend (s)

Detector 1 Queue (s)

Detector 1 Delay (s)

Detector 2 Size(m)

Detector 2 Channel

Detector 2 Extend (s)

Detector 2 Type

Detector 2 Position(m)

Detector 1 Type

Two way Left Turn Lane Headway Factor

Link Offset(m)

Flt Protected

Flt Permitted

2031 Future Total P.M. 09-26-2024

> 95 667

> > 1900

0.95

3505 1583

50

469.5

33.8

0.94

3%

710

710

No

Left Right

7.2

0.0

4.8

1 00

Thru

10.0

0.0

0.0

0.6

0.0

0.0

0.0

9.4

0.6

0.0

CI+Ex

CI+Ex

1900

100.0

1.00

0.950

1805

0.160

304

0.94

101

101

No

Left

1 00

25

Left

2.0

0.0

0.0

2.0

0.0

0.0

0.0

CI+Ex

176

1900

50.0

1.00

1583

Yes

186

0.94

2%

187

187

No

1.00

Right

2.0

0.0

0.0

2.0

0.0

0.0

0.0

CI+Ex

15

ኝኝ 251

251

1900

0.08

0.97

0.950

3502

0.950

3502

0.94

267

267

No

Left

1.00

25

Left

2.0

0.0

0.0

2.0

0.0

0.0

0.0

CI+Ex

806

806

1900

0.95 1.00

3539

3539

50

529.0

38.1

0.94

2%

857

857

No

Left Right

7.2

0.0

4.8

1.00

Thru Right

10.0

0.0

0.0

0.6

0.0

0.0

0.0

9.4

0.6

0.0

CI+Ex

CI+Ex

487

1900

120.0 110.0

1599

1599

Yes

518

0.94

518

518

No

1 00

15

2.0

0.0

0.0

2.0

0.0

0.0

CI+Ex

202

202

1900

0.0 100.0

1.00

Yes

0.94

0%

215

0

No

1 00

15

Intersection Capacity Utilization 90.8%

	٠	-	*	1	•		1	†	-	1	↓	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6					8	4		4
Detector Phase	5	2	2	1	6		3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0		7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	12.0	27.2	27.2	12.0	33.2		11.5	21.0	21.0	11.5	22.5	22.5
Total Split (s)	27.0	31.4	31.4	41.0	45.4		18.0	46.1	46.1	11.5	39.6	39.6
Total Split (%)	20.8%	24.2%	24.2%	31.5%	34.9%		13.8%	35.5%	35.5%	8.8%	30.5%	30.5%
Maximum Green (s)	22.0	24.2	24.2	36.0	38.2		14.0	38.1	38.1	7.5	31.6	31.6
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	2.0	2.2	2.2	2.0	2.2		1.0	3.5	3.5	1.0	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.2	7.2	5.0	7.2		4.0	8.0	8.0	4.0	8.0	8.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.6	3.6	3.0	3.6		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	None	None	None	None	None
Walk Time (s)					7.0			7.0	7.0			
Flash Dont Walk (s)					19.0			6.0	6.0			
Pedestrian Calls (#/hr)					0			0	0			
Act Effct Green (s)	43.0	23.5	23.5	60.3	35.7		12.9	34.3	34.3	40.4	28.9	28.9
Actuated g/C Ratio	0.36	0.20	0.20	0.51	0.30		0.11	0.29	0.29	0.34	0.24	0.24
v/c Ratio	0.75	0.76	0.57	0.87	0.90		0.70	0.84	0.63	0.51	0.84	0.36
Control Delay	38.7	61.0	15.5	39.6	59.0		63.8	49.2	6.7	33.2	53.8	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.7	61.0	15.5	39.6	59.0		63.8	49.2	6.7	33.2	53.8	7.6
LOS	D	Е	В	D	Е		Е	D	Α	С	D	Α
Approach Delay		38.4			49.2			38.2			43.1	
Approach LOS		D			D			D			D	
Queue Length 50th (m)	40.3	70.6	11.5	86.6	115.8		35.1	108.5	0.0	15.8	92.2	0.2
Queue Length 95th (m)	70.6	#116.1	41.1	#134.7	#188.4		51.6	139.8	28.8	29.2	120.7	19.4
Internal Link Dist (m)		162.6			829.6			505.0			445.5	
Turn Bay Length (m)	50.0			115.0			100.0		120.0	110.0		50.0
Base Capacity (vph)	431	390	505	646	594		416	1146	868	199	941	561
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.72	0.56	0.77	0.83		0.64	0.75	0.60	0.51	0.75	0.33
Intersection Summary												
Area Type:	Other											
Cycle Length: 130												
Actuated Cycle Length: 119	9.3											
Natural Cycle: 90												
Control Type: Semi Act-Un	coord											
Maximum v/c Ratio: 0.90												
Intersection Signal Delay: 4					ntersectio							

ICU Level of Service E

Synchro 11 Report Page 9

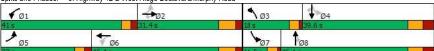
2031 Future Total P.M. 09-26-2024

5: Highway 12 & West Ridge Boulevard/Murphy Road

HCM 2010 TWSC 6: Uhthoff Line & Murphy Road 2031 Future Total P.M. 09-26-2024

Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Highway 12 & West Ridge Boulevard/Murphy Road



Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol., veh/h	448	5	0	3	3	3	2	0	0	2	0	351
Future Vol. veh/h	448	5	0	3	3	3	2	0	0	2	0	351
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length		-	-	-		-	-	-	-	-	-	-
Veh in Median Storage	e,# -	0	-	-	0	-	-	0	-	-	0	
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	18	25	0	0	100	0	0	0	0	0	0	27
Mvmt Flow	498	6	0	3	3	3	2	0	0	2	0	390
Major/Minor	Minor2		, D	Minor1		, D	Major1			Major2		
Conflicting Flow All	206	203	195	206	398	0	390	0	0	0	0	0
Stage 1	199	199	195	4	390	-	550	-	-	-	-	-
Stage 2	7	4	-	202	394							
Critical Hdwy	7.28	6.75	6.2	7.1	7.5	6.2	4.1	-		4.1		
Critical Hdwy Stg 1	6.28	5.75	0.2	6.1	6.5	- 0.2	4.1	-		7.1		
Critical Hdwy Stg 2	6.28	5.75	-	6.1	6.5	-						
Follow-up Hdwy	3.662	4.225	3.3	3.5	4.9	3.3	2.2	-		2.2		
Pot Cap-1 Maneuver	718	654	851	756	415	0.0	1180	-			_	_
Stage 1	767	695	-	1024	731		- 1100					
Stage 2	975	849	-	805	466							
Platoon blocked, %	310	040		000	700							
Mov Cap-1 Maneuver	_	653	851	750	414	_	1180	_	_	_	_	_
Mov Cap-1 Maneuver	_	653	-	750	414	-	- 100	-	-	-		
Stage 1	765	695	-	1022	730	_	_	_	_	_	_	_
Stage 2	969	847	-	799	466			-	-	-	-	
5.0.go 2		.,										
Approach	EB			WB			NB			SB		
HCM Control Delay, s							8.1					
HCM LOS							J. 1					
Minor Lane/Major Mvm	nt	NBL	NBT	NBR I	EBLn1\	VBLn1	SBL	SBT	SBR			
Capacity (veh/h)		1180	-		-		-	-				
HCM Lane V/C Ratio		0.002										
HCM Control Delay (s)		8.1	0	-	-	-	-	-	-			
HCM Lane LOS		A	Ā									
HCM 95th %tile Q(veh)	0	-	-	-	-	-	-	-			
		-										

Synchro 11 Report Page 11

Intersection

	٠	-	•	1	•	•	1	†	~	1	ļ	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (vph)	12	142	153	21	108	3	202	173	63	5	89	26
Future Volume (vph)	12	142	153	21	108	3	202	173	63	5	89	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.933			0.997			0.981			0.970	
Flt Protected		0.998			0.992			0.977			0.998	
Satd. Flow (prot)	0	1744	0	0	1849	0	0	1795	0	0	1571	0
Flt Permitted		0.985			0.916			0.795			0.986	
Satd, Flow (perm)	0	1722	0	0	1707	0	0	1461	0	0	1552	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		98			2			22			28	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1346.1			271.7			1953.3			357.4	
Travel Time (s)		96.9			19.6			140.6			25.7	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	2%	1%	0%	2%	0%	1%	1%	4%	0%	23%	0%
Adj. Flow (vph)	13	151	163	22	115	3	215	184	67	5	95	28
Shared Lane Traffic (%)	10	101	100	22	110	U	210	104	01	0	30	20
Lane Group Flow (vph)	0	327	0	0	140	0	0	466	0	0	128	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	Leit	0.0	Rigili	Leit	0.0	Rigit	Leit	3.6	Rigiti	Leit	3.6	Rigit
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
		4.0			4.0			4.0			4.0	
Two way Left Turn Lane	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Headway Factor	100	1.00	100	100	1.00	100	100	1.00	100	100	1.00	100
Turning Speed (k/h) Number of Detectors	100	2	100	100	2	100	100	2	100	100	2	100
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												

Int Delay, s/veh	3.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol, veh/h	4	223	13	37	283	15	21	28	72	6	18	2
Future Vol, veh/h	4	223	13	37	283	15	21	28	72	6	18	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage	,# -	0	-	-	0	-	-	0	-	-	0	
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	2	0	0	1	0	0	0	0	0	20	0
Mymt Flow	4	240	14	40	304	16	23	30	77	6	19	2
Major/Minor N	/lajor1			Major2			Minor1		N	Minor2		
Conflicting Flow All	320	0	0	254	0	0	658	655	247	701	654	312
Stage 1	320	-	-	204	-	-	255	255	241	392	392	312
Stage 2	-						403	400	-	309	262	-
Critical Hdwy	4.1		-	4.1			7.1	6.5	6.2	7.1	6.7	6.2
Critical Hdwy Stg 1	4.1			4.1			6.1	5.5	0.2	6.1	5.7	0.2
Critical Hdwy Stg 2	-	-	_	-		-	6.1	5.5	_	6.1	5.7	-
Follow-up Hdwy	2.2			2.2		-	3.5	4	3.3	3.5	4.18	3.3
Pot Cap-1 Maneuver	1251		-	1323		_	380	388	797	356	364	733
Stage 1	1231			1020			754	700	191	637	576	100
Stage 1			-		-		628	605	-	705	660	-
Platoon blocked, %	-		•	•	-		020	000	•	700	000	•
Mov Cap-1 Maneuver	1251	-		1323		-	352	372	797	292	349	733
Mov Cap-1 Maneuver	1231			1323		-	352	372	181	292	349	100
Stage 1	-	-	-	-	-	-	751	697	-	634	555	-
	-		-	-			582	583	-	607	657	-
Stage 2	-	-	-	-	-	-	502	503	-	007	00/	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.9			13.8			16.3		
HCM LOS							В			С		
Minor Lane/Major Mvm	t	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR :	SBLn1			
Capacity (veh/h)		537	1251	-	-	1323	-	-	347			
HCM Lane V/C Ratio		0.242	0.003		-	0.03	-	-	0.081			
HCM Control Delay (s)		13.8	7.9	0		7.8	0		16.3			
HCM Lane LOS		В	A	Ā		A	Ā		C			
HCM 95th %tile Q(veh)		0.9	0	-	_	0.1	-	_	0.3			
nom oour muio Q(veri)		0.0	0			0.1			0.0			

₹ ø2

₩ Ø6

2031 Future Total P.M. 09-26-2024

₩ Ø8

Intersection							
Int Delay, s/veh	1.1						
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	EBL	_EB1	WB1	WDK	SBL	SBR	
Traffic Vol., veh/h	0	T	485	37	58	0	
Future Vol. veh/h	0	142	485	37	58	0	
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Free	Free	Free	Free	Stop	Stop	
RT Channelized	-	None	-		-		
Storage Length	0	-	-	-	0	0	
Veh in Median Storage	e,# -	0	0		0	-	
Grade, %	-	0	0	-	0	-	
Peak Hour Factor	92	92	92	92	92	92	
Heavy Vehicles, %	2	2	2	2	2	2	
Mvmt Flow	0	154	527	40	63	0	
Major/Minor	Major1		//ajor2		Minor2		
Conflicting Flow All	567	0	najorz	0	701	547	
Stage 1	-	-		-	547	J41 -	
Stage 2			-	-	154	_	
Critical Hdwy	4.12				6.42	6.22	
Critical Hdwy Stg 1	-			-	5.42	-	
Critical Hdwy Stg 2	_	-	_	-	5.42	_	
Follow-up Hdwy	2.218	-	-		3.518	3.318	
Pot Cap-1 Maneuver	1005	-	-	-	405	537	
Stage 1	-	-	-	-	580	-	
Stage 2	_	-	-	-	874	-	
Platoon blocked, %		-	-	-			
Mov Cap-1 Maneuver	1005	-	-	-	405	537	
Mov Cap-2 Maneuver	-	-	-	-	486	-	
Stage 1	-	-	-	-	580	-	
Stage 2	-	-	-	-	874	-	
Approach	EB		WB		SB		
HCM Control Delay, s			0		13.5		
HCM LOS	U		U		13.3 B		
TIOW LOO					٥		
				14/55			OD 1 6
Minor Lane/Major Mvn	nt	EBL	EBT	WBT		SBLn1	
Capacity (veh/h)		1005	-	-	-	486	-
HCM Lane V/C Ratio		-	-	-	-	0.13	-
HCM Control Delay (s)	0	-	-	-	13.5	0
HCM Lane LOS	. 1	A	-	-	-	В	Α
HCM 95th %tile Q(veh	1)	0	-	-	-	0.4	-

Intersection	Intersection
Int Delay, s/veh 5	Int Delay, s/veh 1.5
Movement WBL WBR NBT NBR SBL SBT	Movement WBL WBR NBT NBR SBL SBT
Lane Configurations 1 1 1	Lane Configurations 🏋 😘 📢
Traffic Vol. veh/h 199 23 259 193 15 158	Traffic Vol. veh/h 31 8 141 51 12 82
Future Vol., veh/h 199 23 259 193 15 158	Future Vol. veh/h 31 8 141 51 12 82
Conflicting Peds, #/hr 0 0 0 0 0 0	Conflicting Peds, #/hr 0 0 0 0 0 0
Sign Control Stop Stop Free Free Free	Sign Control Stop Stop Free Free Free
RT Channelized - None - None	RT Channelized - None - None
Storage Length 0 0	Storage Length 0
Veh in Median Storage, # 0 - 0 0	Veh in Median Storage, # 0 - 0 - 0
Grade. % 0 - 0 0	Grade, % 0 - 0 - 0
Peak Hour Factor 92 92 92 92 92 92	Peak Hour Factor 92 92 92 92 92 92
Heavy Vehicles, % 2 2 2 2 2 2 2	Heavy Vehicles, % 2 2 2 2 2 2 2
Mynt Flow 216 25 282 210 16 172	Mymt Flow 34 9 153 55 13 89
10 20 20 10 10	
Major/Minor Minor1 Major1 Major2	Major/Minor Minor1 Major1 Major2
Conflicting Flow All 591 387 0 0 492 0	Conflicting Flow All 296 181 0 0 208 0
Stage 1 387	Stage 1 181
Stage 2 204	Stage 2 115
Critical Hdwy 6.42 6.22 4.12 -	Critical Howy 6.42 6.22 4.12 -
Critical Hdwy Stg 1 5.42	Critical Hdwy Stg 1 5.42
Critical Hdwy Stg 2 5.42	Critical Hdwy Stg 2 5.42
Follow-up Hdwy 3.518 3.318 2.218 -	Follow-up Hdwy 3.518 3.318 2.218 -
Pot Cap-1 Maneuver 470 661 1071 -	Pot Cap-1 Maneuver 695 862 1363 -
Stage 1 686	Stage 1 850
Stage 2 830	Stage 2 910
Platoon blocked, %	Platoon blocked, %
Mov Cap-1 Maneuver 462 661 1071 -	Mov Cap-1 Maneuver 688 862 1363 -
Mov Cap-2 Maneuver 462	Mov Cap-2 Maneuver 688
Stage 1 686	Stage 1 850
Stage 2 816	Stage 2 901
Approach WB NB SB	Approach WB NB SB
HCM Control Delay, s 18.6 0 0.7	HCM Control Delay, s 10.3 0 1
HCM LOS C	HCM LOS B
Minor Lane/Major Mvmt NBT NBRWBLn1WBLn2 SBL SBT	Minor Lane/Major Mvmt NBT NBRWBLn1 SBL SBT
Capacity (veh/h) 462 661 1071 -	Capacity (veh/h) 718 1363 -
HCM Lane V/C Ratio 0.468 0.038 0.015 -	HCM Lane V/C Ratio 0.059 0.01 -
HCM Control Delay (s) 19.5 10.7 8.4 0	HCM Control Delay (s) 10.3 7.7 0
HCM Lane LOS C B A A	HCM Lane LOS B A A
HCM 95th %tile Q(veh) 2.4 0.1 0 -	HCM 95th %tile Q(veh) 0.2 0 -

09-26-2024

Intersection						
Int Delay, s/veh	0.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y	7751	1	ALDI (ODL	4
Traffic Vol, veh/h	32	0	192	51	0	113
Future Vol. veh/h	32	0	192	51	0	113
Conflicting Peds, #/hr		0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	- Ctop	None	1100	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage		_	0			0
Grade. %	0	_	0		_	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mymt Flow	35	0	209	55	0	123
WWIIIL FIOW	33	U	209	55	U	123
Major/Minor	Minor1		//ajor1		Major2	
Conflicting Flow All	360	237	0	0	264	0
Stage 1	237	-	-	-	-	-
Stage 2	123	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	
Critical Hdwy Stg 1	5.42	-	-	-	-	
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver		802	_	_	1300	-
Stage 1	802	-			-	
Stage 2	902		_	_	_	_
Platoon blocked, %	002					
Mov Cap-1 Maneuve	r 639	802	_	_	1300	_
Mov Cap-1 Maneuve		- 002	-		1300	
Stage 1	802	-	-			
Stage 2	902	-				-
Stage 2	902	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay,	s 11		0		0	
HCM LOS	В					
I ICIVI LOG						
HOW EOS						
	mt	NRT	NRPV	VRI n1	SRI	SRT
Minor Lane/Major Mv	mt	NBT	NBRV		SBL	SBT
Minor Lane/Major Mv Capacity (veh/h)		-	-	639	1300	-
Minor Lane/Major Mv Capacity (veh/h) HCM Lane V/C Ratio		-	-	639 0.054	1300	-
Minor Lane/Major Mv Capacity (veh/h) HCM Lane V/C Ratio HCM Control Delay (:		-	- - -	639 0.054 11	1300 - 0	
Minor Lane/Major Mv Capacity (veh/h) HCM Lane V/C Ratio	s)	-	-	639 0.054	1300	-

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y	TIDIN	1	HUIT	ODL	4
Traffic Vol, veh/h	0	0	243	0	0	145
Future Vol, veh/h	0	0	243	0	0	145
Conflicting Peds. #/hr		0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	
Storage Length	0	-		-		-
Veh in Median Storag		_	0		_	0
Grade, %	0, # 0	-	0		-	0
Peak Hour Factor	92	92	92	92	92	92
		92	2	92	92	92
Heavy Vehicles, %	2					
Mvmt Flow	0	0	264	0	0	158
Major/Minor	Minor1	1	Major1		Major2	
Conflicting Flow All	422	264	0	0	264	0
Stage 1	264		_	_		_
Stage 2	158	-			-	
Critical Hdwy	6.42	6.22			4.12	_
Critical Hdwy Stg 1	5.42	-	-		7.12	
Critical Hdwy Stg 2	5.42	-	-			
Follow-up Hdwy	3.518	3.318	-		2.218	
Pot Cap-1 Maneuver	588	775	-		1300	_
			-	-		-
Stage 1	780	-	-	-	-	-
Stage 2	871	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver		775	-	-	1300	-
Mov Cap-2 Maneuver		-	-	-	-	-
Stage 1	780	-	-	-	-	-
Stage 2	871	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s			0		0	
HCM LOS	. O		U		U	
I IOWI LUO	А					
Minor Lane/Major Mvi	mt	NBT	NBR\	WBLn1	SBL	SBT
Capacity (veh/h)			-	-	1300	-
HCM Lane V/C Ratio			-		-	
HCM Control Delay (s	;)	-	-	0	0	_
HCM Lane LOS	,			Ā	A	
HCM 95th %tile Q(vel	1)			-	0	_
HOW JOHN JOHN G COLACT	'/				U	

2033 Future Total A.M. 09-26-2024

1: Burnside Line & Industrial Road/Brodie Drive

	٠	-	*	•	•	•	1	†	~	1	ţ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	^	7	1	↑	7	1	^	7	1	1	
Traffic Volume (vph)	47	30	247	228	5	39	351	278	82	36	242	45
Future Volume (vph)	47	30	247	228	5	39	351	278	82	36	242	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		75.0	100.0		0.0	75.0		65.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		,,,,,	0.850			0.850	1.55		0.850	1100	0.977	
Fit Protected	0.950		0.000	0.950		0.000	0.950		0.000	0.950	0.011	
Satd. Flow (prot)	1805	1900	1615	1736	1900	1615	1805	1439	1468	1805	1522	0
Flt Permitted	0.754	1000	1010	0.581	1000	1010	0.363	1400	1400	0.574	1022	
Satd. Flow (perm)	1433	1900	1615	1061	1900	1615	690	1439	1468	1091	1522	0
Right Turn on Red	1400	1000	Yes	1001	1000	Yes	000	1400	Yes	1001	1022	Yes
Satd. Flow (RTOR)			271			200			200		11	103
Link Speed (k/h)		50	2/1		60	200		60	200		60	
Link Distance (m)		140.4			136.5			65.5			1953.3	
Travel Time (s)		10.1			8.2			3.9			117.2	
\ /	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Peak Hour Factor					0.91	0.91					26%	
Heavy Vehicles (%)	0% 52	0%	0% 271	4%	U% 5	43	0% 386	32% 305	10% 90	0% 40	266	0% 49
Adj. Flow (vph)	52	33	2/1	251	5	43	386	305	90	40	200	49
Shared Lane Traffic (%)		00	074	054	_	40	200	005		40	0.45	
Lane Group Flow (vph)	52	33	271	251	5	43	386	305	90	40	315	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel		J/			J/			2/\			-, -,	
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4	1 Gill	3	8	I GIIII	рш+рt 5	2	I GIIII	рш+рt 1	6	
Trotodeu Filases	- 1	4		3	0		3			ı	U	

Synchro 11 Report Page 1 Lanes, Volumes, Timings
1: Burnside Line & Industrial Road/Brodie Drive

2033 Future Total A.M. 09-26-2024

	٠	-	*	1	+	*	1	†	-	1	Ţ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	25.0	25.0	5.0	25.0	
Minimum Split (s)	9.5	21.0	21.0	9.5	21.0	21.0	9.5	31.0	31.0	9.5	31.0	
Total Split (s)	9.6	21.0	21.0	15.0	26.4	26.4	19.0	44.5	44.5	9.5	35.0	
Total Split (%)	10.7%	23.3%	23.3%	16.7%	29.3%	29.3%	21.1%	49.4%	49.4%	10.6%	38.9%	
Maximum Green (s)	5.1	15.0	15.0	10.5	20.4	20.4	14.5	38.5	38.5	5.0	29.0	
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	6.0	6.0	4.5	6.0	6.0	4.5	6.0	6.0	4.5	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Min	Min	None	Min	Min	None	Min	Min	None	Min	
Act Effct Green (s)	21.6	15.0	15.0	31.0	23.9	23.9	46.2	39.0	39.0	32.4	25.9	
Actuated g/C Ratio	0.25	0.17	0.17	0.36	0.28	0.28	0.54	0.45	0.45	0.38	0.30	
v/c Ratio	0.14	0.10	0.54	0.55	0.01	0.07	0.70	0.47	0.12	0.09	0.68	
Control Delay	20.2	31.8	8.8	26.2	26.4	0.2	19.5	20.6	0.3	11.2	34.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	20.2	31.8	8.8	26.2	26.4	0.2	19.5	20.6	0.3	11.2	34.2	
LOS	С	С	Α	С	С	Α	В	С	Α	В	С	
Approach Delay		12.6			22.5			17.8			31.6	
Approach LOS		В			С			В			С	
Queue Length 50th (m)	5.8	4.9	0.0	31.7	0.7	0.0	37.7	39.1	0.0	3.1	46.7	
Queue Length 95th (m)	14.2	13.5	21.2	55.7	3.6	0.0	57.8	63.7	0.0	7.7	76.0	
Internal Link Dist (m)		116.4			112.5			41.5			1929.3	
Turn Bay Length (m)	25.0		75.0	100.0			75.0		65.0	40.0		
Base Capacity (vph)	381	330	505	464	525	591	557	676	796	451	519	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.14	0.10	0.54	0.54	0.01	0.07	0.69	0.45	0.11	0.09	0.61	
Intersection Summary												
Area Type:	Other											
Cycle Length: 90												
Actuated Cycle Length: 86.	2											
Natural Cycle: 75												
Control Type: Semi Act-Uni	coord											
Maximum v/c Ratio: 0.70												
Intersection Signal Delay: 2	20.3			li	ntersectio	n LOS: C						
Intersection Capacity Utiliza	ation 73.3%			Į(CU Level	of Service	e D					
Analysis Period (min) 15												





Lanes, Volumes, Timings 2: Burnside Line & Highway 11 Westbound On-Ramp 2033 Future Total A.M. 09-26-2024

Lanes, Volumes,	limings	
3: Burnside Line 8	k Highway 11	Westbound

2033 Future Total A.M. 09-26-2024

	•	*	1	†	↓	1
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				†	↑	7
Traffic Volume (vph)	0	0	0	1028	409	298
Future Volume (vph)	0	0	0	1028	409	298
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	1638	1810	1214
Flt Permitted						
Satd. Flow (perm)	0	0	0	1638	1810	1214
Link Speed (k/h)	50			70	60	
Link Distance (m)	185.9			51.5	174.3	
Travel Time (s)	13.4			2.6	10.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	16%	5%	33%
Adj. Flow (vph)	0	0	0	1082	431	314
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1082	431	314
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0	_		0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilizat	tion 57.4%			IC	U Level	of Service
Analysis Period (min) 15						
, , , , , , , , , , , , , , , , , , , ,						

	1	*	†	-	1	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	*	7	<u> </u>	7		<u> </u>
Traffic Volume (vph)	159	264	766	179	0	409
Future Volume (vph)	159	264	766	179	0	409
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	1000	80.0	0.0	1000
Storage Lanes	1	1		1	0.0	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.850	1.00	0.850	1.00	1.00
Fit Protected	0.950	0.000		0.000		
		4500	4000	4500	0	4040
Satd. Flow (prot)	1787	1583	1638	1509	0	1810
Flt Permitted	0.950	4500	4000	4500		4046
Satd. Flow (perm)	1787	1583	1638	1509	0	1810
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		205		188		
Link Speed (k/h)	50		60			60
Link Distance (m)	241.7		160.3			51.5
Travel Time (s)	17.4		9.6			3.1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	2%	16%	7%	0%	5%
Adj. Flow (vph)	167	278	806	188	0	431
Shared Lane Traffic (%)	101		000	100		101
Lane Group Flow (vph)	167	278	806	188	0	431
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1		2
Detector Template	Left	Right	Thru	Right		Thru
Leading Detector (m)	2.0	2.0	10.0	2.0		10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0
Detector 1 Size(m)	2.0	2.0	0.6	2.0		0.0
	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex
Detector 1 Type	CI+EX	CI+EX	CI+EX	CI+EX		CI+EX
Detector 1 Channel		0.0	0.0	0.0		0.0
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			CI+Ex			CI+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Perm	Perm	NA	Perm		NA
Protected Phases	I CITII	I GIIII	6	1 61111		2
Froiected Phases			0			

Synchro 11 Report Page 3

Lanes, Volumes, Timings 3: Burnside Line & Highway 11 Westbound

Lane Group Permitted Phases Detector Phase

Switch Phase Minimum Initial (s)

Total Split (s)

Total Split (%)

Yellow Time (s)

All-Red Time (s)

Lead/Lag Lead-Lag Optimize? Vehicle Extension (s)

Recall Mode

v/c Ratio

Control Delay

Queue Delay

Total Delay

Approach Delay

Approach LOS

Queue Length 50th (m)

Queue Length 95th (m)

Internal Link Dist (m)

Turn Bay Length (m)

Base Capacity (vph)

Starvation Cap Reductn

Spillback Cap Reductn

Storage Cap Reductn Reduced v/c Ratio

Intersection Summary

Analysis Period (min) 15

Intersection Capacity Utilization 68.1%

Area Type: Cycle Length: 85 Actuated Cycle Length: 63 Natural Cycle: 60 Control Type: Semi Act-Uncoord Maximum v/c Ratio: 0.86 Intersection Signal Delay: 16.6

LOS

Minimum Split (s)

Maximum Green (s)

Lost Time Adjust (s)

Total Lost Time (s)

Act Effct Green (s)

Actuated g/C Ratio

WBL WBR

9.7

16.1

24.0

17.6

4.5

1.9

0.0

6.4

3.0

None

12.6

0.20

0.58

14.0

0.0

14.0

В

7.4 67.3

34.0 144.2

613 1385

0.45

4

9.7

16.1

24.0

17.6

4.5

1.9

0.0

6.4

3.0

None

12.6

0.20

0.47

30.6

0.0

30.6

20.2

17.9

44.4

530

0.32

Other

0

0

217.7

С

С

28.2% 28.2%

NBT NBR

20.0

27.3

61.0

71.8%

53.7

4.5

2.8

0.0

7.3

3.2

None

0.57

0.86

22.3

0.0

22.3

18.4

136.3

0

0.58

6

20.0

27.3

61.0

53.7

4.5

2.8

0.0

7.3

3.2

None

35.9

0.57

0.20

1.6

0.0

1.6

0.0

1305

0

0.14

71.8%

SBL SBT

2

20.0

27.3

61.0

71.8%

53.7

4.5

2.8

0.0

7.3

3.2

None

35.9

0.57

0.42

8.7

0.0

8.7

8.7

24.0

48.9

27.5

1531

0

0

0.28

2033 Future Total A.M. 09-26-2024 Lanes, Volumes, Timings 4: West Street North & Highway 11 Eastbound 2033 Future Total A.M. 09-26-2024

	۶	*	1	†	Į.	4
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	*	7	*		^	7
Traffic Volume (vph)	296	125	103	644	505	64
Future Volume (vph)	296	125	103	644	505	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	55.0			40.0
Storage Lanes	1	1	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			2.000
Satd. Flow (prot)	1327	1524	1787	1827	1845	1442
Flt Permitted	0.950		0.262		. 5 . 5	
Satd, Flow (perm)	1327	1524	493	1827	1845	1442
Right Turn on Red	.021	Yes		1021	10.0	Yes
Satd. Flow (RTOR)		132				49
Link Speed (k/h)	50	102		60	60	73
Link Distance (m)	214.0			160.8	176.6	
Travel Time (s)	15.4			9.6	10.6	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	36%	6%	1%	4%	3%	12%
Adi, Flow (vph)	312	132	108	678	532	67
Shared Lane Traffic (%)	312	132	100	010	332	07
Lane Group Flow (vph)	312	132	108	678	532	67
Enter Blocked Intersection	No	No	No	No	No	No.
Lane Alignment	Left	Right	Left	Left	Left	Right
	3.6	Rigili	Lett	3.6	3.6	Rigilt
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)						
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane	4.00	4.00	4.00	4.00	4.00	4.00
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25	_	_	15
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	pm+pt	NA	NA	Perm
Protected Phases	. 01111	. 31111	1	6	2	31111
			- 1	U		

Splits and Phases: 3: Burnside Line & Highway 11 Westbound



Intersection LOS: B

ICU Level of Service C

2033 Future Total A.M. 09-26-2024

Lane Group	4
Traffic Volume (vph)	SBR
Future Volume (vph)	1
Ideal Flow (vphpi)	205
Storage Length (m) 50.0 0.0 115.0 0.0 100.0 120.0 110.0	205
Storage Lanes	1900
Taper Length (m) 70.0 65.0 80.0 100.0 100.0 1.00 1.00 1.00 1.00 1.00 0.947 0.95 1.00 1.00 0.95 0.950	50.0
Lane Util. Factor	1
Fit Color	
Fit Protected	1.00
Satd. Flow (prot) 1787 1881 1583 1787 1765 0 3467 3574 1568 1736 3471	0.850
Fit Permitted	
Satd, Flow (perm) 589 1881 1583 976 1765 0 3467 3574 1568 815 3471 Right Turn on Red Yes <	1568
Right Turn on Red	
Satd. Flow (RTOR)	1568
Link Speed (k/h) 60 853.6 529.0 469.5 Link Distance (m) 186.6 853.6 529.0 469.5 Travel Time (s) 11.2 51.2 27.2 24.1 Peak Hour Factor 0.97 <td< td=""><td>Yes</td></td<>	Yes
Link Distance (m) 186.6 853.6 529.0 469.5 Travel Time (s) 11.2 51.2 27.2 24.1 Peak Hour Factor 0.97	187
Travel Time (s)	
Peak Hour Factor 0.97 0.	
Heavy Vehicles (%)	
Adj. Flow (vph) 134 182 162 375 289 160 180 453 443 111 736 Shared Lane Traffic (%) Lane Group Flow (vph) 134 182 162 375 449 0 180 453 443 111 736 Enter Blocked Intersection No	0.97
Shared Lane Traffic (%) Lane Group Flow (vph) 134 182 162 375 449 0 180 453 443 111 736	3%
Lane Group Flow (vph)	211
Enter Blocked Intersection	
Left Left Left Right Left Right Left Right Left Right Left Right Left Righ	211
Median Width(m) 3.6 3.6 7.2 7.2 Link Offset(m) 0.0 0.0 0.0 0.0 Crosswalk Width(m) 4.8 4.8 4.8 4.8 Two way Left Turn Lane Headway Factor 1.00 1	No
Median Width(m) 3.6 3.6 7.2 7.2 Link Offset(m) 0.0 0.0 0.0 0.0 Crosswalk Width(m) 4.8 4.8 4.8 4.8 Two way Left Turn Lane Headway Factor 1.00 1	Right
Crosswalk Width(m) 4.8 4.8 4.8 4.8 4.8 4.8 Two way Left Turn Lane Headway Factor 1.00	
Two way Left Turn Lane Headway Factor 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	
Headway Factor	
Turning Speed (k/h) 25 15 100 15 25 15 25 Number of Detectors 1 2 1 1 2 1 2 1 1 2 Detector Template Left Thru Right Left Thru Left Thru Right Left Thru Leading Detector (m) 2.0 10.0 2.0 2.0 10.0 2.0 2.0 10.0 Trailing Detector (m) 0.0	
Number of Detectors 1 2 1 1 2 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 2 1	1.00
Detector Template Left Thru Right Left Thru Left Thru Left Thru Right Left Thru Leading Detector (m) 2.0 10.0 2.0 2.0 10.0 2.0 10.0 2.0 10.0 2.0 2.0 10.0 10.0 2.0 2.0 10.0	100
Leading Detector (m) 2.0 10.0 2.0 2.0 10.0 2.0 10.0 2.0 2.0 10.0 2.0 2.0 10.0 2.0 10.0 2.0 10.0 2.0 10.0 2.0 10.0 2.0 10.0 0	1
Trailing Detector (m) 0.0	Right
Detector 1 Position(m) 0.0	2.0
Detector 1 Size(m) 2.0 0.6 2.0 2.0 0.6 2.0 0.6 2.0 0.6 2.0 0.6	0.0
Detector 1 Type CI+Ex	0.0
Detector 1 Channel Detector 1 Extend (s) 0.0	2.0
Detector 1 Extend (s) 0.0	CI+Ex
Detector 1 Queue (s) 0.0	
Detector 1 Delay (s) 0.0	0.0
Detector 1 Delay (s) 0.0	0.0
Detector 2 Position(m) 9.4 9.4 9.4 9.4	0.0
Detector 2 Size(m) 0.6 0.6 0.6 0.6	
Detector 2 Type CI+Ex CI+Ex CI+Ex CI+Ex	
Detector 2 Channel	
Detector 2 Extend (s) 0.0 0.0 0.0 0.0	
Turn Type pm+pt NA Perm pm+pt NA Prot NA Perm pm+pt NA	
Protected Phases 5 2 1 6 3 8 7 4	

	•	7	1	†	↓	1
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	8	8	6			2
Detector Phase	8	8	1	6	2	2
Switch Phase				, i		_
Minimum Initial (s)	10.0	10.0	7.0	20.0	20.0	20.0
Minimum Split (s)	18.0	18.0	10.0	41.0	41.0	41.0
Total Split (s)	38.0	38.0	10.0	52.0	42.0	42.0
Total Split (%)	42.2%	42.2%	11.1%	57.8%	46.7%	46.7%
Maximum Green (s)	31.8	31.8	8.0	44.9	34.9	34.9
Yellow Time (s)	4.5	4.5	2.0	4.5	4.5	4.5
All-Red Time (s)	1.7	1.7	0.0	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	2.0	7.1	7.1	7.1
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.2	3.2	3.2
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	21.6	21.6	39.8	34.4	27.2	27.2
Actuated g/C Ratio	0.31	0.31	0.57	0.49	0.39	0.39
v/c Ratio	0.76	0.24	0.25	0.76	0.75	0.11
Control Delay	36.7	5.3	9.8	22.0	28.3	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.7	5.3	9.8	22.0	28.3	8.1
LOS	D	Α	Α	С	С	Α
Approach Delay	27.3			20.3	26.0	
Approach LOS	С			С	С	
Queue Length 50th (m)	38.7	0.0	6.3	71.1	65.0	1.6
Queue Length 95th (m)	78.0	11.8	16.4	139.4	121.6	10.3
Internal Link Dist (m)	190.0			136.8	152.6	
Turn Bay Length (m)			55.0			40.0
Base Capacity (vph)	642	806	437	1244	980	789
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.16	0.25	0.55	0.54	0.08
Intersection Summary						
Area Type:	Other					
Cycle Length: 90						
Actuated Cycle Length: 70	0.2					
Natural Cycle: 75						
Control Type: Semi Act-U	ncoord					
Maximum v/c Ratio: 0.76						
Intersection Signal Delay:					ntersectio	
Intersection Capacity Utiliz	zation 63.2%			Į(CU Level	of Service
Analysis Period (min) 15						
Splits and Phases: 4: W	Vest Street N	orth & Hig	ghway 11	Eastbou	nd	
4 0		,				315
\Ø1						
10 s 42 s						
↑ ø6						4
1 200						20.0

Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road

2033 Future Total A.M. 09-26-2024

	•	\rightarrow	*	1	•	•	1	†	1	1	ļ	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2		2	6					8	4		4
Detector Phase	5	2	2	1	6		3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0		7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	12.0	27.2	27.2	12.0	33.2		11.5	21.0	21.0	11.5	22.5	22.5
Total Split (s)	12.0	39.0	39.0	17.0	44.0		12.0	42.0	42.0	12.0	42.0	42.0
Total Split (%)	10.9%	35.5%	35.5%	15.5%	40.0%		10.9%	38.2%	38.2%	10.9%	38.2%	38.2%
Maximum Green (s)	7.0	31.8	31.8	12.0	36.8		8.0	34.0	34.0	8.0	34.0	34.0
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	2.0	2.2	2.2	2.0	2.2		1.0	3.5	3.5	1.0	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.2	7.2	5.0	7.2		4.0	8.0	8.0	4.0	8.0	8.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.6	3.6	3.0	3.6		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	None	None	None	None	None
Walk Time (s)					7.0			7.0	7.0			
Flash Dont Walk (s)					19.0			6.0	6.0			
Pedestrian Calls (#/hr)					0			0	0			
Act Effct Green (s)	34.0	24.7	24.7	44.1	29.8		8.0	26.0	26.0	37.7	25.8	25.8
Actuated g/C Ratio	0.36	0.26	0.26	0.46	0.31		80.0	0.27	0.27	0.40	0.27	0.27
v/c Ratio	0.45	0.37	0.31	0.68	0.79		0.62	0.46	0.59	0.28	0.78	0.38
Control Delay	22.0	32.2	6.4	25.9	39.8		54.4	30.7	6.4	18.5	38.8	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.0	32.2	6.4	25.9	39.8		54.4	30.7	6.4	18.5	38.8	8.0
LOS	С	С	Α	С	D		D	С	Α	В	D	Α
Approach Delay		20.6			33.5			24.6			30.5	
Approach LOS		С			С			С			С	
Queue Length 50th (m)	14.4	28.7	0.0	47.3	73.8		17.2	37.2	0.0	12.0	67.2	3.3
Queue Length 95th (m)	29.4	52.4	15.7	82.0	123.6		#36.1	57.5	23.7	25.5	98.3	21.4
Internal Link Dist (m)		162.6			829.6			505.0			445.5	
Turn Bay Length (m)	50.0			115.0			100.0		120.0	110.0		50.0
Base Capacity (vph)	299	636	642	555	707		295	1292	849	403	1255	686
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.29	0.25	0.68	0.64		0.61	0.35	0.52	0.28	0.59	0.31

Intersection Summary Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 95.2
Natural Cycle: 80
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.79

Intersection Signal Delay: 28.0 Intersection LOS: C Intersection Capacity Utilization 82.6% ICU Level of Service E

Analysis Period (min) 15

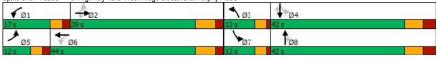
95th percentile volume exceeds capacity, queue may be longer.

Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road 2033 Future Total A.M. 09-26-2024

Page 10

Queue shown is maximum after two cycles.

Splits and Phases: 5: Highway 12 & West Ridge Boulevard/Murphy Road



Synchro 11 Report Synchro 11 Report Page 9

Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol, veh/h	299	4	2	0	10	0	0	0	0	0	0	324
Future Vol, veh/h	299	4	2	0	10	0	0	0	0	0	0	324
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage		0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	32	67	0	0	30	100	50	0	100	0	50	30
Mvmt Flow	325	4	2	0	11	0	0	0	0	0	0	352
Major/Minor	Minor2		ı	Minor1		N	Major1		N	/lajor2		
Conflicting Flow All	182	176	176	179	352	0	352	0	0	0	0	0
Stage 1	176	176	-	0	0	-	-	-	-	-	-	
Stage 2	6	0	-	179	352	-	-	-	-	-	-	-
Critical Hdwy	7.42	7.17	6.2	7.1	6.8	7.2	4.6	-	-	4.1	-	-
Critical Hdwy Stg 1	6.42	6.17	-	6.1	5.8	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.42	6.17	-	6.1	5.8	-	-	-	-	-	-	-
Follow-up Hdwy	3.788	4.603	3.3	3.5	4.27	4.2	2.65	-	-	2.2	-	-
Pot Cap-1 Maneuver	718	615	872	787	530	-	983		-	-		-
Stage 1	761	646	-	-	-	-	-	-	-	-	-	
Stage 2	943	-	-	827	585	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	615	872	781	530	-	983	-	-	-	-	-
Mov Cap-2 Maneuver	-	615	-	781	530	-	-	-	-	-	-	-
Stage 1	761	646	-	-	-	-	-	-	-	-	-	-
Stage 2	943	-	-	819	585	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s							0			0		
HCM LOS				-								
Minor Lane/Major Mvr	nt	NBL	NBT	NRD	EBLn1\	MRI n1	SBL	SBT	SBR			
	III	983	INDI	ואסולו	LULIIIV	VDLIII	ODL	ODI	SDR			
Capacity (veh/h) HCM Lane V/C Ratio		983		- :	-	-	-		-			
	١		-		-	-	0	-	-			
HCM Control Delay (s HCM Lane LOS)	0 A	-	-	-	-	O A	-	-			
	.\	A 0	-	-	-	-	A	-	-			
HCM 95th %tile Q(veh	1)	0	-	-	-	-	-	-	-			

Intersection												
Int Delay, s/veh	3.3											
Movement	EBL	EBT	EDD	WBL	WDT	WBR	NDI	NBT	NDD	CDI	CDT	CDD
Lane Configurations	EDL	4	EBR	WDL	WBT	WDK	NBL		NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	163	8	35	131	4	4	32	38	6	20	2
Future Vol. veh/h	0	163	8	35	131	4	4	32	38	6	20	2
Conflicting Peds. #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	riee -	riee -	None	riee -	riee -	None	Stop -	Stop -	None	Stop -	Stop -	None
Storage Length			INOIIC	-		-	-	-	NONE -	-		NUITE
Veh in Median Storage		0		-	0		-	0	-	-	0	_
Grade, %	, π -	0			0			0			0	
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	2	0	0	1	0	0	25	3	0	11	0
Mymt Flow	0	170	8	36	136	4	4	33	40	6	21	2
	- 0	110		- 00	100		- 1	- 00	10	- 0		
Majar/Minor	Majard			Anion			Minout			Aina _n 0		
	Major1			Major2			Minor1	000		Minor2	000	400
Conflicting Flow All	140	0	0	178	0	0	396	386	174	421	388	138
Stage 1	-	-	-	-	-	-	174	174	-	210	210	-
Stage 2	-	-	-	-	-	-	222	212	- 0.00	211	178	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.75	6.23	7.1	6.61	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.75	-	6.1	5.61	-
Critical Hdwy Stg 2	2.2	-	-	2.2	-	-	6.1	5.75 4.225	3.327	3.5	5.61	3.3
Follow-up Hdwy Pot Cap-1 Maneuver	1456	-	-	1410	-	-	3.5 568	514	867	546	4.099 533	916
Stage 1	1456		-	1410			833	713	001	797	712	910
Stage 2	-	-	-		-	-	785	686	-	796	735	-
Platoon blocked, %				-	-		100	000		190	133	-
Mov Cap-1 Maneuver	1456	-	-	1410	-		538	500	867	484	518	916
Mov Cap-1 Maneuver	1430			1410		-	538	500	007	484	518	910
Stage 1		_				-	833	713	-	797	692	_
Stage 2							738	667	-	724	735	-
Jiaye 2							1 30	007		124	7 33	_
	EE			ME			NE			0.5		
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			1.6			11.4			12.2		
HCM LOS							В			В		
Minor Lane/Major Mvm	nt 1	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)		642	1456	-	-	1410	-	-	526			
HCM Lane V/C Ratio		0.12	-	-	-	0.026	-	-	0.055			
HCM Control Delay (s)		11.4	0	-	-	7.6	0	-	12.2			
HCM Lane LOS		В	A	-		Α	A	-	В			
HCM 95th %tile Q(veh))	0.4	0	-	-	0.1	-	-	0.2			

	۶	-	•	1	•		1	†	-	-	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	23.0	23.0		23.0	23.0		32.0	32.0		32.0	32.0	
Total Split (%)	41.8%	41.8%		41.8%	41.8%		58.2%	58.2%		58.2%	58.2%	
Maximum Green (s)	18.5	18.5		18.5	18.5		27.5	27.5		27.5	27.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		8.7			8.7			30.3			30.3	
Actuated g/C Ratio		0.18			0.18			0.63			0.63	
v/c Ratio		0.56			0.30			0.74			0.24	
Control Delay		13.0			17.7			16.5			5.4	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		13.0			17.7			16.5			5.4	
LOS		В			В			В			Α	
Approach Delay		13.0			17.7			16.5			5.4	
Approach LOS		В			В			В			А	
Queue Length 50th (m)		7.0			6.3			24.7			5.3	
Queue Length 95th (m)		21.5			15.2			#93.9			16.6	
Internal Link Dist (m)		1322.1			247.7			1929.3			333.4	
Turn Bay Length (m)												
Base Capacity (vph)		735			639			741			812	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.31			0.14			0.74			0.24	
Intersection Summary												
Area Type:	Other											
Cycle Length: 55												
Actuated Cycle Length: 48.1												
Natural Cycle: 60												
Control Type: Semi Act-Unc	oord											
Maximum v/c Ratio: 0.74												
Intersection Signal Delay: 13	3.8			Ir	ntersection	LOS: B						
Intersection Capacity Utilizat				IC	CU Level o	of Service	В					
Analysis Period (min) 15												
# 95th percentile volume e	xceeds ca	pacity, qu	eue may	be longe	r.							
Queue shown is maximu	m after two	cycles.										

Lane Configurations		4			4			4			4	
Traffic Volume (vph)	14	76	122	20	60	2	87	382	33	5	161	14
Future Volume (vph)	14	76	122	20	60	2	87	382	33	5	161	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.922			0.997			0.991			0.990	
Flt Protected		0.997			0.988			0.991			0.999	
Satd. Flow (prot)	0	1724	0	0	1872	0	0	1268	0	0	1297	0
Flt Permitted		0.975			0.868			0.916			0.990	
Satd. Flow (perm)	0	1686	0	0	1644	0	0	1172	0	0	1285	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		133			2			9			11	
Link Speed (k/h)		50			50			70			60	
Link Distance (m)		1346.1			271.7			1953.3			357.4	
Travel Time (s)		96.9			19.6			100.5			21.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	1%	0%	0%	0%	0%	62%	0%	0%	50%	0%
Adj. Flow (vph)	15	83	133	22	65	2	95	415	36	5	175	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	231	0	0	89	0	0	546	0	0	195	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	C I +Ex	CI+Ex		C I +Ex	CI+Ex		C I+ Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel		0.0			0.0			0.0			0.0	
Detector 2 Extend (s)	D	0.0		D	0.0		D	0.0		D	0.0	
Turn Type	Perm	NA 4		Perm	NA 8		Perm	NA 2		Perm	NA 6	_
Protected Phases Permitted Phases	4	4		0	ď		0	2		C	Ö	
	4	4		8	8		2	2		6	6	
Detector Phase	4	4		8	б		2	2		0	0	
Switch Phase												

Synchro 11 Report Page 15

Lanes, Volumes, Timings 8: Burnside Line & Division Road W

2033 Future Total A.M.

09-26-2024

Splits and Phases: 8: Burnside Line & Division Road W ₫ ø2 ø₆ ₹ Ø8 HCM 2010 TWSC 9: Industrial Road & Hurlwood Lane 2033 Future Total A.M. 09-26-2024

Intersection						
Int Delay, s/veh	2.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	٦	^	ĵ.		*	1
Traffic Vol. veh/h	0	167	327	73	126	0
Future Vol., veh/h	0	167	327	73	126	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None			-	None
Storage Length	0	-	-	-	0	0
Veh in Median Storage	e,# -	0	0	_	0	
Grade. %	-	0	0	-	0	
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mymt Flow	0	182	355	79	137	0
WWW.CT IOW	v	101	000	70	101	v
				_		
	Major1		Major2		Minor2	
Conflicting Flow All	434	0	-	0	577	395
Stage 1	-	-	-	-	395	-
Stage 2	-	-	-	-	182	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1126	-	-	-	478	654
Stage 1				-	681	
Stage 2	_	-	_	_	849	
Platoon blocked, %		-			010	
Mov Cap-1 Maneuver	1126	-			478	654
Mov Cap-1 Maneuver		-	-	-	556	004
Stage 1	-		•	-	681	_
			-			
Stage 2	-	-	-	-	849	-
Approach	EB		WB		SB	
HCM Control Delay, s	0		0		13.6	
HCM LOS	Ū		Ū		В	
TIOM 200						
Minor Lane/Major Mvr	nt	EBL	EBT	WBT	WBR -	SBLn1
Capacity (veh/h)		1126	-	-	-	556
HCM Lane V/C Ratio		-	-	-	-	0.246
HCM Control Delay (s)	0	-	-	-	13.6
HCM Lane LOS		Α	-	-	-	В
HCM 95th %tile Q(veh	1)	0	-	-	-	1
	•					

Intersection						
Int Delay, s/veh	4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	WDL	WDK		NDIT	ODL	क्ष
			126	100	27	
Traffic Vol, veh/h	159	9	136	189	27 27	195 195
Future Vol, veh/h	159		136	189		
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-		-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage		-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	173	10	148	205	29	212
Major/Minor	Minor1	N	//ajor1		Major2	
Conflicting Flow All	521	251	0	0	353	0
Stage 1	251	201	-	-	333	-
	270					
Stage 2	6.42	6.22	-	-	4.12	-
Critical Hdwy			-	-		-
Critical Hdwy Stg 1	5.42	-	-	-	-	
Critical Hdwy Stg 2	5.42	-	-	-		-
Follow-up Hdwy	3.518		-		2.218	-
Pot Cap-1 Maneuver	516	788	-	-	1200	-
Stage 1	791	-	-	-	-	-
Stage 2	775	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	502	788	-	-	1206	-
Mov Cap-2 Maneuver	502	-	-	-	-	-
Stage 1	791	-	-	-	_	-
Stage 2	754	-				-
, and the second						
	14/0		ND		0.0	
Approach	WB		NB		SB	
HCM Control Delay, s	15.6		0		1	
HCM LOS	С					
Minor Lane/Major Mvm	nt	NBT	NBRV	VBLn1V	VBI n2	SBL
Capacity (veh/h)		-	. 15. (502	788	1206
HCM Lane V/C Ratio					0.012	
HCM Control Delay (s)	١		-	15.9	9.6	8.1
HCM Control Delay (s)		-	-	15.9 C	9.6 A	8.1 A
	١		-	1.5	0	0.1
HCM 95th %tile Q(veh)	-	-	1.5	0	0.1

Intersection						
Int Delay, s/veh	2.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	₩.	WDIX	13	NDIX	ODL	4
Traffic Vol, veh/h	39	14	85	14	5	96
Future Vol, veh/h	39	14	85	14	5	96
Conflicting Peds. #/hr		0	00	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	Stop -	None	-	None	1166	
Storage Length	0	-		NONE -		INOHE -
Veh in Median Storag		-	0	-	-	0
Grade, %	0	-	0			0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	42	15	92	15	5	104
Major/Minor	Minor1	1	Major1		Major2	
Conflicting Flow All	214	100	0	0	107	0
Stage 1	100		-		-	
Stage 2	114	-		-	-	-
Critical Hdwy	6.42	6.22	_		4.12	
Critical Hdwy Stg 1	5.42	-				
Critical Hdwy Stg 2	5.42	-		_		
Follow-up Hdwy	3.518	3.318	-		2.218	
Pot Cap-1 Maneuver	774	956		_	1484	
Stage 1	924	930			1404	-
Stage 2	911					
Platoon blocked, %	911	-			-	
	. 774	OEC		-	1104	-
Mov Cap-1 Maneuver		956	-	-	1484	-
Mov Cap-2 Maneuver		-	-	-	-	-
Stage 1	924	-	-	-	-	-
Stage 2	907	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s			0		0.4	
HCM LOS	, J.O		- 0		0.7	
TIGHT EOU						
Minor Lane/Major Mv	mt	NBT	NBRV	WBLn1	SBL	SBT
Capacity (veh/h)		-	-	813	1484	
HCM Lane V/C Ratio		-	-	0.071	0.004	-
HCM Control Delay (s	s)	-	-	9.8	7.4	0
HCM Lane LOS			-	Α	Α	A
HCM 95th %tile Q(vel	h)	-	-	0.2	0	-

Intersection Int Delay, s/veh Movement Lane Configurations Traffic Vol, veh/h Future Vol, veh/h Conflicting Peds, #/hr Sign Control RT Channelized Storage Length Veh in Median Storag Grade, % Peak Hour Factor Heavy Vehicles, % Mvmt Flow Major/Minor Conflicting Flow All Stage 1 Stage 2 Critical Hdwy Stg 1 Critical Hdwy Stg 1 Critical Hdwy Stg 2 Follow-up Hdwy Pot Cap-1 Maneuver Stage 1	1.8 WBL 53 53 53 0 Stop 0 92 2 58 Minor1 264 117 147 6.42 5.42	92 2 0 117 - 6.22	NBT	92 2	SBL 0 0 0 Free 92 2 0 Major2 127 4.12	SBT 135 135 0 Free None 0 0 0 92 2 147
Int Delay, s/veh Movement Lane Configurations Traffic Vol, veh/h Future Vol, veh/h Conflicting Peds, #/hr Sign Control RT Channelized Storage Length Veh in Median Storag Grade, % Peak Hour Factor Heavy Vehicles, % Mymt Flow Major/Minor Conflicting Flow All Stage 1 Stage 2 Critical Hdwy Critical Hdwy Stg 1 Critical Hdwy Stg 1 Critical Hdwy Stg 2 Follow-up Hdwy Pot Cap-1 Maneuver Stage 1	WBL 53 53 0 Stop 0 e, # 0 92 2 58 Minor1 264 117 6.42	0 0 0 Stop None - - 92 2 0	98 98 98 0 Free - 0 0 92 2 107 Major1	18 18 0 Free None - - - 92 2 20	0 0 0 Free - - - 92 2 0 Major2	135 135 0 Free None 0 0 92 2 147
Lane Configurations Traffic Vol, veh/h Future Vol, veh/h Future Vol, veh/h Conflicting Peds, #/hr Sign Control RT Channelized Storage Length Veh in Median Storag Grade, % Peak Hour Factor Heavy Vehicles, % Mymt Flow Major/Minor Conflicting Flow All Stage 1 Stage 2 Critical Hdwy Critical Hdwy Stg 1 Critical Hdwy Stg 1 Critical Hdwy Stg 2 Follow-up Hdwy Pot Cap-1 Maneuver Stage 1	53 53 0 Stop - 0 e, # 0 92 2 58 Minor1 264 117 147 6.42	0 0 0 Stop None - - 92 2 0	98 98 98 0 Free - 0 0 92 2 107 Major1	18 18 0 Free None - - - 92 2 20	0 0 0 Free - - - 92 2 0 Major2	135 135 0 Free None 0 0 92 2 147
Lane Configurations Traffic Vol, veh/h Future Vol, veh/h Future Vol, veh/h Conflicting Peds, #/hr Sign Control RT Channelized Storage Length Veh in Median Storag Grade, % Peak Hour Factor Heavy Vehicles, % Mymt Flow Major/Minor Conflicting Flow All Stage 1 Stage 2 Critical Hdwy Critical Hdwy Stg 1 Critical Hdwy Stg 1 Critical Hdwy Stg 2 Follow-up Hdwy Pot Cap-1 Maneuver Stage 1	53 53 0 Stop - 0 e, # 0 92 2 58 Minor1 264 117 147 6.42	0 0 0 Stop None - - 92 2 0	98 98 98 0 Free - 0 0 92 2 107 Major1	18 18 0 Free None - - - 92 2 20	0 0 0 Free - - - 92 2 0 Major2	135 135 0 Free None 0 0 92 2 147
Traffic Vol, veh/h Future Vol, veh/h Future Vol, veh/h Future Vol, veh/h Conflicting Peds, #hr Sign Control RT Channelized Storage Length Veh in Median Storag Grade, % Peak Hour Factor Heavy Vehicles, % Mvmt Flow Major/Minor Conflicting Flow All Stage 1 Stage 2 Critical Hdwy Critical Hdwy Stg 1 Critical Hdwy Stg 1 Critical Hdwy Stg 2 Follow-up Hdwy Pot Cap-1 Maneuver Stage 1	53 53 0 Stop 0 e, # 0 92 2 58 Minor1 264 117 147 6.42	0 0 Stop None - - 92 2 0	98 98 98 0 Free - 0 0 92 2 107 Major1	18 0 Free None - - 92 2 20	0 0 Free - - - 92 2 0 Major2	135 135 0 Free None - 0 0 92 2 147
Future Vol, veh/h Conflicting Peds, #/hr Sign Control RT Channelized Storage Length Veh in Median Storag Grade, % Peak Hour Factor Heavy Vehicles, % Mvmt Flow Major/Minor Conflicting Flow All Stage 1 Stage 2 Critical Hdwy Critical Hdwy Stg 1 Critical Hdwy Stg 1 Critical Hdwy Stg 2 Follow-up Hdwy Pot Cap-1 Maneuver Stage 1	53 0 Stop 0 e, # 0 92 2 58 Minor1 264 117 147 6.42	0 0 Stop None - - 92 2 0	98 0 Free - 0 0 92 2 107 Major1	18 0 Free None - - 92 2 20	0 0 Free - - - 92 2 0 Major2	135 0 Free None - 0 0 92 2 147
Conflicting Peds, #hr Sign Control RT Channelized Storage Length Veh in Median Storag Grade, % Peak Hour Factor Heavy Vehicles, % Mvmt Flow Major/Minor Conflicting Flow All Stage 1 Stage 2 Critical Hdwy Critical Hdwy Stg 1 Critical Hdwy Stg 2 Follow-up Hdwy Pot Cap-1 Maneuver Stage 1	0 Stop - 0 e, # 0 92 2 58 Minor1 264 117 147 6.42	0 Stop None - - 92 2 0	0 Free - 0 0 92 2 107 Major1 0	0 Free None - - 92 2 20	Free 92 2 0 Major2 127	0 Free None - 0 0 92 2 147
Sign Control RT Channelized Storage Length Veh in Median Storag Grade, % Peak Hour Factor Heavy Vehicles, % Mvmt Flow Major/Minor Conflicting Flow All Stage 1 Stage 2 Critical Hdwy Critical Hdwy Stg 1 Critical Hdwy Stg 1 Critical Hdwy Stg 2 Follow-up Hdwy Pot Cap-1 Maneuver Stage 1	0 e, # 0 92 2 58 Minor1 264 117 147 6.42	None 92 2 0 117 - 6.22	- 0 0 92 2 107 Major1 0	None 92 2 20	92 2 0 Major2	None
RT Channelized Storage Length Veh in Median Storag Grade, % Peak Hour Factor Heavy Vehicles, % Mvmt Flow Major/Minor Conflicting Flow All Stage 1 Stage 2 Critical Hdwy Critical Hdwy Stg 1 Critical Hdwy Stg 2 Follow-up Hdwy Pot Cap-1 Maneuver Stage 1	0 e, # 0 92 2 58 Minor1 264 117 147 6.42	None 92 2 0 117 - 6.22	- 0 0 92 2 107 Major1 0	None 92 2 20	92 2 0 Major2	None
Storage Length Veh in Median Storag Grade, % Peak Hour Factor Heavy Vehicles, % Mvmt Flow Major/Minor Conflicting Flow All Stage 1 Stage 2 Critical Hdwy Critical Hdwy Stg 1 Critical Hdwy Stg 2 Follow-up Hdwy Pot Cap-1 Maneuver Stage 1	e, # 0 0 92 2 58 Minor1 264 117 147 6.42	92 2 0 117 - 6.22	0 0 92 2 107 Major1 0	92 2 20 0	92 2 0 Major2 127	0 0 92 2 147
Veh in Median Storag Grade, % Peak Hour Factor Heavy Vehicles, % Mvmt Flow Major/Minor Conflicting Flow All Stage 1 Stage 2 Critical Hdwy Stg 1 Critical Hdwy Stg 1 Critical Hdwy Stg 2 Follow-up Hdwy Pot Cap-1 Maneuver Stage 1	e, # 0 0 92 2 58 Minor1 264 117 147 6.42	92 2 0 1117 - 6.22	0 92 2 107 Major1 0 -	92 2 20 0	92 2 0 Major2 127	0 92 2 147
Grade, % Peak Hour Factor Heavy Vehicles, % Mvmt Flow Major/Minor Conflicting Flow All Stage 1 Stage 2 Critical Hdwy Critical Hdwy Stg 1 Critical Hdwy Stg 2 Follow-up Hdwy Pot Cap-1 Maneuver Stage 1	0 92 2 58 Minor1 264 117 147 6.42	92 2 0 117 - 6.22	0 92 2 107 Major1 0 -	92 2 20 0	92 2 0 Major2 127	0 92 2 147
Peak Hour Factor Heavy Vehicles, % Mvmt Flow Major/Minor Conflicting Flow All Stage 1 Stage 2 Critical Hdwy Critical Hdwy Stg 1 Critical Hdwy Stg 2 Follow-up Hdwy Pot Cap-1 Maneuver Stage 1	92 2 58 Minor1 264 117 147 6.42	92 2 0 117 - 6.22	92 2 107 Major1 0 -	92 2 20 0	92 2 0 Major2 127	92 2 147
Heavy Vehicles, % Mvmt Flow Major/Minor Conflicting Flow All Stage 1 Stage 2 Critical Hdwy Critical Hdwy Stg 1 Critical Hdwy Stg 2 Follow-up Hdwy Pot Cap-1 Maneuver Stage 1	2 58 Minor1 264 117 147 6.42	2 0 117 - 6.22	2 107 Major1 0 -	2 20 0 -	2 0 Major2 127 -	2 147 0
Mvmt Flow Major/Minor Conflicting Flow All Stage 1 Stage 2 Critical Hdwy Critical Hdwy Stg 1 Critical Hdwy Stg 2 Follow-up Hdwy Pot Cap-1 Maneuver Stage 1	58 Minor1 264 117 147 6.42	0 117 - - 6.22	107 Major1 0 -	20	0 <u>Major2</u> 127 -	0 -
Major/Minor Conflicting Flow All Stage 1 Stage 2 Critical Hdwy Critical Hdwy Stg 1 Critical Hdwy Stg 2 Follow-up Hdwy Pot Cap-1 Maneuver Stage 1	Minor1 264 117 147 6.42	117 - - 6.22	Major1 0 -	0	Major2 127 -	0 -
Conflicting Flow All Stage 1 Stage 2 Critical Hdwy Critical Hdwy Stg 1 Critical Hdwy Stg 2 Follow-up Hdwy Pot Cap-1 Maneuver Stage 1	264 117 147 6.42	117 - - 6.22	0 - -	0	127	-
Conflicting Flow All Stage 1 Stage 2 Critical Hdwy Critical Hdwy Stg 1 Critical Hdwy Stg 2 Follow-up Hdwy Pot Cap-1 Maneuver Stage 1	264 117 147 6.42	117 - - 6.22	0 - -	0	127	-
Stage 1 Stage 2 Critical Hdwy Critical Hdwy Stg 1 Critical Hdwy Stg 2 Follow-up Hdwy Pot Cap-1 Maneuver Stage 1	117 147 6.42	- 6.22	-	-	-	-
Stage 2 Critical Hdwy Critical Hdwy Stg 1 Critical Hdwy Stg 2 Follow-up Hdwy Pot Cap-1 Maneuver Stage 1	147 6.42	6.22	-	:	-	_
Critical Hdwy Critical Hdwy Stg 1 Critical Hdwy Stg 2 Follow-up Hdwy Pot Cap-1 Maneuver Stage 1	6.42	6.22		-		-
Critical Hdwy Stg 1 Critical Hdwy Stg 2 Follow-up Hdwy Pot Cap-1 Maneuver Stage 1			-	-	4 12	_
Critical Hdwy Stg 2 Follow-up Hdwy Pot Cap-1 Maneuver Stage 1	5.42				1.14	
Follow-up Hdwy Pot Cap-1 Maneuver Stage 1	J.42	-	-	-	-	-
Pot Cap-1 Maneuver Stage 1	5.42	-	-	-	-	-
Pot Cap-1 Maneuver Stage 1	3.518	3.318	-	-	2.218	-
Stage 1	725	935	-	-	1459	_
	908	-	-	-		-
Stage 2	880	_		-		_
Platoon blocked, %	000					
Mov Cap-1 Maneuver	725	935	_	-	1459	
Mov Cap-2 Maneuver		-	-		1100	
Stage 1	908	_	_	_	_	_
Stage 2	880					
Stage 2	000	_				
Approach	WB		NB		SB	
HCM Control Delay, s	10.4		0		0	
HCM LOS	В					
Minor Lane/Major Mvi	nt	NBT	NRRV	WBLn1	SBL	SBT
Capacity (veh/h)	110	-	-	725	1459	-
HCM Lane V/C Ratio		-		0.079	1400	
HCM Control Delay (s		-	-	10.4	0	-
HCM Control Delay (s	1			10.4	-	-
HCM 95th %tile Q(vel)	-		-		
	•	-	-	B 0.3	A 0	-

Intersection						
	2					
Int Delay, s/veh						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		1			4
Traffic Vol, veh/h	53	14	102	27	5	183
Future Vol, veh/h	53	14	102	27	5	183
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage	, # 0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	58	15	111	29	5	199
Major/Minor I	Minor1		Major1		Major2	
	335				140	
Conflicting Flow All		126	0	0	140	0
Stage 1	126 209		-	-		-
Stage 2		- 0.00	-	-	- 4.40	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	- 0.40	-	-	- 0.40	-
Follow-up Hdwy	3.518	3.318 924	-	-	2.218 1443	-
Pot Cap-1 Maneuver	660		-	•		•
Stage 1	900	-	-	-	-	-
Stage 2	826	-	-	-	-	-
Platoon blocked, %	0.55	004	-	-	4440	-
Mov Cap-1 Maneuver	657	924	-	-	1443	-
Mov Cap-2 Maneuver	657	-	-	-	-	•
Stage 1	900	-	-	-	-	-
Stage 2	823	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s	10.7		0		0.2	
HCM LOS	В					
		NDT	NDD	MDI 4	ODI	ODT
Minor Lane/Major Mvm	IT	NBT		NBLn1	SBL	SBT
Capacity (veh/h)		-	-	699	1443	-
HCM Lane V/C Ratio		-	-	0.104		-
HCM Control Delay (s)		-	-	10.7	7.5	0
HCM Lane LOS		-	-	В	A	Α
HCM 95th %tile Q(veh))	-	-	0.3	0	-

2033 Future Total P.M.

1. Burnside Line & Industrial Road/Brodie Drive

1: Burnside Line & I	ndustri	ial Roa	ad/Broo	die Dri	ve						09-2	26-2024
	۶	→	*	•	•	•	1	†	~	1	↓	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	↑	7	7	†	7	7	†	7	7	1	
Traffic Volume (vph)	73	40	354	395	2	100	286	296	90	42	234	23
Future Volume (vph)	73	40	354	395	2	100	286	296	90	42	234	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		75.0	100.0		0.0	75.0		65.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850	1.00		0.850		0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1900	1568	1770	1900	1615	1805	1863	1429	1805	1748	0
Flt Permitted	0.757	1000	1000	0.569	1000	1010	0.405	1000		0.569		
Satd. Flow (perm)	1438	1900	1568	1060	1900	1615	770	1863	1429	1081	1748	0
Right Turn on Red	1-100	1000	Yes	1000	1000	Yes	110	1000	Yes	1001	1140	Yes
Satd. Flow (RTOR)			377			200			200		5	100
Link Speed (k/h)		50	011		60	200		60	200		60	
Link Distance (m)		140.4			136.5			65.5			1953.3	
Travel Time (s)		10.1			8.2			3.9			117.2	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0.94	0.94	3%	2%	0.94	0.94	0.34	2%	13%	0.94	8%	0.94
Adj. Flow (vph)	78	43	377	420	2	106	304	315	96	45	249	24
Shared Lane Traffic (%)	70	43	311	420		100	304	313	90	40	249	24
\ /	78	43	377	420	2	106	304	315	96	45	273	0
Lane Group Flow (vph) Enter Blocked Intersection	No	No	No	No	No	No	No No	No	No	No	No	No
		Left									Left	
Lane Alignment	Left	3.6	Right	Left	Left 3.6	Right	Left	Left	Right	Left	3.6	Right
Median Width(m)		0.0						3.6				
Link Offset(m)		4.8			0.0 4.8			0.0 4.8			0.0 4.8	
Crosswalk Width(m)					4.8			4.8			4.8	
Two way Left Turn Lane	4.00	Yes	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	0	15	25	0	15	25	•	15	25	0	15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	C I +Ex	CI+Ex	CI+Ex	C I +Ex	C I +Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	C I +Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	

Synchro 11 Report Page 1

Lanes, Volumes, Timings

2033 Future Total P.M. 09-26-2024

1: Burnside Line & Industrial Road/Brodie Drive

	•	→	*	1	+	*	1	†	1	-	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	25.0	25.0	5.0	25.0	
Minimum Split (s)	9.5	21.0	21.0	9.5	21.0	21.0	9.5	31.0	31.0	9.5	31.0	
Total Split (s)	10.4	21.0	21.0	21.5	32.1	32.1	15.0	38.0	38.0	9.5	32.5	
Total Split (%)	11.6%	23.3%	23.3%	23.9%	35.7%	35.7%	16.7%	42.2%	42.2%	10.6%	36.1%	
Maximum Green (s)	5.9	15.0	15.0	17.0	26.1	26.1	10.5	32.0	32.0	5.0	26.5	
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	6.0	6.0	4.5	6.0	6.0	4.5	6.0	6.0	4.5	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Min	Min	None	Min	Min	None	Min	Min	None	Min	
Act Effct Green (s)	22.3	15.0	15.0	37.3	27.6	27.6	41.5	34.4	34.4	31.5	25.0	
Actuated g/C Ratio	0.25	0.17	0.17	0.42	0.31	0.31	0.47	0.39	0.39	0.36	0.28	
v/c Ratio	0.20	0.13	0.65	0.72	0.00	0.16	0.62	0.43	0.14	0.10	0.54	
Control Delay	18.0	32.6	9.7	27.5	22.0	0.6	21.6	23.4	0.4	14.1	31.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	18.0	32.6	9.7	27.5	22.0	0.6	21.6	23.4	0.4	14.1	31.1	
LOS	В	С	Α	С	С	Α	С	С	Α	В	С	
Approach Delay		13.0			22.0			19.5			28.7	
Approach LOS		В			С			В			С	
Queue Length 50th (m)	8.1	6.6	0.0	54.6	0.3	0.0	33.3	43.9	0.0	4.2	40.5	
Queue Length 95th (m)	16.7	16.1	25.2	84.0	1.9	0.0	52.7	68.8	0.0	10.0	65.6	
Internal Link Dist (m)		116.4			112.5			41.5			1929.3	
Turn Bay Length (m)	25.0		75.0	100.0			75.0		65.0	40.0		
Base Capacity (vph)	391	324	580	587	596	644	487	747	692	429	530	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.20	0.13	0.65	0.72	0.00	0.16	0.62	0.42	0.14	0.10	0.52	
Intersection Summary												

Area Type: Other Cycle Length: 90 Actuated Cycle Length: 87.9 Natural Cycle: 80 Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.72 Intersection Signal Delay: 20.0 Intersection Capacity Utilization 79.0%

Intersection LOS: C ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: Burnside Line & Industrial Road/Brodie Drive



Lanes, Volumes, Timings 2: Burnside Line & Highway 11 Westbound On-Ramp

2033 Future Total P.M. 09-26-2024 Lanes, Volumes, Timings 3: Burnside Line & Highway 11 Westbound

2033 Future Total P.M. 09-26-2024

	١	*	1	1	Ţ	4	
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations				^	^	7	
Traffic Volume (vph)	0	0	0	998	623	334	
Future Volume (vph)	0	0	0	998	623	334	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt						0.850	
Flt Protected							
Satd. Flow (prot)	0	0	0	1863	1863	1509	
Flt Permitted							
Satd. Flow (perm)	0	0	0	1863	1863	1509	
Link Speed (k/h)	50			50	50		
Link Distance (m)	185.9			51.5	174.3		
Travel Time (s)	13.4			3.7	12.5		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	
Heavy Vehicles (%)	0%	0%	0%	2%	2%	7%	
Adj. Flow (vph)	0	0	0	1018	636	341	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	0	0	1018	636	341	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(m)	0.0	-		0.0	0.0		
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	4.8			4.8	4.8		
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (k/h)	100	100	100			100	
Sign Control	Free			Free	Free		
Intersection Summary							
Area Type:	Other						
Control Type: Unsignalized	d						
Intersection Capacity Utiliz	zation 55.9%			IC	U Level	of Service	B
Analysis Period (min) 15							

	1	*	†	-	1	Ţ
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	7,52	7	1	7	UDL	<u> </u>
Traffic Volume (vph)	201	219	781	285	0	623
Future Volume (vph)	201	219	781	285	0	623
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	1300	80.0	0.0	1000
Storage Lanes	1	1		1	0.0	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.850	1.00	0.850	1.00	1.00
Fit Protected	0.950	0.000		0.000		
Satd. Flow (prot)	1752	1599	1863	1615	0	1863
	0.950	1099	1003	1015	U	1003
Flt Permitted		1500	1000	1615	0	4000
Satd. Flow (perm)	1752	1599	1863	1615	0	1863
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		209		291		
Link Speed (k/h)	50		60			60
Link Distance (m)	241.7		160.3			51.5
Travel Time (s)	17.4		9.6			3.1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	3%	1%	2%	0%	0%	2%
Adj. Flow (vph)	205	223	797	291	0	636
Shared Lane Traffic (%)						
Lane Group Flow (vph)	205	223	797	291	0	636
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6	, tigin	0.0	, again	2010	0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
	4.0		4.0			4.0
Two way Left Turn Lane	4.00	4.00	4.00	4.00	4.00	4.00
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	_	15	25	
Number of Detectors	1	1	_ 2	1		_ 2
Detector Template	Left	Right	Thru	Right		Thru
Leading Detector (m)	2.0	2.0	10.0	2.0		10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0
Detector 1 Size(m)	2.0	2.0	0.6	2.0		0.6
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex		Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)	0.0	0.0	9.4	0.0		9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			CI+Ex			CI+Ex
71			OITEX			OITEX
Detector 2 Channel			0.0			0.0
Detector 2 Extend (s)		_	0.0	-		0.0
Turn Type	Perm	Perm	NA	Perm		NA
Protected Phases			6			2

Lanes, Volumes, Timings 3: Burnside Line & Highway 11 Westbound

Lane Group Permitted Phases Detector Phase

Switch Phase Minimum Initial (s)

Total Split (s)

Total Split (%)

Yellow Time (s)

All-Red Time (s)

Lead/Lag Lead-Lag Optimize? Vehicle Extension (s)

Recall Mode

v/c Ratio

Control Delay

Queue Delay

Total Delay

Approach Delay

Approach LOS Queue Length 50th (m)

Queue Length 95th (m)

Internal Link Dist (m)

Turn Bay Length (m)

Base Capacity (vph)

Starvation Cap Reductn

Spillback Cap Reductn

Storage Cap Reductn Reduced v/c Ratio

Intersection Summary

Analysis Period (min) 15

Intersection Capacity Utilization 65.8%

Area Type: Cycle Length: 85 Actuated Cycle Length: 59.8 Natural Cycle: 60 Control Type: Semi Act-Uncoord Maximum v/c Ratio: 0.78 Intersection Signal Delay: 13.7

▼ Ø2

↑ Ø6

LOS

Minimum Split (s)

Maximum Green (s)

Lost Time Adjust (s)

Total Lost Time (s)

Act Effct Green (s)

Actuated g/C Ratio

WBL WBR

10.0

16.1

24.0

17.9

4.5

1.6

0.0

6.1

3.0

None

13.0

0.22

0.44

8.2

0.0

8.2

1.2 60.0

20.0 119.0

649

0.34

4

10.0

16.1

24.0

17.9

4.5

1.6

0.0

6.1

3.0

None

13.0

0.22

0.54

29.6

0.0

29.6

18.5

19.6

52.9

554

0

0

0.37

Other

Splits and Phases: 3: Burnside Line & Highway 11 Westbound

217.7

С

28.2% 28.2%

NBT NBR

20.0

27.3

61.0

71.8%

53.7

4.5

2.8

0.0

7.3

3.2

None

32.6

0.55

0.78

16.9

0.0

16.9

12.8

136.3

1638

0.49

6

20.0

27.3

61.0

53.7

4.5

2.8

0.0

7.3

3.2

None

32.6

0.55

0.29

1.7

0.0

1.7

0.0

8.4

1455

0

0.20

71.8%

SBL SBT

2

20.0

27.3

61.0

71.8%

53.7

4.5

2.8

0.0

7.3

3.2

None

32.6

0.55

0.63

12.2

0.0

12.2

12.2

41.5

82.0

27.5

1638

0.39

Intersection LOS: B

ICU Level of Service C

V Ø4

0

0

2033 Future Total P.M. 09-26-2024

Lanes, Volumes, Timings 4: West Street North & Highway 11 Eastbound 2033 Future Total P.M. 09-26-2024

	•	*	1	†	Ţ	1
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	*	7	7	<u> </u>	<u> </u>	7
Traffic Volume (vph)	220	163	237	844	688	137
Future Volume (vph)	220	163	237	844	688	137
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	55.0	1000	1000	40.0
Storage Lanes	1	1	1			40.0
Taper Length (m)	7.5	1	7.5			- 1
	1.00	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Frt	0.050	0.850	0.050			0.850
Flt Protected	0.950	4500	0.950	4001	4000	4500
Satd. Flow (prot)	1736	1583	1787	1881	1863	1583
Flt Permitted	0.950		0.136			
Satd. Flow (perm)	1736	1583	256	1881	1863	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		172				77
Link Speed (k/h)	50			60	60	
Link Distance (m)	214.0			160.8	176.6	
Travel Time (s)	15.4			9.6	10.6	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	2%	1%	1%	2%	2%
Adi. Flow (vph)	232	172	249	888	724	144
	232	172	249	000	124	144
Shared Lane Traffic (%)						
Lane Group Flow (vph)	232	172	249	888	724	144
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25	1100	1100	15
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
					10.0	2.0
Leading Detector (m)	2.0	2.0	2.0	10.0		
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel				31. LX	31. LX	
Detector 2 Extend (s)				0.0	0.0	
	D	D				D
Turn Type	Perm	Perm	pm+pt	NA	NA	Perm
Protected Phases			1	6	2	

2033 Future Total P.M.

4: West Street North & Highway 11 Eastbound

09-26-2024

	•	*	1	†	Ţ	1
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	8	8	6			2
Detector Phase	8	8	1	6	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	7.0	20.0	20.0	20.0
Minimum Split (s)	18.0	18.0	10.0	41.0	41.0	41.0
Total Split (s)	25.0	25.0	24.0	70.0	46.0	46.0
Total Split (%)	26.3%	26.3%	25.3%	73.7%	48.4%	48.4%
Maximum Green (s)	18.8	18.8	21.0	62.9	38.9	38.9
Yellow Time (s)	4.5	4.5	3.0	4.5	4.5	4.5
All-Red Time (s)	1.7	1.7	0.0	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	3.0	7.1	7.1	7.1
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.2	3.2	3.2
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	15.3	15.3	55.4	51.2	36.0	36.0
Actuated g/C Ratio	0.19	0.19	0.69	0.64	0.45	0.45
v/c Ratio	0.70	0.39	0.61	0.74	0.87	0.19
Control Delay	44.2	8.1	15.4	14.8	34.4	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.2	8.1	15.4	14.8	34.4	8.7
LOS	D	Α	В	В	С	Α
Approach Delay	28.8			14.9	30.1	
Approach LOS	С			В	С	
Queue Length 50th (m)	36.4	0.0	12.7	88.7	101.9	6.0
Queue Length 95th (m)	66.5	16.8	37.4	145.1	#204.0	19.5
Internal Link Dist (m)	190.0			136.8	152.6	
Turn Bay Length (m)			55.0			40.0
Base Capacity (vph)	417	511	588	1493	927	826
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.34	0.42	0.59	0.78	0.17
Intersection Summary	0.11					
Area Type:	Other					
Cycle Length: 95						
Actuated Cycle Length: 80	.2					
Natural Cycle: 70						
Control Type: Semi Act-Un	coord					
Maximum v/c Ratio: 0.87	00.7					100.0
Intersection Signal Delay:					ntersectio	
Intersection Capacity Utiliz	ation 75.9%				CU Level	of Service
Analysis Period (min) 15						

Analysis Period (min) 15

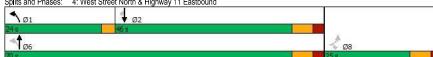
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

4: West Street North & Highway 11 Eastbound Splits and Phases: 4: West Street North & Highway 11 Eastbound

Lanes, Volumes, Timings

2033 Future Total P.M. 09-26-2024



Synchro 11 Report Page 7

261

261

1900

50.0

70.0

1.00

0.950

1787

0.94

278

278

No

Left

1.00

25

Left

2.0

0.0

0.0

2.0

0.0

0.0

CI+Ex

0.190

290

290

1900

1.00

50

186.6

13.4

0.94

309

309

No

Left

3.6

0.0

4.8

1 00

Thru

10.0

0.0

0.0

0.6

0.0

0.0

0.0

9.4

0.6

0.0

CI+Ex

CI+Ex

493

493

1900

65.0

1.00

1.00

0.950

1787

0.200

0.94

524

524

No

Left

1 00

25

Left

2.0

0.0

0.0

2.0

0.0

0.0

0.0

CI+Ex

278

278

1900

1.00

30

70

853.6

43.9

0.94

296

522

No

Left Right

3.6

0.0

4.8

1.00

Thru

10.0

0.0

0.0

0.6

0.0

0.0

0.0

9.4

0.6

0.0

CI+Ex

CI+Ex

274

274

1900

1.00

0.98

0.850

1599

1575

214

0.94

291

291

No

Right

1.00

Right

2.0

0.0

0.0

2.0

0.0

0.0

0.0

CI+Ex

15

0.0 115.0

261

261

1900

0.08

0.97

0.950

3502

0.950

3502

0.94

278

278

No

Left

1.00

25

Left

2.0

0.0

0.0

2.0

0.0

0.0

0.0

CI+Ex

838

1900

0.95 1.00

3539

3539

50

529.0

38.1

0.94

2%

891

891

No

Left Right

7.2

0.0

4.8

1.00

Thru Right

10.0

0.0

0.0

0.6

0.0

0.0

9.4

0.6

0.0

CI+Ex

CI+Ex

547

1900

120.0 110.0

1599

1599

Yes

582

0.94

582

582

No

1.00

15

2.0

0.0

0.0

2.0

0.0

0.0

CI+Ex

212

212

1900

0.0 100.0

1.00

Yes

0.94

0%

226

0

No

1 00

15

Lane Group

Lane Configurations

Traffic Volume (vph)

Future Volume (vph)

Ideal Flow (vphpl)

Storage Length (m)

Storage Lanes Taper Length (m)

Lane Util. Factor

Ped Bike Factor

Satd. Flow (prot)

Satd. Flow (perm)

Right Turn on Red

Satd. Flow (RTOR)

Link Speed (k/h)

Link Distance (m)

Confl. Peds. (#/hr) Peak Hour Factor

Heavy Vehicles (%)

Shared Lane Traffic (%)

Lane Group Flow (vph)

Enter Blocked Intersection

Travel Time (s)

Adj. Flow (vph)

Lane Alignment

Median Width(m)

Crosswalk Width(m)

Turning Speed (k/h)

Number of Detectors Detector Template

Leading Detector (m)

Trailing Detector (m)

Detector 1 Position(m)

Detector 1 Size(m)

Detector 1 Channel
Detector 1 Extend (s)

Detector 1 Queue (s)

Detector 1 Delay (s)

Detector 2 Size(m)

Detector 2 Channel

Detector 2 Extend (s)

Detector 2 Type

Detector 2 Position(m)

Detector 1 Type

Two way Left Turn Lane Headway Factor

Link Offset(m)

Flt Protected

Flt Permitted

2033 Future Total P.M. 09-26-2024

183

1900

50.0

1.00

1583

Yes

186

0.94

2%

195

195

No

1.00

Right

2.0

0.0

0.0

2.0

0.0

0.0

0.0

CI+Ex

15

105

105

1900

100.0

1.00

0.950

1805

0.136

258

0.94

112

112

No

Left

1 00

25

Left

2.0

0.0

0.0

2.0

0.0

0.0

0.0

CI+Ex

694

1900

0.95

3505 1583

50

469.5

33.8

0.94

3%

738

738

No

Left Right

7.2

0.0

4.8

1 00

Thru

10.0

0.0

0.0

0.6

0.0

0.0

0.0

9.4

0.6

0.0

CI+Ex

CI+Ex

	٠	-	*	1	•		1	†	-	1	Ţ	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6					8	4		4
Detector Phase	5	2	2	1	6		3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0		7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	12.0	27.2	27.2	12.0	33.2		11.5	21.0	21.0	11.5	22.5	22.5
Total Split (s)	27.0	31.4	31.4	41.0	45.4		18.0	46.1	46.1	11.5	39.6	39.6
Total Split (%)	20.8%	24.2%	24.2%	31.5%	34.9%		13.8%	35.5%	35.5%	8.8%	30.5%	30.5%
Maximum Green (s)	22.0	24.2	24.2	36.0	38.2		14.0	38.1	38.1	7.5	31.6	31.6
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	2.0	2.2	2.2	2.0	2.2		1.0	3.5	3.5	1.0	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.2	7.2	5.0	7.2		4.0	8.0	8.0	4.0	8.0	8.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.6	3.6	3.0	3.6		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	None	None	None	None	None
Walk Time (s)		110110			7.0			7.0	7.0		110.10	
Flash Dont Walk (s)					19.0			6.0	6.0			
Pedestrian Calls (#/hr)					0.0			0.0	0.0			
Act Effct Green (s)	44.6	23.6	23.6	63.7	37.7		13.3	35.9	35.9	41.6	30.1	30.1
Actuated g/C Ratio	0.36	0.19	0.19	0.51	0.30		0.11	0.29	0.29	0.33	0.24	0.24
v/c Ratio	0.81	0.86	0.62	0.93	0.94		0.74	0.87	0.66	0.63	0.87	0.37
Control Delay	49.0	72.6	20.0	52.4	66.6		67.7	52.8	7.0	41.2	57.9	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.0	72.6	20.0	52.4	66.6		67.7	52.8	7.0	41.2	57.9	8.6
LOS	D	7 Z.0	В	D	E		E	D D	Α.	D	E	A
Approach Delay		47.7			59.5		_	39.9	,,		46.9	- '
Approach LOS		D			E			D			D	
Queue Length 50th (m)	49.7	81.8	18.0	107.9	131.2		38.0	119.6	0.0	18.7	101.0	1.9
Queue Length 95th (m)	#84.7	#133.4	49.8	#174.4	#206.6		#54.1	146.8	30.9	#33.7	#132.6	21.5
Internal Link Dist (m)	1104.1	162.6	40.0	1111111	829.6		1104.1	505.0	00.0	#00.F	445.5	21.0
Turn Bay Length (m)	50.0	102.0		115.0	020.0		100.0	303.0	120.0	110.0	770.0	50.0
Base Capacity (vph)	393	373	481	604	576		398	1094	896	180	898	544
Starvation Cap Reductn	0	0	0	0	0		0	0	0.00	0	0.00	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.83	0.60	0.87	0.91		0.70	0.81	0.65	0.62	0.82	0.36
Intersection Summary												
Area Type:	Other											
Cycle Length: 130												
Actuated Cycle Length: 124	1.2											
Natural Cycle: 90												
Control Type: Semi Act-Un	coord											
Maximum v/c Ratio: 0.94	5551 W											
Intersection Signal Delay: 4	17 2			li	ntersection	I OS: D						
Intersection Capacity Utiliza					CU Level		F					
intoroccion oupdoity offize	20011 00.170	,			OU LUTEI (J. JUI VIUC						

Synchro 11 Report Page 9

2033 Future Total P.M. 09-26-2024

5: Highway 12 & West Ridge Boulevard/Murphy Road

HCM 2010 TWSC 6: Uhthoff Line & Murphy Road 2033 Future Total P.M. 09-26-2024

> Synchro 11 Report Page 13

Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Highway 12 & West Ridge Boulevard/Murphy Road



Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol., veh/h	527	5	0	3	3	3	2	0	0	2	0	349
Future Vol. veh/h	527	5	0	3	3	3	2	0	0	2	0	349
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-		-	-	-	-	-	-	-
Veh in Median Storage	e,# -	0	-	-	0	-	-	0	-	-	0	
Grade, %	-	0		-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	18	25	0	0	100	0	0	0	0	0	0	27
Mvmt Flow	586	6	0	3	3	3	2	0	0	2	0	388
Major/Minor	Minor2			Minor1			Major1		N	Major2		
Conflicting Flow All	205	202	194	205	396	0	388	0	0	0	0	0
Stage 1	198	198	194	205	390	U	300	U	U	U	U	U
Stage 2	7	190	-	201	392						-	
Critical Hdwy	7.28	6.75	6.2	7.1	7.5	6.2	4.1	-	-	4.1	-	_
Critical Hdwy Stg 1	6.28	5.75	0.2	6.1	6.5	0.2	4.1	-		4.1		
Critical Hdwy Stg 2	6.28	5.75	_	6.1	6.5	-		-	-	-	-	
Follow-up Hdwy	3.662	4.225	3.3	3.5	4.9	3.3	2.2	-		2.2	-	-
Pot Cap-1 Maneuver	720	655	853	757	416	3.3	1182			2.2		
Stage 1	768	696	000	1024	731	-	1102	-		-		-
Stage 2	975	849	-	805	467	-	-	-	-	-	-	
Platoon blocked, %	910	049	-	000	407	_	-	-	-	_		
Mov Cap-1 Maneuver	_	654	853	751	415	_	1182	_	_	_	_	
Mov Cap-1 Maneuver	-	654	000	751	415	-	1102	-	-	-	-	-
Stage 1	766	696	_	1022	730		-	_	-	_		
Stage 2	969	847	-	799	467	-			-			
Staye 2	208	047	_	1 22	407	-					_	
Approach	EB			WB			NB			SB		
HCM Control Delay, s				***			8.1			00		
HCM LOS				_			0.1					
TIOM LOO	_											
Minor Lane/Major Mvn	nt	NBL	NBT	NRD	EBLn1V	VRI n1	SBL	SBT	SBR			
Capacity (veh/h)	IL.	1182	ND I	ו אטוז	_ULII1V	VULII	ODL	001	SDIK			
			-	-	-	-	-	-	-			
HCM Cantrol Dalay (a)		0.002	0	-	-	-	-	-	-			
HCM Long LOS		8.1 A	A		-	-	-	-	-			
HCM CEth % tile O(voh	١	A 0	А	-	-	-	-	-	-			
HCM 95th %tile Q(veh)	0	-	-	-	-	-	-	-			

	۶	→	*	1	+	•	1	†	~	1	Ţ	✓
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (vph)	12	147	159	22	113	3	210	178	65	5	92	27
Future Volume (vph)	12	147	159	22	113	3	210	178	65	5	92	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.932			0.997			0.981			0.970	
Flt Protected		0.998			0.992			0.977			0.998	
Satd. Flow (prot)	0	1742	0	0	1849	0	0	1795	0	0	1571	0
Flt Permitted		0.986		-	0.912			0.791			0.986	
Satd. Flow (perm)	0	1722	0	0	1700	0	0	1454	0	0	1552	0
Right Turn on Red			Yes		11.00	Yes			Yes			Yes
Satd. Flow (RTOR)		99			2			22			29	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1346.1			271.7			1953.3			357.4	
Travel Time (s)		96.9			19.6			140.6			25.7	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	2%	1%	0%	2%	0%	1%	1%	4%	0%	23%	0%
Adj. Flow (vph)	13	156	169	23	120	3	223	189	69	5	98	29
Shared Lane Traffic (%)	10	100	100	20	120	U	220	100	00	0	30	20
Lane Group Flow (vph)	0	338	0	0	146	0	0	481	0	0	132	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	Leit	0.0	Ngnt	Leit	0.0	ragnt	Leit	3.6	rtigitt	Leit	3.6	rtigitt
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		4.0			4.0			4.0			4.0	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	100	1.00	100	100	1.00	100	100	1.00	100	100	1.00	100
Number of Detectors	100	2	100	100	2	100	100	2	100	100	2	100
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
• ()	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.0	
Detector 1 Size(m)	CI+Ex	CI+Ex		CI+Ex	CI+Ex			CI+Ex		CI+Ex	CI+Ex	
Detector 1 Type	CI+EX	CI+EX		CI+EX	CI+EX		C I +Ex	CI+EX		CI+EX	CI+EX	
Detector 1 Channel	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel		0.0			0.0			0.0			0.0	
Detector 2 Extend (s)		0.0			0.0		_	0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												

Intersection												
Int Delay, s/veh	4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	LDL	4	LDIX	WDL	4	WUIN	NDL		NUIX	ODL		אושט
			4.4	20		40	00	4	7.5	0	4	0
Traffic Vol, veh/h	4	232	14	39	294	16	22	39	75	6	34	2
Future Vol, veh/h	4	232	14	39	294	16	22	39	75	6	34	2
Conflicting Peds, #/hr	_ 0	_ 0	_ 0	_ 0	_ 0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage,		0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	2	0	0	1	0	0	0	0	0	20	0
Mvmt Flow	4	249	15	42	316	17	24	42	81	6	37	2
Major/Minor M	1ajor1			Major2			Minor1		N	/linor2		
Conflicting Flow All	333	0	0	264	0	0	693	682	257	735	681	325
Stage 1	555	-	U	204	-	-	265	265	231	409	409	323
Stage 2	- :						428	417	-	326	272	-
Critical Hdwy	4.1	-	-	4.1	-		7.1	6.5	6.2	7.1	6.7	6.2
Critical Hdwy Stg 1	4.1	-		4.1	-	-	6.1	5.5	0.2	6.1	5.7	0.2
Critical Howy Stg 1 Critical Howy Stg 2	-	-	-	-	-	-	6.1	5.5		6.1	5.7	-
Follow-up Hdwy	2.2	-	-	2.2	-		3.5	5.5 4	3.3	3.5	4.18	3.3
		-	-		-	-						
Pot Cap-1 Maneuver	1238	-	-	1312	-	-	360	375	787	338 623	351	721
Stage 1	-	-	-	-	-		745	693			566	-
Stage 2	-	-	-	-	-	-	609	595	-	691	653	-
Platoon blocked, %	4000	-	-	4040	-	-	040	0.50	707	007	000	70.1
Mov Cap-1 Maneuver	1238	-	-	1312	-	-	319	359	787	267	336	721
Mov Cap-2 Maneuver	-	-	-	-		-	319	359	-	267	336	-
Stage 1	-	-	-	-	-	-	742	690	-	621	544	-
Stage 2	-	-	-	-	-	-	544	572	-	580	650	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.9			15.2			17.5		
HCM LOS	0.1			0.0			C			C		
							J					
Miner Lone/Major Miner		UDI m4	EDI	EDT	EDD	WDI	MDZ	WDD	CDI w4			
Minor Lane/Major Mvmt		VBLn1	EBL	EBT	EBR	WBL	WBT	WBR :				
Capacity (veh/h)		498	1238	-	-	1312	-	-	332			
HCM Lane V/C Ratio		0.294	0.003	-	-	0.032	-	-	0.136			
HCM Control Delay (s)		15.2	7.9	0	-	7.8	0	-	17.5			
HCM Lane LOS		С	Α	Α	-	Α	Α	-	С			
HCM 95th %tile Q(veh)		1.2	0	-	-	0.1	-	-	0.5			

₩ Ø6

2033 Future Total P.M. 09-26-2024

₹ Ø8

Intersection						
Int Delay, s/veh	2.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	ሻ	↑	7	יוטוו) N	7
Traffic Vol., veh/h	0	145	490	109	122	0
Future Vol, veh/h	0	145	490	109	122	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	0
Veh in Median Storage	, # -	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	158	533	118	133	0
Major/Minor N	Major1		Major2		Minor2	
Conflicting Flow All	651	0	viajuiz	0	750	592
Stage 1	001	-	_	-	592	382
Stage 2					158	_
Critical Hdwy	4.12				6.42	6.22
Critical Hdwy Stg 1	4.12	-	-		5.42	0.22
Critical Hdwy Stg 2	-	-			5.42	_
Follow-up Hdwy	2.218				3.518	3 318
Pot Cap-1 Maneuver	935	-	_		379	506
Stage 1	-	-	-		553	J00
Stage 2	_	_	_	_	871	_
Platoon blocked, %					0,1	
Mov Cap-1 Maneuver	935	-	_	_	379	506
Mov Cap-2 Maneuver	-	-	-		463	-
Stage 1	-	_	_	_	553	_
Stage 2	-		-		871	_
Olugo L					0,1	
Approach	EB		WB		SB	
HCM Control Delay, s	0		0		15.9	
HCM LOS					С	
Minor Lane/Major Mvm	ıt	EBL	EBT	WBT	WBR	SBLn1:
Capacity (veh/h)		935		-	-	463
HCM Lane V/C Ratio		-				0.286
HCM Control Delay (s)		0	-	-	-	15.9
HCM Lane LOS		Ā	-			С
HCM 95th %tile Q(veh)		0	-	-	-	1.2

Intersection						
Int Delay, s/veh	5.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	*	7	1→	TIDIT	002	4
Traffic Vol., veh/h	199	28	337	193	18	156
Future Vol. veh/h	199	28	337	193	18	156
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	Stop.	None	riee	None	riee -	None
Storage Length	0	0	-	NONE -	-	None -
Veh in Median Storage		-	0	-	-	0
	e, # 0		0			0
Grade, %		-		-	-	
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	216	30	366	210	20	170
Major/Minor	Minor1	1	Major1	1	Major2	
Conflicting Flow All	681	471	0	0	576	0
Stage 1	471	_		-		_
Stage 2	210	-	-	-	-	-
Critical Hdwy	6.42	6.22	-		4.12	_
Critical Hdwy Stg 1	5.42	-				
Critical Hdwy Stg 2	5.42	-	_	_		
Follow-up Hdwv	3.518				2.218	
Pot Cap-1 Maneuver	416	593		_	997	_
Stage 1	628	-			-	
Stage 2	825	-				
	020	-	-	-	-	
Platoon blocked, %	407	E00	-	-	007	-
Mov Cap-1 Maneuver		593	-	-	997	-
Mov Cap-2 Maneuver		-	-		-	•
Stage 1	628	-	-	-	-	-
Stage 2	807	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s			0		0.9	
HCM LOS	Z 1.5				0.0	
1.0 200	J					
Minor Lane/Major Mvr	nt	NBT	NBRV	VBLn1V		SBL
Capacity (veh/h)		-	-	407	593	997
HCM Lane V/C Ratio		-	-	0.531	0.051	0.02
HCM Control Delay (s	i)	-	-	23.4	11.4	8.7
HCM Lane LOS		-	-	С	В	Α
HCM 95th %tile Q(veh	1)	-	-	3	0.2	0.1
	•					

Intersection						
Int Delay, s/veh	1.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		1			4
Traffic Vol, veh/h	26	9	155	42	14	99
Future Vol., veh/h	26	9	155	42	14	99
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None		None
Storage Length	0	-				
Veh in Median Storage	e,# 0	-	0	-	-	0
Grade, %	0	-	0		-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	10	168	46	15	108
M = i = =/N Aire = =	M		M-:4		M-:0	
	Minor1		Major1		Major2	
Conflicting Flow All	329	191	0	0	214	0
Stage 1	191	-	-	-	-	-
Stage 2	138	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy		3.318	-	-	2.218	-
Pot Cap-1 Maneuver	665	851	-	-	1356	-
Stage 1	841	-	-	-	-	-
Stage 2	889	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver		851	-		1356	-
Mov Cap-2 Maneuver	657	-	-	-	-	-
Stage 1	841	-	-	-	-	-
Stage 2	878	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s	10.5		0		1	
HCM Control Delay, s	10.5 B		U		1	
HUM LUS	В					
Minor Lane/Major Mvn	nt	NBT	NBR\	WBLn1	SBL	SBT
Capacity (veh/h)		-	-	698	1356	
HCM Lane V/C Ratio		-	-	0.055	0.011	-
HCM Control Delay (s))	-	-	10.5	7.7	0
HCM Lane LOS				В	Α	A
HCM 95th %tile Q(veh	1)	-	-	0.2	0	
	,					

12: U	hthoff	Line	& No	orth S	Site /	Acce	ss 2

Intersection						
Int Delay, s/veh	0.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	WDL	וטיי	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	אטא	ODL	अव
		0		E.C.	^	
Traffic Vol, veh/h	35	0	197	56	0	125
Future Vol, veh/h	35	0	197	56	0	125
Conflicting Peds, #/hr	0	0	0	_ 0	_ 0	_ 0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage	e,# 0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mymt Flow	38	0	214	61	0	136
IVIVIIIL I IOW	50	U	214	UI	U	100
Major/Minor	Minor1	N	Major1		Major2	
Conflicting Flow All	381	245	0	0	275	0
Stage 1	245		-	-		-
Stage 2	136					
Critical Hdwy	6.42	6.22			4.12	
	5.42					_
Critical Hdwy Stg 1		-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518		-		2.218	-
Pot Cap-1 Maneuver	621	794	-	-	1288	-
Stage 1	796	-	-	-	-	-
Stage 2	890	-	-	-	-	-
Platoon blocked, %				-		-
Mov Cap-1 Maneuver	621	794	_	-	1288	-
Mov Cap-1 Maneuver	621	- 134	-		1200	-
Stage 1	796					_
		_	-	-	-	-
Stage 2	890	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s			0		0	
HCM LOS	11.2 B		U		U	
HOW LOS	В					
Minor Lane/Major Mvr	nt	NBT	NBRV	WBLn1	SBL	SBT
Capacity (veh/h)		.,,,,	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	621	1288	-
HCM Lane V/C Ratio		-		0.061	1200	-
	١			11.2		
HCM Control Delay (s)	-			0	-
HCM Lane LOS		-	-	В	Α	-
HCM 95th %tile O(veh	11			0.2	0	_

Intersection				_		
Int Delay, s/veh	1.2					
init Delay, Siven						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		1			4
Traffic Vol, veh/h	35	9	243	84	14	146
Future Vol, veh/h	35	9	243	84	14	146
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-		-		-
Veh in Median Storage	e,# 0	_	0	-	_	0
Grade. %	0		0			0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mymt Flow	38	10	264	91	15	159
WWITH FIOW	30	10	204	ופ	13	108
Major/Minor	Minor1	1	Major1	1	Major2	
Conflicting Flow All	499	310	0	0	355	0
Stage 1	310	-	-	-	-	-
Stage 2	189	-		-	-	-
Critical Hdwy	6.42	6.22		-	4.12	_
Critical Hdwy Stg 1	5.42	-			-	
Critical Hdwy Stg 2	5.42	_	_	_		
Follow-up Hdwy	3.518		-		2.218	
Pot Cap-1 Maneuver	531	730		-	1204	_
	744	730			1204	
Stage 1			-	-	-	-
Stage 2	843	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver		730	-	-	1204	-
Mov Cap-2 Maneuver		-	-	-	-	-
Stage 1	744	-	-	-	-	-
Stage 2	831	-	-	-	-	-
Approach	WB		NB		SB	
			0		0.7	
HCM Control Delay, s			U		0.7	
HCM LOS	В					
Minor Lane/Major Mvr	nt	NBT	NBRV	WBLn1	SBL	SBT
Capacity (veh/h)		-		556	1204	-
HCM Lane V/C Ratio		-	_	0.086		_
HCM Control Delay (s	4			12.1	8	0
HCM Lane LOS	7			12.1 B	A	A
	-1			0.3		
HCM 95th %tile Q(veh	٦)	-	-	0.3	0	-

2035 Future Total A.M. 09-26-2024

1: Burnside Line & Industrial Road/Brodie Drive

	۶	→	•	•	•	•	1	†	~	1	ţ	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	^	7	7	†	7	7	^	7	7	1	
Traffic Volume (vph)	48	30	316	237	5	40	361	289	85	38	252	45
Future Volume (vph)	48	30	316	237	5	40	361	289	85	38	252	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		75.0	100.0		0.0	75.0		65.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.977	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1900	1615	1736	1900	1615	1805	1439	1468	1805	1520	0
Flt Permitted	0.754			0.581			0.350			0.568		
Satd. Flow (perm)	1433	1900	1615	1061	1900	1615	665	1439	1468	1079	1520	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			347			200			200		10	
Link Speed (k/h)		50			60			60			60	
Link Distance (m)		140.4			136.5			65.5			1953.3	
Travel Time (s)		10.1			8.2			3.9			117.2	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	4%	0%	0%	0%	32%	10%	0%	26%	0%
Adj. Flow (vph)	53	33	347	260	5	44	397	318	93	42	277	49
Shared Lane Traffic (%)												
Lane Group Flow (vph)	53	33	347	260	5	44	397	318	93	42	326	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA.	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	

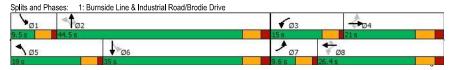
Synchro 11 Report Page 1 Lanes, Volumes, Timings
1: Burnside Line & Industrial Road/Brodie Drive

2035 Future Total A.M.

09-26-2024

	٠	→	*	1	•	•	1	1	1	-	Ţ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	25.0	25.0	5.0	25.0	
Minimum Split (s)	9.5	21.0	21.0	9.5	21.0	21.0	9.5	31.0	31.0	9.5	31.0	
Total Split (s)	9.6	21.0	21.0	15.0	26.4	26.4	19.0	44.5	44.5	9.5	35.0	
Total Split (%)	10.7%	23.3%	23.3%	16.7%	29.3%	29.3%	21.1%	49.4%	49.4%	10.6%	38.9%	
Maximum Green (s)	5.1	15.0	15.0	10.5	20.4	20.4	14.5	38.5	38.5	5.0	29.0	
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	6.0	6.0	4.5	6.0	6.0	4.5	6.0	6.0	4.5	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Min	Min	None	Min	Min	None	Min	Min	None	Min	
Act Effct Green (s)	21.6	15.0	15.0	31.1	23.9	23.9	46.4	39.3	39.3	32.6	26.1	
Actuated g/C Ratio	0.25	0.17	0.17	0.36	0.28	0.28	0.54	0.45	0.45	0.38	0.30	
v/c Ratio	0.14	0.10	0.61	0.57	0.01	0.07	0.73	0.49	0.12	0.09	0.70	
Control Delay	20.4	32.0	9.1	27.0	26.6	0.2	21.0	21.0	0.3	11.3	35.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	20.4	32.0	9.1	27.0	26.6	0.2	21.0	21.0	0.3	11.3	35.3	
LOS	С	С	Α	С	С	Α	С	С	Α	В	D	
Approach Delay		12.2			23.1			18.6			32.6	
Approach LOS		В			С			В			С	
Queue Length 50th (m)	5.9	4.9	0.0	33.0	0.7	0.0	39.1	41.3	0.0	3.3	49.0	
Queue Length 95th (m)	14.5	13.5	24.2	57.7	3.6	0.0	59.8	67.2	0.0	8.0	79.5	
Internal Link Dist (m)		116.4			112.5			41.5			1929.3	
Turn Bay Length (m)	25.0		75.0	100.0			75.0		65.0	40.0		
Base Capacity (vph)	379	329	567	463	524	590	548	675	795	448	516	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.14	0.10	0.61	0.56	0.01	0.07	0.72	0.47	0.12	0.09	0.63	
Intersection Summary												

Intersection Summary Area Type: Other Cycle Length: 90 Actuated Cycle Length: 86.5 Natural Cycle: 75 Control Type: Semi Act-Uncoord Maximum v/c Ratio: 0.73 Intersection Signal Delay: 20.6 Intersection Capacity Utilization 74.4% Analysis Period (min) 15



Lanes, Volumes, Timings 2: Burnside Line & Highway 11 Westbound On-Ramp 2035 Future Total A.M. 09-26-2024

Lanes, Volumes, Timings
3: Burnside Line & Highway 11 Westbound

2035 Future Total A.M. 09-26-2024

	•	*	1	†	ļ	1	
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations				↑	†	7	Τ
Traffic Volume (vph)	0	0	0	1066	440	355	
Future Volume (vph)	0	0	0	1066	440	355	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt						0.850	
Fit Protected							
Satd. Flow (prot)	0	0	0	1638	1810	1214	
Flt Permitted							
Satd. Flow (perm)	0	0	0	1638	1810	1214	
Link Speed (k/h)	50			70	60		
Link Distance (m)	185.9			51.5	174.3		
Travel Time (s)	13.4			2.6	10.5		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Heavy Vehicles (%)	0%	0%	0%	16%	5%	33%	
Adj. Flow (vph)	0	0	0	1122	463	374	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	0	0	1122	463	374	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(m)	0.0			0.0	0.0		
Link Offset(m)	0.0			0.0	0.0		
Crosswalk Width(m)	4.8			4.8	4.8		
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (k/h)	25	15	25			15	
Sign Control	Free			Free	Free		
Intersection Summary							
	ther						
Control Type: Unsignalized							
Intersection Capacity Utilization	on 59.4%			IC	U Level o	of Service I	В
Analysis Period (min) 15							

	1	1	Ť	-	1	ļ
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	7	7	†	1		+
Traffic Volume (vph)	166	267	799	186	0	440
Future Volume (vph)	166	267	799	186	0	440
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	1000	80.0	0.0	1000
Storage Lanes	1	1		1	0.0	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.850	1.00	0.850	1.00	1.00
Flt Protected	0.950	0.000		0.000		
		1500	1620	1500	0	1810
Satd. Flow (prot)	1787	1583	1638	1509	0	1810
Flt Permitted	0.950	4500	4000	4500		4046
Satd. Flow (perm)	1787	1583	1638	1509	0	1810
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		191		196		
Link Speed (k/h)	50		60			60
Link Distance (m)	241.7		160.3			51.5
Travel Time (s)	17.4		9.6			3.1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	2%	16%	7%	0%	5%
Adi, Flow (vph)	175	281	841	196	0	463
Shared Lane Traffic (%)						
Lane Group Flow (vph)	175	281	841	196	0	463
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
		Rigiit		Right	Left	0.0
Median Width(m)	3.6		0.0			
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1		2
Detector Template	Left	Right	Thru	Right		Thru
Leading Detector (m)	2.0	2.0	10.0	2.0		10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0
Detector 1 Size(m)	2.0	2.0	0.6	2.0		0.6
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex
Detector 1 Channel	OITEX	OLICY	Olicx	OIILX		Olicy
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0
\ /						
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			CI+Ex			CI+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Perm	Perm	NA	Perm		NA
Protected Phases			6			2
			0			

Synchro 11 Report Page 3

2035 Future Total A.M. 09-26-2024

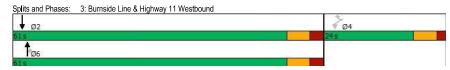
3: Burnside Line & Highway 11 Westbound

	1	*	1	-	1	↓	
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	
Permitted Phases	4	4		6			
Detector Phase	4	4	6	6		2	
Switch Phase							
Minimum Initial (s)	9.7	9.7	20.0	20.0		20.0	
Minimum Split (s)	16.1	16.1	27.3	27.3		27.3	
Total Split (s)	24.0	24.0	61.0	61.0		61.0	
Total Split (%)	28.2%	28.2%	71.8%	71.8%		71.8%	
Maximum Green (s)	17.6	17.6	53.7	53.7		53.7	
Yellow Time (s)	4.5	4.5	4.5	4.5		4.5	
All-Red Time (s)	1.9	1.9	2.8	2.8		2.8	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	
Total Lost Time (s)	6.4	6.4	7.3	7.3		7.3	
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.2	3.2		3.2	
Recall Mode	None	None	None	None		None	
Act Effct Green (s)	12.9	12.9	39.0	39.0		39.0	
Actuated g/C Ratio	0.19	0.19	0.59	0.59		0.59	
v/c Ratio	0.51	0.61	0.87	0.20		0.44	
Control Delay	32.7	16.5	23.2	1.6		8.8	
Queue Delay	0.0	0.0	0.0	0.0		0.0	
Total Delay	32.7	16.5	23.2	1.6		8.8	
LOS	С	В	С	Α		Α	
Approach Delay	22.8		19.1			8.8	
Approach LOS	С		В			Α	
Queue Length 50th (m)	20.5	10.1	76.2	0.0		27.4	
Queue Length 95th (m)	46.3	37.8	#159.4	7.0		53.6	
Internal Link Dist (m)	217.7		136.3			27.5	
Turn Bay Length (m)				80.0			
Base Capacity (vph)	500	581	1345	1275		1487	
Starvation Cap Reductn	0	0	0	0		0	
Spillback Cap Reductn	0	0	0	0		0	
Storage Cap Reductn	0	0	0	0		0	
Reduced v/c Ratio	0.35	0.48	0.63	0.15		0.31	
Intersection Summary							
Area Type:	Other						
Cycle Length: 85							
Actuated Cycle Length: 66	.4						
Natural Cycle: 60							
Control Type: Semi Act-Un	coord						
Maximum v/c Ratio: 0.87							
Intersection Signal Delay:	17.5			ln:	tersection	LOS: B	
Intersection Capacity Utiliz	ation 70.0%			IC	U Level o	of Service	С
Analysis Period (min) 15							

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Synchro 11 Report Page 5 Lanes, Volumes, Timings 3: Burnside Line & Highway 11 Westbound 2035 Future Total A.M. 09-26-2024



	•	+	1	†	ļ	4
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	*	7	*		<u> </u>	7
Traffic Volume (vph)	310	130	107	672	537	69
Future Volume (vph)	310	130	107	672	537	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	55.0			40.0
Storage Lanes	1	1	1			1
Taper Length (m)	7.5		7.5			•
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1327	1524	1787	1827	1845	1442
Flt Permitted	0.950	.027	0.231	.027		
Satd. Flow (perm)	1327	1524	435	1827	1845	1442
Right Turn on Red	1021	Yes		1021	10.0	Yes
Satd. Flow (RTOR)		137				51
Link Speed (k/h)	50	101		60	60	01
Link Distance (m)	214.0			160.8	176.6	
Travel Time (s)	15.4			9.6	10.6	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	36%	6%	1%	4%	3%	12%
Adi, Flow (vph)	326	137	113	707	565	73
Shared Lane Traffic (%)	320	13/	113	707	202	13
Lane Group Flow (vph)	326	137	113	707	565	73
Enter Blocked Intersection		No	No		No	No
	No			No		
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane	4.0-	4.0-	4.0-	4.0-	4.0-	4.0-
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	pm+pt	NA	NA	Perm
Protected Phases	1 01111	1 01111	1	6	2	1 01111
1 TOTOGOGO I HASOS				0		

Lanes, Volumes, Timings 4: West Street North & Highway 11 Eastbound 2035 Future Total A.M. 09-26-2024



Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road

2035 Future Total A.M. 09-26-2024

	•	-	*	1	+	*	1	†	1	1	Ţ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	↑	7	*	1		77	^	7	*	^	7
Traffic Volume (vph)	135	186	163	360	294	162	182	457	450	112	743	213
Future Volume (vph)	135	186	163	360	294	162	182	457	450	112	743	213
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	115.0		0.0	100.0		120.0	110.0		50.0
Storage Lanes	1		1	1		0	2		1	1		1
Taper Length (m)	70.0			65.0		-	80.0		•	100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.850		0.947	1.00			0.850	1100		0.850
Flt Protected	0.950		0.000	0.950	0.011		0.950		0.000	0.950		0.000
Satd. Flow (prot)	1787	1881	1583	1787	1765	0	3467	3574	1568	1736	3471	1568
Flt Permitted	0.279	1001	1000	0.505	1700		0.950	0014	1000	0.429	0471	1000
Satd. Flow (perm)	525	1881	1583	950	1765	0	3467	3574	1568	784	3471	1568
Right Turn on Red	525	1001	Yes	330	1700	Yes	3407	3317	Yes	707	3771	Yes
Satd. Flow (RTOR)			168		27	163			464			187
Link Speed (k/h)		60	100		60			70	404		70	107
Link Distance (m)		186.6			853.6			529.0			469.5	
Travel Time (s)		11.2			51.2			27.2			24.1	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
		1%	2%		3%			1%	3%	4%	4%	3%
Heavy Vehicles (%)	1% 139	192	168	1%	303	0%	1% 188	471	464	115	766	220
Adj. Flow (vph)	139	192	100	371	303	167	100	4/1	404	115	/00	220
Shared Lane Traffic (%)	400	400	400	074	470	0	188	474	464	445	700	220
Lane Group Flow (vph)	139	192	168	371				471		115	766	
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	100		15	25		15	25		100
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
	·				,		<u> </u>	•				

Synchro 11 Report Page 9

Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road

2035 Future Total A.M. 09-26-2024

	•	-	*	1	←	•	1	†	1	1	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2		2	6					8	4		4
Detector Phase	5	2	2	1	6		3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0		7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	12.0	27.2	27.2	12.0	33.2		11.5	21.0	21.0	11.5	22.5	22.5
Total Split (s)	12.0	39.0	39.0	17.0	44.0		12.0	42.0	42.0	12.0	42.0	42.0
Total Split (%)	10.9%	35.5%	35.5%	15.5%	40.0%		10.9%	38.2%	38.2%	10.9%	38.2%	38.2%
Maximum Green (s)	7.0	31.8	31.8	12.0	36.8		8.0	34.0	34.0	8.0	34.0	34.0
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	2.0	2.2	2.2	2.0	2.2		1.0	3.5	3.5	1.0	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.2	7.2	5.0	7.2		4.0	8.0	8.0	4.0	8.0	8.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.6	3.6	3.0	3.6		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	None	None	None	None	None
Walk Time (s)					7.0			7.0	7.0			
Flash Dont Walk (s)					19.0			6.0	6.0			
Pedestrian Calls (#/hr)					0			0	0			
Act Effct Green (s)	35.0	25.7	25.7	45.1	30.7		8.1	27.3	27.3	39.0	27.1	27.1
Actuated g/C Ratio	0.36	0.26	0.26	0.46	0.31		0.08	0.28	0.28	0.40	0.28	0.28
v/c Ratio	0.50	0.39	0.31	0.68	0.82		0.66	0.47	0.60	0.29	0.79	0.39
Control Delay	23.9	32.7	6.3	26.7	42.4		57.6	31.1	6.4	19.0	39.7	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.9	32.7	6.3	26.7	42.4		57.6	31.1	6.4	19.0	39.7	8.6
LOS	С	С	Α	С	D		Е	С	Α	В	D	Α
Approach Delay		21.4			35.5			25.3			31.3	
Approach LOS		С			D			С			С	
Queue Length 50th (m)	15.9	31.7	0.0	49.3	82.2		19.2	40.6	0.0	13.2	73.6	4.8
Queue Length 95th (m)	30.3	55.0	15.9	81.1	131.5		#38.6	60.0	24.2	26.2	103.0	23.8
Internal Link Dist (m)		162.6			829.6			505.0			445.5	
Turn Bay Length (m)	50.0			115.0			100.0		120.0	110.0		50.0
Base Capacity (vph)	280	621	635	543	691		288	1262	854	394	1226	674
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.31	0.26	0.68	0.68		0.65	0.37	0.54	0.29	0.62	0.33

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 97.5
Natural Cycle: 90
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.82

Intersection Signal Delay: 29.0 Intersection LOS: C Intersection Capacity Utilization 83.1% ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road 2035 Future Total A.M. 09-26-2024

Queue shown is maximum after two cycles.



Synchro 11 Report Synchro 11 Report Page 12 Page 11

Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol, veh/h	315	4	2	0	10	0	0	0	0	0	0	296
Future Vol, veh/h	315	4	2	0	10	0	0	0	0	0	0	296
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage	e,# -	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	32	67	0	0	30	100	50	0	100	0	50	30
Mvmt Flow	342	4	2	0	11	0	0	0	0	0	0	322
Major/Minor	Minor2		- 1	Minor1		P	Major1		P	Major2		
Conflicting Flow All	167	161	161	164	322	0	322	0	0	0	0	0
Stage 1	161	161		0	0	-	-	-	-	-	-	
Stage 2	6	0		164	322	-						
Critical Hdwy	7.42	7.17	6.2	7.1	6.8	7.2	4.6	-	-	4.1	-	-
Critical Hdwy Stg 1	6.42	6.17	-	6.1	5.8	-	-	-	-	-		
Critical Hdwy Stg 2	6.42	6.17		6.1	5.8	-	-	_	-	-	-	-
Follow-up Hdwy	3.788	4.603	3.3	3.5	4.27	4.2	2.65	-	-	2.2	-	-
Pot Cap-1 Maneuver	735	628	889	805	552	-	1011	-		-	-	-
Stage 1	775	657	-	-	-	-	-	-	-	-		
Stage 2	943	-	-	843	604	-	_	-	-	-	-	-
Platoon blocked, %									-		-	-
Mov Cap-1 Maneuver	-	628	889	799	552	-	1011	-	-	-	-	-
Mov Cap-2 Maneuver	-	628	-	799	552	-	-	-	-	-	-	-
Stage 1	775	657	-	-	-	-	-	-	-	-	-	-
Stage 2	943	-		835	604	-	-	-	-	-	-	
, v												
Approach	EB			WB			NB			SB		
HCM Control Delay, s							0			0		
HCM LOS				-								
Minor Lane/Major Mvm	nt	NBL	NBT	NBR I	EBLn1\	VBLn1	SBL	SBT	SBR			
Capacity (veh/h)		1011	-	-	_	-	_					
HCM Lane V/C Ratio		-										
HCM Control Delay (s)		0		-	_	-	0	_	-			
HCM Lane LOS		A					Ā					
HCM 95th %tile Q(veh)	0	-	-	-	-	-	-	-			
	,	0										

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol. veh/h	0	170	8	37	136	4	4	39	39	7	24	2
Future Vol. veh/h	0	170	8	37	136	4	4	39	39	7	24	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-			-				-	-			
Veh in Median Storage	,# -	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0		-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	2	0	0	1	0	0	25	3	0	11	0
Mvmt Flow	0	177	8	39	142	4	4	41	41	7	25	2
Major/Minor N	Major1			Major2			Minor1		- 1	Minor2		
Conflicting Flow All	146	0	0	185	0	0	417	405	181	444	407	144
Stage 1	_	-	-	-	-	-	181	181	-	222	222	-
Stage 2	-	-	-	-	-	-	236	224		222	185	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.75	6.23	7.1	6.61	6.2
Critical Hdwy Stg 1	-	-	-	-	-		6.1	5.75	-	6.1	5.61	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.75	-	6.1	5.61	-
Follow-up Hdwy	2.2		-	2.2	-		3.5	4.225	3.327	3.5	4.099	3.3
Pot Cap-1 Maneuver	1448	-	-	1402	-	-	550	501	859	528	520	909
Stage 1	-	-	-	-	-	-	825	708	-	785	703	-
Stage 2	-	-	-	-	-	-	772	678	-	785	730	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1448	-	-	1402	-	-	516	486	859	460	504	909
Mov Cap-2 Maneuver	-		-	-	-		516	486	-	460	504	
Stage 1	-	-	-	-	-	-	825	708	-	785	682	-
Stage 2	-	-	-	-	-	-	720	658	-	705	730	-
·												
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			1.6			11.8			12.6		
HCM LOS							В			В		
Minor Lane/Major Mvm	t I	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)		615	1448	-	-	1402	-	-	507			
HCM Lane V/C Ratio		0.139	-		-	0.027	-	-	0.068			
HCM Control Delay (s)		11.8	0	-	-	7.6	0	-	12.6			
HCM Lane LOS		В	Α	-	-	Α	Α	-	В			
HCM 95th %tile Q(veh)		0.5	0	-	-	0.1	-	-	0.2			

	•	→	•	1	•	•	1	†	-	1	ļ	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	23.0	23.0		23.0	23.0		32.0	32.0		32.0	32.0	
Total Split (%)	41.8%	41.8%		41.8%	41.8%		58.2%	58.2%		58.2%	58.2%	
Maximum Green (s)	18.5	18.5		18.5	18.5		27.5	27.5		27.5	27.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		8.9			8.9			30.3			30.3	
Actuated g/C Ratio		0.18			0.18			0.63			0.63	
v/c Ratio		0.57			0.30			0.75			0.25	
Control Delay		13.3			17.7			17.4			5.5	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		13.3			17.7			17.4			5.5	
LOS		В			В			В			A	
Approach Delay		13.3			17.7			17.4			5.5	
Approach LOS		В			В			В			A	
Queue Length 50th (m)		7.5			6.5			25.7			5.5	
Queue Length 95th (m)		22.3			15.5			#97.3			17.3	
Internal Link Dist (m)		1322.1			247.7			1929.3			333.4	
Turn Bay Length (m)								102010				
Base Capacity (vph)		735			638			738			810	
Starvation Cap Reductn		0			0			0			0.0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.33			0.14			0.75			0.25	
Intersection Summary												
Area Type:	Other											
Cycle Length: 55												
Actuated Cycle Length: 48.3	3											
Natural Cycle: 60												
Control Type: Semi Act-Unc	oord											
Maximum v/c Ratio: 0.75												
Intersection Signal Delay: 14	4.3			Ir	tersection	LOS: B						
Intersection Capacity Utiliza				IC	CU Level	of Service	В					
Analysis Period (min) 15												
# 95th percentile volume e	exceeds ca	pacity, qu	eue mav	be longe	ſ.							
Queue shown is maximu				3-								

Lanes, Volumes, Timings 8: Burnside Line & Division Road W 2035 Future Total A.M. 09-26-2024 HCM 2010 TWSC 9: Industrial Road & Hurlwood Lane 2035 Future Total A.M. 09-26-2024

Splits and Phases:	8: Burnside Line & Division Road W		
₫ ø2		4 04	
32 s		23 s	
Ø6		▼ Ø8	
32 s		23 s	

Interception							
Intersection	0.7						
Int Delay, s/veh	3.7						
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	*	†	1		7	7	
Traffic Vol, veh/h	0	174	330	81	187	0	
Future Vol, veh/h	0	174	330	81	187	0	
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Free	Free	Free	Free	Stop	Stop	
RT Channelized	-	None	-	None	-	None	
Storage Length	0	-	-	-	0	0	
Veh in Median Storage	,# -	0	0	-	0	-	
Grade, %	-	0	0	-	0	-	
Peak Hour Factor	92	92	92	92	92	92	
Heavy Vehicles, %	2	2	2	2	2	2	
Mvmt Flow	0	189	359	88	203	0	
Major/Minor	Major4		Acior?		/linor?		
	Major1		Major2		Minor2	400	
Conflicting Flow All	447	0	-	0	592	403	
Stage 1	-		-		403		
Stage 2	4.12	-	-	-	189 6.42	6.22	
Critical Hdwy			-		5.42	6.22 <u>-</u>	
Critical Hdwy Stg 1	-	-	-	-	5.42	-	
Critical Hdwy Stg 2	2.218	-	-	-	3.518	2 240	
Follow-up Hdwy	1113	-	-		469	647	
Pot Cap-1 Maneuver	1113	-	-	-	675	047	
Stage 1 Stage 2	-	-	-	-	843	-	
Platoon blocked, %	-		-	-	843	-	
Mov Cap-1 Maneuver	1113	-		-	469	647	
		_	_				
Mov Cap-2 Maneuver	-	-	-	-	549	-	
Stage 1			-	-	675 843		
Stage 2	-	-	-	-	843	-	
Approach	EB		WB		SB		
HCM Control Delay, s	0		0		15.4		
HCM LOS					С		
Min 1 /M - i 14		EDI	CDT	MOT	WDD	ODI 4	ODI :- 0
Minor Lane/Major Mvm	IL	EBL	EBT	WBT		SBLn1	
Capacity (veh/h)		1113	-	-	-	549	-
HCM Lane V/C Ratio		-	-	-	-	0.37	-
HCM Control Delay (s)		0	-	-	-	15.4	0
HCM Lane LOS		Α	-	-	-	С	Α
HCM 95th %tile Q(veh))	0	-	-	-	1.7	-

Intersection						
Intersection	4.2					
Int Delay, s/veh	4.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	7	7	ĵ.			ર્લ
Traffic Vol, veh/h	159	12	152	189	34	167
Future Vol, veh/h	159	12	152	189	34	167
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized		None	-	None	-	None
Storage Length	0	0				-
Veh in Median Storage	e. # 0		0	-	-	0
Grade. %	0	-	0			0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mymt Flow	173	13	165	205	37	182
WWITH	173	13	100	200	31	102
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	524	268	0	0	370	0
Stage 1	268	-	-	-	-	-
Stage 2	256	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-		-		-
Critical Hdwy Stg 2	5.42	_	-	-	_	-
Follow-up Hdwy	3.518	3 318			2.218	-
Pot Cap-1 Maneuver	514	771		-		
Stage 1	777	- '''			1100	-
Stage 2	787	-				
	101	-	-	-	-	-
Platoon blocked, %	100		-	-	4400	-
Mov Cap-1 Maneuver	496	771	-	-	1189	-
Mov Cap-2 Maneuver	496	-	-	-	-	-
Stage 1	777	-	-	-	-	-
Stage 2	759	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s	15.7		0		1.4	
HCM LOS	13.7 C		U		1.4	
HCW LOS	U					
Minor Lane/Major Mvn	nt	NBT	NBR\	WBLn1V	VBLn2	SBL
Capacity (veh/h)		-	-	496	771	1189
HCM Lane V/C Ratio		-	-	0.348	0.017	0.031
HCM Control Delay (s)		-	-	16.1	9.8	8.1
HCM Lane LOS		-		С	A	A
HCM 95th %tile Q(veh	1	-		1.5	0.1	0.1
TOTAL OUT TOTAL SE(VEI)	1			1.0	0.1	0.1

Intersection						
Int Delay, s/veh	2.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		ĵ.			र्स
Traffic Vol., veh/h	34	17	91	12	6	101
Future Vol. veh/h	34	17	91	12	6	101
Conflicting Peds. #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None		None
Storage Length	0	-	-	-		-
Veh in Median Storage	e. # 0	-	0	-	-	0
Grade, %	0	-	0	-		0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mymt Flow	37	18	99	13	7	110
	01	10	- 00	10		110
	Minor1		Major1		Major2	
Conflicting Flow All	230	106	0	0	112	0
Stage 1	106	-	-	-	-	-
Stage 2	124	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	758	948	-	-	1478	-
Stage 1	918	-	-	-	-	-
Stage 2	902	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	754	948	-	-	1478	-
Mov Cap-2 Maneuver	754	-	-	-	-	-
Stage 1	918	-	-	-	-	-
Stage 2	897	-	-			
A	\A/D		ND		0.0	
Approach	WB		NB		SB	
HCM Control Delay, s	9.8		0		0.4	
HCM LOS	Α					
Minor Lane/Major Mvn	nt	NBT	NBR\	NBLn1	SBL	SBT
Capacity (veh/h)		-	-	809	1478	-
HCM Lane V/C Ratio		-		0.069		-
HCM Control Delay (s)		-	-	9.8	7.4	0
HCM Lane LOS			-	9.0 A	7.4 A	A
HCM 95th %tile Q(veh	1	_	_	0.2	0	
HOW SOUL YOUR CALACT	1			0.2	0	

Intersection						
Int Delay, s/veh	1.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	¥	,,,,,,	1	,,,,,,		र्स
Traffic Vol, veh/h	34	0	103	12	0	135
Future Vol. veh/h	34	0	103	12	0	135
Conflicting Peds. #/hr		0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	- Clop		-	None	-	
Storage Length	0	-		-		-
Veh in Median Storag		_	0		_	0
Grade. %	0	-	0			0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mymt Flow	37	0	112	13	0	147
WWIII FIOW	31	U	112	13	U	147
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	266	119	0	0	125	0
Stage 1	119	-	-	-	-	-
Stage 2	147	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	
Pot Cap-1 Maneuver	723	933	-	-	1462	-
Stage 1	906		-		-	
Stage 2	880	_	_	_	-	_
Platoon blocked, %	000					-
Mov Cap-1 Maneuver	r 723	933	-		1462	_
Mov Cap-1 Maneuver		-	-		1402	
Stage 1	906	-	_			
Stage 2	880	-				
Staye 2	000	-				
Approach	WB		NB		SB	
HCM Control Delay, s	10.2		0		0	
HCM LOS	В					
Minor Lane/Major Mvi	mt	NBT	NRRV	VBLn1	SBL	SBT
	me	IND I	NDIN	723	1462	301
Capacity (veh/h)		_		0.051		-
HCM Careta Dalay (- \	-			-	
HCM Control Delay (s	5)	-	-	10.2	0	-
HCM Lane LOS	L-V	-	-	В	A	-
HCM 95th %tile Q(vel	n)	-	-	0.2	0	-

Intersection						
Int Delay, s/veh	2.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	WDL	אפא	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	INDIC	ODL	अव
Traffic Vol., veh/h	17 85	17	97	51	6	163
Future Vol. veh/h	85	17	97	51	6	163
Conflicting Peds, #/hr	00	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage		-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	92	18	105	55	7	177
Majay/Minay	Minord		Aniord		Ounian)	
	Minor1		Major1		Major2	
Conflicting Flow All	324	133	0	0	160	0
Stage 1	133	-	-	-	-	-
Stage 2	191	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy		3.318	-	-	2.218	-
Pot Cap-1 Maneuver	670	916	-	-	1419	-
Stage 1	893	-	-	-	-	-
Stage 2	841	-	-	-	-	-
Platoon blocked, %				-		
Mov Cap-1 Maneuver	667	916	-		1419	-
Mov Cap-2 Maneuver	667	-				
Stage 1	893	-		_		-
Stage 2	837					
Staye 2	007					
Approach	WB		NB		SB	
HCM Control Delay, s	11.1		0		0.3	
HCM LOS	В					
					00/	
Minor Lane/Major Mvn	nt	NBT	NBRV	WBLn1	SBL	SBT
Capacity (veh/h)		-	-	699	1419	-
HCM Lane V/C Ratio		-	-	0.159	0.005	-
HCM Control Delay (s)	-	-	11.1	7.5	0
HCM Lane LOS		-	-	В	Α	Α
HCM 95th %tile Q(veh)		-	0.6	0	-
0011 70110 0(1011	7			0.0	0	

	•	-	*	1	•	*	1	†	-	1	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	^	7	7	^	7	7	^	7	7	1	
Traffic Volume (vph)	73	40	400	411	2	104	316	308	94	44	243	23
Future Volume (vph)	73	40	400	411	2	104	316	308	94	44	243	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		75.0	100.0		0.0	75.0		65.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1900	1568	1770	1900	1615	1805	1863	1429	1805	1747	0
Flt Permitted	0.757			0.568			0.392			0.562		
Satd. Flow (perm)	1438	1900	1568	1058	1900	1615	745	1863	1429	1068	1747	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			404			200			200		5	
Link Speed (k/h)		50			60			60			60	
Link Distance (m)		140.4			136.5			65.5			1953.3	
Travel Time (s)		10.1			8.2			3.9			117.2	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	3%	2%	0%	0%	0%	2%	13%	0%	8%	0%
Adj. Flow (vph)	78	43	426	437	2	111	336	328	100	47	259	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	78	43	426	437	2	111	336	328	100	47	283	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	

Lanes, Volumes, Timings 1: Burnside Line & Industrial Road/Brodie Drive

	•	→	*	1	+	•	1	†	1	1	↓	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	25.0	25.0	5.0	25.0	
Minimum Split (s)	9.5	21.0	21.0	9.5	21.0	21.0	9.5	31.0	31.0	9.5	31.0	
Total Split (s)	10.4	21.0	21.0	21.5	32.1	32.1	15.0	38.0	38.0	9.5	32.5	
Total Split (%)	11.6%	23.3%	23.3%	23.9%	35.7%	35.7%	16.7%	42.2%	42.2%	10.6%	36.1%	
Maximum Green (s)	5.9	15.0	15.0	17.0	26.1	26.1	10.5	32.0	32.0	5.0	26.5	
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	6.0	6.0	4.5	6.0	6.0	4.5	6.0	6.0	4.5	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Min	Min	None	Min	Min	None	Min	Min	None	Min	
Act Effct Green (s)	22.3	15.0	15.0	37.6	27.8	27.8	41.7	34.5	34.5	31.7	25.2	
Actuated g/C Ratio	0.25	0.17	0.17	0.43	0.31	0.31	0.47	0.39	0.39	0.36	0.29	
v/c Ratio	0.20	0.13	0.71	0.75	0.00	0.17	0.70	0.45	0.15	0.11	0.56	
Control Delay	18.2	32.8	11.9	29.1	22.5	0.6	25.0	23.7	0.5	14.1	31.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	18.2	32.8	11.9	29.1	22.5	0.6	25.0	23.7	0.5	14.1	31.6	
LOS	В	С	В	С	С	Α	С	С	Α	В	С	
Approach Delay		14.5			23.3			21.2			29.1	
Approach LOS		В			С			С			С	
Queue Length 50th (m)	8.1	6.6	3.4	57.4	0.3	0.0	37.7	46.0	0.0	4.4	42.4	
Queue Length 95th (m)	16.9	16.1	33.3	#91.0	2.0	0.0	58.6	71.6	0.0	10.4	68.3	
Internal Link Dist (m)		116.4			112.5			41.5			1929.3	
Turn Bay Length (m)	25.0		75.0	100.0			75.0		65.0	40.0		
Base Capacity (vph)	389	323	602	587	598	645	478	743	690	425	527	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.20	0.13	0.71	0.74	0.00	0.17	0.70	0.44	0.14	0.11	0.54	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 88.3
Natural Cycle: 80
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0,75
Intersection Signal Delay: 21.2

Intersection LOS: C Intersection Capacity Utilization 82.1% ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Lanes, Volumes, Timings
1: Burnside Line & Industrial Road/Brodie Drive

2035 Future Total P.M.

2: Burnside Line & Highway 11 Westbound On-Ramp

Lanes, Volumes, Timings

2035 Future Total P.M. 09-06-2024

09-06-2024

 Splits and Phases:
 1: Burnside Line & Industrial Road/Brodie Drive

 Ø1
 Ø2
 Ø3
 Ø4

 9.5s
 33 s
 21.5s
 21 s

 Ø5
 Ø6
 Ø7
 Ø8

	A	2		•	1	,
	•	*	1	T	+	4
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				^	↑	7
Traffic Volume (vph)	0	0	0	1057	655	373
Future Volume (vph)	0	0	0	1057	655	373
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	1863	1863	1509
Flt Permitted						
Satd. Flow (perm)	0	0	0	1863	1863	1509
Link Speed (k/h)	50			50	50	
Link Distance (m)	185.9			51.5	174.3	
Travel Time (s)	13.4			3.7	12.5	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	0%	2%	2%	7%
Adj. Flow (vph)	0	0	0	1079	668	381
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1079	668	381
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	100	100	100			100
Sign Control	Free			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilizat	ion 59.0%			IC	U Level	of Service E
Analysis Period (min) 15						

Synchro 11 Report
Page 3
Synchro 11 Report
Page 4

Lanes, Volumes, Timings

2035 Future Total P.M. 09-06-2024

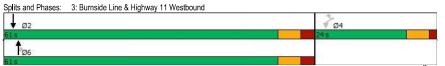
3: Burnside Line & Highway 11 Westbound

	1		†	-	-	ļ
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	*	7	†	7		
Traffic Volume (vph)	209	226	832	296	0	655
Future Volume (vph)	209	226	832	296	0	655
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	1900	80.0	0.0	1300
Storage Lanes	1	1		1	0.0	
•		l I		- 1		
Taper Length (m)	7.5	4.00	4.00	4.00	7.5	4.00
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950					
Satd. Flow (prot)	1752	1599	1863	1615	0	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1752	1599	1863	1615	0	1863
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		187		302		
Link Speed (k/h)	50		60			60
Link Distance (m)	241.7		160.3			51.5
Travel Time (s)	17.4		9.6			3.1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	3%	1%	2%	0.96	0.96	2%
Adj. Flow (vph)	213	231	849	302	0%	668
	213	231	049	302	U	000
Shared Lane Traffic (%)	040	004	0.40	000	_	000
Lane Group Flow (vph)	213	231	849	302	0	668
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1		2
Detector Template	Left	Right	Thru	Right		Thru
Leading Detector (m)	2.0	2.0	10.0	2.0		10.0
	0.0	0.0	0.0	0.0		0.0
Trailing Detector (m)				***		
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0
Detector 1 Size(m)	2.0	2.0	0.6	2.0		0.6
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	C I +Ex		Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			CI+Ex			CI+Ex
Detector 2 Channel			J/			J/
Detector 2 Extend (s)			0.0			0.0
	Perm	Perm	NA	Perm		NA
Turn Type	renii	reiili		reiiii		
Protected Phases			6			2

Synchro 11 Report Page 5 Lanes, Volumes, Timings
3: Burnside Line & Highway 11 Westbound

2035 Future Total P.M. 09-06-2024

	1	*	1	-	-	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Permitted Phases	4	4		6		
Detector Phase	4	4	6	6		2
Switch Phase						
Minimum Initial (s)	10.0	10.0	20.0	20.0		20.0
Minimum Split (s)	16.1	16.1	27.3	27.3		27.3
Total Split (s)	24.0	24.0	61.0	61.0		61.0
Total Split (%)	28.2%	28.2%	71.8%	71.8%		71.8%
Maximum Green (s)	17.9	17.9	53.7	53.7		53.7
Yellow Time (s)	4.5	4.5	4.5	4.5		4.5
All-Red Time (s)	1.6	1.6	2.8	2.8		2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	6.1	6.1	7.3	7.3		7.3
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.2	3.2		3.2
Recall Mode	None	None	None	None		None
Act Effct Green (s)	13.4	13.4	35.0	35.0		35.0
Actuated g/C Ratio	0.21	0.21	0.56	0.56		0.56
v/c Ratio	0.57	0.47	0.82	0.29		0.64
Control Delay	31.8	11.0	18.3	1.6		12.4
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	31.8	11.0	18.3	1.6		12.4
LOS	С	В	В	Α		В
Approach Delay	20.9		14.0			12.4
Approach LOS	C		В			В
Queue Length 50th (m)	22.7	4.2	70.1	0.0		46.9
Queue Length 95th (m)	55.6	26.1	133.9	8.4		88.2
Internal Link Dist (m)	217.7		136.3			27.5
Turn Bay Length (m)				80.0		
Base Capacity (vph)	530	614	1579	1415		1579
Starvation Cap Reductn	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0		0
Storage Cap Reductn	0	0	0	0		0
Reduced v/c Ratio	0.40	0.38	0.54	0.21		0.42
Intersection Summary						
Area Type:	Other					
Cycle Length: 85						
Actuated Cycle Length: 62.	7					
Natural Cycle: 60						
Control Type: Semi Act-Un	coord					
Maximum v/c Ratio: 0.82						
Intersection Signal Delay: 1	4.9			In	ersection	LOS: B
Intersection Capacity Utiliza						f Service (



	•	1	1	†	↓	1
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	*	7	NO.		<u> </u>	7
Traffic Volume (vph)	235	170	247	891	722	145
Future Volume (vph)	235	170	247	891	722	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	55.0	1000	1000	40.0
Storage Lanes	1	1	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt Factor	1.00	0.850	1.00	1.00	1.00	0.850
Fit Protected	0.950	0.000	0.950			0.000
		1500		1004	1000	1500
Satd. Flow (prot)	1736	1583	1787	1881	1863	1583
Flt Permitted	0.950	4500	0.118	4001	1000	4500
Satd. Flow (perm)	1736	1583	222	1881	1863	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		179				78
Link Speed (k/h)	50			60	60	
Link Distance (m)	214.0			160.8	176.6	
Travel Time (s)	15.4			9.6	10.6	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	2%	1%	1%	2%	2%
Adj. Flow (vph)	247	179	260	938	760	153
Shared Lane Traffic (%)		110	200	000	, , ,	100
Lane Group Flow (vph)	247	179	260	938	760	153
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
	3.6	Rigiii	Leit	3.6	3.6	Right
Median Width(m)						
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel	Olicx	OIILX	OLICY	Olicx	Olicx	Olicx
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
\ /						
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	pm+pt	NA	NA	Perm
Protected Phases			1	6	2	

	•	*	1	†	↓	1
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	8	8	6			2
Detector Phase	8	8	1	6	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	7.0	20.0	20.0	20.0
Minimum Split (s)	18.0	18.0	10.0	41.0	41.0	41.0
Total Split (s)	25.0	25.0	24.0	70.0	46.0	46.0
Total Split (%)	26.3%	26.3%	25.3%	73.7%	48.4%	48.4%
Maximum Green (s)	18.8	18.8	21.0	62.9	38.9	38.9
Yellow Time (s)	4.5	4.5	3.0	4.5	4.5	4.5
All-Red Time (s)	1.7	1.7	0.0	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	3.0	7.1	7.1	7.1
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.2	3.2	3.2
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	16.0	16.0	58.8	54.7	38.8	38.8
Actuated g/C Ratio	0.19	0.19	0.70	0.65	0.46	0.46
v/c Ratio	0.75	0.40	0.66	0.77	0.88	0.20
Control Delay	48.5	8.1	20.2	15.9	36.6	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.5	8.1	20.2	15.9	36.6	9.0
LOS	D	Α	С	В	D	A
Approach Delay	31.6			16.8	32.0	
Approach LOS	C			В.	C	
Queue Length 50th (m)	39.7	0.0	18.7	103.5	116.1	7.1
Queue Length 95th (m)	#78.2	17.4	44.6	161.8	#222.0	21.3
Internal Link Dist (m)	190.0	17.01	,	136.8	152.6	
Turn Bay Length (m)	100.0		55.0	100.0	102.0	40.0
Base Capacity (vph)	392	496	550	1422	873	783
Starvation Cap Reductn	0	0	0	0	0/0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.36	0.47	0.66	0.87	0.20
	0.00	0.00	0.41	0.00	0.07	0.20
Intersection Summary						
Area Type:	Other					
Cycle Length: 95						
Actuated Cycle Length: 84	.1					
Natural Cycle: 70						
Control Type: Semi Act-Un	coord					
Maximum v/c Ratio: 0.88						
Intersection Signal Delay:					ntersectio	
Intersection Capacity Utiliz	ation 79.1%			ŀ	CU Level	of Service
Analysis Period (min) 15						
# 95th percentile volume			leue may	be longe	er.	
Queue shown is maxim	um after two	cycles.				

Synchro 11 Report Page 7

Lanes, Volumes, Timings
4: West Street North & Highway 11 Eastbound

Splits and Phases: 4: West Street North & Highway 11 Eastbound

↑øı

₫ ø6 Ø2

2035 Future Total P.M. 09-06-2024

Ø8

Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road

2035 Future Total P.M. 09-06-2024

	۶	\rightarrow	*	1	•	•	1	Ť	1	1	Ţ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	↑	7	*	1		14	ተተ	7	*	^	7
Traffic Volume (vph)	272	307	285	499	290	221	272	872	591	111	722	191
Future Volume (vph)	272	307	285	499	290	221	272	872	591	111	722	191
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	115.0		0.0	100.0		120.0	110.0		50.0
Storage Lanes	1		1	1		0	2		1	1		1
Taper Length (m)	70.0			65.0			80.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98	1.00								
Frt			0.850		0.935				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1900	1599	1787	1766	0	3502	3539	1599	1805	3505	1583
Flt Permitted	0.167			0.161			0.950			0.129		
Satd. Flow (perm)	314	1900	1575	303	1766	0	3502	3539	1599	245	3505	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			208		30				605			186
Link Speed (k/h)		50			70			50			50	
Link Distance (m)		186.6			853.6			529.0			469.5	
Travel Time (s)		13.4			43.9			38.1			33.8	
Confl. Peds. (#/hr)			2	2								
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	0%	1%	1%	1%	0%	0%	2%	1%	0%	3%	2%
Adj. Flow (vph)	289	327	303	531	309	235	289	928	629	118	768	203
Shared Lane Traffic (%)												
Lane Group Flow (vph)	289	327	303	531	544	0	289	928	629	118	768	203
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6	Ŭ		3.6	Ŭ		7.2	Ŭ		7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	0.0	9.4	0.0	0.0	9.4		0.0	9.4	0.0	0.0	9.4	0.0
Detector 2 Fosition(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel		J1. L∧			OI. LX			J1. L∧			OI · LX	
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Detector 2 Exterior(5)		0.0			0.0			0.0			0.0	

Synchro 11 Report Page 9

Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road 2035 Future Total P.M. 09-06-2024

	•	-	*	1	•	•	1	Ť	1	1	Ţ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6					8	4		4
Detector Phase	5	2	2	1	6		3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0		7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	12.0	27.2	27.2	12.0	33.2		11.5	21.0	21.0	11.5	22.5	22.5
Total Split (s)	27.0	31.4	31.4	41.0	45.4		18.0	46.1	46.1	11.5	39.6	39.6
Total Split (%)	20.8%	24.2%	24.2%	31.5%	34.9%		13.8%	35.5%	35.5%	8.8%	30.5%	30.5%
Maximum Green (s)	22.0	24.2	24.2	36.0	38.2		14.0	38.1	38.1	7.5	31.6	31.6
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	2.0	2.2	2.2	2.0	2.2		1.0	3.5	3.5	1.0	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.2	7.2	5.0	7.2		4.0	8.0	8.0	4.0	8.0	8.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.6	3.6	3.0	3.6		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	None	None	None	None	None
Walk Time (s)					7.0			7.0	7.0			
Flash Dont Walk (s)					19.0			6.0	6.0			
Pedestrian Calls (#/hr)					0			0	0			
Act Effct Green (s)	45.7	24.0	24.0	65.6	38.9		13.5	36.8	36.8	42.4	30.9	30.9
Actuated g/C Ratio	0.36	0.19	0.19	0.52	0.31		0.11	0.29	0.29	0.33	0.24	0.24
v/c Ratio	0.85	0.91	0.65	0.95	0.97		0.78	0.91	0.70	0.68	0.90	0.39
Control Delay	56.8	81.3	22.9	60.2	73.0		70.9	56.7	8.4	46.0	61.9	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.8	81.3	22.9	60.2	73.0		70.9	56.7	8.4	46.0	61.9	9.5
LOS	Е	F	С	E	E		Е	Е	Α	D	Е	Α
Approach Delay		54.4			66.7			42.5			50.4	
Approach LOS		D			Е			D			D	
Queue Length 50th (m)	55.0	87.6	22.7	117.7	~142.8		39.6	126.3	4.7	19.8	106.3	3.5
Queue Length 95th (m)	#98.9	#145.2	56.5	#188.6	#219.6		#58.7	#163.4	41.6	#39.6	#141.8	24.0
Internal Link Dist (m)		162.6			829.6			505.0			445.5	
Turn Bay Length (m)	50.0			115.0			100.0		120.0	110.0		50.0
Base Capacity (vph)	375	362	469	578	561		387	1064	904	174	873	534
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.90	0.65	0.92	0.97		0.75	0.87	0.70	0.68	0.88	0.38

Intersection Summary Area Type:

Cycle Length: 130
Actuated Cycle Length: 127

Natural Cycle: 90 Control Type: Semi Act-Uncoord Maximum v/c Ratio: 0.97

Intersection Signal Delay: 51.7
Intersection Capacity Utilization 94.7%

Intersection LOS: D ICU Level of Service F

> Synchro 11 Report Page 11

Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road 2035 Future Total P.M.

09-06-2024

Analysis Period (min) 15

- Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.

 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.



Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol, veh/h	577	5	0	3	3	3	2	0	0	2	0	331
Future Vol, veh/h	577	5	0	3	3	3	2	0	0	2	0	331
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage	е,#-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	18	25	0	0	100	0	0	0	0	0	0	27
Mvmt Flow	641	6	0	3	3	3	2	0	0	2	0	368
Major/Minor	Minor2		N	Minor1		1	Major1		N	Major2		
Conflicting Flow All	195	192	184	195	376	0	368	0	0	0	0	0
Stage 1	188	188	-	4	4		-	-	-	-	-	-
Stage 2	7	4	-	191	372	-	-	-	-	-	-	-
Critical Hdwy	7.28	6.75	6.2	7.1	7.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.28	5.75	-	6.1	6.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.28	5.75	-	6.1	6.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.662	4.225	3.3	3.5	4.9	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	731	664	864	769	429	-	1202			-	-	-
Stage 1	778	703	-	1024	731	-	-	-	-	-	-	-
Stage 2	975	849	-	815	478		-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	663	864	763	428	-	1202	-	-	-	-	-
Mov Cap-2 Maneuver	-	663	-	763	428	-	-	-	-	-	-	-
Stage 1	776	703	-	1022	730	-	-	-	-	-	-	-
Stage 2	969	847	-	809	478	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s							8					
HCM LOS	-			-								
Minor Lane/Major Mvn	nt	NBL	NBT	NBR I	EBLn1\	VBLn1	SBL	SBT	SBR			
Capacity (veh/h)		1202	-	-		-	-					
HCM Lane V/C Ratio		0.002	-	-	_	-		-	-			
HCM Control Delay (s)	8	0	-	_	_	_	_	_			
HCM Lane LOS		A	A		-			-				
HCM 95th %tile Q(veh)	0	-	_	_	_	-	_	_			
	,											

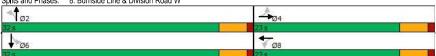
Intersection												
Int Delay, s/veh	4.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol. veh/h	4	242	14	40	306	17	23	45	78	7	43	2
Future Vol., veh/h	4	242	14	40	306	17	23	45	78	7	43	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	.0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length			-			-			-			
Veh in Median Storage	.# -	0	_	-	0	_		0	-	-	0	_
Grade. %	, -	0			0	-		0	-		0	
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	2	0	0	1	0	0	0	0	0	20	0
Mymt Flow	4	260	15	43	329	18	25	48	84	8	46	2
	•				020				•		10	
Major/Minor N	Major1			Major2		- 1	Minor1		N	Minor2		
Conflicting Flow All	347	0	0	275	0	0	724	709	268	766	707	338
Stage 1	347	-	-	213	-	-	276	276	200	424	424	330
Stage 2							448	433	-	342	283	-
Critical Hdwy	4.1			4.1			7.1	6.5	6.2	7.1	6.7	6.2
Critical Hdwy Stg 1	4.1			4.1			6.1	5.5	0.2	6.1	5.7	0.2
Critical Hdwy Stg 2	-	-	-			-	6.1	5.5	-	6.1	5.7	-
Follow-up Hdwy	2.2			2.2			3.5	4	3.3	3.5	4.18	3.3
Pot Cap-1 Maneuver	1223			1300	_	-	344	362	776	322	339	709
Stage 1	1223			1300	-		735	685	110	612	557	109
Stage 2						-	594	585	-	677	646	-
Platoon blocked, %						-	J34	303	_	011	040	-
Mov Cap-1 Maneuver	1223		_	1300	_	-	295	346	776	248	324	709
Mov Cap-1 Maneuver	1223			1300			295	346	110	248	324	109
Stage 1	-				_	-	732	682	-	610	534	_
Stage 2	-						519	561	-	559	643	-
Jiaye 2							010	501		555	043	
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.9			16.3			18.7		
HCM LOS							С			С		
Minor Lane/Major Mvm	it l	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)		473	1223	-	-	1300	-	-	318			
HCM Lane V/C Ratio		0.332	0.004	-	-	0.033		-	0.176			
HCM Control Delay (s)		16.3	8	0	-	7.9	0		18.7			
HCM Lane LOS		С	A	A	-	Α	A	-	С			
HCM 95th %tile Q(veh)		1.4	0	-	-	0.1	-	-	0.6			
(. 2)												

Lanes, Volumes, Timings 8: Burnside Line & Division Road W 2035 Future Total P.M. 09-06-2024

	٠	-	•	1	+	•	1	†	-	1	ţ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (vph)	13	153	166	23	117	3	218	182	68	5	95	28
Future Volume (vph)	13	153	166	23	117	3	218	182	68	5	95	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.932			0.997			0.980			0.970	
Flt Protected		0.998			0.992			0.977			0.998	
Satd. Flow (prot)	0	1742	0	0	1849	0	0	1793	0	0	1571	0
Flt Permitted		0.985			0.907			0.786			0.986	
Satd. Flow (perm)	0	1720	0	0	1690	0	0	1443	0	0	1552	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		99			2			22			30	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1346.1			271.7			1953.3			357.4	
Travel Time (s)		96.9			19.6			140.6			25.7	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	2%	1%	0%	2%	0%	1%	1%	4%	0%	23%	0%
Adj. Flow (vph)	14	163	177	24	124	3	232	194	72	5	101	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	354	0	0	151	0	0	498	0	0	136	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0	0		0.0	- U		3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	100		100	100		100	100		100	100		100
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												

Synchro 11 Report Page 17 Lanes, Volumes, Timings 8: Burnside Line & Division Road W 2035 Future Total P.M. 09-06-2024

	٠	-	7	1	•	1	1	†	1	1	↓	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	23.0	23.0		23.0	23.0		32.0	32.0		32.0	32.0	
Total Split (%)	41.8%	41.8%		41.8%	41.8%		58.2%	58.2%		58.2%	58.2%	
Maximum Green (s)	18.5	18.5		18.5	18.5		27.5	27.5		27.5	27.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		12.6			12.6			28.0			28.0	
Actuated g/C Ratio		0.25			0.25			0.56			0.56	
v/c Ratio		0.69			0.25			0.61			0.15	
Control Delay		19.3			16.7			12.0			5.8	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		19.3			16.7			12.0			5.8	
LOS		19.3 B			10.7 B			12.0 B			3.6 A	
Approach Delay		19.3			16.7			12.0			5.8	
Approach LOS		19.3 B			10.7 B			12.0 B			3.6 A	
Queue Length 50th (m)		20.3			11.1			25.0			4.0	
Queue Length 95th (m)		42.2			23.0			65.3			13.0	
Internal Link Dist (m)		1322.1			247.7			1929.3			333.4	
		1322.1			241.1			1929.3			333.4	
Turn Bay Length (m)		707			635			823			888	
Base Capacity (vph)		0			035			823			000	
Starvation Cap Reductn		-			-			_			-	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn					-							
Reduced v/c Ratio		0.50			0.24			0.61			0.15	
Intersection Summary	011											
Area Type:	Other											
Cycle Length: 55	^											
Actuated Cycle Length: 49.	.0											
Natural Cycle: 55												
Control Type: Semi Act-Uni	coora											
Maximum v/c Ratio: 0.69						100 B						
Intersection Signal Delay: 1					tersection							
Intersection Capacity Utiliza	ation 64.2%			IC	CU Level o	of Service	e C					
Analysis Period (min) 15												
Splits and Phases: 8: Bu	rnside Line	& Division	n Road V	/								
AT						// p.d	Å.					-
72						- 2						



Interception						
Intersection						
Int Delay, s/veh	3.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	7	^	1		7	7
Traffic Vol, veh/h	0	150	498	130	163	0
Future Vol, veh/h	0	150	498	130	163	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	0

/eh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
leavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	163	541	141	177	0

Major/Minor	Major1	Maj	or2	Mi	inor2	
Conflicting Flow All	682	0	-	0	775	612
Stage 1	-	-	-	-	612	-
Stage 2	-	-	-	-	163	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	- 3	3.518	3.318
Pot Cap-1 Maneuver	911	-	-	-	366	493
Stage 1	-	-	-	-	541	-
Stage 2	-	-	-	-	866	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	911	-	-	-	366	493
Mov Cap-2 Maneuver	-	-	-	-	452	-
Stage 1	-	-	-	-	541	-
Stage 2	-	-	-	-	866	-

EB	WB	SB
0	0	18
		С
	0 0	0 0

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	911	-	-		452	-
HCM Lane V/C Ratio	-	-	-		0.392	-
HCM Control Delay (s)	0	-	-		- 18	0
HCM Lane LOS	Α	-	-			: A
HCM 95th %tile Q(veh)	0	-	-		1.8	-

Intersection						
Int Delay, s/veh	7.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	WDL	אטוו	1	ואטול	ODL	- 3 €
Traffic Vol, veh/h	199	36	387	193	23	138
Future Vol, veh/h	199	36	387	193	23	138
	199	0	0	193	23	0
Conflicting Peds, #/hr						
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage		-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	216	39	421	210	25	150
Majar/Minar	Minord		Majard		MaiarA	
	Minor1		Major1		Major2	
Conflicting Flow All	726	526	0	0	631	0
Stage 1	526	-	-	-	-	-
Stage 2	200	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	391	552	-	-	951	-
Stage 1	593	-	-	-	-	-
Stage 2	834	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	380	552	-	-	951	_
Mov Cap-2 Maneuver	380	-			-	
Stage 1	593	-	-	_	-	_
Stage 2	810					
Stage 2	010			_	_	
Approach	WB		NB		SB	
HCM Control Delay, s	28.7		0		1.3	
HCM LOS	D					
Minor Lane/Major Mvn	nt	NBT	NBRV	WBLn1	SBL	SBT
Capacity (veh/h)		-	-	399	951	-
HCM Lane V/C Ratio		-	-	0.64	0.026	-
HCM Control Delay (s)	١			28.7	89	0

- 399 951 - 0.64 0.026 - 28.7 8.9 - D A - 4.3 0.1

HCM Control Delay (s) HCM Lane LOS HCM 95th %tile Q(veh)

2035 Future Total P.M.

09-06-2024

Intersection						
Int Delay, s/veh	1.4					
•		WDD	NDT	NDD	ODI	0.0.7
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		1			ન
Traffic Vol, veh/h	22	12	164	36	18	107
Future Vol, veh/h	22	12	164	36	18	107
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage	e,# 0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mymt Flow	24	13	178	39	20	116
		,,,		00		110
	Minor1		Major1		Major2	
Conflicting Flow All	354	198	0	0	217	0
Stage 1	198	-	-	-	-	-
Stage 2	156	-	-	-	-	-
Critical Hdwy	6.42	6.22	-		4.12	-
Critical Hdwy Stg 1	5.42	-		-		
Critical Hdwy Stg 2	5.42	-	-		-	
Follow-up Hdwy	3.518				2.218	
Pot Cap-1 Maneuver	644	843			1353	-
Stage 1	835	-			-	
Stage 2	872	_	_	_	_	_
Platoon blocked, %	012					
Mov Cap-1 Maneuver	634	843	-	-	1353	-
	634		-		1333	-
Mov Cap-2 Maneuver		-	-	-	-	-
Stage 1	835	-	-	-	-	-
Stage 2	858	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s	10.5		0		1.1	
			U		1.1	
HCM LOS	В					
Minor Lane/Major Mvr	nt	NBT	NBRV	VBLn1	SBL	SBT
Capacity (veh/h)		-	-	695	1353	_
HCM Lane V/C Ratio		-		0.053		_
HCM Control Delay (s)	-		10.5	7.7	0
HCM Lane LOS)			10.5 B	Α.	A
	A	-	-	0.2	0 0	A -
HCM 95th %tile Q(veh	1)	-	-	0.2	0	-

Intersection						
Int Delay, s/veh	0.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		ĵ.			4
Traffic Vol. veh/h	22	0	199	36	0	129
Future Vol., veh/h	22	0	199	36	0	129
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-		-	None
Storage Length	0	-		-		-
Veh in Median Storage		_	0		-	0
Grade. %	0	_	0			0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mymt Flow	24	0	216	39	0	140
WWITE LOW	24	U	210	00	U	170
	Minor1		Major1		Major2	
Conflicting Flow All	376	236	0	0	255	0
Stage 1	236	-	-			-
Stage 2	140	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	625	803	-	-	1310	-
Stage 1	803	-	-	-	-	-
Stage 2	887	-	-	_	-	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	625	803	-	-	1310	-
Mov Cap-2 Maneuver	625	-		-	-	-
Stage 1	803	_	-	_	-	-
Stage 2	887					
Olago L	001					
Approach	WB		NB		SB	
HCM Control Delay, s	11		0		0	
HCM LOS	В					
Minor Lane/Major Mvn	nt	NBT	MRRI	WBLn1	SBL	SBT
Capacity (veh/h)		-	-	625	1310	-
HCM Lane V/C Ratio		-		0.038	-	Ī
HCM Control Delay (s)		_		11	0	-
HCM Lane LOS			-	В	A	-
HCM 95th %tile Q(veh	١	-	-	0.1	0 0	-
HOW SOUL WILLE O(VEN)	-	-	0.1	U	-

42 278

42

1900

40.0

7.5

1.00

1805

0.551

1047

46 305

46 357

No

Left

1.00

25

Left

0.0

0.0

2.0

CI+Ex

0.0

0.0

0.0

278

1900

1.00

0.978

1520

1520

10

60 1953.3

117.2

0.91

26%

No Right

Left

3.6

0.0

4.8

Thru

0.0

0.0

0.6

0.0

0.0

0.0

9.4

0.6

0.0

NA

CI+Ex

CI+Ex

47

0.0

1.00

Yes

0.91

0%

52

15

1900

94

1900

65.0

1.00

0.850

1468

1468

200

0.91

10%

103

103

No

Right

1.00

15

2.0

0.0

0.0

2.0

0.0

0.0

NA Perm pm+pt

CI+Ex

0.0

2

CI+Ex

0.6

0.0

NA

4

Perm pm+pt

CI+Ex

0.0

NA

8

Perm pm+pt

CI+Ex

pm+pt

Detector 2 Size(m)

Detector 2 Channel Detector 2 Extend (s)

Protected Phases

Detector 2 Type

Turn Type

Intersection						
Int Delay, s/veh	1.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		1			4
Traffic Vol. veh/h	56	12	224	162	18	133
Future Vol. veh/h	56	12	224	162	18	133
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	Otop	None	-	None	-	None
Storage Length	0	-		-		-
Veh in Median Storage		-	0			0
Grade, %	0	-	0			0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mymt Flow	61	13	243	176	20	145
WIVING FIOW	01	13	243	1/0	20	143
Major/Minor	Minor1	1	Major1		Major2	
Conflicting Flow All	516	331	0	0	419	0
Stage 1	331	-	-	-	-	-
Stage 2	185	-				-
Critical Hdwy	6.42	6.22	-		4.12	-
Critical Hdwy Stg 1	5.42	-			-	
Critical Hdwy Stg 2	5.42	-	_	-		-
Follow-up Hdwy		3.318			2.218	
Pot Cap-1 Maneuver	519	711	_		1140	-
Stage 1	728					
Stage 2	847		_			_
Platoon blocked, %	047					-
Mov Cap-1 Maneuver	509	711		-	1140	
Mov Cap-1 Maneuver	509	711			1140	-
	728			-	-	-
Stage 1	831	-	-	-		-
Stage 2	831	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s	12.8		0		1	
HCM LOS	В					
Minor Lane/Major Mvm	nt	NBT	NBRV	VBLn1	SBL	SBT
Capacity (veh/h)		-	-	536	1140	-
HCM Lane V/C Ratio				0.138		-
HCM Control Delay (s)		-	-	12.8	8.2	0
HCM Control Delay (s)		-	-	12.8 B	8.2 A	A
						A -
HCM 95th %tile Q(veh	1	-	-	0.5	0.1	-

Synchro 11 Report Page 28

Lanes, Volumes, Timings

2040 Future Total A.M. 09-26-2024

1: Burnside Line & Industrial Road/Brodie Drive

	•	→	*	1	•	•	1	†	1	-	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	25.0	25.0	5.0	25.0	
Minimum Split (s)	9.5	21.0	21.0	9.5	21.0	21.0	9.5	31.0	31.0	9.5	31.0	
Total Split (s)	9.6	21.0	21.0	15.0	26.4	26.4	19.0	44.5	44.5	9.5	35.0	
Total Split (%)	10.7%	23.3%	23.3%	16.7%	29.3%	29.3%	21.1%	49.4%	49.4%	10.6%	38.9%	
Maximum Green (s)	5.1	15.0	15.0	10.5	20.4	20.4	14.5	38.5	38.5	5.0	29.0	
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	6.0	6.0	4.5	6.0	6.0	4.5	6.0	6.0	4.5	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Min	Min	None	Min	Min	None	Min	Min	None	Min	
Act Effct Green (s)	21.6	15.0	15.0	31.2	24.0	24.0	47.1	40.0	40.0	33.1	26.6	
Actuated g/C Ratio	0.25	0.17	0.17	0.36	0.27	0.27	0.54	0.46	0.46	0.38	0.30	
v/c Ratio	0.14	0.10	0.62	0.63	0.01	0.08	0.76	0.53	0.13	0.10	0.76	
Control Delay	20.7	32.3	9.2	29.3	27.0	0.3	23.4	21.9	0.4	11.3	38.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	20.7	32.3	9.2	29.3	27.0	0.3	23.4	21.9	0.4	11.3	38.7	
LOS	С	С	Α	С	С	Α	С	С	Α	В	D	
Approach Delay		12.4			25.2			20.0			35.6	
Approach LOS		В			С			С			D	
Queue Length 50th (m)	5.9	4.9	0.0	37.1	0.9	0.0	39.4	47.0	0.0	3.6	55.3	
Queue Length 95th (m)	14.5	13.5	24.1	64.0	4.6	0.0	#65.8	75.3	0.0	8.6	#89.6	
Internal Link Dist (m)		116.4			112.5			41.5			1929.3	
Turn Bay Length (m)	25.0		75.0	100.0			75.0		65.0	40.0		
Base Capacity (vph)	376	326	566	460	522	589	523	672	792	440	512	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.14	0.10	0.62	0.62	0.01	0.08	0.76	0.52	0.13	0.10	0.70	

Intersection Summary

Intersection Summary
Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 87.3
Natural Cycle: 75
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 22.3
Intersection Capacity Utilization 75.9%
Analysis Pacied (mix) 15 Intersection LOS: C ICU Level of Service D

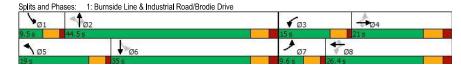
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Lanes, Volumes, Timings 1: Burnside Line & Industrial Road/Brodie Drive 2040 Future Total A.M. 09-26-2024

Page 3



Synchro 11 Report Synchro 11 Report Page 2

Lanes, Volumes, Timings 2: Burnside Line & Highway 11 Westbound On-Ramp 2040 Future Total A.M. 09-26-2024 Lanes, Volumes, Timings 3: Burnside Line & Highway 11 Westbound

	1	*	1	1	1	Ţ
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	*	7	†	7		^
Traffic Volume (vph)	183	274	869	205	0	473
Future Volume (vph)	183	274	869	205	0	473
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	1500	80.0	0.0	1000
Storage Lanes	1	1		1	0.0	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Earle Oill. Faciol	1.00	0.850	1.00	0.850	1.00	1.00
Flt Protected	0.950	0.000		0.000		
		4500	4000	4500	0	4040
Satd. Flow (prot)	1787	1583	1638	1509	U	1810
Flt Permitted	0.950	4500	4000	4500	_	4040
Satd. Flow (perm)	1787	1583	1638	1509	0	1810
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		163		216		
Link Speed (k/h)	50		60			60
Link Distance (m)	241.7		160.3			51.5
Travel Time (s)	17.4		9.6			3.1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	2%	16%	7%	0%	5%
Adj. Flow (vph)	193	288	915	216	0	498
Shared Lane Traffic (%)						
Lane Group Flow (vph)	193	288	915	216	0	498
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane	1.0		1.0			1.0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	1.00	1.00	25	1.00
Number of Detectors	1	1	2	1	20	2
Detector Template	Left	Right	Thru	Right		Thru
	2.0	2.0	10.0	2.0		10.0
Leading Detector (m)	0.0	0.0	0.0	0.0		0.0
Trailing Detector (m)						
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0
Detector 1 Size(m)	2.0	2.0	0.6	2.0		0.6
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	C I +Ex		CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			CI+Ex			CI+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Perm	Perm	NA	Perm		NA
Protected Phases			6			2
TOTOGOGO T HOSOS			0			

	•	*	1	Ť	↓	4
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				^	^	7
Traffic Volume (vph)	0	0	0	1143	473	375
Future Volume (vph)	0	0	0	1143	473	375
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	1638	1810	1214
Flt Permitted						
Satd. Flow (perm)	0	0	0	1638	1810	1214
Link Speed (k/h)	50			70	60	
Link Distance (m)	185.9			51.5	174.3	
Travel Time (s)	13.4			2.6	10.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	16%	5%	33%
Adj. Flow (vph)	0	0	0	1203	498	395
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1203	498	395
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilizat	ion 63.5%			IC	U Level	of Service
Analysis Period (min) 15						

Synchro 11 Report Page 4

Lanes, Volumes, Timings

2040 Future Total A.M. 09-26-2024

3: Burnside Line & Highway 11 Westbound

	1	•	†	-	1	Ţ	
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	
Permitted Phases	4	4		6			
Detector Phase	4	4	6	6		2	
Switch Phase							
Minimum Initial (s)	9.7	9.7	20.0	20.0		20.0	
Minimum Split (s)	16.1	16.1	27.3	27.3		27.3	
Total Split (s)	24.0	24.0	61.0	61.0		61.0	
Total Split (%)	28.2%	28.2%	71.8%	71.8%		71.8%	
Maximum Green (s)	17.6	17.6	53.7	53.7		53.7	
Yellow Time (s)	4.5	4.5	4.5	4.5		4.5	
All-Red Time (s)	1.9	1.9	2.8	2.8		2.8	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	
Total Lost Time (s)	6.4	6.4	7.3	7.3		7.3	
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.2	3.2		3.2	
Recall Mode	None	None	None	None		None	
Act Effct Green (s)	13.6	13.6	44.7	44.7		44.7	
Actuated g/C Ratio	0.19	0.19	0.62	0.62		0.62	
v/c Ratio	0.58	0.67	0.91	0.21		0.45	
Control Delay	36.6	22.1	26.9	1.5		8.8	
Queue Delay	0.0	0.0	0.0	0.0		0.0	
Total Delay	36.6	22.1	26.9	1.5		8.8	
LOS	D	С	С	Α		Α	
Approach Delay	27.9		22.0			8.8	
Approach LOS	С		С			Α	
Queue Length 50th (m)	28.4	17.8	99.7	0.0		32.9	
Queue Length 95th (m)	50.8	45.5	#215.3	7.4		58.9	
Internal Link Dist (m)	217.7		136.3			27.5	
Turn Bay Length (m)				80.0			
Base Capacity (vph)	450	521	1243	1198		1374	
Starvation Cap Reductn	0	0	0	0		0	
Spillback Cap Reductn	0	0	0	0		0	
Storage Cap Reductn	0	0	0	0		0	
Reduced v/c Ratio	0.43	0.55	0.74	0.18		0.36	
Intersection Summary							
Area Type:	Other						
Cycle Length: 85	_						

Actuated Cycle Length: 72.5

Natural Cycle: 70

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 20.3

Intersection Capacity U.5.

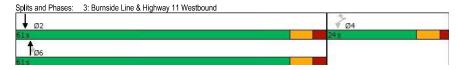
Intersection LOS: C ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Synchro 11 Report Page 6 Lanes, Volumes, Timings 3: Burnside Line & Highway 11 Westbound 2040 Future Total A.M. 09-26-2024



2040	Future	Lotal A.M
		00-26-202/

	•	1	1	Ť	¥	4
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	*	7	*	^		7
Traffic Volume (vph)	339	143	119	731	583	73
Future Volume (vph)	339	143	119	731	583	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	55.0	1000	1000	40.0
Storage Lanes	1	1	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ert	1.00	0.850	1.00	1.00	1.00	0.850
Flt Protected	0.950	0.000	0.950			0.000
Satd. Flow (prot)	1327	1524	1787	1827	1845	1442
Flt Permitted	0.950	1524	0.181	102/	1045	1442
		1504		1007	1045	1442
Satd. Flow (perm)	1327	1524	340	1827	1845	
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		151				49
Link Speed (k/h)	50			60	60	
Link Distance (m)	214.0			160.8	176.6	
Travel Time (s)	15.4			9.6	10.6	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	36%	6%	1%	4%	3%	12%
Adj. Flow (vph)	357	151	125	769	614	77
Shared Lane Traffic (%)						
Lane Group Flow (vph)	357	151	125	769	614	77
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane					***	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25	1.00	1.00	15
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
	2.0	2.0	2.0	10.0	10.0	2.0
Leading Detector (m)	0.0		0.0			
Trailing Detector (m)		0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	C I +Ex	C I +Ex	CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Perm	Perm	pm+pt	NA	NA	Perm
Protected Phases	1 01111	1 01111	1	6	2	1 01111
T TOTAL CITE OF THE SES			- 1	0		

Lanes, Volumes, Timings	
4: West Street North & Highway 11 Eastbound	
	ī

	•	*	1	†	Ţ	1
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	8	8	6			2
Detector Phase	8	8	1	6	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	7.0	20.0	20.0	20.0
Minimum Split (s)	18.0	18.0	10.0	41.0	41.0	41.0
Total Split (s)	38.0	38.0	10.0	52.0	42.0	42.0
Total Split (%)	42.2%	42.2%	11.1%	57.8%	46.7%	46.7%
Maximum Green (s)	31.8	31.8	8.0	44.9	34.9	34.9
Yellow Time (s)	4.5	4.5	2.0	4.5	4.5	4.5
All-Red Time (s)	1.7	1.7	0.0	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	2.0	7.1	7.1	7.1
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.2	3.2	3.2
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	25.7	25.7	43.4	38.0	30.8	30.8
Actuated g/C Ratio	0.33	0.33	0.56	0.49	0.40	0.40
v/c Ratio	0.82	0.25	0.37	0.86	0.84	0.13
Control Delay	41.6	4.9	12.3	29.8	35.4	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.6	4.9	12.3	29.8	35.4	9.1
LOS	D	Α	В	С	D	Α
Approach Delay	30.7			27.3	32.5	
Approach LOS	С			С	С	
Queue Length 50th (m)	56.7	0.0	9.3	106.6	94.4	2.9
Queue Length 95th (m)	#101.2	12.4	18.7	#189.8	#163.4	12.0
Internal Link Dist (m)	190.0			136.8	152.6	
Turn Bay Length (m)			55.0			40.0
Base Capacity (vph)	571	742	346	1111	872	708
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.20	0.36	0.69	0.70	0.11
Intersection Summary						
Area Type:	Other					
Cycle Length: 90						
Actuated Cycle Length: 77	7.7					
Natural Cycle: 80						
Control Type: Semi Act-U	ncoord					
Maximum v/c Ratio: 0.86						
Intersection Signal Delay:					ntersectio	
Intersection Capacity Utiliz	zation 70.5%			ŀ	CU Level	of Service
Analysis Period (min) 15						

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Lanes, Volumes, Timings 4: West Street North & Highway 11 Eastbound Splits and Phases: 4: West Street North & Highway 11 Eastbound

₩ Ø2

101

¶ ø6

2040 Future Total A.M. 09-26-2024

Ø8

Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road 2040 Future Total A.M. 09-26-2024

	•	\rightarrow	*	1	-	•	1	Ť	1	-	↓	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	↑	7	1	1		44	^	7	*	^	7
Traffic Volume (vph)	149	201	180	382	313	170	201	504	478	119	820	235
Future Volume (vph)	149	201	180	382	313	170	201	504	478	119	820	235
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	115.0		0.0	100.0		120.0	110.0		50.0
Storage Lanes	1		1	1		0	2		1	1		1
Taper Length (m)	70.0			65.0			80.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt			0.850		0.947				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1881	1583	1787	1765	0	3467	3574	1568	1736	3471	1568
Flt Permitted	0.231			0.484			0.950			0.389		
Satd. Flow (perm)	435	1881	1583	910	1765	0	3467	3574	1568	711	3471	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			186		27				493			187
Link Speed (k/h)		60			60			70			70	
Link Distance (m)		186.6			853.6			529.0			469.5	
Travel Time (s)		11.2			51.2			27.2			24.1	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	2%	1%	3%	0%	1%	1%	3%	4%	4%	3%
Adj. Flow (vph)	154	207	186	394	323	175	207	520	493	123	845	242
Shared Lane Traffic (%)										,_,		
Lane Group Flow (vph)	154	207	186	394	498	0	207	520	493	123	845	242
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	20.1	3.6	. ug.ii	2011	3.6	, agair	2011	7.2	rugiii	2011	7.2	, ug.ii
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		1.0			1.0			1.0			1.0	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	1.00	15	100	1.00	15	25	1.00	15	25	1.00	100
Number of Detectors	1	2	1	1	2	10	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel	CITEX	CITEX	CITEX	CITEX	CITEX		CITEX	CITEX	CITEX	CITEX	CITEX	CITEX
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0			0.0		0.0	0.0		0.0
Detector 2 Position(m)		9.4 0.6			9.4 0.6			9.4 0.6			9.4 0.6	
Detector 2 Size(m)												
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel		0.0			0.0			0.0			0.0	
Detector 2 Extend (s)		0.0	_		0.0			0.0	_		0.0	_
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	

Synchro 11 Report Page 10

4 Synchro 11 Report Page 11

Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road

2040 Future Total A.M. 09-26-2024

	•	→	*	1	•	•	1	†	1	1	↓	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2		2	6					8	4		4
Detector Phase	5	2	2	1	6		3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0		7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	12.0	27.2	27.2	12.0	33.2		11.5	21.0	21.0	11.5	22.5	22.5
Total Split (s)	12.0	39.0	39.0	17.0	44.0		12.0	42.0	42.0	12.0	42.0	42.0
Total Split (%)	10.9%	35.5%	35.5%	15.5%	40.0%		10.9%	38.2%	38.2%	10.9%	38.2%	38.2%
Maximum Green (s)	7.0	31.8	31.8	12.0	36.8		8.0	34.0	34.0	8.0	34.0	34.0
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	2.0	2.2	2.2	2.0	2.2		1.0	3.5	3.5	1.0	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.2	7.2	5.0	7.2		4.0	8.0	8.0	4.0	8.0	8.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.6	3.6	3.0	3.6		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	None	None	None	None	None
Walk Time (s)					7.0			7.0	7.0			
Flash Dont Walk (s)					19.0			6.0	6.0			
Pedestrian Calls (#/hr)					0			0	0			
Act Effct Green (s)	36.5	27.2	27.2	46.6	32.2		8.1	29.6	29.6	41.3	29.4	29.4
Actuated g/C Ratio	0.36	0.27	0.27	0.46	0.32		0.08	0.29	0.29	0.41	0.29	0.29
v/c Ratio	0.61	0.41	0.33	0.75	0.86		0.75	0.50	0.61	0.33	0.84	0.41
Control Delay	30.0	33.7	6.1	31.3	47.0		65.1	31.8	6.3	19.8	42.5	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.0	33.7	6.1	31.3	47.0		65.1	31.8	6.3	19.8	42.5	10.1
LOS	С	С	Α	С	D		Е	С	Α	В	D	В
Approach Delay		23.3			40.0			27.1			33.7	
Approach LOS		С			D			С			С	
Queue Length 50th (m)	19.2	36.5	0.0	57.7	95.1		23.2	48.5	0.0	15.3	89.0	8.6
Queue Length 95th (m)	33.3	59.1	16.6	#88.8	#152.7		#44.2	66.5	25.2	27.7	116.2	29.3
Internal Link Dist (m)		162.6			829.6			505.0			445.5	
Turn Bay Length (m)	50.0			115.0			100.0		120.0	110.0		50.0
Base Capacity (vph)	251	596	629	523	665		276	1212	857	373	1177	655
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.35	0.30	0.75	0.75		0.75	0.43	0.58	0.33	0.72	0.37

Intersection Summary Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 101.2
Natural Cycle: 90
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.86

Intersection Signal Delay: 31.6 Intersection LOS: C Intersection Capacity Utilization 86.5% ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road 2040 Future Total A.M. 09-26-2024

Queue shown is maximum after two cycles.



Synchro 11 Report Synchro 11 Report Page 13 Page 12

Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol, veh/h	322	5	2	0	11	0	0	0	0	0	0	306
Future Vol, veh/h	322	5	2	0	11	0	0	0	0	0	0	306
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage	e,# -	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	32	67	0	0	30	100	50	0	100	0	50	30
Mvmt Flow	350	5	2	0	12	0	0	0	0	0	0	333
Major/Minor	Minor2			Minor1		- 1	Major1		ı	//ajor2		
Conflicting Flow All	173	167	167	170	333	0	333	0	0	0	0	0
Stage 1	167	167	-	0	0	-	-	-	-	-	-	-
Stage 2	6	0	-	170	333	-	-	-	-	-	-	-
Critical Hdwy	7.42	7.17	6.2	7.1	6.8	7.2	4.6	-	-	4.1	-	-
Critical Hdwy Stg 1	6.42	6.17	-	6.1	5.8	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.42	6.17	-	6.1	5.8	-	-	-	-	-	-	-
Follow-up Hdwy	3.788	4.603	3.3	3.5	4.27	4.2	2.65	-	-	2.2	-	-
Pot Cap-1 Maneuver	728	623	882	798	544	-	1001			-	-	-
Stage 1	769	652	-	-	-	-	-	-	-	-	-	-
Stage 2	943	-		837	597	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	623	882	791	544	-	1001	-	-	-	-	-
Mov Cap-2 Maneuver	-	623	-	791	544	-	-	-	-	-	-	-
Stage 1	769	652	-	-	-	-	-	-	-	-	-	-
Stage 2	943	-	-	828	597	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s							0			0		
HCM LOS										-		
Minor Lane/Major Mvn	nt	NBL	NBT	NRR I	EBLn1\	WRI n1	SBL	SBT	SBR			
Capacity (veh/h)	iii.	1001	INDI	INDICI	LDLIIIV	VDLIII	ODL	ODT	ODIX			
HCM Lane V/C Ratio		1001			-		-	-	-			
HCM Control Delay (s)	١	0	-	-	-	-	0	-	-			
HCM Control Delay (s)		A	-		-		A	-	-			
HCM Lane LOS HCM 95th %tile Q(veh	1	A 0	-	-	-	-	А	-	-			
now som whe wiven)	U	-	-	_	-	-		-			

Intersection												
Int Delay, s/veh	3.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol. veh/h	0	187	9	40	150	5	5	40	43	7	25	2
Future Vol. veh/h	0	187	9	40	150	5	5	40	43	7	25	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	- 1100	-	None	-	-	None	-	- Otop	None	-	- Clop	None
Storage Length		-	-			-			-	-		-
Veh in Median Storage	.# -	0	-	-	0	-		0	_	-	0	_
Grade, %	-	0			0			0			0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	2	0	0	1	0	0	25	3	0	11	0
Mvmt Flow	0	195	9	42	156	5	5	42	45	7	26	2
Major/Minor I	Major1		ı	Major2			Minor1		N	/linor2		
Conflicting Flow All	161	0	0	204	0	0	457	445	200	486	447	159
Stage 1		-	-		-	-	200	200		243	243	_
Stage 2		-	-		-	-	257	245	-	243	204	
Critical Hdwy	4.1	-	-	4.1	_	-	7.1	6.75	6.23	7.1	6.61	6.2
Critical Hdwy Stg 1		-	-	- "-	-		6.1	5.75	-	6.1	5.61	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.75	-	6.1	5.61	-
Follow-up Hdwy	2.2		-	2.2	-		3.5	4.225	3.327	3.5	4.099	3.3
Pot Cap-1 Maneuver	1430	-	-	1380	-	-	517	475	838	495	493	892
Stage 1	-	-	-	-	-	-	806	695	-	765	688	-
Stage 2	-	-	-	-	-	-	752	663	-	765	716	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1430	-	-	1380	-	-	482	459	838	425	477	892
Mov Cap-2 Maneuver	-	-	-	-	-	-	482	459	-	425	477	-
Stage 1	-	-	-	-	-	-	806	695	-	765	665	-
Stage 2		-			-	-	697	641	-	681	716	-
3												
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			1.6			12.2			13.1		
HCM LOS	- 0						В			В		
Minor Lane/Major Mvm	nt I	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)		591	1430	-	-	1380	-	-	478			
HCM Lane V/C Ratio		0.155	1430	-	-	0.03		_	0.074			
HCM Control Delay (s)		12.2	0			7.7	0	_	13.1			
HCM Lane LOS		В	A		-	Α.	A	_	В			
HCM 95th %tile Q(veh))	0.5	0	-	-	0.1	-	-	0.2			

	٠	-	•	1	•	•	1	†	-	-	Ţ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (vph)	16	87	141	22	69	2	99	403	38	6	180	16
Future Volume (vph)	16	87	141	22	69	2	99	403	38	6	180	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.922			0.997			0.991			0.990	
Flt Protected		0.997			0.988			0.991			0.998	
Satd. Flow (prot)	0	1724	0	0	1872	0	0	1276	0	0	1299	0
Flt Permitted		0.975			0.854	-		0.903	-	-	0.985	
Satd. Flow (perm)	0	1686	0	0	1618	0	0	1162	0	0	1282	0
Right Turn on Red	Ū	1000	Yes	•	1010	Yes	•	1102	Yes	Ū	1202	Yes
Satd. Flow (RTOR)		135	103		2	103		10	103		11	103
Link Speed (k/h)		50			50			70			60	
Link Distance (m)		1346.1			271.7			1953.3			357.4	
Travel Time (s)		96.9			19.6			100.5			21.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
				0.92	0.92				0.92	0.92		0.92
Heavy Vehicles (%)	0%	2%	1%			0%	0%	62%			50%	
Adj. Flow (vph)	17	95	153	24	75	2	108	438	41	7	196	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	265	0	0	101	0	0	587	0	0	220	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel		JX			J/							
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	i Giill	4		i ciill	8		1 61111	2		1 61111	6	
Permitted Phases	4	+		8	0		2			6	U	
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase	4	4		0	0		2			0	0	
SWILLII FIIASE												

	•	→	*	1	•	4	1	†	1	1	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	23.0	23.0		23.0	23.0		32.0	32.0		32.0	32.0	
Total Split (%)	41.8%	41.8%		41.8%	41.8%		58.2%	58.2%		58.2%	58.2%	
Maximum Green (s)	18.5	18.5		18.5	18.5		27.5	27.5		27.5	27.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		9.5			9.5			30.1			30.1	
Actuated g/C Ratio		0.20			0.20			0.62			0.62	
v/c Ratio		0.61			0.32			0.81			0.28	
Control Delay		14.5			17.6			21.9			6.1	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		14.5			17.6			21.9			6.1	
LOS		В			В			C			A	
Approach Delay		14.5			17.6			21,9			6.1	
Approach LOS		В			В			C C			Α.1	
Queue Length 50th (m)		9.6			7.1			30.8			6.7	
Queue Length 95th (m)		25.7			16.7			#109.3			20.8	
Internal Link Dist (m)		1322.1			247.7			1929.3			333.4	
Turn Bay Length (m)		1022.1			241.1			1323.3			555.4	
Base Capacity (vph)		728			620			722			796	
Starvation Cap Reductn		0			020			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.36			0.16			0.81			0.28	
Intersection Summary												
Area Type:	Other											
Cycle Length: 55												
Actuated Cycle Length: 48.7	7											
Natural Cycle: 65												
Control Type: Semi Act-Und	oord											
Maximum v/c Ratio: 0.81												
Intersection Signal Delay: 10	6.9			Ir	tersection	LOS: B						
Intersection Capacity Utiliza					CU Level		C					
Analysis Period (min) 15						22.1700						
# 95th percentile volume 6	exceeds ca	pacity, qu	eue mav	be longe	ſ.							
Queue shown is maximu												

Lanes, Volumes, Timings 8: Burnside Line & Division Road W 2040 Future Total A.M. 09-26-2024 HCM 2010 TWSC 9: Industrial Road & Hurlwood Lane 2040 Future Total A.M. 09-26-2024

Splits and Phases:	8: Burnside Line & Division Road W			
¶ ø₂		#	△ _{Ø4}	
32 s			23 s	
↓ Ø6			₹ øs	
32 s			23 s	

Intereseties							_
Intersection	2.0						
Int Delay, s/veh	3.8						
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	*	†	1		7	7	
Traffic Vol, veh/h	0	174	330	86	191	0	
Future Vol, veh/h	0	174	330	86	191	0	
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Free	Free	Free	Free	Stop	Stop	
RT Channelized	-	None	-	None	-	None	
Storage Length	0	-	-	-	0	0	
Veh in Median Storage	e,# -	0	0	-	0	-	
Grade, %	-	0	0	-	0	-	
Peak Hour Factor	92	92	92	92	92	92	
Heavy Vehicles, %	2	2	2	2	2	2	
Mvmt Flow	0	189	359	93	208	0	
Majar/Minor	Majaud		Craint		(Name)		
	Major1		Major2		Minor2	400	
Conflicting Flow All	452	0	-	0	595	406	
Stage 1	-	-	-	-	406	-	
Stage 2	- 4.40	-	-	-	189	- 0.00	
Critical Hdwy	4.12	-	-	-	6.42	6.22	
Critical Hdwy Stg 1	-	-	-	-	5.42	-	
Critical Hdwy Stg 2	- 0.040	-	-	-	5.42	0.040	
Follow-up Hdwy	2.218	-	-	-	3.518		
Pot Cap-1 Maneuver	1109	-	-	-	467	645	
Stage 1	-	-	-	-	673	-	
Stage 2	-	-	-	-	843	-	
Platoon blocked, %	4400	-	-	-	407	0.15	
Mov Cap-1 Maneuver	1109	-	-	-	467	645	
Mov Cap-2 Maneuver	-	-	-	-	548	-	
Stage 1	-	-	-	-	673	-	
Stage 2	-	-	-	-	843	-	
Approach	EB		WB		SB		
HCM Control Delay, s	0		0		15.5		
HCM LOS					C		
Minor Lane/Major Mvm	nt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)		1109	-	-	-	548	-
HCM Lane V/C Ratio		-	-	-	-	0.379	-
HCM Control Delay (s)		0	-	-	-	15.5	0
HCM Lane LOS		Α	-	-	-	С	Α
HCM 95th %tile Q(veh)	0	-	-	-	1.8	-

HCM Lane LOS

HCM 95th %tile Q(veh)

- - C A A

- - 1.6 0.1 0.1

Intersection						
Int Delay, s/veh	2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	WDL	MDI	λ	NDI	ODL	<u>अज्ञा</u>
Traffic Vol, veh/h	34	17	98	12	6	H 111
	34		98	12		
Future Vol, veh/h		17			6	111
Conflicting Peds, #/hr	O Ctop	O Cton	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage		-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	37	18	107	13	7	121
					_	
	Minor1		Major1		Major2	
Conflicting Flow All	249	114	0	0	120	0
Stage 1	114	-	-	-	-	-
Stage 2	135	-	-	-	-	-
Critical Hdwy	6.42	6.22		-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	_	-	-	_	_
Follow-up Hdwy		3.318			2.218	-
Pot Cap-1 Maneuver	739	939	-	-	1468	_
Stage 1	911	-			-	
Stage 2	891	_		-	-	-
Platoon blocked, %	001					
Mov Cap-1 Maneuver	735	939			1468	
Mov Cap-1 Maneuver	735	909		_	1400	-
				-		-
Stage 1	911	-	-	-	-	-
Stage 2	887	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s	9.9		0		0.4	
HCM LOS	9.9 A		U		0.4	
HCIWI LOS	A					
Minor Lane/Major Mvn	nt	NBT	NBR\	WBLn1	SBL	SBT
Capacity (veh/h)		-	_	792	1468	_
HCM Lane V/C Ratio				0.07		-
HCM Control Delay (s)	١	-		9.9	7.5	0
HCM Lane LOS			-	Α.	7.5 A	A
HCM 95th %tile Q(veh	Λ		-	0.2	0	
HOW BOUT JOURE Q(VEH	1		-	0.2	U	_

HCM 95th %tile Q(veh)

- - 0.2 0 -

Intersection						
Int Delay, s/veh	1.2					
•		MDE	NDT	NDD	OD	0.07
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		₽			ન
Traffic Vol, veh/h	34	0	110	12	0	145
Future Vol, veh/h	34	0	110	12	0	145
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storag	e,# 0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	37	0	120	13	0	158
Mai / Mi	N Ali	_	4-14		4-1	
	Minor1		Major1		Major2	
Conflicting Flow All	285	127	0	0	133	0
Stage 1	127	-	-	-	-	-
Stage 2	158	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	705	923	-	-	1452	-
Stage 1	899		-	-	-	-
Stage 2	871	-	-	-	-	-
Platoon blocked, %						
Mov Cap-1 Maneuver	705	923	_		1452	_
Mov Cap-2 Maneuver	705	-	-		1402	
Stage 1	899	-				
	871	-	-	-		-
Stage 2	0/1	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s	10.4		0		0	
HCM LOS	В					
	Ī					
					200	
Minor Lane/Major Mvr	nt	NBT		VBLn1	SBL	SBT
Capacity (veh/h)		-	-	705	1452	-
HCM Lane V/C Ratio		-	-		-	-
HCM Control Delay (s)	-	-	10.4	0	-
HCM Lane LOS		-	-	В	Α	-

Intersection						
Int Delay, s/veh	2.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	**	11511	f)	11511	002	4
Traffic Vol, veh/h	85	17	104	51	6	173
Future Vol. veh/h	85	17	104	51	6	173
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-				
Veh in Median Storage	e.# 0	-	0	-	-	0
Grade. %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mymt Flow	92	18	113	55	7	188
WIVING FOW	02	10	110	00		100
	Minor1		Major1		Major2	
Conflicting Flow All	343	141	0	0	168	0
Stage 1	141	-	-	-	-	-
Stage 2	202	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	653	907	-	-	1410	-
Stage 1	886	-	-	-	-	-
Stage 2	832	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	649	907	-	-	1410	-
Mov Cap-2 Maneuver	649	-			-	
Stage 1	886	-	-	-	_	_
Stage 2	827					
Olago L	021					
Approach	WB		NB		SB	
HCM Control Delay, s			0		0.3	
HCM LOS	В					
Minor Lane/Major Mvr	nt	NBT	NRR	WBLn1	SBL	SBT
Capacity (veh/h)		NUT	NON	681	1410	301
HCM Lane V/C Ratio		-		0.163		-
	١	-	-	11.3	7.6	
HCM Control Delay (s)	-	-			0
HCM Lane LOS		-	-	В	A	Α
HCM 95th %tile Q(veh	1)	-	-	0.6	0	-

2040 Future Total P.M. 09-26-2024 Lanes, Volumes, Timings

1: Burnside Line & Industrial Road/Brodie Drive

	۶	→	•	1	←	*	1	†	1	1	Ţ	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*		7	*	↑	7	*	+	7	*	1>	
Traffic Volume (vph)	74	41	405	454	2	114	319	340	103	49	268	24
Future Volume (vph)	74	41	405	454	2	114	319	340	103	49	268	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0	1000	75.0	100.0	1000	0.0	75.0	1000	65.0	40.0	1000	0.0
Storage Lanes	1		1	1		1	1		1	1		0.0
Taper Length (m)	7.5		•	7.5		•	7.5			7.5		v
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.850	1.00	1.00	0.850	1.00	1.00	0.850	1.00	0.987	1.00
Flt Protected	0.950		0.000	0.950		0.000	0.950		0.000	0.950	0.001	
Satd. Flow (prot)	1805	1900	1568	1770	1900	1615	1805	1863	1429	1805	1747	0
Flt Permitted	0.757	1000	1000	0.568	1000	1010	0.355	1000	1720	0.529	11-11	
Satd. Flow (perm)	1438	1900	1568	1058	1900	1615	674	1863	1429	1005	1747	0
Right Turn on Red	1400	1000	Yes	1000	1000	Yes	014	1000	Yes	1000	17-77	Yes
Satd. Flow (RTOR)			372			200			200		5	103
Link Speed (k/h)		50	012		60	200		60	200		60	
Link Distance (m)		140.4			136.5			65.5			1953.3	
Travel Time (s)		10.1			8.2			3.9			117.2	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0.94	0.94	3%	2%	0.94	0.94	0.94	2%	13%	0.94	8%	0.94
Adi. Flow (vph)	79	44	431	483	2	121	339	362	110	52	285	26
Shared Lane Traffic (%)	19	44	431	403		121	339	302	110	32	200	20
Lane Group Flow (vph)	79	44	431	483	2	121	339	362	110	52	311	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	Leit	3.6	Rigiit	Leit	3.6	Right	Leit	3.6	Rigit	Leit	3.6	Rigiit
Link Offset(m)		0.0			0.0			0.0			0.0	
		4.8			4.8			4.8			4.8	
Crosswalk Width(m)		Yes			4.8			4.8			4.8	
Two way Left Turn Lane	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Headway Factor	1.00	1.00	1.00	25	1.00	1.00	25	1.00	1.00	25	1.00	
Turning Speed (k/h)	25 1	2	15	25 1	2	15	25 1	2	15	25 1	2	15
Number of Detectors							•					
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	C I +Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	
Detector 1 Channel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	

•	→	*	1	+	*	1	†	1	-	Ţ	1
EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
4		4	8		8	2		2	6		
7	4	4	3	8	8	5	2	2	1	6	
5.0	15.0	15.0	5.0	15.0	15.0	5.0	25.0	25.0	5.0	25.0	
9.5	21.0	21.0	9.5	21.0	21.0	9.5	31.0	31.0	9.5	31.0	
10.4	21.0	21.0	21.5	32.1	32.1	15.0	38.0	38.0	9.5	32.5	
11.6%	23.3%	23.3%	23.9%	35.7%	35.7%	16.7%	42.2%	42.2%	10.6%	36.1%	
5.9	15.0	15.0	17.0	26.1	26.1	10.5	32.0	32.0	5.0	26.5	
3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	
1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
4.5	6.0	6.0	4.5	6.0	6.0	4.5	6.0	6.0	4.5	6.0	
Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
		Min		Min				Min	None	Min	
22.3	15.0	15.0	38.0	28.2	28.2	41.8	34.6	34.6	31.8	25.3	
0.25	0.17	0.17	0.43	0.32	0.32	0.47	0.39	0.39	0.36	0.28	
	0.14		0.82				0.50		0.13	0.62	
	32.9		34.1				24.6		14.2	33.4	
0.0											
18.3											
В		В	С			C			В		
							22.9				
8.2		9.2	65.8		0.0	38.1		0.0	4.9		
									11.1		

25.0		75.0	100.0			75.0		65.0	40.0		
	321			603	649		738			524	
										-	
0	0						0	-		0	
0.20	0.14	0.75	0.82	0.00	0.19	0.75	0.49	0.16	0.13	0.59	
Other											
oord											
1.0			lr	ntersectio	n LOS: C						
			IC	CU Level	of Service	eΕ					
xceeds ca	pacity, di	ueue may	be longe	r.							
	EBL 4 7 7 5.0 9.5 10.4 11.6% 5.9 3.5 1.0 0 4.5 Lead Yes 3.0 None 22.3 0.25 0.21 18.3 0.0 18.3 B 8.2 17.2 25.0 387 0 0 0.20 Other 6 0.20 Other 6 0.20	## Control	EBL EBT EBR 4 4 4 7 4 4 5.0 15.0 15.0 9.5 21.0 21.0 10.4 21.0 21.0 11.6% 23.3% 23.3% 5.9 15.0 15.0 3.5 4.0 4.0 1.0 2.0 2.0 0.0 0.0 0.0 4.5 6.0 6.0 Lead Lag Lag Yes Yes 3.0 3.0 3.0 None Min Min 22.3 15.0 15.0 0.25 0.17 0.17 0.21 0.14 0.75 18.3 32.9 16.0 0.0 0.0 0.0 18.3 32.9 16.0 B C B 17.6 B 8.2 6.8 9.2 17.2 16.6 #46.9 116.4 25.0 75.0 387 321 573 0	EBL EBT EBR WBL 4	EBL EBT EBR WBL WBT 4	EBL EBT EBR WBL WBT WBR 4	EBL EBT EBR WBL WBT WBR NBL 4	EBL EBT EBR WBL WBT WBR NBL NBT	EBL EBT EBR WBL WBT WBR NBL NBT NBR 4	EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL	EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBT

Synchro 11 Report Page 1

Lanes, Volumes, Timings

2040 Future Total P.M. 09-26-2024 2040 Future Total P.M. 09-26-2024

1: Burnside Line & Industrial Road/Brodie Drive

Splits and Phases: 1: Burnside Line & Industrial Road/Brodie Drive **₽**04 Ø2 **√**Ø3 **≯**Ø7 **₹**Ø8 **↑**ø5

Lanes, Volumes, Timings 2: Burnside Line & Highway 11 Westbound On-Ramp

	۶	*	1	†	↓	4
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				^	^	7
Traffic Volume (vph)	0	0	0	1138	707	391
Future Volume (vph)	0	0	0	1138	707	391
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	1863	1863	1509
Flt Permitted						
Satd. Flow (perm)	0	0	0	1863	1863	1509
Link Speed (k/h)	50			50	50	
Link Distance (m)	185.9			51.5	174.3	
Travel Time (s)	13.4			3.7	12.5	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	0%	2%	2%	7%
Adj. Flow (vph)	0	0	0	1161	721	399
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1161	721	399
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	100	100	100			100
Sign Control	Free			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilizat	ion 63.2%			IC	U Level	of Service
Analysis Period (min) 15						

Synchro 11 Report Synchro 11 Report Page 3 Page 4 Lanes, Volumes, Timings
3: Burnside Line & Highway 11 Westbound

2040 Future Total P.M.

09-26-2024

	1	1	†	1	1	
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	*	7	A	7		<u> </u>
Traffic Volume (vph)	231	235	903	327	0	707
Future Volume (vph)	231	235	903	327	0	707
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	1000	80.0	0.0	1000
Storage Lanes	1	1		1	0.0	
Taper Length (m)	7.5			-	7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.850	1.00	0.850	1.00	1.00
Flt Protected	0.950	0.000		0.000		
Satd. Flow (prot)	1752	1599	1863	1615	0	1863
Flt Permitted	0.950	1333	1003	1013	U	1003
Satd. Flow (perm)	1752	1599	1863	1615	0	1863
Right Turn on Red	1702	Yes	1003	Yes	U	1003
		160		334		
Satd. Flow (RTOR)	50	001	60	334		60
Link Speed (k/h)			60			
Link Distance (m)	241.7		160.3			51.5
Travel Time (s)	17.4	0.00	9.6	0.00	0.00	3.1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	3%	1%	2%	0%	0%	2%
Adj. Flow (vph)	236	240	921	334	0	721
Shared Lane Traffic (%)						
Lane Group Flow (vph)	236	240	921	334	0	721
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1		2
Detector Template	Left	Right	Thru	Right		Thru
Leading Detector (m)	2.0	2.0	10.0	2.0		10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0
Detector 1 Size(m)	2.0	2.0	0.6	2.0		0.6
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex
Detector 1 Channel	OI LX	OI - EX	31 - EX	31. EX		5 - LA
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)	0.0	0.0	9.4	0.0		9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Size(m) Detector 2 Type			CI+Ex			CI+Ex
Detector 2 Type Detector 2 Channel			OI+EX			OI+EX
			0.0			0.0
Detector 2 Extend (s)	-	_	0.0	_		0.0
Turn Type	Perm	Perm	NA	Perm		NA
Protected Phases			6			2

Synchro 11 Report Page 5 Lanes, Volumes, Timings
3: Burnside Line & Highway 11 Westbound

2040 Future Total P.M. 09-26-2024

ane Group WBL remitted Phases 4 remitted Phases 4 remitted Phase 4 remitted Phase 5 remitted Phase 6 remitted Phase 6 remitted Phase 7 remitted Phase 7 remitted Phase 7 remitted Phase 8 remitted Phase 9 remitte	10.0	NBT 6	NBR 6	SBL S	
A	10.0	6	6		BT
witch Phase finimum Initial (s) 10.0 finimum Split (s) 16.1 finimum Split (s) 16.1 fotal Split (s) 24.0 fotal Split (%) 28.2 flaximum Green (s) 17.9 flellow Time (s) 4.5 flost Time (s) 4.5 flost Time (s) 1.6 flost Time (s) 6.1 flost Time (s)	10.0	6			
finimum Initial (s) 10.0 finimum Split (s) 16.1 otal Split (s) 24.0 otal Split (s) 24.0 otal Split (%) 28.2% Maximum Green (s) 17.9 fellow Time (s) 4.5 ul-Red Time (s) 0.0 ost Time Adjust (s) 0.0 otal Lost Time (s) 6.1 ead/Lag ead-Lag Optimize? elecal Mode None ctet Effet Green (s) 14.3 ctuated g/C Ratio 0.21 /c Ratio 0.63 control Delay 35.3 Otal Delay 35.3 otal Delay 35.3 opproach Delay 25.0 opproach LOS 0			6		2
flinimum Split (s) 16.1 otal Split (s) 24.0 otal Split (s) 28.2% flaximum Green (s) 17.9 fellow Time (s) 4.5 ull-Red Time (s) 0.0 otal Lost Time (s) 6.1 ead/Lag 6.1 ead-Lag Optimize? 6.1 ead-Lag Optimize? 7 etecall Mode None oct Letfict Green (s) 14.3 ctuated g/C Ratio 0.21 /c Ratio 0.63 control Delay 35.3 otal Delay 0.5 otal Delay 35.3 otal Delay 25.0 upproach Delay 25.0 upproach LOS 0					
flinimum Split (s) 16.1 otal Split (s) 24.0 otal Split (s) 28.2% flaximum Green (s) 17.9 fellow Time (s) 4.5 ull-Red Time (s) 0.0 otal Lost Time (s) 6.1 ead/Lag 6.1 ead-Lag Optimize? 6.1 ead-Lag Optimize? 7 etecall Mode None oct Letfict Green (s) 14.3 ctuated g/C Ratio 0.21 /c Ratio 0.63 control Delay 35.3 otal Delay 0.5 otal Delay 35.3 otal Delay 25.0 upproach Delay 25.0 upproach LOS 0	10.1	20.0	20.0	20	0.0
total Split (s) 24.0 total Split (%) 28.2% total Split (%) 28.2% total Split (%) 28.2% total Split (%) 17.9 total Lost Time (s) 1.6 total Lost Time (s) 0.0 total Lost Time (s) 6.1 ead/Lag Optimize? tehicle Extension (s) 3.0 tecall Mode None total total Cost Time (s) 14.3 totuated g/C Ratio 0.21 total Cost (C Ratio 0.30 total Delay 35.3 total Delay 35.3 total Delay 25.0 pproach Delay 25.0 pproach Delay 25.0 total Delay 25.0 tota	10.1	27.3	27.3	27	7.3
total Split (%) 28.2% daximum Green (s) 17.9 daximum Green (s) 17.9 dellow Time (s) 4.5 dill-Red Time (s) 1.6 ost Time Adjust (s) 0.0 otal Lost Time (s) 6.1 ead/Lag ead-Lag Optimize? delicile Extension (s) 3.0 decall Mode None act Effct Green (s) 14.3 ctuated g/C Ratio 0.21 for Ratio 0.63 control Delay 35.3 otal Delay 0.0 otal Delay 35.3 opproach Delay 25.0 pproach Delay 25.0	24.0	61.0	61.0	61	1.0
Maximum Green (s) 17.9 ellow Time (s) 4.5 ull-Red Time (s) 1.6 sot Time Adjust (s) 0.0 total Lost Time (s) 6.1 ead/Lag ead-Lag Optimize? elecial Mode None ctetaell Mode None ct Effct Green (s) 14.3 ctuated g/C Ratio 0.21 control Delay 35.3 control Delay 35.3 object 0.0 pproach Delay 25.0 pproach LOS 0	28.2%	71.8%	71.8%	71.8	8%
Fellow Time (s)	17.9	53.7	53.7	50	3.7
II-Red Time (s) 1.6 ost Time Adjust (s) 0.0 otal Lost Time (s) 6.1 ead/Lag Optimize? ehicle Extension (s) 3.0 cetall Mode None ctetall Mode 0.21 ctuated g/C Ratio 0.23 ctuated g/C Ratio 0.30 chait o 0.30	4.5	4.5	4.5		4.5
ost Time Adjust (s) 0.0 otal Lost Time (s) 6.1 ead/Lag ead-Lag Optimize? ehicle Extension (s) 3.0 tecall Mode None ct Effct Green (s) 14.3 ctuated g/C Ratio 0.21 /c Ratio 0.63 control Delay 35.3 otal Delay 35.3 OS D opproach Delay 25.0 opproach Delay 25.0 opproach LOS C.	1.6	2.8	2.8	- 2	2.8
cotal Lost Time (s) 6.1		0.0	0.0		0.0
ead/Lag ead-Lag Optimize? (ehicle Extension (s) 3.0 tecall Mode None oct Effct Green (s) 14.3 ctuated g/C Ratio 0.21 /c Ratio 0.63 control Delay 35.3 queue Delay 0.0 otal Delay 35.3 opproach Delay 25.0 pproach Delay 25.0		7.3	7.3		7.3
ead-Lag Optimize? éhicle Extension (s) 3.0. decall Mode None cct Effct Green (s) 14.3 cctuated g/C Ratio 0.21 fo Ratio 0.63 control Delay 35.3 queue Delay 0.0 obs 25 Deproach Delay 25.0 pproach LOS 0.00					
/ehicle Extension (s) 3.0 /ecall Mode None /ect Effct Green (s) 14.3 /ect Effct Green (s) 0.21 /e Ratio 0.60 /control Delay 35.3 /ueue Delay 0.0 otal Delay 35.3 OS D pproach Delay 25.0 pproach LOS C					
Accall Mode None Act Effct Green (s) 14.3 Act Letted g/C Ratio 0.21 Ac Ratio 0.63 Acorntrol Delay 35.3 Actual Delay 35.3 Object D Actual Delay 25.0	3.0	3.2	3.2	(3.2
Lot Effect Green (s) 14.3 Lotuated g/C Ratio 0.21 /c Ratio 0.63 Dontrol Delay 35.3 Queue Delay 0.0 otal Delay 35.3 OB D pproach Delay 25.0 upproach LOS C	None	None	None	No	one
ictuated g/C Ratio 0.21 /c Ratio 0.63 control Delay 35.3 queue Delay 0.0 total Delay 35.3 OS D opproach Delay 25.0 opproach LOS C		38.5	38.5		8.5
/c Ratio 0.63 /control Delay 35.3 /ueue Delay 0.0 /ord Delay 35.3 OS D /pproach Delay 25.0 /pproach LOS C		0.57	0.57		.57
Control Delay 35.3 Queue Delay 0.0 otal Delay 35.3 OS D pproach Delay 25.0 pproach LOS C		0.86	0.31		.67
Queue Delay 0.0 otal Delay 35.3 OS D opproach Delay 25.0 opproach LOS C		21.4	1.6		3.3
fotal Delay 35.3 OS D .pproach Delay 25.0 .pproach LOS C		0.0	0.0		0.0
OS D pproach Delay 25.0 pproach LOS C		21.4	1.6		3.3
pproach Delay 25.0 pproach LOS C		C	A	,	В
pproach LOS C		16.1		13	3.3
		В			В
		88.3	0.0	57	7.0
Queue Length 95th (m) 61.6		158.6	8.8		9.5
nternal Link Dist (m) 217.7		136.3	0.0		7.5
urn Bay Length (m)		100.0	80.0	2.	0
lase Capacity (vph) 496	567	1506	1370	15	506
starvation Cap Reductn 0		0	0	10	0
spillback Cap Reductn 0		0	0		0
storage Cap Reductn 0		0	0		0
Reduced v/c Ratio 0.48		0.61	0.24	0.	.48
ntersection Summary					
rea Type: Other					
Cycle Length: 85					
ctuated Cycle Length: 67					
latural Cycle: 60					
Control Type: Semi Act-Uncoord					
Maximum v/c Ratio: 0.86					
ntersection Signal Delay: 17.0			Jn:	tersection LOS	S: B
ntersection Capacity Utilization 73.2	%			U Level of Se	
nalysis Period (min) 15	-			2 20.0.0.00	





Lanes, Volumes, Timings
4: West Street North & Highway 11 Eastbound

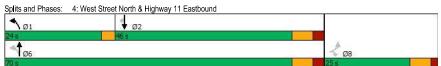
J4U	Гι	ıιu	ıe	1	U	.ai	г		٧.
					(9-	26-	20)2

Lane Group		۶	*	1	†	Ţ	1
Lane Configurations Fraffic Volume (vph) 255 187 272 972 784 156 156 164 156 1	Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Volume (vph)							
Future Volume (vph)							
Ideal Flow (vphpl)							
Storage Length (m)							
Storage Lanes					1000	1000	
Taper Length (m)							
Lane Util. Factor							
Fir	1 0 ()		1.00		1.00	1.00	1.00
Fit Protected 0.950 0.950 Sald. Flow (prot) 1736 1583 1787 1881 1863 1583 1787 1881 1863 1583 1787 1881 1863 1583 1787 1881 1863 1583 1787 1881 1863 1583 1787 1881 1863 1583 1787 1881 1863 1583 1787 1881 1863 1583 1787 1881 1863 1583 1787 1881 1863 1583 1787 1881 1863 1583 1787 1881 1863 1583 1787 1881 1863 1583 1787 1881 1863 1583 1787 1881 1863 1583 1787 1881 1863 1583 1891 1991		1.00		1.00	1.00	1.00	
Satd. Flow (prot)		0.050	0.000	0.050			0.000
Fit Permitted			1502		1001	1062	1502
Satd. Flow (perm) 1736 1583 177 1881 1863 1583 Right Turn on Red Yes Satd. Flow (RTOR) 197 77 77 77 77 77 77 7			1000		1001	1003	1505
Right Turn on Red			1500		1004	1062	1500
Satd. Flow (RTOR) 197 77 Link Speed (k/h) 50 60 60 Link Distance (m) 214.0 160.8 176.6 Travel Time (s) 15.4 9.6 10.6 Peak Hour Factor 0.95 0.95 0.95 0.95 0.95 Heavy Vehicles (%) 4% 2% 1% 1% 2% 2% Adj. Flow (vph) 268 197 286 1023 825 164 Shared Lane Traffic (%) Lane Group Flow (vph) 268 197 286 1023 825 164 Enter Blocked Intersection No		1/36		177	1881	1863	
Link Speed (k/h) 50 60 60 Link Distance (m) 214.0 160.8 176.6 Travel Time (s) 15.4 9.6 10.6 Peak Hour Factor 0.95 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>							
Link Distance (m)		F.0	197		00	00	17
Travel Time (s) 15.4 9.6 10.6 Peak Hour Factor 0.95 0.96 0.85 2 0.85 18 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>							
Peak Hour Factor							
Heavy Vehicles (%)							
Adj. Flow (vph) 268 197 286 1023 825 164 Shared Lane Traffic (%) 268 197 286 1023 825 164 Enter Blocked Intersection No 1.0 1.0							
Shared Lane Traffic (%) Lane Group Flow (vph) 268 197 286 1023 825 164							_,,,
Lane Group Flow (vph) 268 197 286 1023 825 164		268	197	286	1023	825	164
Enter Blocked Intersection Lane Alignment No Left Right Left Left Thru Thru Right Left Thru Thru Right Left Thru Thru Right Left Thru Right Left Thru Thru Right Left Left Left Left	Shared Lane Traffic (%)						
Lane Alignment Median Width(m) Left Median Width(m) 3.6 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Lane Group Flow (vph)	268	197	286	1023	825	164
Median Width(m) 3.6 3.6 3.6 Link Offset(m) 0.0 0.0 0.0 Crosswalk Width(m) 4.8 4.8 4.8 Two way Left Turn Lane Headway Factor 1.00 1.00 1.00 1.00 1.00 Turning Speed (k/h) 25 15 25 15 15 Number of Detectors 1 1 1 2 2 1 1 Detector Template Left Right Left Thru Thru Thru Right Leading Detector (m) 2.0 2.0 2.0 10.0 10.0 2.0 Trailing Detector (m) 0.0	Enter Blocked Intersection	No	No	No	No	No	No
Link Offset(m) 0.0 0.0 0.0 Crosswalk Width(m) 4.8 4.8 4.8 Two way Left Turn Lane 4.8 4.8 4.8 Headway Factor 1.00 1.00 1.00 1.00 1.00 Turning Speed (k/h) 25 15 25 15 Number of Detectors 1 1 1 2 2 1 Detector Template Left Right Left Thru Thru Right Leading Detector (m) 2.0 2.0 2.0 10.0 1.00 2.0 Trailing Detector (m) 0.0	Lane Alignment	Left	Right	Left	Left	Left	Right
Crosswalk Width(m) 4.8 4.8 4.8 Two way Left Turn Lane 1.00 0.0 <td< td=""><td>Median Width(m)</td><td>3.6</td><td></td><td></td><td>3.6</td><td>3.6</td><td></td></td<>	Median Width(m)	3.6			3.6	3.6	
Two way Left Turn Lane Headway Factor 1.00	Link Offset(m)	0.0			0.0	0.0	
Two way Left Turn Lane Headway Factor 1.00	Crosswalk Width(m)	4.8			4.8	4.8	
Headway Factor							
Turning Speed (k/h) 25 15 25 15 Number of Detectors 1 1 1 2 2 1 Detector Template Left Right Left Thru Thru Right Leading Detector (m) 2.0 2.0 2.0 10.0 10.0 2.0 Trailing Detector (m) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 Detector 1 Position(m) 0.0 <td>,</td> <td>1.00</td> <td>1.00</td> <td>1.00</td> <td>1.00</td> <td>1.00</td> <td>1.00</td>	,	1.00	1.00	1.00	1.00	1.00	1.00
Number of Detectors	•				1100		
Detector Template					2	2	
Leading Detector (m) 2.0 2.0 2.0 10.0 10.0 2.0							
Trailing Detector (m) 0.0 0.0 0.0 0.0 0.0 0.0 Detector 1 Position(m) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 2.0 2.0 Executed Text Cl+Ex Cl-Ex							
Detector 1 Position(m) 0.0 0.0 0.0 0.0 0.0 0.0							
Detector 1 Size(m) 2.0 2.0 2.0 0.6 0.6 2.0	• ()						
Detector 1 Type							
Detector 1 Channel							
Detector 1 Extend (s) 0.0 0.0 0.0 0.0 0.0 0.0		CI+Ex	CI+EX	CI+EX	CI+EX	CI+Ex	CI+EX
Detector 1 Queue (s) 0.0 0.0 0.0 0.0 0.0 0.0							
Detector 1 Delay (s) 0.0 0.0 0.0 0.0 0.0 0.0 Detector 2 Position(m) 9.4 9.4 Detector 2 Size(m) 0.6 0.6 Detector 2 Type CI+Ex CI+Ex Detector 2 Channel Detector 2 Extend (s) 0.0 0.0 Turn Type Perm Perm pm+pt NA NA Perm							
Detector 2 Position(m) 9.4 9.4							
Detector 2 Size(m)	• (/	0.0	0.0	0.0			0.0
Detector 2 Type CI+Ex CI+Ex Detector 2 Channel V 0.0 0.0 Detector 2 Extend (s) Perm Perm pm+pt NA NA Perm	Detector 2 Position(m)						
Detector 2 Channel Detector 2 Extend (s) 0.0 0.0	Detector 2 Size(m)						
Detector 2 Extend (s) 0.0 0.0 Turn Type Perm Perm pm+pt NA NA Perm	Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Extend (s) 0.0 0.0 Turn Type Perm Perm pm+pt NA NA Perm	Detector 2 Channel						
Turn Type Perm Perm pm+pt NA NA Perm					0.0	0.0	
		Perm	Perm	pm+pt			Perm
Protected Phases 1 6 2	Protected Phases			1	6	2	

	٠	*	1	†	ţ	4
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	8	8	6			2
Detector Phase	8	8	1	6	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	7.0	20.0	20.0	20.0
Minimum Split (s)	18.0	18.0	10.0	41.0	41.0	41.0
Total Split (s)	25.0	25.0	24.0	70.0	46.0	46.0
Total Split (%)	26.3%	26.3%	25.3%	73.7%	48.4%	48.4%
Maximum Green (s)	18.8	18.8	21.0	62.9	38.9	38.9
Yellow Time (s)	4.5	4.5	3.0	4.5	4.5	4.5
All-Red Time (s)	1.7	1.7	0.0	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	3.0	7.1	7.1	7.1
Lead/Lag	0.2	0.2	Lead	7.1	Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.2	3.2	3.2
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	16.8	16.8	60.6	56.5	39.5	39.5
Actuated g/C Ratio	0.19	0.19	0.70	0.65	0.46	0.46
v/c Ratio	0.19	0.19	0.70	0.84	0.46	0.46
Control Delay	53.1	8.1	29.8	19.6	51.2	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
	53.1	8.1	29.8	19.6	51.2	9.9
Total Delay	53.1 D		29.8 C		51.2 D	
LOS Appress Delev	_	Α	Ü	B		Α
Approach Delay	34.0			21.8	44.4	
Approach LOS	C	0.0	20.0	C	D	0.0
Queue Length 50th (m)	44.7	0.0	29.9	130.4	~143.7	8.9
Queue Length 95th (m)	#88.7	18.1	57.1	198.1	#252.0	23.9
Internal Link Dist (m)	190.0		55.0	136.8	152.6	10.0
Turn Bay Length (m)	0=0		55.0	40==	0.10	40.0
Base Capacity (vph)	379	499	517	1375	848	763
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.39	0.55	0.74	0.97	0.21
Intersection Summary						
Area Type:	Other					
Cycle Length: 95						
Actuated Cycle Length: 86	3.7					
Natural Cycle: 80						
Control Type: Semi Act-U	ncoord					
Maximum v/c Ratio: 0.97						
Intersection Signal Delay:	31.9			li	ntersectio	n LOS: C
Intersection Capacity Utilia						of Service E
Analysis Period (min) 15					23 20101	5. 501 1100 L
 Volume exceeds capa 	city queue is	s theoretic	cally infini	ite		
Queue shown is maxin			cany milli			
# 95th percentile volume			ielie mav	he longe	r	
Queue shown is maxin			acae may	be longe		
Quodo onown io maxiii	nam and two	oyuus.				

Synchro 11 Report Page 7

Lanes, Volumes, Timings 4: West Street North & Highway 11 Eastbound 2040 Future Total P.M. 09-26-2024



Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road

2040 Future Total P.M. 09-26-2024

	•	-	*	1	+	*	1	†	-	1	Ţ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	-	↑	7	*	1		77	^	7	*	^	7
Traffic Volume (vph)	299	331	315	535	310	234	300	963	622	117	797	211
Future Volume (vph)	299	331	315	535	310	234	300	963	622	117	797	211
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	115.0		0.0	100.0		120.0	110.0		50.0
Storage Lanes	1		1	1		0	2		1	1		1
Taper Length (m)	70.0			65.0			80.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98	1.00								
Frt			0.850		0.935				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1900	1599	1787	1766	0	3502	3539	1599	1805	3505	1583
Flt Permitted	0.165			0.137		-	0.950			0.126		
Satd. Flow (perm)	310	1900	1575	257	1766	0	3502	3539	1599	239	3505	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			195		30				595			186
Link Speed (k/h)		50	100		70			50	000		50	
Link Distance (m)		186.6			853.6			529.0			469.5	
Travel Time (s)		13.4			43.9			38.1			33.8	
Confl. Peds. (#/hr)		1011	2	2	10.0			00.1			00.0	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	0%	1%	1%	1%	0%	0%	2%	1%	0%	3%	2%
Adj. Flow (vph)	318	352	335	569	330	249	319	1024	662	124	848	224
Shared Lane Traffic (%)	010	002	000	000	000		010	1021	002		010	
Lane Group Flow (vph)	318	352	335	569	579	0	319	1024	662	124	848	224
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	Loit	3.6	rtigit	Loit	3.6	rugiit	Loit	7.2	rugiit	Loit	7.2	rugiii
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		7.0			7.0			-1.0			4.0	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	1.00	15	25	1.00	15	25	1.00	15	25	1.00	15
Number of Detectors	1	2	1	1	2	10	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel	OITEX	OI · LX	OI. LX	OI. LX	OI. LX		OI LX	OILLX	OILLX	OILLX	OILLX	OILLA
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	0.0	9.4	0.0	0.0	9.4		0.0	9.4	0.0	0.0	9.4	0.0
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel		OITEX			OITEX			CITEX			CITEX	
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Detector 2 Exterio (S)		0.0			0.0			0.0			0.0	

Synchro 11 Report Page 9

Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road 2040 Future Total P.M. 09-26-2024

	٠	-	*	1	•	*	1	†	1	1	↓	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6					8	4		4
Detector Phase	5	2	2	1	6		3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0		7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	12.0	27.2	27.2	12.0	33.2		11.5	21.0	21.0	11.5	22.5	22.5
Total Split (s)	27.0	31.4	31.4	41.0	45.4		18.0	46.1	46.1	11.5	39.6	39.6
Total Split (%)	20.8%	24.2%	24.2%	31.5%	34.9%		13.8%	35.5%	35.5%	8.8%	30.5%	30.5%
Maximum Green (s)	22.0	24.2	24.2	36.0	38.2		14.0	38.1	38.1	7.5	31.6	31.6
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	2.0	2.2	2.2	2.0	2.2		1.0	3.5	3.5	1.0	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.2	7.2	5.0	7.2		4.0	8.0	8.0	4.0	8.0	8.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.6	3.6	3.0	3.6		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	None	None	None	None	None
Walk Time (s)					7.0			7.0	7.0			
Flash Dont Walk (s)					19.0			6.0	6.0			
Pedestrian Calls (#/hr)					0			0	0			
Act Effct Green (s)	47.3	24.2	24.2	67.4	39.3		13.9	38.1	38.1	43.2	31.7	31.7
Actuated g/C Ratio	0.36	0.19	0.19	0.52	0.30		0.11	0.29	0.29	0.33	0.24	0.24
v/c Ratio	0.91	1.00	0.74	1.02	1.05		0.86	0.99	0.74	0.73	0.99	0.43
Control Delay	66.3	100.0	31.5	80.2	92.4		78.6	70.8	11.0	51.6	77.9	11.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.3	100.0	31.5	80.2	92.4		78.6	70.8	11.0	51.6	77.9	11.7
LOS	E	F	С	F	F		Е	Е	В	D	Е	В
Approach Delay		66.5			86.3			52.3			62.8	
Approach LOS		E			F			D			Е	
Queue Length 50th (m)	65.6	95.9	36.2	~145.0	~167.3		44.2	144.8	13.4	20.9	120.9	8.0
Queue Length 95th (m)	#118.1	#160.3	73.3	#218.3	#240.7		#68.8	#192.3	61.2	#44.3	#166.3	31.1
Internal Link Dist (m)		162.6			829.6			505.0			445.5	
Turn Bay Length (m)	50.0			115.0			100.0		120.0	110.0		50.0
Base Capacity (vph)	365	353	451	556	554		377	1037	889	169	855	527
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.87	1.00	0.74	1.02	1.05		0.85	0.99	0.74	0.73	0.99	0.43

Intersection Summary Area Type:

Cycle Length: 130

Actuated Cycle Length: 130 Natural Cycle: 120 Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.05 Intersection Signal Delay: 64.6
Intersection Capacity Utilization 100.4%

Intersection LOS: E ICU Level of Service G

> Synchro 11 Report Page 11

Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road 2040 Future Total P.M.

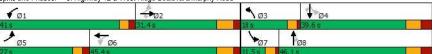
09-26-2024

Analysis Period (min) 15

- Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.

 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 5: Highway 12 & West Ridge Boulevard/Murphy Road



Int Delay, s/veh
Lane Configurations
Traffic Vol, veh/h
Traffic Vol, veh/h
Conflicting Peds, #hr Stop Stop Stop Stop Stop Stop Stop Stop Stop Free Free
Sign Control Stop
Sign Control Stop RT Channelized Stop None Free RT Channelized Free RT Channelized RT Channelized None - None<
RT Channelized - None - None - None - None - None - None Storage Length None - None - None - None Storage Length
Storage Length
Weh in Median Storage, # 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0
Grade, % - 0 0 0 0 0 0 0 - 0 0 0 0 0 0 0 0 - 0 0 - 0
Heavy Vehicles, % 18 25 0 0 100 0 0 0 0 0 0
Mymit Flow 658 7 0 3 3 2 0 0 2 0 378 Major/Minor Minor1 Major1 Major2 Major2 Conflicting Flow All 200 197 189 201 386 0 378 0
Mymt Flow 658 7 0 3 3 3 2 0 0 2 0 378 Major/Minor Minor1 Major1 Major2 Conflicting Flow All 200 197 189 201 386 0 378 0 0 0 0 0 Stage 1 193 - 4 4 -
Major/Minor Minor2 Minor1 Major1 Major2 Conflicting Flow All 200 197 189 201 386 0 378 0
Conflicting Flow All 200 197 189 201 386 0 378 0 0 0 0 0 0 Stage 1 193 193 - 4 4 4 Stage 2 7 4 - 197 382 - Critical Hdwy 7,28 6,75 6,2 7,1 7,5 6,2 4,1 4,1 Critical Hdwy Stg 1 6,28 5,75 - 6,1 6,5 - Critical Hdwy Stg 2 6,28 5,75 - 6,1 6,5 - Critical Hdwy Stg 2 6,28 5,75 - 6,1 6,5 Critical Hdwy Stg 2 6,28 5,75 - 6,1 6,5 Critical Hdwy Stg 2 6,28 5,75 - 6,1 6,5 Critical Hdwy Stg 2 6,28 5,75 - 6,1 6,5 Critical Hdwy Stg 2 6,28 5,75 - 6,1 6,5 Critical Hdwy Stg 2 6,28 5,75 - 6,1 6,5 Critical Hdwy Stg 2 6,28 5,75 - 6,1 6,5 Critical Hdwy Stg 2 6,28 5,75 423 - Stage 1 773 700 - 1024 731 Stage 2 975 849 - 809 473 Critical Hdwy Stg 2 Stage 1 771 700 - 1022 730 Critical Hdwy Stg 3 Critical Hdwy Stg 4 - 801 473 - Critical Hdwy Stg 5 - Critical Hdwy Stg 5 - Critical Hdwy Stg 5 Critical Hdwy Stg 6 Critical Hdwy Stg 7 C
Conflicting Flow All 200 197 189 201 386 0 378 0 0 0 0 0 0 Stage 1 193 193 - 4 4 4
Stage 1 193 193 4 4 - <t></t>
Stage 2
Critical Hdwy 7.28 6.75 6.2 7.1 7.5 6.2 4.1 - 4.1 - - Critical Hdwy Stg 1 6.28 5.75 - 6.1 6.5 -
Critical Hdwy Stg 1 6.28 5.75 - 6.1 6.5
Critical Hdwy Stg 2 6.28 5.75 - 6.1 6.5
Follow-up Hdwy 3.662 4.225 3.3 3.5 4.9 3.3 2.2 - 2.2 Pot Cap-1 Maneuver 725 660 858 762 423 - 1192 Stage 1 773 700 - 1024 731
Pot Cap-1 Maneuver Stage 1 725 660 858 762 423 - 1192
Stage 1 773 700 - 1024 731
Stage 2 975 849 - 809 473
Platoon blocked, %
Mov Cap-1 Maneuver - 659 858 755 422 - 1192 - - - - Mov Cap-2 Maneuver - 659 - 755 422 - - - - - Stage 1 771 700 - 1022 730 - - - - - Stage 2 969 847 - 801 473 - - - - - -
Mov Cap-2 Maneuver - 659 - 755 422 - - - - - Stage 1 771 700 - 1022 730 - - - - - Stage 2 969 847 - 801 473 - - - - -
Stage 1 771 700 - 1022 730
Stage 2 969 847 - 801 473
Approach EB WB NB SB HCM Control Delay, s 8
HCM LOS
Mineral and Marine Marine All DID AND AND AND AND AND AND AND AND AND AN
Minor Lane/Major Mvmt NBL NBT NBR EBLn1WBLn1 SBL SBT SBR
Capacity (veh/h) 1192
HCM Lane V/C Ratio 0.002
HCM Control Delay (s) 8 0
HCM Lane LOS A A
HCM 95th %tile Q(veh) 0

Intersection												
Int Delay, s/veh	4.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol. veh/h	5	267	16	44	338	18	25	47	86	7	43	2
Future Vol. veh/h	5	267	16	44	338	18	25	47	86	7	43	2
Conflicting Peds. #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	_	None	-	-	None		-	None
Storage Length		-	-	-		-		-	-	-		-
Veh in Median Storage,	# -	0	-	-	0		-	0	-	-	0	-
Grade. %	-	0	-	-	0	-		0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	2	0	0	1	0	0	0	0	0	20	0
Mymt Flow	5	287	17	47	363	19	27	51	92	8	46	2
				.,	-000			- 01				
Major/Minor M	1ajor1			Major2		- 1	Minor1		ı	Minor2		
Conflicting Flow All	382	0	0	304	0	0	797	782	296	844	781	373
Stage 1	-	-	-	-	-	-	306	306		467	467	-
Stage 2			-	-			491	476		377	314	_
Critical Hdwy	4.1		_	4.1	_		7.1	6.5	6.2	7.1	6.7	6.2
Critical Hdwy Stg 1				- "-			6.1	5.5	-	6.1	5.7	-
Critical Hdwy Stg 2		-	_		_		6.1	5.5	-	6.1	5.7	_
Follow-up Hdwy	2.2			2.2			3.5	4	3.3	3.5	4.18	3.3
Pot Cap-1 Maneuver	1188	-	-	1268		-	307	328	748	285	306	678
Stage 1	-			-			708	665	- 10	580	533	-
Stage 2		_	-	-		-	563	560	_	649	625	-
Platoon blocked, %						-	-000	000		010	020	
Mov Cap-1 Maneuver	1188	-	_	1268	_	-	258	311	748	210	290	678
Mov Cap-2 Maneuver	-			-			258	311	- 110	210	290	-
Stage 1	-	-	_	_	_	_	704	662	_	577	508	_
Stage 2							486	534		523	622	
Olago L							,00	001		020	022	
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.9			18.5			20.9		
HCM LOS	•••			0.0			C			C		
										Ť		
Minor Lane/Major Mvmt		NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)		435	1188		-	1268		-	282			
HCM Lane V/C Ratio		0.391	0.005			0.037		-	0.198			
HCM Control Delay (s)		18.5	8	0	_	7.9	0	_	20.9			
HCM Lane LOS		C	A	A		A	A		C			
HCM 95th %tile Q(veh)		1.8	0	-	_	0.1	-	_	0.7			
		1.0	- 0			0.1			0.7			

Switch Phase

	•	-	*	1	•	•	1	Ť	1	-	↓	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	23.0	23.0		23.0	23.0		32.0	32.0		32.0	32.0	
Total Split (%)	41.8%	41.8%		41.8%	41.8%		58.2%	58.2%		58.2%	58.2%	
Maximum Green (s)	18.5	18.5		18.5	18.5		27.5	27.5		27.5	27.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		13.4			13.4			27.7			27.7	
Actuated g/C Ratio		0.27			0.27			0.55			0.55	
v/c Ratio		0.73			0.38			0.68			0.17	
Control Delay		20.9			16.9			15.2			6.1	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		20.9			16.9			15.2			6.1	
LOS		С			В			В			Α	
Approach Delay		20.9			16.9			15.2			6.1	
Approach LOS		С			В			В			Α	
Queue Length 50th (m)		23.8			12.5			31.3			4.8	
Queue Length 95th (m)		48.4			25.3			#90.9			14.2	
Internal Link Dist (m)		1322.1			247.7			1929.3			333.4	
Turn Bay Length (m)												
Base Capacity (vph)		700			618			795			868	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.56			0.27			0.68			0.17	
Intersection Summary												
Area Type: (Other											
Cycle Length: 55												
Actuated Cycle Length: 50.2												
Natural Cycle: 55												
Control Type: Semi Act-Unco	oord											
Maximum v/c Ratio: 0.73												
Intersection Signal Delay: 16	5.1			lr	ntersection	LOS: B						
Intersection Capacity Utilizat				IC	CU Level o	of Service	C					
Analysis Period (min) 15												
# 95th percentile volume e:	xceeds ca	pacity, qu	eue may	be longe	r.							
Queue shown is maximur												

Lanes, Volumes, Timings 8: Burnside Line & Division Road W 2040 Future Total P.M. 09-26-2024 HCM 2010 TWSC 9: Industrial Road & Hurlwood Lane 2040 Future Total P.M. 09-26-2024

Splits and Phases:	8: Burnside Line & Division Road W		
↑ ø2		→ _{Ø4}	
32 s		23 s	
↓ ø ₆		₹ø8	
32 s		23 s	

Int Delay, s/veh 3.3 Section Section									_	
Movement	Intersection									
Movement	Int Delay, s/veh	3.3								
Lane Configurations		EDI	EDT	MDT	WDD	CD1	CDD			
Traffic Vol, veh/h Future Vol, veh/h O Future Vol, veh/h O Conflicting Peds, #/hr O Conflicting Peds O Conflicting Firee Free Free Free Free Free Free Free					WBK				1	
Future Vol, veh/h Conflicting Peds, #/hr O Conflicting Peds, #/hr O O O O O O O O O O O O O O O O O O O					40.					
Conflicting Peds, #/hr		-					-			
Sign Control Free Free Free Free Free Free Stop Stop RT Channelized None None None None None Storage Length 0 - - 0 0 Grade, % - 0 0 - 0 - Grade, % - 0 0 - 0 - Peak Hour Factor 92 92 92 92 92 92 Heavy Vehicles, % 2 2 2 2 2 2 2 2 Mymt Flow 0 163 541 146 184 0 Minor Conflicting Flow All Stage 1		-					-			
RT Channelized - None - None - None Storage Length 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0										
Storage Length										
Veh in Median Storage, # - 0 0 0 - 0 - 0 - 0 Grade, % - 0 0 0 - 0 0 - 0 - 0 - 0 - 0 - 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0				-						
Grade, % - 0 0 - 0 - Peak Hour Factor 92 92 92 92 92 92 92 92 92 94 92 92 92 92 92 92 92 92 92 92 92 92 92										
Peak Hour Factor 92		e,# -		-	-	-	-			
Heavy Vehicles, % 2 2 2 2 2 2 2 2 2										
Mymit Flow 0 163 541 146 184 0 Major/Minor Major1 Major2 Minor2 Conflicting Flow All 687 0 0 777 614 Stage 1 - - 614 - Stage 2 - - 642 6.22 Critical Hdwy 4.12 - - 6.42 6.22 Critical Hdwy Stg 2 - - - 5.42 - Critical Hdwy Stg 2 - - - 5.42 - Critical Hdwy Stg 2 - - - 5.42 - Critical Hdwy Stg 2 - - - 5.42 - Critical Hdwy Stg 2 - - - 5.42 - Critical Hdwy Stg 2 - - - - 5.42 - Citical Hdwy Stg 2 - - - - 5.42 - Stage 1 - - <	Peak Hour Factor									
Major/Minor Major1 Major2 Minor2	Heavy Vehicles, %				2	2	2			
Conflicting Flow All 687 0 - 0 777 614 Stage 1 614 - 614 - 615 Stage 2 614 - 613 - 615 Critical Hdwy 4.12 6.42 6.22 Critical Hdwy Stg 1 5.42 - 6.42 6.22 Critical Hdwy Stg 2 5.42 - 6.42 Follow-up Hdwy 2.218 3.518 3.318 Pot Cap-1 Maneuver 907 365 492 Stage 1 540 - 6.42 Stage 2 866 - 6.42 Mov Cap-1 Maneuver 907 365 492 Mov Cap-1 Maneuver 907 365 492 Mov Cap-2 Maneuver 452 - 6.40 Stage 1 540 - 6.40 Stage 2 866 - 6.40 Approach EB WB SB HCM Control Delay, s 0 0 18.3 HCM LOS C Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1 SBLn2 Capacity (veh/h) 907 - 452 - 6.406 - 6.406 HCM Lane V/C Ratio 0.406 - 6.406 HCM Control Delay (s) 0 - 18.3 0 HCM Cantrol Delay (s) 0 - 18.3 0	Mvmt Flow	0	163	541	146	184	0			
Conflicting Flow All 687 0 - 0 777 614 Stage 1 - - 614 - Stage 2 - - 163 - Critical Hdwy										
Conflicting Flow All 687 0 - 0 777 614 Stage 1 - - 614 - Stage 2 - - 163 - Critical Hdwy	Maria a /Missa a a	NA -: A		4-:0		M:0				ı
Stage 1							04:			
Stage 2				-						
Critical Hdwy 4.12 - - 6.42 6.22 Critical Hdwy Stg 1 - - - 5.42 - Critical Hdwy Stg 2 - - - 5.42 - Follow-up Hdwy 2.218 - - 3.518 3.318 Pot Cap-1 Maneuver 907 - - 365 492 Stage 1 - - - 540 - Stage 2 - - - 866 - Platoon blocked, % - - - - Mov Cap-1 Maneuver 907 - - 365 492 Mov Cap-2 Maneuver - - - 452 - Stage 1 - - - 540 - Stage 2 - - - 866 - Approach EB WB SB HCM Control Delay, s 0 0 18.3 HCM Lane V/C Ratio <td></td> <td></td> <td></td> <td>-</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>				-						
Critical Hdwy Stg 1 5.42 Critical Hdwy Stg 2 5.42 5.42 Critical Hdwy Stg 2 5.42 5.42 5.42 5.40 5.40 5.40 5.40 5.40 5.40										
Critical Hdwy Stg 2 5.42 - Follow-up Hdwy 2.218 3.518 3.318 Pot Cap-1 Maneuver 907 365 492 Stage 1 866 - Flatoon blocked, % 365 492 Mov Cap-1 Maneuver 907 365 492 Mov Cap-1 Maneuver 907 365 492 Mov Cap-2 Maneuver 452 - Stage 1 540 - Stage 2 866 - Approach EB WB SB HCM Control Delay, s 0 0 18.3 HCM LOS C Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1 SBLn2 Capacity (veh/h) 907 - 452 - HCM Lane V/C Ratio 0.406 - HCM Control Delay (s) 0 18.3 0 HCM LOS A C A										
Follow-up Hidwy 2.218 3.518 3.318 Pot Cap-1 Maneuver 907 365 492 Stage 1 540 - Stage 2 866 - Platoon blocked, % 365 492 Mov Cap-1 Maneuver 907 365 492 Mov Cap-1 Maneuver 907 365 492 Mov Cap-2 Maneuver 452 - Stage 1 540 - Stage 2 866 Approach EB WB SB HCM Control Delay, s 0 0 18.3 HCM LOS C Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1 SBLn2 Capacity (veh/h) 907 - 452 - HCM Lane V/C Ratio 0.406 - HCM Control Delay (s) 0 - 18.3 0 HCM Control Delay (s) 0 - 18.3 0				-	-					
Pot Cap-1 Maneuver 907 365 492 Stage 1 540 -			-	-	-					
Stage 1			-	-	-					
Stage 2	Pot Cap-1 Maneuver	907	-	-			492			
Platoon blocked, %		-	-	-	-		-			
Mov Cap-1 Maneuver 907 - - 365 492 Mov Cap-2 Maneuver - - - 452 - Stage 1 - - - 540 - Stage 2 - - - 866 - Approach EB WB SB HCM Control Delay, s 0 0 18.3 HCM LOS C C Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1 SBLn2 Capacity (veh/h) 907 452 - HCM Lane V/C Ratio 0.406 - HCM Control Delay (s) 0 18.3 0 HCM Lane LOS A C A	Stage 2	-	-	-	-	866	-			
Mov Cap-2 Maneuver - - - 452 - Stage 1 - - - 540 - Stage 2 - - - 866 - Approach EB WB SB HCM Control Delay, s 0 18.3 C Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1 SBLn2 Capacity (veh/h) 907 - - 452 - Capacity (veh/h) HCM Lane V/C Ratio HCM Control Delay (s) 0 - - - 18.3 0 HCM Lane LOS A - - C A	Platoon blocked, %		-	-	-					
Stage 1	Mov Cap-1 Maneuver	907	-	-	-	365	492			
Stage 1 - - - 540 - Stage 2 - - - 866 - Approach EB WB SB HCM Control Delay, s 0 0 18.3 HCM LOS C Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1 SBLn2 Capacity (veh/h) 907 - - 452 - HCM Lane V/C Ratio - - - 0.406 - HCM Lane LOS A - - C A	Mov Cap-2 Maneuver	-	-	-	-	452	-			Ī
Stage 2		-	-	-	-	540	-			
Approach EB WB SB HCM Control Delay, s 0 0 18.3 HCM LOS C Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1 SBLn2 Capacity (veh/h) 907 452 - HCM Lane V/C Ratio 0.406 - HCM Control Delay (s) 0 18.3 0 HCM Lane LOS A C A	Stage 2	-	-	-	-	866	-			
HCM Control Delay, s 0 0 18.3 HCM LOS C Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1 SBLn2						_				
HCM Control Delay, s 0 0 18.3 HCM LOS C Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1 SBLn2				10.00						
HCM LOS C C										
Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1 SBLn2 Capacity (veh/h) 907 - - 452 - HCM Lane V/C Ratio - - - 0.406 - HCM Control Delay (s) 0 - - 18.3 0 HCM Lane LOS A - - C A		0		0						
Capacity (vel/h) 907 - - 452 - HCM Lane V/C Ratio - - - 0.406 - HCM Control Delay (s) 0 - - 18.3 0 HCM Lane LOS A - - C A	HCM LOS					С				
Capacity (veh/h) 907 - - 452 - HCM Lane V/C Ratio - - - 0.406 - HCM Control Delay (s) 0 - - 18.3 0 HCM Lane LOS A - - C A										
Capacity (vel/h) 907 - - 452 - HCM Lane V/C Ratio - - - 0.406 - HCM Control Delay (s) 0 - - 18.3 0 HCM Lane LOS A - - C A	Minor Lano/Major Muss	nt .	ERI	ERT	W/RT	WRP	QRI n1	QRI n2		
HCM Lane V/C Ratio 0.406 - HCM Control Delay (s) 0 18.3 0 HCM Lane LOS A C A		IL								
HCM Control Delay (s) 0 18.3 0 HCM Lane LOS A C A										
HCM Lane LOS A C A										
					-					
HCM 95th %tile Q(veh) 0 1.9 -					-	-				
	HCM 95th %tile Q(veh))	0	-	-	-	1.9	-		

Intersection						
Int Delay, s/veh	6.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	7	7	ĵ.			4
Traffic Vol, veh/h	199	36	403	193	23	147
Future Vol, veh/h	199	36	403	193	23	147
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	
Storage Length	0	0	-	-	-	-
Veh in Median Storag		-	0	-	-	0
Grade. %	0, 0		0			0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	216	39	438	210	25	160
HITTION .	210	00	700	210	20	100
	Minor1		//ajor1		Major2	
Conflicting Flow All	753	543	0	0	648	0
Stage 1	543	-	-	-	-	-
Stage 2	210	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	377	540	-	-	938	-
Stage 1	582	-		-	-	-
Stage 2	825	-	_	-	-	-
Platoon blocked, %				-		-
Mov Cap-1 Maneuver	366	540		-	938	-
Mov Cap-2 Maneuver	366	-			-	
Stage 1	582	_	_	-	-	_
Stage 2	801			_		_
Otage 2	001					
Approach	WB		NB		SB	
HCM Control Delay, s	25.7		0		1.2	
HCM LOS	D					
Minor Lane/Major Mvr	nt	NBT	NRR\	VBLn1V	VRI n2	SBL
Capacity (veh/h)		1101	110111	366	540	938
HCM Lane V/C Ratio		-			0.072	
HCM Control Delay (s	1			28.1	12.2	8.9
)	-		28.1 D	12.2 B	8.9 A
HCM Lane LOS	.1	-	-			
HCM 95th %tile Q(veh	1)	-	-	3.6	0.2	0.1

Intersection						
	1.3					
Int Delay, s/veh						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		1			ન
Traffic Vol, veh/h	22	12	180	36	18	116
Future Vol, veh/h	22	12	180	36	18	116
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storag	e,# 0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	24	13	196	39	20	126
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	382	216	0	0	235	0
Stage 1	216	-	-	-	-	-
Stage 2	166	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	620	824	-	-	1332	-
Stage 1	820	-	-	-	-	-
Stage 2	863	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	610	824	-	-	1332	-
Mov Cap-2 Maneuver		-			.002	
Stage 1	820	-	-	_	-	_
Stage 2	849					
Otage 2	043					
Approach	WB		NB		SB	
HCM Control Delay, s	10.7		0		1	
HCM LOS	В					
Minor Lane/Major Mvr	t	NBT	NDD	WBLn1	SBL	SBT
	nι		NDK			
Capacity (veh/h)		-	-	672	1332	-
HCM Lane V/C Ratio		-	-	0.055	0.015	-
HCM Control Delay (s)	-	-	10.7	7.7	0
HCM Lane LOS		-	-	В	Α	Α
HCM 95th %tile Q(veh	1)	-	-	0.2	0	-

Intersection						
Int Delay, s/veh	0.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y	7751	1	HUIL	ODL	4
Traffic Vol, veh/h	22	0	215	36	0	138
Future Vol. veh/h	22	0	215	36	0	138
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	Stop	None	Free			None
Storage Length	0	None -	-	None -	-	None -
Veh in Median Storage		_	0	-	-	0
Grade, %	e,# 0	-	0			0
	92		92			92
Peak Hour Factor		92		92	92	
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	24	0	234	39	0	150
Major/Minor	Minor1	N	//ajor1		Major2	
Conflicting Flow All	404	254	0	0	273	0
Stage 1	254		-	-		-
Stage 2	150					-
Critical Hdwy	6.42	6.22	_	_	4.12	
Critical Hdwy Stg 1	5.42	0.22			7.12	
Critical Hdwy Stg 2	5.42	-	-		-	
Follow-up Hdwy	3.518		-		2.218	
Pot Cap-1 Maneuver	603	785	-		1290	_
				-		
Stage 1	788	-	-	-	-	-
Stage 2	878	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver		785	-	-	1290	-
Mov Cap-2 Maneuver	603	-	-	-	-	-
Stage 1	788	-	-	-	-	-
Stage 2	878	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s			0		0	
HCM LOS	11.2 B		U		0	
I IOWI LOG	٥					
Minor Lane/Major Mvn	nt	NBT	NBRV	VBLn1	SBL	SBT
Capacity (veh/h)		-	-	603	1290	-
HCM Lane V/C Ratio		-	-	0.04	-	
HCM Control Delay (s)	-	-	11.2	0	-
HCM Lane LOS		-	-	В	Ā	-
HCM 95th %tile Q(veh	1)		-	0.1	0	
TOTAL OUT TOTAL Q (VCI	'/			0.1	U	

Intersection						
Intersection Int Delay, s/veh	1.6					
int Delay, s/ven						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		1			4
Traffic Vol, veh/h	56	12	240	162	18	142
Future Vol, veh/h	56	12	240	162	18	142
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage	e,# 0	_	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mymt Flow	61	13	261	176	20	154
WWITETIOW	01	10	201	170	20	104
	Minor1		Major1		Major2	
Conflicting Flow All	543	349	0	0	437	0
Stage 1	349	-	-		-	
Stage 2	194	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318		-	2.218	-
Pot Cap-1 Maneuver	501	694	-	-	1123	-
Stage 1	714	-		-		-
Stage 2	839	_		_	_	_
Platoon blocked, %	000					
Mov Cap-1 Maneuver	491	694			1123	
Mov Cap-2 Maneuver	491	-			- 1120	
Stage 1	714	_	_	_	_	_
Stage 2	823				_	_
Stage 2	023					
Approach	WB		NB		SB	
HCM Control Delay, s	13.1		0		0.9	
HCM LOS	В					
Minor Lane/Major Mvr	un f	NBT	NDD	WBLn1	SBL	SBT
	nι		NDK			
Capacity (veh/h)		-	-	518	1123	-
HCM Lane V/C Ratio		-		0.143		-
HCM Control Delay (s)	-	-	13.1	8.3	0
HCM Lane LOS		-	-	В	Α	Α
HCM 95th %tile Q(veh	1)	-	-	0.5	0.1	-

C.F. Crozier & Associates

2045 Future Total A.M.

1: Burnside Line & Industrial Road/Brodie Drive

09-26-2024

Lane Corough Carbon Carb		•	-	*	1	←	*	1	†	1	1	↓	1
Tradit Volume (vph)	Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	Lane Configurations	7	^	7	7	^	7	*	^	7	7	1	
Ideal Flow (vphph)	Traffic Volume (vph)	49	30	321	288		49	368	352	104	46		49
Storage Lanes	Future Volume (vph)	49	30	321	288	7	49	368	352	104	46	307	49
Storage Lanes 1	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Taper Length (m)	Storage Length (m)	25.0		75.0	100.0		0.0	75.0		65.0	40.0		0.0
Lane Util. Factor	Storage Lanes	1		1	1		1	1		1	1		0
Fit Frotected 0.950	Taper Length (m)	7.5			7.5			7.5			7.5		
Fit Protected	Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot) 1805 1900 1615 1736 1900 1615 1805 1439 1468 1805 1520 0	Frt			0.850			0.850			0.850		0.979	
Fit Permitted	Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (perm) 1429 1900 1615 1060 1900 1615 528 1439 1468 1013 1520 0 Right Turn on Red	Satd. Flow (prot)	1805	1900	1615	1736	1900	1615	1805	1439	1468	1805	1520	0
Neght Turn on Red	Flt Permitted	0.752			0.580			0.278			0.533		
Satid. Flow (RTOR)	Satd. Flow (perm)	1429	1900	1615	1060	1900	1615	528	1439	1468	1013	1520	0
Link Speed (k/h)	Right Turn on Red			Yes			Yes			Yes			Yes
Link Distance (m)	Satd. Flow (RTOR)			353			200			200		9	
Travel Time (s)	Link Speed (k/h)		50			60			60			60	
Peak Hour Factor 0.91 0.	Link Distance (m)		140.4			136.5			65.5			1953.3	
Heavy Vehicles (%)	Travel Time (s)		10.1			8.2			3.9			117.2	
Adj. Flow (vph)	Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Shared Lane Traffic (%) Lane Group Flow (yph) 54 33 353 316 8 54 404 387 114 51 391 0	Heavy Vehicles (%)	0%	0%	0%	4%	0%	0%	0%	32%	10%	0%	26%	0%
Lane Group Flow (vph)	Adj. Flow (vph)	54	33	353	316	8	54	404	387	114	51	337	54
Enter Blocked Intersection	Shared Lane Traffic (%)												
Left Left Right Right Left Right Left Right Left Right Left Right Right Left Righ	Lane Group Flow (vph)	54	33	353	316	8	54	404	387	114	51	391	0
Median Width(m) 3.6 3.6 3.6 3.6 3.6 3.6 3.6 1.6 3.6 4.8	Enter Blocked Intersection	No	No	No									
Link Offset(m) 0.0 1.00	Lane Alignment	Left	Left	Right									
Crosswalk Width(m) 4.8	Median Width(m)		3.6			3.6			3.6			3.6	
Two way Left Turn Lane Headway Factor 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Link Offset(m)		0.0			0.0			0.0			0.0	
Headway Factor 1.00	Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Turning Speed (k/h) 25 15 25 15 25 15 25 15 25 15 25 15 25 15 25 15 25 15 15 25 15 15 25 15 15 25 15 15 25 15 15 25 15 15 25 15 25 15 15 25 <td>Two way Left Turn Lane</td> <td></td> <td>Yes</td> <td></td>	Two way Left Turn Lane		Yes										
Number of Detectors 1 2 1	Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Detector Template	Turning Speed (k/h)	25		15	25		15			15	25		15
Leading Detector (m) 2.0 10.0 2.0 2.0 10.0 2.0 2.0 10.0 2.0 2.0 10.0 2.0 2.0 10.0 2.0 2.0 10.0 2.0 2.0 10.0	Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Trailing Detector (m) 0.0	Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Detector 1 Position(m) 0.0	Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	
Detector 1 Size(m) 2.0	Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Type	Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Channel	Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	
Detector 1 Extend (s) 0.0	Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	
Detector 1 Queue (s) 0.0	Detector 1 Channel												
Detector 1 Delay (s) 0.0	Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m) 9.4 9.4 9.4 9.4	Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Size(m) 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 Detector 2 Cl+Ex Cl+Ex Cl+Ex Cl+Ex Cl+Ex Cl+Ex Cl+Ex Cl+Ex Detector 2 Cl+Ex 0.0	Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Type	Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Channel Detector 2 Extend (s) 0.0 0	Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Extend (s) 0.0 0.0 0.0 0.0 0.0 Turn Type pm+pt NA Perm pm+pt	Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Turn Type pm+pt NA Perm pm+pt NA Perm pm+pt NA Perm pm+pt NA	Detector 2 Channel												
	Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
	Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
	Protected Phases	7	4		3	8		5	2		1	6	

Lanes, Volumes, Timings
1: Burnside Line & Industrial Road/Brodie Drive

2045 Future Total A.M. 09-26-2024

	•	→	*	1	+	*	1	†	1	1	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	25.0	25.0	5.0	25.0	
Minimum Split (s)	9.5	21.0	21.0	9.5	21.0	21.0	9.5	31.0	31.0	9.5	31.0	
Total Split (s)	9.6	21.0	21.0	15.0	26.4	26.4	19.0	44.5	44.5	9.5	35.0	
Total Split (%)	10.7%	23.3%	23.3%	16.7%	29.3%	29.3%	21.1%	49.4%	49.4%	10.6%	38.9%	
Maximum Green (s)	5.1	15.0	15.0	10.5	20.4	20.4	14.5	38.5	38.5	5.0	29.0	
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	6.0	6.0	4.5	6.0	6.0	4.5	6.0	6.0	4.5	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Min	Min	None	Min	Min	None	Min	Min	None	Min	
Act Effct Green (s)	21.6	15.0	15.0	31.5	24.3	24.3	47.7	40.6	40.6	33.7	27.2	
Actuated g/C Ratio v/c Ratio	0.24 0.15	0.17 0.10	0.17 0.62	0.36	0.28	0.28	0.54	0.46 0.58	0.46 0.15	0.38	0.31	
Control Delay	21.1	32.6	9.3	32.3	27.1	0.09	27.6	23.2	0.15	11.3	43.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	
Total Delay	21.1	32.6	9.3	32.3	27.1	0.0	27.6	23.2	0.0	11.3	43.8	
LOS	Z1.1	32.0 C	9.5 A	32.3 C	27.1 C	0.3 A	27.0 C	23.2 C	0.4 A	В	43.6 D	
Approach Delay	U	12.5	А	U	27.6		U	22,3	А	U	40.0	
Approach LOS		12.3 B			Z1.0			22.5 C			70.0 D	
Queue Length 50th (m)	6.4	5.1	0.0	44.3	1.1	0.0	39.9	53.5	0.0	4.0	62.8	
Queue Length 95th (m)	14.6	13.5	24.2	#71.4	4.8	0.0	#75.7	85.6	0.3	9.3	#109.7	
Internal Link Dist (m)	1110	116.4			112.5	0.0	111 011	41.5	0.0	0.0	1929.3	
Turn Bay Length (m)	25.0		75.0	100.0	11210		75.0		65.0	40.0	.020.0	
Base Capacity (vph)	371	323	567	458	524	590	495	665	786	431	505	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.15	0.10	0.62	0.69	0.02	0.09	0.82	0.58	0.15	0.12	0.77	
Intersection Summary												
Area Type:	Other											
Cycle Length: 90												
Actuated Cycle Length: 88.	2											
Natural Cycle: 90												
Control Type: Semi Act-Uno	coord											
Maximum v/c Ratio: 0.82												
Intersection Signal Delay: 2				ntersectio								
Intersection Capacity Utiliza	ation 77.6%)		IC	CU Level	of Service	e D					

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

C.F. Crozier & Associates Synchro 11 Report

Lanes, Volumes, Timings

2045 Future Total A.M.

1: Burnside Line & Industrial Road/Brodie Drive

09-26-2024



C.F. Crozier & Associates Synchro 11 Report Page 3

Lanes, Volumes, Timings

2045 Future Total A.M. 09-26-2024

2: Burnside Line & Highway 11 Westbound On-Ramp

	٠	7	1	†	Ţ	4
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				†	†	7
Traffic Volume (vph)	0	0	0	1227	509	396
Future Volume (vph)	0	0	0	1227	509	396
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	1638	1810	1214
Flt Permitted						
Satd. Flow (perm)	0	0	0	1638	1810	1214
Link Speed (k/h)	50			70	60	
Link Distance (m)	185.9			51.5	174.3	
Travel Time (s)	13.4			2.6	10.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	16%	5%	33%
Adj. Flow (vph)	0	0	0	1292	536	417
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1292	536	417
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15	25			15
Sign Control	Free			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilizat	ion 67.9%			IC	U Level o	of Service C
Analysis Period (min) 15						

C.F. Crozier & Associates Synchro 11 Report

09-26-2024

	1	*	†	-	1	Ţ
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	7	7	†	7	UDL	<u>→</u>
Traffic Volume (vph)	202	282	946	226	0	509
Future Volume (vph)	202	282	946	226	0	509
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0	1000	80.0	0.0	1000
Storage Lanes	1	1		1	0.0	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
	1.00		1.00		1.00	1.00
Frt	0.050	0.850		0.850		
Flt Protected	0.950	4500	4000	4500	0	4040
Satd. Flow (prot)	1787	1583	1638	1509	0	1810
Flt Permitted	0.950		1005			10.15
Satd. Flow (perm)	1787	1583	1638	1509	0	1810
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		136		238		
Link Speed (k/h)	50		60			60
Link Distance (m)	241.7		160.3			51.5
Travel Time (s)	17.4		9.6			3.1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	2%	16%	7%	0%	5%
Adi. Flow (vph)	213	297	996	238	0	536
Shared Lane Traffic (%)	210	201	550	200		000
Lane Group Flow (vph)	213	297	996	238	0	536
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1		2
Detector Template	Left	Right	Thru	Right		Thru
Leading Detector (m)	2.0	2.0	10.0	2.0		10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0
Detector 1 Size(m)	2.0	2.0	0.6	2.0		0.6
	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex
Detector 1 Type	CI+EX	CITEX	CITEX	CITEX		CITEX
Detector 1 Channel	0.0	0.0	0.0	0.0		0.0
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			CI+Ex			CI+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Perm	Perm	NA	Perm		NA
Protected Phases			6			2
i iotocteu i ilases			0			2

	1	*	†	1	1	↓	
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	
Permitted Phases	4	4		6			
Detector Phase	4	4	6	6		2	
Switch Phase							
Minimum Initial (s)	9.7	9.7	20.0	20.0		20.0	
Minimum Split (s)	16.1	16.1	27.3	27.3		27.3	
Total Split (s)	24.0	24.0	61.0	61.0		61.0	
Total Split (%)	28.2%	28.2%	71.8%	71.8%		71.8%	
Maximum Green (s)	17.6	17.6	53.7	53.7		53.7	
Yellow Time (s)	4.5	4.5	4.5	4.5		4.5	
All-Red Time (s)	1.9	1.9	2.8	2.8		2.8	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	
Total Lost Time (s)	6.4	6.4	7.3	7.3		7.3	
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.2	3.2		3.2	
Recall Mode	None	None	None	None		None	
Act Effct Green (s)	14.3	14.3	50.9	50.9		50.9	
Actuated g/C Ratio	0.18	0.18	0.64	0.64		0.64	
v/c Ratio	0.66	0.75	0.95	0.23		0.46	
Control Delay	41.4	29.5	32.8	1.5		9.0	
Queue Delay	0.0	0.0	0.0	0.0		0.0	
Total Delay	41.4	29.5	32.8	1.5		9.0	
LOS	D	C .C	C	A		Α.	
Approach Delay	34.5	0	26.8	/\		9.0	
Approach LOS	C		C			A	
Queue Length 50th (m)	33.0	24.8	127.8	0.0		38.3	
Queue Length 95th (m)	55.7	53.4	#246.2	7.7		65.2	
Internal Link Dist (m)	217.7	33.4	136.3	1.1		27.5	
Turn Bay Length (m)	217.7		130.3	80.0		21.5	
	403	462	1126	1112		1245	
Base Capacity (vph) Starvation Cap Reductn	403	402	0	0		0	
	0					0	
Spillback Cap Reductn Storage Cap Reductn	0	0	0	0		0	
Reduced v/c Ratio	0.53	0.64	0.88	0.21		0.43	
Intersection Summary							
Area Type:	Other						
Cycle Length: 85							
Actuated Cycle Length: 79.1							
Natural Cycle: 90							
Control Type: Semi Act-Und	oord						
Maximum v/c Ratio: 0.95							
Intersection Signal Delay: 2	4.3			In	tersectio	n LOS: C	
Intersection Capacity Utiliza						of Service D	
Analysis Period (min) 15	21. 70			,,,			
# 95th percentile volume e				to a factor of			

Lanes, Volumes, Timings
3: Burnside Line & Highway 11 Westbound

Splits and Phases: 3: Burnside Line & Highway 11 Westbound

₩ Ø2

↑Ø6

2045 Future Total A.M.

V Ø4

09-26-2024

4: West Street North & Highway 11 Eastbound

Lanes, Volumes, Timings

2045 Future Total A.M. 09-26-2024

Lane Group Lane Configurations Traffic Volume (vph) 372 131 633 Future Volume (vph) 372 158 131 797 633 78 Ideal Flow (vphpl) 1900 1900 1900 1900 1900 Storage Length (m) 0.0 0.0 55.0 40.0 Storage Lanes Taper Length (m) 7.5 7.5 Lane Util. Factor 1.00 1.00 1.00 1.00 1.00 1.00 0.850 0.850 Flt Protected 0.950 1787 1845 1442 Satd. Flow (prot) 1327 1524 1827 Flt Permitted 0.950 0.118 Satd, Flow (perm) 1845 1442 1327 1524 222 1827 Right Turn on Red Yes Yes Satd. Flow (RTOR) 166 48 Link Speed (k/h) 50 Link Distance (m) 214.0 160.8 176.6 Travel Time (s) 15.4 9.6 10.6 Peak Hour Factor 0.95 0.95 0.95 0.95 0.95 0.95 Heavy Vehicles (%) 36% 6% 1% 4% 3% 12% Adj. Flow (vph) 166 138 839 666 82 392 Shared Lane Traffic (%) Lane Group Flow (vph) 392 166 138 839 666 82 Enter Blocked Intersection No Lane Alignment Left Right Left Left Left Right Median Width(m) 3.6 3.6 3.6 Link Offset(m) 0.0 0.0 0.0 Crosswalk Width(m) 4.8 4.8 Two way Left Turn Lane Headway Factor 1.00 1.00 Turning Speed (k/h) 25 15 25 15 Number of Detectors Detector Template Left Riaht Left Thru Thru Right Leading Detector (m) 2.0 2.0 2.0 Trailing Detector (m) 0.0 0.0 0.0 0.0 0.0 0.0 Detector 1 Position(m) 0.0 0.0 0.0 0.0 0.0 0.0 Detector 1 Size(m) 2.0 2.0 2.0 0.6 0.6 2.0 Detector 1 Type CI+Ex CI+Ex CI+Ex CI+Ex CI+Ex CI+Ex Detector 1 Channel Detector 1 Extend (s) 0.0 0.0 Detector 1 Queue (s) 0.0 0.0 0.0 0.0 0.0 0.0 Detector 1 Delay (s) 0.0 0.0 0.0 0.0 0.0 0.0 Detector 2 Position(m) 9.4 9.4 Detector 2 Size(m) Detector 2 Type CI+Ex CI+Ex Detector 2 Channel Detector 2 Extend (s) 0.0 0.0 Turn Type Perm Perm pm+pt NA NA Perm Protected Phases 6 2

C.F. Crozier & Associates Synchro 11 Report
Page 7

C.F. Crozier & Associates Synchro 11 Report

Lanes, Volumes, Timings 4: West Street North & Highway 11 Eastbound 2045 Future Total A.M. 09-26-2024

Page 9

	•	*	1	†	Ţ	1
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	8	8	6			2
Detector Phase	8	8	1	6	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	7.0	20.0	20.0	20.0
Minimum Split (s)	18.0	18.0	10.0	41.0	41.0	41.0
Total Split (s)	38.0	38.0	10.0	52.0	42.0	42.0
Total Split (%)	42.2%	42.2%	11.1%	57.8%	46.7%	46.7%
Maximum Green (s)	31.8	31.8	8.0	44.9	34.9	34.9
Yellow Time (s)	4.5	4.5	2.0	4.5	4.5	4.5
All-Red Time (s)	1.7	1.7	0.0	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	2.0	7.1	7.1	7.1
Lead/Lag	J.L		Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.2	3.2	3.2
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	28.1	28.1	47.9	42.7	32.9	32.9
Actuated g/C Ratio	0.33	0.33	0.57	0.51	0.39	0.39
v/c Ratio	0.89	0.33	0.51	0.91	0.93	0.39
Control Delay	50.7	4.7	16.7	35.4	46.2	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.7	4.7	16.7	35.4	46.2	9.8
LOS	50.7 D	4.7 A	16.7 B	35.4 D	46.2 D	9.8 A
	37.0	А	В	32.7	42.2	A
Approach Delay						
Approach LOS	D 64.6	0.0	44.0	C	D	2.0
Queue Length 50th (m)	64.6	0.0	11.3	134.9	113.8	3.8
Queue Length 95th (m)	#116.1	13.0	21.6	#218.1	#184.8	13.0
Internal Link Dist (m)	190.0		FF 2	136.8	152.6	10.0
Turn Bay Length (m)	=		55.0			40.0
Base Capacity (vph)	507	685	276	986	774	632
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.24	0.50	0.85	0.86	0.13
Intersection Summary						
Area Type:	Other					
Cycle Length: 90						
Actuated Cycle Length: 84	.3					
Natural Cycle: 90						
Control Type: Semi Act-Ur	ncoord					
Maximum v/c Ratio: 0.93						
Intersection Signal Delay:	36.9			l	ntersectio	n LOS: D
Intersection Capacity Utiliz						of Service
Analysis Pariod (min) 15						

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

C.F. Crozier & Associates Synchro 11 Report

Lanes, Volumes, Timings 4: West Street North & Highway 11 Eastbound 2045 Future Total A.M. 09-26-2024

C.F. Crozier & Associates Synchro 11 Report Page 10

C.F. Crozier & Associates

2045 Future Total A.M.

5: Highway 12 & West Ridge Boulevard/Murphy Road

09-26-2024

Synchro 11 Report

Page 11

	•	-	*	1	•		1	†	1	1	Ţ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	↑	7	7	1>		1/4	† †	7	*	^	7
Traffic Volume (vph)	164	218	199	406	334	180	222	557	508	127	905	260
Future Volume (vph)	164	218	199	406	334	180	222	557	508	127	905	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	115.0		0.0	100.0		120.0	110.0		50.0
Storage Lanes	1		1	1		0	2		1	1		1
Taper Length (m)	70.0			65.0			80.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt			0.850		0.947				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1881	1583	1787	1765	0	3467	3574	1568	1736	3471	1568
Flt Permitted	0.184			0.458			0.950			0.349		
Satd. Flow (perm)	346	1881	1583	862	1765	0	3467	3574	1568	638	3471	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			205		27				514			187
Link Speed (k/h)		60			60			70			70	
Link Distance (m)		186.6			853.6			529.0			469.5	
Travel Time (s)		11.2			51.2			27.2			24.1	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	1%	2%	1%	3%	0%	1%	1%	3%	4%	4%	3%
Adj. Flow (vph)	169	225	205	419	344	186	229	574	524	131	933	268
Shared Lane Traffic (%)												
Lane Group Flow (vph)	169	225	205	419	530	0	229	574	524	131	933	268
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6	, i		3.6			7.2	Ť		7.2	, and the second
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	100		15	25		15	25		100
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel		J^			2. <u>-</u> ^			2/\			J^	
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2	1 01111	1	6		3	8	1 01111	7	4	1 01111
					,			<u> </u>			-	

Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road

2045 Future Total A.M. 09-26-2024

	•	-	*	1	+	*	1	†	1	-	ţ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2		2	6					8	4		4
Detector Phase	5	2	2	1	6		3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0		7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	12.0	27.2	27.2	12.0	33.2		11.5	21.0	21.0	11.5	22.5	22.5
Total Split (s)	12.0	39.0	39.0	17.0	44.0		12.0	42.0	42.0	12.0	42.0	42.0
Total Split (%)	10.9%	35.5%	35.5%	15.5%	40.0%		10.9%	38.2%	38.2%	10.9%	38.2%	38.2%
Maximum Green (s)	7.0	31.8	31.8	12.0	36.8		8.0	34.0	34.0	8.0	34.0	34.0
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	2.0	2.2	2.2	2.0	2.2		1.0	3.5	3.5	1.0	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.2	7.2	5.0	7.2		4.0	8.0	8.0	4.0	8.0	8.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.6	3.6	3.0	3.6		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	None	None	None	None	None
Walk Time (s)					7.0			7.0	7.0			
Flash Dont Walk (s)					19.0			6.0	6.0			
Pedestrian Calls (#/hr)					0			0	0			
Act Effct Green (s)	37.8	28.6	28.6	47.9	33.6		8.1	32.0	32.0	43.6	31.7	31.7
Actuated g/C Ratio	0.36	0.27	0.27	0.46	0.32		0.08	0.31	0.31	0.42	0.30	0.30
v/c Ratio	0.76	0.44	0.35	0.84	0.91		0.86	0.53	0.63	0.38	0.89	0.44
Control Delay	43.6	34.8	6.0	38.9	53.7		78.6	32.6	6.7	20.9	46.7	12.2
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.6	34.8	6.0	38.9	53.7		78.6	32.6	6.7	20.9	46.7	12.2
LOS	D	С	Α	D	D		Е	С	Α	С	D	В
Approach Delay		27.4			47.2			30.3			37.2	
Approach LOS		С			D			С			D	
Queue Length 50th (m)	22.0	41.0	0.0	64.5	107.0		26.9	56.0	1.6	17.0	104.4	13.3
Queue Length 95th (m)	#45.1	64.0	17.3	#109.8	#169.5		#50.5	73.7	29.0	29.5	#139.3	36.4
Internal Link Dist (m)		162.6			829.6			505.0			445.5	
Turn Bay Length (m)	50.0			115.0			100.0		120.0	110.0		50.0
Base Capacity (vph)	221	574	626	500	641		266	1167	858	351	1133	638
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.39	0.33	0.84	0.83		0.86	0.49	0.61	0.37	0.82	0.42

Intersection Summary		
Area Type:	Other	
Cycle Length: 110		
Actuated Cycle Length	: 104.8	
Natural Cycle: 90		
Control Type: Semi Ac	t-Uncoord	
Maximum v/c Ratio: 0.	91	
Intersection Signal Del	ay: 35.9	Intersection LOS: D
Intersection Capacity U	Jtilization 90.7%	ICU Level of Service E
Analysis Period (min) '	15	

95th percentile volume exceeds capacity, queue may be longer.

Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road 2045 Future Total A.M. 09-26-2024 HCM 2010 TWSC 6: Uhthoff Line & Murphy Road 2045 Future Total A.M. 09-26-2024

Queue shown is maximum after two cycles.

Splits and Pha	ises: 5: Highway 12 & West Ridge	Boulevard/Murphy Road		
ÿ1	→ Ø2	↑ øs	Ø4	
17 s	39 s	12 s	42 s	
♪ Ø5	₩ Ø6	Ø7	↑ ø8	
12 e	44 c	12 c	42 c	

Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol., veh/h	331	5	2	0	13	0	0	0	0	0	0	317
Future Vol. veh/h	331	5	2	0	13	0	0	0	0	0	0	317
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	_	None	-	-	None
Storage Length	-		-			-	-		-	-	-	-
Veh in Median Storage	e,# -	0	-	-	0	-	-	0	-	-	0	_
Grade, %	-	0		-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	32	67	0	0	30	100	50	0	100	0	50	30
Mvmt Flow	360	5	2	0	14	0	0	0	0	0	0	345
Major/Minor	Minor			Minor4			Anior1		_ 6	Anior?	_	
	Minor2	173	173	Minor1 176	345		Major1	0		Major2		0
Conflicting Flow All	180	173	1/3	1/6	345	0	345	0	0	0	0	0
Stage 1	173	1/3		176	345		-		-	-	-	•
Stage 2	7.42	7.17	6.2	7.1	6.8	7.2	4.6	-	-	4.1	-	
Critical Hdwy Critical Hdwy Stg 1				6.1	5.8	1.2	4.0	-	-	4.1		
Critical Hdwy Stg 2	6.42	6.17	-	6.1	5.8	-	-	-	-	-	-	-
Follow-up Hdwy	3.788		3.3	3.5	4.27	4.2	2.65	-	-	2.2	-	-
Pot Cap-1 Maneuver	720	618	876	791	535	4.2	990	-	-	2.2	-	-
	764	648	0/0	791	000	-	990	-		-	-	-
Stage 1 Stage 2	942	048	-	831	589	-	-	-	-	-	-	-
Platoon blocked, %	542	-	-	001	509	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	618	876	784	535	_	990	-	-	_	-	
Mov Cap-1 Maneuver	-	618	8/6	784	535	-	990	-	-	-	-	-
Stage 1	764	648	-	704	535	-	-	-	-	-	-	-
Stage 2	942	040		822	589	-	-	-	-	-	-	-
Staye 2	542			022	209		-			-	-	
Approach	EB			WB			NB			SB		
HCM Control Delay, s							0			0		
HCM LOS	-			-								
Minor Lane/Major Mvr	nt	NBL	NBT	NRP I	EBLn1V	VRI n1	SBL	SBT	SBR			
Capacity (veh/h)	TIK .	990	1101	NDIX	_DLITTY	VDLIII	JDL -	301	JUIN			
HCM Lane V/C Ratio		990	-	-	-	-	-	-	-			
HCM Control Delay (s	1	0	-				0		-			
HCM Lane LOS)	A	-	-		-	A	-	-			
HCM 95th %tile Q(veh	١١	0	-		-	-	Α -		-			
HOW SOUL WHE COVER	1)	U	-	-	-	-	-	-	-			

C.F. Crozier & Associates Synchro 11 Report Page 13

Synchro 11 Report Page 15 C.F. Crozier & Associates

3.6

0 207

0 207

10

- None

0

2 0 0

0

566 1410

Α

0

0.171

12.7 0

2.2

Intersection Int Delay, s/veh

Movement

Lane Configurations Traffic Vol, veh/h

Conflicting Peds, #/hr

Veh in Median Storage, # -

Future Vol, veh/h

RT Channelized

Storage Length

Peak Hour Factor Heavy Vehicles, %

Grade. %

Mvmt Flow

Major/Minor
Conflicting Flow All

Critical Hdwy

Stage 1

Stage 2

Critical Hdwy Stg 1

Critical Hdwy Stg 2

Pot Cap-1 Maneuver

Stage 1

Stage 2

Mov Cap-1 Maneuver

Mov Cap-2 Maneuver

Stage 1

Stage 2

HCM Control Delay, s

Minor Lane/Major Mvmt

Capacity (veh/h)

HCM Lane LOS

HCM Lane V/C Ratio

HCM Control Delay (s)

HCM 95th %tile Q(veh)

Approach

HCM LOS

Platoon blocked, %

Follow-up Hdwy

Sign Control

26

Ω

8 26 2

Lanes, volumes, i imings
8: Burnside Line & Division Road W

	٠	→	*	1	•	•	1	1	-	-	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (vph)	17	96	155	25	76	2	110	420	41	7	196	17
Future Volume (vph)	17	96	155	25	76	2	110	420	41	7	196	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1,00	1.00	1.00
Frt		0.922			0.998			0.990			0.990	
Flt Protected		0.997			0.988			0.990			0.998	
Satd. Flow (prot)	0	1724	0	0	1873	0	0	1279	0	0	1299	0
Flt Permitted		0.976			0.840			0.892			0.983	
Satd. Flow (perm)	0	1688	0	0	1593	0	0	1153	0	0	1279	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		136			2			10			11	
Link Speed (k/h)		50			50			70			60	
Link Distance (m)		1346.1			271.7			1953.3			357.4	
Travel Time (s)		96.9			19.6			100.5			21.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	1%	0%	0%	0%	0%	62%	0%	0%	50%	0.02
Adj. Flow (vph)	18	104	168	27	83	2	120	457	45	8	213	18
Shared Lane Traffic (%)	-10	.01	.00		- 00	_	0	.01	,,,			
Lane Group Flow (vph)	0	290	0	0	112	0	0	622	0	0	239	(
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Righ
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane					1,0							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	1.00	15	25	1100	15	25	1100	15	25	1.00	15
Number of Detectors	1	2		1	2	,,,	1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel	J/	J\		J\	J			, <u>-</u> ,		, <u> </u>	, <u>-</u> ,	
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4		3.3	9.4		3.3	9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel		31·LX			JI. LA			JI. LK			31. LX	
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	1 01111	4		7 (1111	8		. 01111	2		1 Citil	6	
	4	4		8	U		2			6	U	
Permitted Phases												
Permitted Phases Detector Phase	4	4		8	8		2	2		6	6	

C.F. Crozier & Associates Synchro 11 Report
Page 17

EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBT SBR

5 5

0 0 25 3 0

0 503

- 221

- 7.1

- - - 786 680

- -

NBLn1 EBL EBT EBR WBL WBT WBR SBLn1

- 0.034

- 7.8

A A

0.1

- - 1354

- - - 729 646

282 270

6.1 5.75

- 445 429

- 670 621

NB

12.7

В

786 680

Free Free Free Free Free Stop Stop Stop Stop Stop

- - None - - None

41

0

43

491 221 535 494

221

6.75

- - 482 446 816 459 464

429

6.1 5.75

- 268

6.23

- 3.5 4.225 3.327 3.5 4.099

- 443

- 0.085

- 13.9

В

267

7.1

- 742 671

- 743 700

742 646

13.9

В

446

700

- 387

- 655

6.1 5.61

47

44 166

46

0 226

- 2.2

0

0

0

-

C.F. Crozier & Associates

Page 18

Synchro 11 Report

Lanes, Volumes, Timings 8: Burnside Line & Division Road W 2045 Future Total A.M. 09-26-2024

	•	-	*	1	•	•	1	†	1	1	↓	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	23.0	23.0		23.0	23.0		32.0	32.0		32.0	32.0	
Total Split (%)	41.8%	41.8%		41.8%	41.8%		58.2%	58.2%		58.2%	58.2%	
Maximum Green (s)	18.5	18.5		18.5	18.5		27.5	27.5		27.5	27.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		10.1			10.1			29.4			29.4	
Actuated g/C Ratio		0.21			0.21			0.61			0.61	
v/c Ratio		0.63			0.34			0.89			0.31	
Control Delay		15.3			17.7			29.6			6.8	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		15.3			17.7			29.6			6.8	
LOS		В			В			С			Α	
Approach Delay		15.3			17.7			29.6			6.8	
Approach LOS		В			В			С			Α	
Queue Length 50th (m)		11.5			8.0			37.4			7.8	
Queue Length 95th (m)		28.9			18.1			#122.5			24.1	
Internal Link Dist (m)		1322.1			247.7			1929.3			333.4	
Turn Bay Length (m)												
Base Capacity (vph)		730			611			702			778	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.40			0.18			0.89			0.31	
Intersection Summary												
Area Type:	Other											
Cycle Length: 55												
Actuated Cycle Length: 48.	5											
Natural Cycle: 75												
Control Type: Semi Act-Und	coord											
Maximum v/c Ratio: 0.89												
Intersection Signal Delay: 2					ntersection							
Intersection Capacity Utiliza	ation 70.1%			I	CU Level o	of Service	e C					
Analysis Period (min) 15												
# 95th percentile volume			eue may	be longe	r.							
Queue shown is maximu	um after two	cycles.										

C.F. Crozier & Associates Synchro 11 Report Page 19 Lanes, Volumes, Timings 8: Burnside Line & Division Road W 2045 Future Total A.M. 09-26-2024



C.F. Crozier & Associates Synchro 11 Report Page 20

Intersection						
Int Delay, s/veh	3.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	*	^	1		*	7
Traffic Vol, veh/h	0	174	330	92	194	0
Future Vol. veh/h	0	174	330	92	194	0
Conflicting Peds, #/hr		0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-		-	0	0
Veh in Median Storag		0	0	_	0	-
Grade, %	c, # -	0	0		0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mymt Flow	0	189	359	100	211	0
WWITH FIOW	U	109	339	100	211	U
Major/Minor	Major1	1	Major2		Minor2	
Conflicting Flow All	459	0	-	0	598	409
Stage 1	-	-	-	-	409	-
Stage 2	-	-	-	-	189	-
Critical Hdwy	4.12	-		-	6.42	6.22
Critical Hdwy Stg 1	-	-		-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-		-	3.518	3.318
Pot Cap-1 Maneuver	1102	-	-	-	465	642
Stage 1	-		-		671	-
Stage 2	-	-	_		843	-
Platoon blocked, %					2.10	
Mov Cap-1 Maneuver	1102	_	_	_	465	642
Mov Cap-2 Maneuver					546	-
Stage 1	_	_	-		671	_
Stage 2					843	_
Stage 2					040	
Approach	EB		WB		SB	
HCM Control Delay, s	0		0		15.7	
HCM LOS					С	
Minor Lane/Major Mvi	mt	EBL	EBT	WBT	WRR	SBLn1 SI
Capacity (veh/h)		1102	LDI	WDI	- VVDIX	546
HCM Lane V/C Ratio		1102		-		0.386
HCM Control Delay (s	-1	0		-	-	15.7
HCM Control Delay (s)	A	-		-	15.7 C
	٠١		-	-	-	1.8
HCM 95th %tile Q(vel	1)	0	-	-	-	1.8

Intersection							
Int Delay, s/veh	4.2						
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	*	7	4		UDL	4	
Traffic Vol., veh/h	159	12	168	189	34	188	
Future Vol. veh/h	159	12	168	189	34	188	
Conflicting Peds. #/hr	0	0	0	0	0	0	
Sign Control	Stop	Stop	Free	Free	Free	Free	
RT Channelized	- Ctop	None	-	None	-	None	
Storage Length	0	0		-		-	
Veh in Median Storage		-	0		_	0	
Grade, %	0, # 0	-	0			0	
Peak Hour Factor	92	92	92	92	92	92	
Heavy Vehicles, %	2	2	2	2	2	2	
Mymt Flow	173	13	183	205	37	204	
WWITH TOW	113	13	103	200	31	204	
Major/Minor	Minor1	- 1	Major1		Major2		
Conflicting Flow All	564	286	0	0	388	0	
Stage 1	286	-	-	-	-	-	
Stage 2	278	-	-	-	-	-	
Critical Hdwy	6.42	6.22	-	-	4.12	-	
Critical Hdwy Stg 1	5.42	-	-	-	-	-	
Critical Hdwy Stg 2	5.42	-	-	-	-	-	
Follow-up Hdwy	3.518	3.318	-	-	2.218	-	
Pot Cap-1 Maneuver	487	753	-		1170	-	
Stage 1	763	-	-		-	-	
Stage 2	769	-	-	_	-	-	
Platoon blocked, %			-	-		-	
Mov Cap-1 Maneuver	469	753	-		1170	-	
Mov Cap-2 Maneuver	469	-	-		-	-	
Stage 1	763	-	-	-	-	-	
Stage 2	741						
A)A/P		ND		0.0		
Approach	WB		NB		SB		
HCM Control Delay, s	16.6		0		1.3		
HCM LOS	С						
Minor Lane/Major Myn	nt	NBT	NBR\	WBLn1V	VBLn2	SBL	
Capacity (veh/h)				469	753	1170	
HCM Lane V/C Ratio			-	0.368		0.032	
HCM Control Delay (s)	-	-	17.1	9.9	8.2	
HCM Lane LOS	,	-	-	C	Α.	Α.2	
HCM 95th %tile Q(veh	1)		_	1.7	0.1	0.1	
HOM JOHN JOHN Q(VEI)	7	_		1.7	0.1	0.1	

2045 Future Total A.M. 09-26-2024

HCM 2010 TWSC 12: Uhthoff Line & North Site Access 2

Intersection						
Int Delay, s/veh	1.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		1			र्स
Traffic Vol. veh/h	34	17	107	12	6	122
Future Vol. veh/h	34	17	107	12	6	122
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	- -	None	-	None	-	None
Storage Length	0	INOIIC		NONE -		INOHE -
Veh in Median Storage		_	0		-	0
Grade, %	0		0			0
Peak Hour Factor	92	92	92	92	92	92
	92	92	92	92	2	92
Heavy Vehicles, % Mymt Flow	37	18	116	13	7	133
MVMt Flow	3/	18	116	13	- /	133
Major/Minor	Minor1	N	Major1		Major2	
Conflicting Flow All	270	123	0	0	129	0
Stage 1	123	-	-	-	-	
Stage 2	147					
Critical Hdwy	6.42	6.22	_		4.12	_
Critical Hdwy Stg 1	5.42	0.22			7.12	
Critical Hdwy Stg 2	5.42	-			-	
Follow-up Hdwy	3.518		-		2.218	-
Pot Cap-1 Maneuver	719	928			1457	-
	902	920				
Stage 1			-		-	-
Stage 2	880	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver		928	-	-	1457	-
Mov Cap-2 Maneuver	715	-	-	-	-	-
Stage 1	902	-	-	-	-	-
Stage 2	876	-	-	-	-	-
· ·						
Approach	WB		NB		SB	
			0			
HCM Control Delay, s	10		0		0.4	
HCM LOS	В					
Minor Lane/Major Mvr	nt	NBT	NBRV	WBLn1	SBL	SBT
Capacity (veh/h)				774	1457	-
HCM Lane V/C Ratio				0.072		-
HCM Control Delay (s	١	_	_	10	7.5	0
HCM Lane LOS	,		-	В	7.5 A	A
HCM 95th %tile Q(veh	4			0.2	0	-
HOW SOUL WILL COVER	7	-	-	0.2	U	-

Intersection						
Int Delay, s/veh	1.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		1			4
Traffic Vol, veh/h	34	0	119	12	0	156
Future Vol, veh/h	34	0	119	12	0	156
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage	, # 0	-	0	-	-	0
Grade, %	0	-	0		-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	37	0	129	13	0	170
Majar/Minor I	Minord		Majar1		Maiar	
	Minor1		Major1		Major2	
Conflicting Flow All	306	136	0	0	142	0
Stage 1	136	-	-	-	-	-
Stage 2	170	-	-	-	- 440	-
Critical Hdwy	6.42	6.22	-	-	4.12	•
Critical Hdwy Stg 1	5.42	-	-	-		
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-			-
Pot Cap-1 Maneuver	686	913	-	-	1441	•
Stage 1	890	-	-	-	-	-
Stage 2	860	-	-	-	-	-
Platoon blocked, %	000	0.10	-	-		-
Mov Cap-1 Maneuver	686	913	-	-	1441	-
Mov Cap-2 Maneuver	686	-	-	-	-	
Stage 1	890	-	-	-	-	-
Stage 2	860	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s	10.5		0		0	
HCM LOS	В					
Min and an all Mains Manne		NDT	NDD	MDL 4	ODI	SBT
Minor Lane/Major Mvm	IL	NBT		WBLn1	SBL	
Capacity (veh/h)		-	-	686	1441	-
HCM Lane V/C Ratio		-	-	0.054	-	-
HCM Control Delay (s)		-	-	10.5	0	-
HCM CEth (/tile O(ush)		-	-	0.2	Α	-
HCM 95th %tile Q(veh))	-	-	0.2	0	-

2045 Future Total A.M. 09-26-2024

Intersection						
Int Delay, s/veh	2.7					
int belay, s/ven	2.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		B			4
Traffic Vol, veh/h	85	17	113	51	6	184
Future Vol, veh/h	85	17	113	51	6	184
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage	, # 0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	92	18	123	55	7	200
Major/Minor I	Minor1	1	Major1	1	Major2	
Conflicting Flow All	365	151	0	0	178	0
	4-4					
Stage 1	151	-	-	-	-	-
Stage 1 Stage 2 Critical Hdwy	151 214 6.42	6.22	-	-	4.12	-

Major/Minor	Minor1	N	//ajor1	N	Major2					
Conflicting Flow All	365	151	0	0	178	0				
Stage 1	151	-	-	-	-	-				
Stage 2	214	-	-	-	-	-				
Critical Hdwy	6.42	6.22	-	-	4.12	-				
Critical Hdwy Stg 1	5.42	-	-	-	-	-				
Critical Hdwy Stg 2	5.42	-	-	-	-	-				
Follow-up Hdwy	3.518	3.318	-	-	2.218	-				
Pot Cap-1 Maneuver	635	895	-	-	1398	-				
Stage 1	877	-	-	-	-	-				
Stage 2	822	-	-	-	-	-				
Platoon blocked, %			-	-		-				
Mov Cap-1 Maneuver	631	895	-	-	1398	-				
Mov Cap-2 Maneuver	631	-	-	-	-	-				
Stage 1	877	-	-	-	-	-				
Stage 2	817	-	-	-	-	-				

Approach	WB	NB	SB
HCM Control Delay, s	11.5	0	0.2
HCM LOS	В		

Minor Lane/Major Mymt	NBT	NRDI	NRI n1	SBI	SB
Millior Lane/Major MVIIIL	INDI	NDK	VDLIII	ODL	901
Capacity (veh/h)	-	-	664	1398	-
HCM Lane V/C Ratio	-	-	0.167	0.005	-
HCM Control Delay (s)	-	-	11.5	7.6	0
HCM Lane LOS	-	-	В	Α	Α
HCM 95th %tile Q(veh)	-	-	0.6	0	-

1. Dulliside Lille &	muusu	iai i tua	טום וטג	uic Dii	VC						00 2	O LOL
	٠	→	*	•	•	•	1	†	~	-	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Lane Configurations	7	^	7	7	†	7	7	^	7	7	1>	
Traffic Volume (vph)	75	42	411	501	2	126	323	375	114	54	296	25
Future Volume (vph)	75	42	411	501	2	126	323	375	114	54	296	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		75.0	100.0		0.0	75.0		65.0	40.0		0.0
Storage Lanes	1		1	1		1	1		1	1		(
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.988	
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1900	1568	1770	1900	1615	1805	1863	1429	1805	1748	C
Flt Permitted	0.757			0.567			0.309			0.447		
Satd. Flow (perm)	1438	1900	1568	1056	1900	1615	587	1863	1429	849	1748	C
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			340			200			200		5	
Link Speed (k/h)		50	0.0		60			60			60	
Link Distance (m)		140.4			136.5			65.5			1953.3	
Travel Time (s)		10.1			8.2			3.9			117.2	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	3%	2%	0%	0%	0%	2%	13%	0%	8%	0%
Adj. Flow (vph)	80	45	437	533	2	134	344	399	121	57	315	27
Shared Lane Traffic (%)		10	101	000		101	011	000		0,	010	
Lane Group Flow (vph)	80	45	437	533	2	134	344	399	121	57	342	(
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Righ
Median Width(m)	Lon	3.6	rtigitt	Lon	3.6	rugiit	Loit	3.6	rtigitt	Lon	3.6	rtigii
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes			4.0			4.0			4.0	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	1.00	1.00	25	1.00	1.00	25	1.00	1.00	25	1.00	1.00
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	10
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	
Detector 1 Size(m) Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	
Detector 1 Type Detector 1 Channel	U ±EX	CITEX	CITEX	CITEX	CITEX	CITEX	CITEX	CITEX	CITEX	CITEX	CITEX	
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Extend (s)	0.0	0.0										
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			C I +Ex			CI+Ex	
Detector 2 Channel		0.7									0.5	
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	

C.F. Crozier & Associates Synchro 11 Report Page 30

C.F. Crozier & Associates Synchro 11 Report

Lanes, Volumes, Timings

2045 Future Total P.M. 09-26-2024

1: Burnside Line & Industrial Road/Brodie Drive

1. Duffiside Liffe &	เทนนธน	iai Nua	JU/DIO	ale Dil	ve						03-2	10-2024
	۶	→	*	•	-	•	1	1	-	1	Ţ	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	25.0	25.0	5.0	25.0	
Minimum Split (s)	9.5	21.0	21.0	9.5	21.0	21.0	9.5	31.0	31.0	9.5	31.0	
Total Split (s)	10.4	21.0	21.0	21.5	32.1	32.1	15.0	38.0	38.0	9.5	32.5	
Total Split (%)	11.6%	23.3%	23.3%	23.9%	35.7%	35.7%	16.7%	42.2%	42.2%	10.6%	36.1%	
Maximum Green (s)	5.9	15.0	15.0	17.0	26.1	26.1	10.5	32.0	32.0	5.0	26.5	
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	6.0	6.0	4.5	6.0	6.0	4.5	6.0	6.0	4.5	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Min	Min	None	Min	Min	None	Min	Min	None	Min	
Act Effct Green (s)	22.3	15.0	15.0	38.0	28.2	28.2	41.8	32.7	32.7	31.8	25.3	
Actuated g/C Ratio	0.25	0.17	0.17	0.43	0.32	0.32	0.47	0.37	0.37	0.36	0.28	
v/c Ratio	0.21	0.14	0.80	0.91	0.00	0.21	0.82	0.58	0.19	0.16	0.68	
Control Delay	18.3	33.0	21.3	43.7	22.5	1.7	34.4	27.5	0.9	14.6	35.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	18.3	33.0	21.3	43.7	22.5	1.7	34.4	27.5	0.9	14.6	35.8	
LOS	В	С	С	D	С	Α	С	С	Α	В	D	
Approach Delay		21.8			35.2			26.5			32.7	
Approach LOS		С			D			С			С	
Queue Length 50th (m)	8.3	6.9	15.5	75.5	0.3	0.0	38.8	58.7	0.0	5.4	53.5	
Queue Length 95th (m)	17.5	16.9	#64.8	#155.1	2.0	3.8	#74.5	89.2	1.4	12.0	83.8	
Internal Link Dist (m)		116.4			112.5			41.5			1929.3	
Turn Bay Length (m)	25.0		75.0	100.0			75.0		65.0	40.0		
Base Capacity (vph)	387	321	547	588	603	649	420	705	665	358	524	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	

Reduced v/c Ratio
Intersection Summary

Area Type: Other

Cycle Length: 90 Actuated Cycle Length: 88.8 Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.91

Intersection LOS: C ICU Level of Service E

0.91

0.00

0.21

0.82

0.57

0.18

0.16

Intersection Signal Delay: 28.8 Intersection Capacity Utilization 87.8%

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

0.21

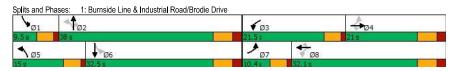
0.14

0.80

Queue shown is maximum after two cycles.

C.F. Crozier & Associates Synchro 11 Report Page 2 Lanes, Volumes, Timings 1: Burnside Line & Industrial Road/Brodie Drive 2045 Future Total P.M.

09-26-2024



C.F. Crozier & Associates Synchro 11 Report Page 3 2045 Future Total P.M.

2: Burnside Line & Highway 11 Westbound On-Ramp

09-26-2024

	•	7	1	†	ļ	1
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				^	†	7
Traffic Volume (vph)	0	0	0	1226	765	410
Future Volume (vph)	0	0	0	1226	765	410
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	1863	1863	1509
Flt Permitted						
Satd. Flow (perm)	0	0	0	1863	1863	1509
Link Speed (k/h)	50			50	50	
Link Distance (m)	185.9			51.5	174.3	
Travel Time (s)	13.4			3.7	12.5	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	0%	2%	2%	7%
Adj. Flow (vph)	0	0	0	1251	781	418
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1251	781	418
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	100	100	100			100
Sign Control	Free			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utiliza	tion 67.9%			IC	U Level	of Service (
Analysis Period (min) 15						

C.F. Crozier & Associates Synchro 11 Report Page 4

Lanes, Volumes, Timings
3: Burnside Line & Highway 11 Westbound

2045 Future Total P.M. 09-26-2024

	1	*	†	1	1	Ţ
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	*	7		7		†
Traffic Volume (vph)	255	245	982	361	0	765
Future Volume (vph)	255	245	982	361	0	765
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0	0.0		80.0	0.0	
Storage Lanes	1	1		1	0.0	
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.50	0.850	1.00	0.850	1.00	1.00
Flt Protected	0.950	3.000		0.000		
Satd. Flow (prot)	1752	1599	1863	1615	0	1863
Flt Permitted	0.950	1000	1000	1013	J	1000
Satd. Flow (perm)	1752	1599	1863	1615	0	1863
Right Turn on Red	1132	Yes	1003	Yes	U	1003
Satd. Flow (RTOR)		135		368		
	50	133	60	300		60
Link Speed (k/h)						
Link Distance (m)	241.7		160.3			51.5
Travel Time (s)	17.4	0.00	9.6	0.00	0.00	3.1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	3%	1%	2%	0%	0%	2%
Adj. Flow (vph)	260	250	1002	368	0	781
Shared Lane Traffic (%)						
Lane Group Flow (vph)	260	250	1002	368	0	781
Enter Blocked Intersection	No No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25	15		15	25	
Number of Detectors	1	1	2	1		2
Detector Template	Left	Right	Thru	Right		Thru
Leading Detector (m)	2.0	2.0	10.0	2.0		10.0
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0
Detector 1 Size(m)	2.0	2.0	0.6	2.0		0.6
		CI+Ex	CI+Ex	CI+Ex		CI+Ex
Detector 1 Type	CI+Ex	CI+EX	CI+EX	CI+EX		U +EX
Detector 1 Channel	0.0	0.0	0.0	0.0		0.0
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			CI+Ex			CI+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Perm	Perm	NA	Perm		NA

C.F. Crozier & Associates Synchro 11 Report Page 5

Lanes, Volumes, Timings
3: Burnside Line & Highway 11 Westbound

2045 Future Total P.M.

09-26-2024

emitted Phases		1	*	†	1	-	†	
ermitted Phases	Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	
etector Phase witch Phase witch Phase witch Phase linimum Initial (s) 10.0 10.0 20.0 20.0 20.0 20.0 inimum Bylit (s) 16.1 16.1 27.3 27.3 27.3 27.3 27.3 27.3 27.3 27.3	Permitted Phases	4	4		6			
inimum Initial (s)	Detector Phase	4	4	6	6		2	
Inimum Split (s)	Switch Phase							
otal Split (s) 24.0 24.0 61.0 61.0 61.0 otal Split (%) 28.2% 28.2% 71.8% 71.8% 71.8% azximum Green (s) 17.9 17.9 53.7 53.8 28.2 28.8 28.8	Minimum Initial (s)	10.0	10.0	20.0	20.0		20.0	
otal Split (%) 28.2% 28.2% 28.2% 71.8% 71.8% 71.8% aximum Green (s) 17.9 17.9 53.7 53.7 53.7 53.7 ellow Time (s) 4.5 4.4 5 6.0 6.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.6 0.	Minimum Split (s)	16.1	16.1	27.3	27.3		27.3	
Asximum Green (s) 17.9 17.9 53.7 53.7 53.7	Total Split (s)	24.0	24.0	61.0	61.0		61.0	
ellow Time (s)	Total Split (%)	28.2%	28.2%	71.8%	71.8%	7	1.8%	
I-Red Time (s)	Maximum Green (s)	17.9	17.9	53.7	53.7		53.7	
ost Time Adjust (s) 0.0 0.0 0.0 0.0 0.0 0.0 octal Lost Time (s) 6.1 6.1 7.3 7.3 7.3 7.3 7.3 aad/Lag sad-Lag Optimize? ehicle Extension (s) 3.0 3.0 3.2 3.2 3.2 aceall Mode None None None None None None Octal Lost Effet Green (s) 15.3 15.3 44.5 44.5 44.5 access to Effet Green (s) 15.3 15.3 44.5 44.5 44.5 access to Effet Green (s) 15.3 15.3 44.5 44.5 44.5 access to Effet Green (s) 15.3 15.3 44.5 44.5 access to Effet Green (s) 15.3 15.3 44.5 44.5 access to Effet Green (s) 15.3 15.3 44.5 44.5 access to Effet Green (s) 15.3 15.3 44.5 44.5 access to Effet Green (s) 15.3 15.3 44.5 44.5 access to Effet Green (s) 15.3 15.3 44.5 access to Effet Green (s) 15.3 15.3 44.5 access to Effet Green (s) 15.3 15.3 45.5 access to Effet Green (s) 15.3 15.3 access to Effet Green (s) 1	Yellow Time (s)	4.5	4.5	4.5	4.5		4.5	
otal Lost Time (s) 6.1 6.1 7.3 7.3 7.3 aad/Lag saad-Lag Optimize? saad-Lag Optimize? saad-Lag Optimize? saad-Lag Optimize? ehicle Extension (s) 3.0 3.0 3.2 3.2 3.2 ecall Mode None None None None None None ct Effct Green (s) 15.3 15.3 44.5 44.5 44.5 44.5 64.5 64.5 64.5 64.5 64.5 64.5 64.5 64.5 64.5 64.5 64.5 64.5 64.5 64.5 64.5 64.5 64.5 64.5 66.0 6.60 0.70 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	All-Red Time (s)	1.6	1.6	2.8	2.8		2.8	
aad/Lag Optimize? ehicle Extension (s) 3.0 3.0 3.2 3.2 3.2 ecall Mode None None None None None Ct Effet Green (s) 15.3 15.3 44.5 44.5 44.5 ctuated g/C Ratio 0.21 0.21 0.60 0.60 0.60 0.60 ontrol Delay 41.9 19.7 24.4 1.6 13.9 ueue Delay 0.0 0.0 0.0 0.0 0.0 0.0 otal Delay 41.9 19.7 24.4 1.6 13.9 ueue Delay 19.7 24.4 1.6 13.9 pproach Delay 31.0 18.3 13.9 13.9 pproach LOS C B B B B pproach LOS C B B B B pproach LOS C B B B B pueue Length 50th (m) 39.8 16.1 120.1 0.0 74.6 tueue Length 95th (m) 217.7 136.3 27.5 urn Bay Length (m) 84.3 505 1390 1298 1390 tarvation Cap Reductn 0 0 0 0 0 0 pillback Cap Reductn 0 0 0 0 0 0 pillback Cap Reductn 0 0 0 0 0 0 pillback Cap Reductn 0 0 0 0 0 0 tersection Summary rea Type: Other ycle Length: 85 ctuated Cycle Length: 73.7 atural Cycle: 70 ontrol Upics Semi Act-Uncoord aximum v/c Ratio: 0.89 tersection Signal Delay: 19.4 Intersection LOS: B lCU Level of Service D nalysis Period (min) 15 95th percentile volume exceeds capacity, queue may be longer.	Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	
eacl-Lag Optimize? ehicle Extension (s) 3.0 3.0 3.2 3.2 3.2 3.2 ehicle Extension (s) 3.0 3.0 3.0 3.2 3.2 3.2 3.2 ecall Mode None None None None None ot Effet Green (s) 15.3 15.3 44.5 44.5 44.5 ctuated g/C Ratio 0.21 0.21 0.60 0.60 0.60 0.60 c Ratio 0.72 0.57 0.89 0.33 0.70 ontrol Delay 41.9 19.7 24.4 1.6 13.9 OS 0 B C A B proach Delay 41.9 19.7 24.4 1.6 13.9 OS D B C A B proach Delay 31.0 18.3 13.9 Proach Delay 31.0 18.3 13.9 proach LOS C B B B ueue Length 50th (m) 39.8 16.1 120.1 0.0 74.6 ueue Length 95th (m) 474.0 40.7 #222.8 9.2 114.4 ternal Link Dist (m) 217.7 136.3 27.5 urn Bay Length (m) ase Capacity (vph) 443 505 1390 1298 1390 tarvation Cap Reductn 0 0 0 0 0 0 otarge Cap Reductn 0 0 0 0 0 0 otarge Cap Reductn 0 0 0 0 0 0 otarge Cap Reductn 0 0 0 0 0 0 0 tersection Summary rea Type: Other ycle Length: 85 ctuated Cycle Length: 73.7 attural Cycle: 70 ontrol Type: Semi Act-Uncoord laximum v/c Ratio: 0.89 tersection Capacity Utilization 78.0% nalysis Period (min) 15	Total Lost Time (s)	6.1	6.1	7.3	7.3		7.3	
ehicle Extension (s) 3.0 3.0 3.2 3.2 3.2 3.2 ecall Mode None None None None None None Cell Mode (see High Green (s) 15.3 15.3 15.3 44.5 44.5 44.5 totuated g/C Ratio 0.21 0.21 0.60 0.60 0.60 0.60 0.60 0.60 0.60 0.6	Lead/Lag							
None None None None None None None Comment	Lead-Lag Optimize?							
tet Effet Green (s) 15.3 15.3 44.5 44.5 44.5 totated g/C Ratio 0.21 0.21 0.60 0.60 0.60 0.60 c Ratio 0.72 0.57 0.89 0.33 0.70 ontrol Delay 41.9 19.7 24.4 1.6 13.9 ueue Delay 0.0 0.0 0.0 0.0 0.0 0.0 otal Delay 41.9 19.7 24.4 1.6 13.9 ostal Delay 41.9 19.7 24.4 1.6 13.9 ostal Delay 41.9 19.7 24.4 1.6 13.9 ostal Delay 31.0 18.3 13.9 ostal Delay 15.1 ostal Delay 16.1 120.1 10.0 74.6 ueue Length 95th (m) 39.8 16.1 120.1 10.0 74.6 ueue Length 95th (m) 474.0 40.7 #222.8 9.2 114.4 ternal Link Dist (m) 217.7 136.3 27.5 urm Bay Length (m) asse Capacity (vph) 443 505 1390 1298 1390 tarvation Cap Reductn 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Vehicle Extension (s)	3.0	3.0	3.2	3.2		3.2	
ctuated g/C Ratio 0.21 0.21 0.60 0.60 0.60 0.60 c Ratio 0.72 0.57 0.89 0.33 0.70 ontrol Delay 41.9 19.7 24.4 1.6 13.9 usue Delay 0.0 0.0 0.0 0.0 0.0 0.0 ctal Delay 41.9 19.7 24.4 1.6 13.9 OS D B C A B procach Delay 31.0 18.3 13.9 procach Delay 31.0 18.3 13.9 procach Delay 31.0 18.3 13.9 usue Length 50th (m) 39.8 16.1 120.1 0.0 74.6 usue Length 95th (m) 474.0 40.7 #222.8 9.2 114.4 ternal Link Dist (m) 217.7 136.3 27.5 urn Bay Length (m) ase Capacity (vph) 443 505 1390 1298 1390 tarvation Cap Reductn 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Recall Mode	None	None	None	None	1	None	
c Ratio 0.72 0.57 0.89 0.33 0.70 ontrol Delay 41.9 19.7 24.4 1.6 13.9 ueue Delay 0.0 0.0 0.0 0.0 0.0 0.0 cotal Delay 41.9 19.7 24.4 1.6 13.9 Use Delay 31.0 18.3 13.9 Use Deproach Delay 31.0 18.3 13.9 Use Deproach LoS C B B B Use Use Length 50th (m) 39.8 16.1 120.1 0.0 74.6 Use Use Length 95th (m) 474.0 40.7 4222.8 9.2 114.4 Use Use Length 95th (m) 217.7 136.3 27.5 Use Use Delay 13.90 Use D	Act Effct Green (s)	15.3	15.3	44.5	44.5		44.5	
ontrol Delay	Actuated g/C Ratio	0.21	0.21	0.60	0.60		0.60	
ueue Delay 0.0 0.0 0.0 0.0 0.0 otal Delay 41.9 19.7 24.4 1.6 13.9 DS D B C A B pproach Delay 31.0 18.3 13.9 pproach LOS C B B B ueue Length 50th (m) 39.8 16.1 120.1 0.0 74.6 ueue Length 95th (m) #74.0 40.7 #222.8 9.2 114.4 ueue Length White (m) 38.0 27.5 3 27.5 urn Bay Length (m) 80.0 80.0 3 3 39.0 atarvation Cap Reductn 0 <	v/c Ratio	0.72	0.57	0.89	0.33		0.70	
obtal Delay 41.9 19.7 24.4 1.6 13.9 OS D B C A B opproach Delay 31.0 18.3 13.9 opproach LOS C B B oueue Length 50th (m) 39.8 16.1 120.1 0.0 74.6 oueue Length 95th (m) #74.0 40.7 #222.8 9.2 114.4 teteral Link Dist (m) 217.7 136.3 27.5 urn Bay Length (m) 80.0 80.0 ase Capacity (vph) 443 505 1390 1298 1390 tervation Cap Reductn 0 0 0 0 0 0 orange Cap Reductn 0 <td>Control Delay</td> <td>41.9</td> <td>19.7</td> <td>24.4</td> <td>1.6</td> <td></td> <td>13.9</td> <td></td>	Control Delay	41.9	19.7	24.4	1.6		13.9	
D	Queue Delay	0.0	0.0	0.0	0.0		0.0	
pproach Delay 31.0 18.3 13.9 pproach LOS C B B B B ueue Length 50th (m) 39.8 16.1 120.1 0.0 74.6 ueue Length 95th (m) #74.0 40.7 #222.8 9.2 114.4 ternal Link Dist (m) 217.7 136.3 27.5 urn Bay Length (m) 80.0 asse Capacity (vph) 443 505 1390 1298 1390 tarvation Cap Reductn 0 0 0 0 0 0 0 pillback Cap Reductn 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Total Delay	41.9	19.7	24.4	1.6		13.9	
Deproach LOS	LOS	D	В	С	Α		В	
ueue Length 50th (m) 39.8 16.1 120.1 0.0 74.6 ueue Length 95th (m) #74.0 40.7 #222.8 9.2 114.4 ternal Link Dist (m) 217.7 136.3 27.5 urn Bay Length (m) 80.0 80.0 ase Capacity (vph) 443 505 1390 1298 1390 tarvation Cap Reductn 0 0 0 0 0 pillback Cap Reductn 0 0 0 0 0 orage Cap Reductn 0 0 0 0 0 0 orage Cap Reductn 0 0 0	Approach Delay	31.0		18.3			13.9	
ueue Length 95th (m) #74.0 40.7 #222.8 9.2 114.4 ternal Link Dist (m) 217.7 136.3 27.5 um Bay Length (m) 80.0 80.0 ase Capacity (vph) 443 505 1390 1298 1390 tarvation Cap Reductn 0 0 0 0 0 pillback Cap Reductn 0 0 0 0 0 torage Cap Reductn 0 0 0 0 0 deduced v/c Ratio 0.59 0.50 0.72 0.28 0.56 tetresection Summary rea Type: Other ycle Length: 85 tutated Cycle Length: 73.7 atural Cycle: 70 ontrol Type: Semi Act-Uncoord laximum v/c Ratio: 0.89 tersection Signal Delay: 19.4 Intersection LOS: B tersection Capacity Utilization 78.0% Intersection LOS: B Jet Protoid (min) 15 95th percentile volume exceeds capacity, queue may be longer.	Approach LOS	С		В			В	
ternal Link Dist (m) 217.7 136.3 27.5 urn Bay Length (m) 80.0 asse Capacity (vph) 443 505 1390 1298 1390 tarvation Cap Reductn 0 0 0 0 0 0 pillback Cap Reductn 0 0 0 0 0 0 pillback Cap Reductn 0 0 0 0 0 0 ctorage Cap Reductn 0 0 0 0 0 0 0 deduced v/c Ratio 0.59 0.50 0.72 0.28 0.56 tersection Summary rea Type: Other ycle Length: 85 ctuated Cycle Length: 73.7 atural Cycle: 70 ontrol Type: Semi Act-Uncoord aximum v/c Ratio: 0.89 tersection Capacity Utilization 78.0% larty Service D nalysis Period (min) 15 95th percentile volume exceeds capacity, queue may be longer.	Queue Length 50th (m)	39.8	16.1	120.1	0.0		74.6	
urn Bay Length (m) 80.0 ase Capacity (vph) 443 505 1390 1298 1390 tarvation Cap Reductn 0 0 0 0 0 0 polipilack Cap Reductn 0 0 0 0 0 0 torage Cap Reductn 0 0 0 0 0 0 educed v/c Ratio 0.59 0.50 0.72 0.28 0.56 tersection Summary rea Type: Other ycle Length: 85 ctuated Cycle Length: 73.7 attural Cycle: 70 ontrol Type: Semi Act-Uncoord aximum v/c Ratio: 0.89 tersection Signal Delay: 19.4 Intersection LOS: B tersection Capacity Utilization 78.0% ICU Level of Service D nallysis Period (min) 15 95th percentile volume exceeds capacity, queue may be longer.	Queue Length 95th (m)	#74.0	40.7	#222.8	9.2	,	14.4	
ase Capacity (vph)	Internal Link Dist (m)	217.7		136.3			27.5	
tarvation Cap Reductn 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Turn Bay Length (m)				80.0			
pillback Cap Reductn 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Base Capacity (vph)	443	505	1390	1298		1390	
tersection Summary Tea Type: Other Vole Length: 85 Ctuated Cycle Length: 73.7 atural Cycle: 70 ontrol Type: Semi Act-Uncoord aximum v/c Ratio: 0.89 tersection Signal Delay: 19.4 Intersection LOS: B tersection Capacity Utilization 78.0% JCU Level of Service D nallysis Period (min) 15 95th percentile volume exceeds capacity, queue may be longer.	Starvation Cap Reductn	0	0	0	0		0	
educed v/c Ratio 0.59 0.50 0.72 0.28 0.56 tersection Summary rea Type: Other ycle Length: 85 ctuated Cycle Length: 73.7 atural Cycle: 70 ontrol Type: Semi Act-Uncoord laximum v/c Ratio: 0.89 tersection Signal Delay: 19.4 Intersection LOS: B tersection Capacity Utilization 78.0% ICU Level of Service D nallysis Period (min) 15 95th percentile volume exceeds capacity, queue may be longer.	Spillback Cap Reductn	0	0	0	0		0	
tersection Summary rea Type: Other ycle Length: 85 ctuated Cycle Length: 73.7 atural Cycle: 70 ontrol Type: Semi Act-Uncoord laximum v/c Ratio: 0.89 tersection Signal Delay: 19.4 Intersection LOS: B tersection Capacity Utilization 78.0% ICU Level of Service D nalysis Period (min) 15 95th percentile volume exceeds capacity, queue may be longer.	Storage Cap Reductn	0	0	0	0		0	
rea Type: Other ycle Length: 85 ctuated Cycle Length: 73.7 atural Cycle: 70 ontrol Type: Semi Act-Uncoord laximum v/c Ratio: 0.89 tersection Signal Delay: 19.4 Intersection LOS: B tersection Capacity Utilization 78.0% ICU Level of Service D nalysis Period (min) 15 95th percentile volume exceeds capacity, queue may be longer.	Reduced v/c Ratio	0.59	0.50	0.72	0.28		0.56	
ycle Length: 85 ctuated Cycle Length: 73.7 atural Cycle: 70 ontrol Type: Semi Act-Uncoord laximum v/c Ratio: 0.89 tersection Signal Delay: 19.4 tersection Capacity Utilization 78.0% ICU Level of Service D nalysis Period (min) 15 95th percentile volume exceeds capacity, queue may be longer.	Intersection Summary							
ctuated Cycle Length: 73.7 altural Cycle: 70 ontrol Type: Semi Act-Uncoord laximum v/c Ratio: 0.89 tersection Signal Delay: 19.4 letersection Capacity Utilization 78.0% letersection Capacity Utilization 78.0% letersection LOS: B tersection Capacity Utilization 78.0% letersection Capacity Utilization 78.0% letersection LOS: B tersection Capacity Utilization 78.0% letersection Capacity Utilization 78.0% letersection Capacity Utilization 78.0% letersection Capacity Utilization 78.0% letersection LOS: B	Area Type:	Other						
atural Cycle: 70 ontrol Type: Semi Act-Uncoord aximum v/c Ratio: 0.89 tersection Signal Delay: 19.4 Intersection LOS: B tersection Capacity Utilization 78.0% ICU Level of Service D nallysis Period (min) 15 95th percentile volume exceeds capacity, queue may be longer.	Cycle Length: 85							
ontrol Type: Semi Act-Uncoord aximum v/c Ratio: 0.89 tersection Signal Delay: 19.4 tersection Capacity Utilization 78.0% ICU Level of Service D nallysis Period (min) 15 95th percentile volume exceeds capacity, queue may be longer.		.7						
laximum v/c Ratio: 0.89 tersection Signal Delay: 19.4 tersection Capacity Utilization 78.0% ICU Level of Service D nallysis Period (min) 15 95th percentile volume exceeds capacity, queue may be longer.	Natural Cycle: 70							
tersection Signal Delay: 19.4 Intersection LOS: B tersection Capacity Utilization 78.0% ICU Level of Service D nalysis Period (min) 15 95th percentile volume exceeds capacity, queue may be longer.		coord						
tersection Capacity Utilization 78.0% ICU Level of Service D nalysis Period (min) 15 95th percentile volume exceeds capacity, queue may be longer.	Maximum v/c Ratio: 0.89							
nalysis Period (min) 15 95th percentile volume exceeds capacity, queue may be longer.								
95th percentile volume exceeds capacity, queue may be longer.		ation 78.0%			IC	U Level of	Service	D
	Analysis Period (min) 15							
Queue shown is maximum after two cycles.	# 95th percentile volume	exceeds ca	pacity, qu	ueue may	be longer			
	Queue shown is maximi	um after two	cycles.					

C.F. Crozier & Associates Synchro 11 Report Page 6

Lanes, Volumes, Timings 3: Burnside Line & Highway 11 Westbound 2045 Future Total P.M. 09-26-2024

 Splits and Phases:
 3: Burnside Line & Highway 11 Westbound

 ↓ Ø2
 Ø4

 61s
 Ø4

 61s
 Ø6

 61s
 Ø6

C.F. Crozier & Associates Synchro 11 Report

277

277

1900

0.0

7.5

1.00

0.950

1736

0.950

1736

214.0

15.4

0.95

4%

292

292

No

3.6

0.0

4.8

1.00

25

Left Right

2.0

0.0

0.0

2.0

0.0

0.0

0.0

CI+Ex

207

207

1900

0.0 55.0

1.00

0.850

1583

1583

Yes

218

0.95

2%

218

218

Right Left

1.00

15

2.0

0.0

0.0

2.0

0.0

0.0

Perm Perm pm+pt

CI+Ex

301

301

1900

7.5

1.00

1787

0.092

173

0.95

317 1119

317

No

Left

1.00

25

Left

2.0

0.0

0.0

2.0

0.0

0.0

0.0

CI+Ex

1063

1063

1900

1.00 1.00

1881

1881

160.8

9.6

0.95

1%

1119

Left

3.6

0.0

1.00

Thru

10.0

0.0

0.0

0.6

0.0

0.0

9.4

0.0

NA

6

CI+Ex CI+Ex

CI+Ex

854

1900

1863

1863

176.6

10.6

0.95

2%

899

899

Left Right

3.6

0.0

1.00

Thru Right

0.0

0.0

0.6

0.0

0.0

9.4

0.0

NA Perm

2

CI+Ex

169

169

1900

40.0

1.00

0.850

1583

1583

Yes

76

0.95

2%

178

178

No

1.00

15

2.0

0.0

0.0

2.0

0.0

0.0

0.0

CI+Ex

Lane Group Lane Configurations Traffic Volume (vph)

Future Volume (vph)

Ideal Flow (vphpl)

Storage Length (m)

Storage Lanes Taper Length (m)

Lane Util. Factor

Satd. Flow (prot)

Satd, Flow (perm)

Right Turn on Red

Satd. Flow (RTOR)

Link Speed (k/h) Link Distance (m)

Travel Time (s)

Adj. Flow (vph)

Lane Alignment

Link Offset(m)

Median Width(m)

Crosswalk Width(m)

Headway Factor

Turning Speed (k/h)

Number of Detectors Detector Template

Leading Detector (m)

Trailing Detector (m)

Detector 1 Size(m)

Detector 1 Channel Detector 1 Extend (s)

Detector 1 Queue (s)

Detector 1 Delay (s)

Detector 2 Size(m) Detector 2 Type

Detector 2 Channel Detector 2 Extend (s)

Protected Phases

Turn Type

Detector 2 Position(m)

Detector 1 Type

Detector 1 Position(m)

Two way Left Turn Lane

Peak Hour Factor

Heavy Vehicles (%)

Shared Lane Traffic (%) Lane Group Flow (vph)

Enter Blocked Intersection

Flt Protected

Flt Permitted

2045 Future Total P.M. 09-26-2024

11 Eastbound

Lanes, Volumes, Timings
4: West Street North & Highway 1

	٠	*	1	†	Ţ	1	
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	
Permitted Phases	8	8	6			2	
Detector Phase	8	8	1	6	2	2	
Switch Phase							
Minimum Initial (s)	10.0	10.0	7.0	20.0	20.0	20.0	
Minimum Split (s)	18.0	18.0	10.0	41.0	41.0	41.0	
Total Split (s)	25.0	25.0	24.0	70.0	46.0	46.0	
Total Split (%)	26.3%	26.3%	25.3%	73.7%	48.4%	48.4%	
Maximum Green (s)	18.8	18.8	21.0	62.9	38.9	38.9	
Yellow Time (s)	4.5	4.5	3.0	4.5	4.5	4.5	
All-Red Time (s)	1.7	1.7	0.0	2.6	2.6	2.6	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.2	6.2	3.0	7.1	7.1	7.1	
Lead/Lag			Lead		Lag	Lag	
Lead-Lag Optimize?			Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.2	3.2	3.2	
Recall Mode	None	None	None	None	None	None	
Act Effct Green (s)	17.7	17.7	62.7	58.6	40.3	40.3	
Actuated g/C Ratio	0.20	0.20	0.70	0.65	0.45	0.45	
v/c Ratio	0.85	0.45	0.80	0.91	1.08	0.24	
Control Delay	59.9	8.0	34.9	26.3	80.8	10.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	59.9	8.0	34.9	26.3	80.8	10.8	
LOS	Е	Α	С	С	F	В	
Approach Delay	37.7			28.2	69.2		
Approach LOS	D			С	Е		
Queue Length 50th (m)	54.8	0.0	38.5	160.5	~191.6	11.1	
Queue Length 95th (m)	#100.1	19.0	66.5	#278.9	#283.9	26.7	
Internal Link Dist (m)	190.0			136.8	152.6		
Turn Bay Length (m)			55.0			40.0	
Base Capacity (vph)	366	506	501	1328	835	752	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.80	0.43	0.63	0.84	1.08	0.24	
Intersection Summary							
Area Type:	Other						
Cycle Length: 95							
Actuated Cycle Length: 89.	7						
Natural Cycle: 90							
Control Type: Semi Act-Un	coord						
Maximum v/c Ratio: 1.08							
Intersection Signal Delay: 4					ntersectio		
Intersection Capacity Utiliza	ation 91.4%)		ŀ	CU Level	of Service	F
Analysis Period (min) 15							
 Volume exceeds capac 			cally infin	ite.			
Queue shown is maximi							
# 95th percentile volume							

C.F. Crozier & Associates	Synchro 11 Report
	Page 8

C.F. Crozier & Associates Synchro 11 Report Page 9 Lanes, Volumes, Timings 4: West Street North & Highway 11 Eastbound 2045 Future Total P.M. 09-26-2024

Splits and Phases: 4: West Street North & Highway 11 Eastbound Ø2 **↑**øı ₫ ø6 < ₽ Ø8

C.F. Crozier & Associates Synchro 11 Report Page 10 Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road

2045 Future Total P.M.

	•	-	*	-	-	*	1	†	1	1	Ţ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	^	7	*	f.		77	^	7	7	^	1
Traffic Volume (vph)	329	357	348	576	332	250	331	1063	656	124	880	232
Future Volume (vph)	329	357	348	576	332	250	331	1063	656	124	880	232
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	115.0		0.0	100.0		120.0	110.0		50.0
Storage Lanes	1		1	1		0	2		1	1		1
Taper Length (m)	70.0			65.0			80.0			100.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98									
Frt			0.850		0.936				0.850			0.850
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1900	1599	1787	1768	0	3502	3539	1599	1805	3505	1583
Flt Permitted	0.165			0.137			0.950			0.127		
Satd. Flow (perm)	310	1900	1575	258	1768	0	3502	3539	1599	241	3505	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			193		30				587			186
Link Speed (k/h)		50			70			50			50	
Link Distance (m)		186.6			853.6			529.0			469.5	
Travel Time (s)		13.4			43.9			38.1			33.8	
Confl. Peds. (#/hr)			2	2								
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	0%	1%	1%	1%	0%	0%	2%	1%	0%	3%	2%
Adj. Flow (vph)	350	380	370	613	353	266	352	1131	698	132	936	247
Shared Lane Traffic (%)												
Lane Group Flow (vph)	350	380	370	613	619	0	352	1131	698	132	936	247
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6	Ŭ		7.2	Ŭ		7.2	Ŭ
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	- 1,0
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel		J/			J(J/			J/	
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
DOGOGOT E EXTORTO (0)		0.0			0.0			0.0			0.0	

C.F. Crozier & Associates Synchro 11 Report

Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road 2045 Future Total P.M. 09-26-2024

	۶	→	*	1	+	•	1	†	1	-	ţ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6					8	4		4
Detector Phase	5	2	2	1	6		3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0	20.0	7.0	20.0		7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	12.0	27.2	27.2	12.0	33.2		11.5	21.0	21.0	11.5	22.5	22.5
Total Split (s)	27.0	31.4	31.4	41.0	45.4		18.0	46.1	46.1	11.5	39.6	39.6
Total Split (%)	20.8%	24.2%	24.2%	31.5%	34.9%		13.8%	35.5%	35.5%	8.8%	30.5%	30.5%
Maximum Green (s)	22.0	24.2	24.2	36.0	38.2		14.0	38.1	38.1	7.5	31.6	31.6
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	2.0	2.2	2.2	2.0	2.2		1.0	3.5	3.5	1.0	3.5	3.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.2	7.2	5.0	7.2		4.0	8.0	8.0	4.0	8.0	8.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.6	3.6	3.0	3.6		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	None	None	None	None	None
Walk Time (s)					7.0			7.0	7.0			
Flash Dont Walk (s)					19.0			6.0	6.0			
Pedestrian Calls (#/hr)					0			0	0			
Act Effct Green (s)	48.3	24.2	24.2	67.4	38.3		14.0	38.1	38.1	43.1	31.6	31.6
Actuated g/C Ratio	0.37	0.19	0.19	0.52	0.29		0.11	0.29	0.29	0.33	0.24	0.24
v/c Ratio	0.96	1.08	0.82	1.10	1.14		0.93	1.09	0.79	0.78	1.10	0.47
Control Delay	76.6	119.3	39.9	103.4	124.5		89.7	99.1	14.5	56.6	107.4	14.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.6	119.3	39.9	103.4	124.5		89.7	99.1	14.5	56.6	107.4	14.6
LOS	Е	F	D	F	F		F	F	В	Е	F	В
Approach Delay		79.0			114.0			70.5			84.9	
Approach LOS		Е			F			Е			F	
Queue Length 50th (m)	76.1	~113.8	48.0	~169.8	~189.9		49.2	~180.5	23.8	22.3	~150.3	13.0
Queue Length 95th (m)	#138.6	#177.7	#99.4	#244.4	#265.0		#79.2	#224.5	82.4	#49.5	#193.1	38.6
Internal Link Dist (m)		162.6			829.6			505.0			445.5	
Turn Bay Length (m)	50.0			115.0			100.0		120.0	110.0		50.0
Base Capacity (vph)	365	353	450	557	541		377	1037	883	170	851	525
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.96	1.08	0.82	1.10	1.14		0.93	1.09	0.79	0.78	1.10	0.47

Intersection Summary Area Type: Cycle Length: 130
Actuated Cycle Length: 130

Natural Cycle: 130

Control Type: Semi Act-Uncoord Maximum v/c Ratio: 1.14

Intersection Signal Delay: 84.6
Intersection Capacity Utilization 107.4%

Intersection LOS: F ICU Level of Service G

C.F. Crozier & Associates Synchro 11 Report Page 12 Lanes, Volumes, Timings

2045 Future Total P.M.

09-26-2024

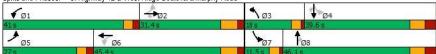
5: Highway 12 & West Ridge Boulevard/Murphy Road

Analysis Period (min) 15

- Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.

 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 5: Highway 12 & West Ridge Boulevard/Murphy Road



Synchro 11 Report C.F. Crozier & Associates

Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol. veh/h	609	7	0	4	4	4	2	0	0	2	0	350
Future Vol., veh/h	609	7	0	4	4	4	2	0	0	2	0	350
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage	e,# -	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	18	25	0	0	100	0	0	0	0	0	0	27
Mvmt Flow	677	8	0	4	4	4	2	0	0	2	0	389
Major/Minor	Minor2			Minor1			Major1		ı	Major2		
Conflicting Flow All	207	203	195	207	397	0	389	0	0	0	0	0
Stage 1	199	199	-	4	4	-	-	-	-	-	-	-
Stage 2	8	4		203	393							
Critical Hdwy	7.28	6.75	6.2	7.1	7.5	6.2	4.1			4.1	-	
Critical Hdwy Stg 1	6.28	5.75		6.1	6.5					-		
Critical Hdwy Stg 2	6.28	5.75		6.1	6.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.662	4.225	3.3	3.5	4.9	3.3	2.2	-		2.2	-	-
Pot Cap-1 Maneuver	717	654	851	755	416	-	1181	-			-	
Stage 1	767	695	-	1024	731	-	-	-	-	-	-	-
Stage 2	973	849		804	467		-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	653	851	747	415	-	1181	-	-	-	-	-
Mov Cap-2 Maneuver	-	653	-	747	415	-	-	-	-	-	-	-
Stage 1	765	695	-	1022	730	-	-	-	-	-	-	-
Stage 2	965	847	-	795	467	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s							8.1					
HCM LOS	-			-								
Miner Lone/Meier Muse	na f	NDI	NDT	NDD I	TDI = 41	MDI =1	CDI	CDT	CDD			
Minor Lane/Major Mvn	III	NBL	NBT	NDK I	EBLn1\	VDLIII	SBL	SBT	SBR			
Capacity (veh/h)		1181	-	-	-	-	-	-	-			
HCM Cantrol Dalay (a)	١	0.002	-	-	-	-	-	-	-			
HCM Control Delay (s) HCM Lane LOS)	8.1 A	0 A	-	-	-	-	-	-			
	A	A 0	А	-	-	-	-	-	-			
HCM 95th %tile Q(veh)	U	-	-	-	-	-	-				

Intersection												
Int Delay, s/veh	5.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol., veh/h	5	295	17	49	373	20	28	49	94	8	44	2
Future Vol. veh/h	5	295	17	49	373	20	28	49	94	8	44	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-			-				-			
Veh in Median Storage,	,# -	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0		-	0			0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	2	0	0	1	0	0	0	0	0	20	0
Mvmt Flow	5	317	18	53	401	22	30	53	101	9	47	2
Major/Minor N	/lajor1			Major2			Minor1		N	Minor2		
Conflicting Flow All	423	0	0	335	0	0	879	865	326	931	863	412
Stage 1	-	-			-		336	336	-	518	518	-
Stage 2	-	-	-	-	-	-	543	529	-	413	345	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.7	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.7	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.7	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4.18	3.3
Pot Cap-1 Maneuver	1147	-	-	1236	-	-	270	294	720	249	274	644
Stage 1	-	-	-	-	-	-	682	645	-	544	505	-
Stage 2	-	-	-	-	-	-	528	530	-	620	605	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1147	-	-	1236	-	-	221	276	720	175	257	644
Mov Cap-2 Maneuver	-	-	-	-	-	-	221	276	-	175	257	-
Stage 1	-	-	-	-	-	-	679	642	-	541	477	-
Stage 2	-	-	-	-	-	-	447	500	-	487	602	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.9			22			24.2		
HCM LOS							C			С		
Minor Lane/Major Mvmt	t	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)		393	1147			1236			245			
HCM Lane V/C Ratio		0.468	0.005			0.043		-	0.237			
HCM Control Delay (s)		22	8.2	0	_	8	0	_	24.2			
HCM Lane LOS		C	Α.Δ	A		A	Ā		C			
HCM 95th %tile Q(veh)		2.4	0	-	_	0.1	-	_	0.9			
00111 /0110 34(4011)			0			V. I			0.0			

Lanes, Volumes, Timings 8: Burnside Line & Division Road W

	•	-	*	1	•	*	1	†	1	1	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (vph)	16	187	202	28	143	4	266	207	82	7	113	34
Future Volume (vph)	16	187	202	28	143	4	266	207	82	7	113	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.933			0.997			0.980			0.970	
Flt Protected		0.998			0.992			0.977			0.998	
Satd. Flow (prot)	0	1744	0	0	1849	0	0	1793	0	0	1573	0
Flt Permitted		0.984			0.878			0.767			0.979	-
Satd. Flow (perm)	0	1720	0	0	1636	0	0	1408	0	0	1543	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		98			2			23			36	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		1346.1			271.7			1953.3			357.4	
Travel Time (s)		96.9			19.6			140.6			25.7	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	2%	1%	0%	2%	0%	1%	1%	4%	0%	23%	0%
Adi, Flow (vph)	17	199	215	30	152	4	283	220	87	7	120	36
Shared Lane Traffic (%)		100	210	00	102	•	200	LLU	O,	,	120	00
Lane Group Flow (vph)	0	431	0	0	186	0	0	590	0	0	163	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	Lon	0.0	rugiit	Loit	0.0	ragin	Lon	3.6	rugiti	Loit	3.6	rugiit
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		1.0			1.0			1.0			1.0	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	100	1100	100	100	1100	100	100	1100	100	100	1.00	100
Number of Detectors	1	2	100	1	2	100	1	2	100	1	2	100
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel	OITEX	OITEX		CITEX	OITEX		CITEX	OITEX		CITEX	CITEX	
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)	0.0	9.4		0.0	9.4		0.0	9.4		0.0	9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel		CITEX			CITEX			CITEX			CITEX	
		0.0			0.0			0.0			0.0	
Detector 2 Extend (s)	Dores	NA		Perm	NA		Dorm	NA		Perm	NA	
Turn Type Protected Phases	Perm	NA 4		Perin	NA 8		Perm	NA 2		Perm	NA 6	
	4	4		8	ď		0	2		C	Ö	
Permitted Phases	4			8	8		2	2		6	6	
Detector Phase	4	4		8	ď		2	2		б	b	
Switch Phase												

	•	-	*	1	+	1	1	†	1	1	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	23.0	23.0		23.0	23.0		32.0	32.0		32.0	32.0	
Total Split (%)	41.8%	41.8%		41.8%	41.8%		58.2%	58.2%		58.2%	58.2%	
Maximum Green (s)	18.5	18.5		18.5	18.5		27.5	27.5		27.5	27.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		14.5			14.5			27.7			27.7	
Actuated g/C Ratio		0.28			0.28			0.54			0.54	
v/c Ratio		0.78			0.40			0.77			0.19	
Control Delay		23.2			17.1			19.5			6.4	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		23.2			17.1			19.5			6.4	
LOS		С			В			В			Α	
Approach Delay		23.2			17.1			19.5			6.4	
Approach LOS		С			В			В			Α	
Queue Length 50th (m)		28.4			14.0			39.7			5.7	
Queue Length 95th (m)		55.9			28.0			#104.9			15.2	
Internal Link Dist (m)		1322.1			247.7			1929.3			333.4	
Turn Bay Length (m)												
Base Capacity (vph)		687			596			771			850	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.63			0.31			0.77			0.19	
Intersection Summary												
Area Type:	Other											
Cycle Length: 55												
Actuated Cycle Length: 51.	2											
Natural Cycle: 55												
Control Type: Semi Act-Und	coord											
Maximum v/c Ratio: 0.78												
Intersection Signal Delay: 1					ntersection							
Intersection Capacity Utiliza	ation 74.9%			IC	CU Level o	of Service	e D					
Analysis Period (min) 15												
# 95th percentile volume			eue may	be longe	r.							
Queue shown is maximu	ım after two	cycles.										

C.F. Crozier & Associates Synchro 11 Report Page 18

Synchro 11 Report Page 19 Lanes, Volumes, Timings 8: Burnside Line & Division Road W 2045 Future Total P.M.

09-26-2024

Splits and Phases: 8: Burnside Line & Division Road W ₹ ø2 **♣**Ø4 ₹ Ø8 Ø6

C.F. Crozier & Associates Synchro 11 Report Page 20

HCM 2010 TWSC 9: Industrial Road & Hurlwood Lane

HCM 95th %tile Q(veh)

2045 Future Total P.M. 09-26-2024

Intersection							
	3.4						
Int Delay, s/veh	3.4						
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	1	^	1		7	7	
Traffic Vol, veh/h	0	150	498	139	176	0	
Future Vol, veh/h	0	150	498	139	176	0	
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Free	Free	Free	Free	Stop	Stop	
RT Channelized	-	None	-	None	-	None	
Storage Length	0	-	-	-	0	0	
Veh in Median Storage	e,# -	0	0	-	0	-	
Grade, %	-	0	0	-	0	-	
Peak Hour Factor	92	92	92	92	92	92	
Heavy Vehicles, %	2	2	2	2	2	2	
Mvmt Flow	0	163	541	151	191	0	
Major/Minor	Major1		Major2		Minor2		
	692	0				617	
Conflicting Flow All	092	-	-	0	780 617	017	
Stage 1 Stage 2			-		163	-	
Critical Hdwy	4.12			-	6.42	6.22	
		-			5.42	6.22	
Critical Hdwy Stg 1	-	-	-	-	5.42	-	
Critical Hdwy Stg 2	2.218	-	-	-		3.318	
Follow-up Hdwy	903	-	-	-	3.518	490	
Pot Cap-1 Maneuver		-	-	-			
Stage 1	-	-	-	-	538	-	
Stage 2	-	-	-	-	866	-	
Platoon blocked, %	000	-	-	-	001	100	
Mov Cap-1 Maneuver	903	-	-	-	364	490	
Mov Cap-2 Maneuver	-	-	-	-	450	-	
Stage 1	-	-	-	-	538	-	
Stage 2	-	-	-	-	866	-	
Approach	EB		WB		SB		
HCM Control Delay, s	0		0		18.8		
HCM LOS					C		
				11/0-		001	
Minor Lane/Major Mvn	nt	EBL	EBT	WBT		SBLn1 S	
Capacity (veh/h)		903	-	-	-	450	-
HCM Lane V/C Ratio		-	-	-	-	0.425	-
HCM Control Delay (s)		0	-	-	-	18.8	0
HCM Lane LOS		Α	-	-	-	С	Α
	V						

Intersection						
Int Delay, s/veh	6.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	*	7	1			4
Traffic Vol., veh/h	199	36	420	193	23	157
Future Vol. veh/h	199	36	420	193	23	157
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage	e,# 0	-	0	-	-	0
Grade, %	0		0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mymt Flow	216	39	457	210	25	171
Mai / Missau	Minand		4-14		M-:0	
	Minor1		Major1		Major2	
Conflicting Flow All	783	562	0	0	667	0
Stage 1	562	-	-	-	-	-
Stage 2	221	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518		-	-	2.218	-
Pot Cap-1 Maneuver	362	526	-	-	923	-
Stage 1	571	-	-	-	-	-
Stage 2	816	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver		526	-	-	923	-
Mov Cap-2 Maneuver	351	-	-	-	-	-
Stage 1	571	-	-	-	-	-
Stage 2	792	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s			0		1.2	
HCM LOS	D				1.2	
Miner Lane/Major Mus	w. 6	NDT	NDDV	MDI = 4M	MDI ~2	CDI
Minor Lane/Major Mvr	nt	NBT	NRK/	VBLn1V		SBL
Capacity (veh/h)		-	-	351	526	923
HCM Lane V/C Ratio		-	-		0.074	
HCM Control Delay (s)	-	-	30.4	12.4	9
HCM Lane LOS		-	-	D	В	Α
HCM 95th %tile Q(veh	1)	-	-	3.9	0.2	0.1

Intersection						
Int Delay, s/veh	1.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		ĵ.			4
Traffic Vol., veh/h	22	12	197	36	18	126
Future Vol. veh/h	22	12	197	36	18	126
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	- Ctop	None	-	None	-	None
Storage Length	0	-	-	-		-
Veh in Median Storage		-	0	-	-	0
Grade, %	e,# 0 0	-	0		-	0
	92					
Peak Hour Factor		92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	24	13	214	39	20	137
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	411	234	0	0	253	0
Stage 1	234	234	-	-	200	-
Stage 2	177				-	
Stage 2 Critical Hdwy	6.42	6.22	-	-	4.12	-
	5.42	6.22	-		4.12	-
Critical Hdwy Stg 1			-	-		-
Critical Hdwy Stg 2	5.42	- 0.40	-	-	- 0.40	-
Follow-up Hdwy			-	-	2.218	-
Pot Cap-1 Maneuver	597	805	-	-	1312	-
Stage 1	805	-	-	-	-	-
Stage 2	854	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	587	805	-	-	1312	-
Mov Cap-2 Maneuver	587	-	-	-	-	-
Stage 1	805	-	-	-	-	-
Stage 2	840	-	-	-	-	-
ŭ						
Annroach	WD		ND		ep.	
Approach	WB		NB		SB	
HCM Control Delay, s	10.9		0		1	
HCM LOS	В					
Minor Lane/Major Mvn	nt	NBT	NBR\	WBLn1	SBL	SBT
Capacity (veh/h)		-	-	649	1312	-
HCM Lane V/C Ratio			-		0.015	
HCM Control Delay (s	١	_	-	10.9	7.8	0
HCM Lane LOS)		-	10.9 B	7.0 A	A
HCM 95th %tile Q(veh	۸.	-	-	0.2	0	- -
HOM SOM WHIE Q(VEN)	-	-	0.2	U	-

Intersection						
Int Delay, s/veh	0.6					
		MDD	NDT	NDD	OD!	ODT
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		1			4
Traffic Vol, veh/h	22	0	232	36	0	148
Future Vol, veh/h	22	0	232	36	0	148
Conflicting Peds, #/hr	0	0	0	_ 0	_ 0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage		-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	24	0	252	39	0	161
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	433	272	0 (viajori	0	291	0
	433 272	2/2	-	-	291	0
Stage 1						
Stage 2	161	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	580	767	-	-	1271	-
Stage 1	774	-	-	-	-	-
Stage 2	868	-	-	-	-	-
Platoon blocked, %				-		-
Mov Cap-1 Maneuver	580	767		-	1271	_
Mov Cap-2 Maneuver	580	-				
Stage 1	774			_	_	_
Stage 2	868	-		_		
Staye 2	000					
Approach	WB		NB		SB	
HCM Control Delay, s	11.5		0		0	
HCM LOS	В					
10200						
					001	
Minor Lane/Major Mvm	nt	NBT		WBLn1	SBL	SBT
Capacity (veh/h)		-	-	580	1271	-
HCM Lane V/C Ratio		-	-	0.041	-	-
HCM Control Delay (s)		-	-	11.5	0	
HCM Lane LOS		-	-	В	Α	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-
					•	

Intersection						
Int Delay, s/veh	1.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
		NOK		NDK	ODL	<u>अज्ञा</u>
Lane Configurations	7	12	1 → 257	162	18	152
Traffic Vol, veh/h Future Vol. veh/h	56					152
		12	257	162	18	
Conflicting Peds, #/hr	0	0	0	- 0	0	_ 0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-		-	
Storage Length	0	-	-	-	-	-
Veh in Median Storage		-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	61	13	279	176	20	165
					_	
	Minor1		Major1		Major2	
Conflicting Flow All	572	367	0	0	455	0
Stage 1	367	-	-	-	-	
Stage 2	205	-	-	-	-	-
Critical Hdwy	6.42	6.22		-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	_	-
Follow-up Hdwy	3.518	3 318			2.218	
Pot Cap-1 Maneuver	482	678	_	_	1106	_
Stage 1	701	-		_	-	
Stage 2	829		_			_
	029	-			-	
Platoon blocked, %	470	070	-	-	4400	-
Mov Cap-1 Maneuver		678	-	-	1106	-
Mov Cap-2 Maneuver	472	-	-	-	-	•
Stage 1	701	-	-	-	-	-
Stage 2	812	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s	13.5		0		0.9	
			0		0.9	
HCM LOS	В					
Minor Lane/Major Mvn	nt	NBT	NBR\	NBLn1	SBL	SBT
Capacity (veh/h)		-	-	499	1106	-
HCM Lane V/C Ratio		-		0.148		_
HCM Control Delay (s)	١	-	-	13.5	8.3	0
HCM Lane LOS)			13.5 B	0.3 A	A
		-	-			
HCM 95th %tile Q(veh	1)	-	-	0.5	0.1	-

Detector 2 Extend (s)

0.0

0.0

0.0

2045 Future Total P.M. Mitigation 09-06-2024

Perm pm+pt

7.0 10.0

11.5

12.0

10.0%

8.0

3.0

1.0

0.0

Yes

3.0

None

44.9

0.37

0.69

41.2

0.0

41.2

D

191

0

0

0.69

8

10.0

21.0

47.0

39.2%

39.0

4.5

3.5

0.0

8.0

Lag

Yes

3.0

None

6.0

39.0

0.33

0.92

38.1

0.0

38.1

D

94.2

120.0 110.0

#70.3 #194.3 #176.4 #40.8 #165.3

757

0.92

0

NA Perm

22.5

41.0

33.0

4.5

3.5

0.0

8.0

Lag

Yes

3.0

None

33.0

0.28

0.97

66.0

66.0

0.0

Е

D

120.9

445.5

0

34.2%

4

10.0

22.5

41.0

34.2%

33.0

4.5

3.5

0.0

8.0

Yes

3.0

None

33.0

0.28

10.4

0.0

10.4

30.8

50.0

581

В

ICU Level of Service F

44.7 145.8

NA

8

10.0

21.0

47.0

39.2%

39.0

4.5

3.5

0.0

8.0

Lag

Yes

3.0

7.0 6.0

0

39.0

0.33

0.98

63.2

0.0

63.2

505.0

1151

0.98

0

Ε

None

		-	*	1	2000.00	-	1	T		-	+	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	77	*	7	1/1/	T _a		77	^	#	*	^	7
Traffic Volume (vph)	329	357	348	576	332	250	331	1063	656	124	880	232
Future Volume (vph)	329	357	348	576	332	250	331	1063	656	124	880	232
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	60.0	1300	0.0	115.0	1300	0.0	100.0	1300	120.0	110.0	1300	50.0
Storage Lanes	2		1	2		0.0	2		120.0	110.0		30.0
	70.0		I	65.0		U	80.0			100.0		I
Taper Length (m)		4.00	4.00		4.00	4.00		0.05	4.00		0.05	4.00
ane Util. Factor	0.97	1.00	1.00	0.97	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
ed Bike Factor			0.99	1.00								
rt			0.850		0.936				0.850			0.850
It Protected	0.950			0.950			0.950			0.950		
atd. Flow (prot)	3467	1900	1599	3467	1768	0	3502	3539	1599	1805	3505	1583
It Permitted	0.115			0.259			0.950			0.121		
atd. Flow (perm)	420	1900	1577	944	1768	0	3502	3539	1599	230	3505	1583
Right Turn on Red			Yes			Yes			Yes			Yes
atd. Flow (RTOR)			220		34				352			202
ink Speed (k/h)		50			70			50			50	
ink Distance (m)		186.6			853.6			529.0			469.5	
ravel Time (s)		13.4			43.9			38.1			33.8	
onfl. Peds. (#/hr)			2	2								
eak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
leavy Vehicles (%)	1%		1%	1%	1%	0%	0%	2%	1%	0%	3%	2%
idi. Flow (vph)	350	380	370	613	353	266	352	1131	698	132	936	247
hared Lane Traffic (%)	330	300	3/0	013	555	200	302	1131	030	132	330	241
ane Group Flow (vph)	350	380	370	613	619	0	352	1131	698	132	936	247
inter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
ane Alignment	Left			Left		Right	Left	Left	Right	Left		
	Leit	Left 7.2	Right	Leit	Left 7.2	Right	Leit	7.2	Right	Leit	Left 7.2	Right
ledian Width(m)												
ink Offset(m)		0.0			0.0			0.0			0.0	
rosswalk Width(m)		4.8			4.8			4.8			4.8	
wo way Left Turn Lane												
leadway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
urning Speed (k/h)	25		15	25		15	25		15	25		15
lumber of Detectors	1	2	1	1	2		1	2	1	1	2	1
etector Template	Left		Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
eading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Frailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
etector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
etector 1 Channel												
etector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	0.0	9.4	0.0	0.0	9.4		0.0	9.4	0.0	0.0	9.4	0.0
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Type		CI+EX			CI+EX			CI+EX			CI+EX	
Detector 2 Channel												

0.0

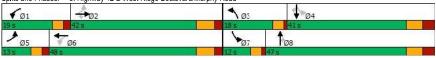
Intersection Capacity Utilization 98.5%

2045 Future Total P.M. Mitigation 09-06-2024

Lanes, Volumes, Timings 5: Highway 12 & West Ridge Boulevard/Murphy Road

Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Highway 12 & West Ridge Boulevard/Murphy Road



C.F. Crozier & Associates Synchro 11 Report Page 3

APPENDIX G

Environmental Study Report Excerpts (Tatham, 2021)

Appendix A: Transportation Needs & Justification Study



Enhancing our communities



Inch Farm & North Orillia Employment Lands

TRANSPORTATION NEEDS & JUSTIFICATION

City of Orillia

2 Traffic Volumes

2.1 METHODOLOGY

To establish the future traffic volumes on the Inch Farm arterial road (for the 2030 and 2040 horizons), consideration was given to the following:

- diversion of existing study area traffic to the proposed arterial road;
- background growth (including induced travel);
- ongoing development within the Orillia West area; and
- proposed development within the Inch Farm and North Orillia Employment Lands areas.

Baseline conditions (2020) were established based on the assumed traffic diversion detailed below. The baseline condition is a theoretical scenario that illustrates the anticipated traffic volumes on the arterial road should it be constructed currently (2020) in its entirety (i.e. from Uhthoff Line to Burnside Line). The intent of establishing a theoretical baseline condition is to provide reference volumes from which future volumes can be projected. Background growth, induced travel and development specific traffic have been added to the 2020 baseline conditions to establish future volumes for the 2030 and 2040 horizon years. The transportation needs and justification assessment has focused on the 2030 and 2040 conditions.

2.2 BASELINE CONDITIONS

2.2.1 Diverted Trips

Diverted traffic consists of existing traffic on the surrounding road network that diverts to a new or improved travel route that provides similar or better travel time or provides some other perceived benefit to the motorist. In considering the proposed arterial road, which will provide north-south service parallel to Highway 11, connecting the Orillia West development area to Burnside Line/Orillia Square Mall area, it is anticipated that most traffic diverting to the new arterial will be trips generated by existing development within the Orillia West area – specifically, trips travelling to/from the north via Highway 11. An aerial map of the study area road network is provided in Figure 2, illustrating the roads that will connect the proposed arterial road to the Orillia West area.

To determine the volume of traffic anticipated to divert to the new arterial road, traffic counts conducted on Tuesday March 10, 2020 at the intersections of Highway 12 with the Highway 11 ramps were reviewed. The counts were conducted as part of the *Orillia West Transportation*



Planning Study Update¹ and as they were completed prior to restrictive measures being implemented by the Province in response to Covid-19, they are considered representative of typical conditions. The detailed traffic count data is provided in Appendix A.

In reviewing the traffic data, it was determined that approximately 20% of traffic on Highway 12 (west of the Highway 11 ramps), is travelling to/from the north via Highway 11. For the purpose of this study, a diversion rate of 20% has been applied (i.e. 20% of the existing traffic travelling to/from the north will divert to the new arterial road, whereas the remaining 80% will continue to use Highway 11). The diversion of trips to the proposed arterial road is illustrated in Figure 3, amounting to approximately 45 to 55 vehicles per hour per direction.

It is noted that the assumed diversion will only occur once the arterial road is extended through to Burnside Line. Regardless, such has been considered to ensure that the portion of the arterial road constructed within the City's limits can accommodate future volumes.

2.2.2 Uhthoff Line

While Uhthoff Line has not been included in the transportation assessment in so far as lane capacity is concerned, the operations of its future intersection with the proposed arterial road have been considered to ensure that the intersection is designed to adequately accommodate future volumes. The traffic volumes on Uhthoff Line are based on volumes provided in the *Inch Farm Traffic Impact Study*² for the intersection of Uhthoff Line with Murphy Road, as illustrated in Figure 4.

2.2.3 Baseline Volumes

The baseline (2020) traffic volumes for the proposed arterial road are illustrated in Figure 5, reflective of the assumed traffic diversion and the noted volumes on Uhthoff Line. As indicated, the baseline volumes utilizing the arterial road are in the order of 50 to 65 vehicles per peak hour (which accounts for rounding of volumes and minimum of 5 vehicles per movement).

2.3 FUTURE TRAFFIC VOLUMES

2.3.1 Background Growth

Population Growth

As per the available 2016 census data for the City of Orillia, the population increased from 30,546 person in 2011 to 31,128 in 2016, which translates to an annual growth rate of 0.38%.



¹ Orillia West Transportation Planning Study Update. Tatham Engineering Ltd. April 2021.

² Inch Farm Traffic Impact Study (Draft). Tatham Engineering Limited. February 2021

the remaining 90% assigned to/from the south towards Highway 12 (thus maintaining a conservative approach in that it maximizes the peak volumes on the arterial road). As a result, the trip assignment to the access points was also revised slightly to consider 80% of trips using the arterial road access and 20% the Uhthoff Line access. The revised trip assignment to the road network is illustrated in Figure 8.

Table 2: Trip Estimates - Inch Farm Residential Development

LAND USE	AN	WEEKDAY 1 PEAK HO		WEEKDAY PM PEAK HOUR			
	In	Out	Total	In	Out	Total	
single detached units	22	65	87	73	43	116	
semi-detached units	8	24	33	27	16	44	
Totals	30	89	119	100	59	159	

North Orillia Employment Lands

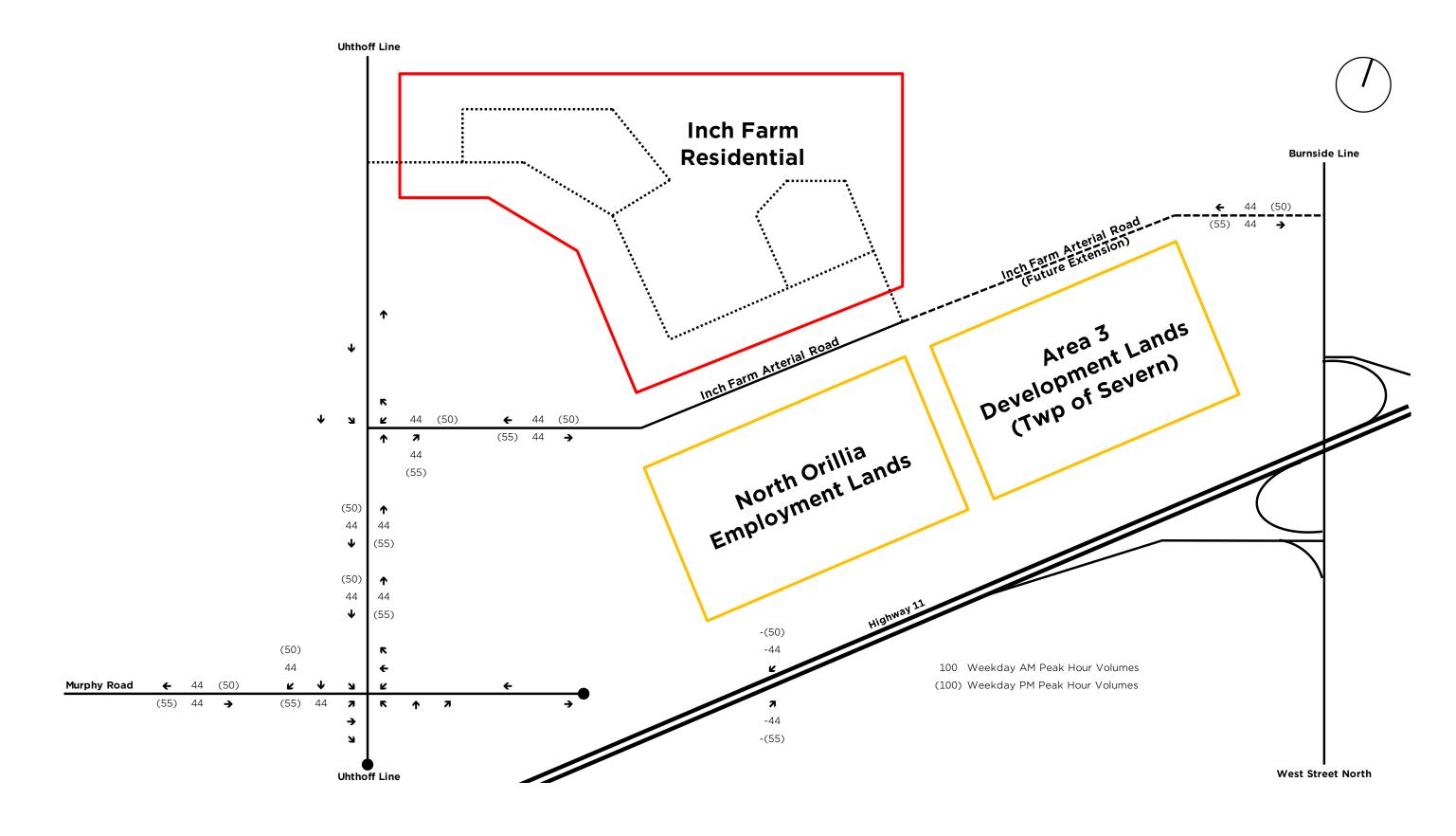
The North Orillia Employment Lands (formerly known as the Inch Farm Industrial Lands) consist of approximately 3.88 hectares (9.5 acres) of industrial land. As there is no definitive site plan for the development, it has been assumed that the gross floor area (GFA) of the development will reflect a lot coverage of 20%, which amounts to 7,689 m² (82,763 ft²). It is understood that the lands will be divided into industrial lots, each with their own access to the proposed arterial road. Full build-out of the North Orillia Employment Lands has been assumed by 2030.

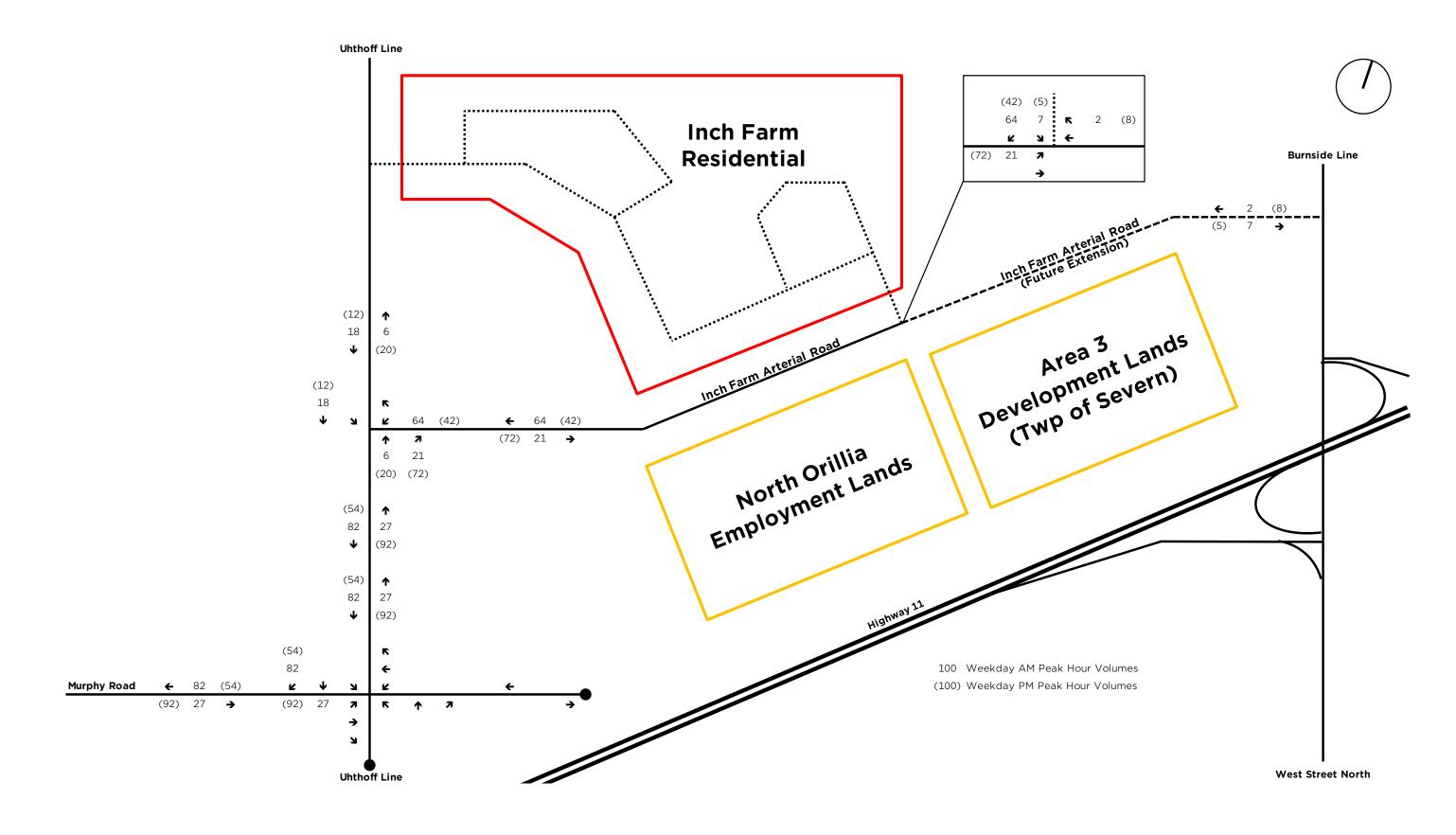
Trip estimates for the North Orillia Employment Lands reflect those applied in the *Orillia West Study*. The trip estimates are provided in Table 3. With respect to trip assignment, 10% of the site traffic has been distributed to/from the north via the proposed arterial road with the remaining 90% assigned to/from the south towards Highway 12. The trip assignment to the road network is illustrated in Figure 9..

Table 3: Trip Estimates - North Orillia Employment Lands

LAND USE	AN.	WEEKDAY 1 PEAK HO		WEEKDAY PM PEAK HOUR			
	In	Out	Total	In	Out	Total	
general light industrial (82,763 ft² GFA)	51	7	58	7	45	52	

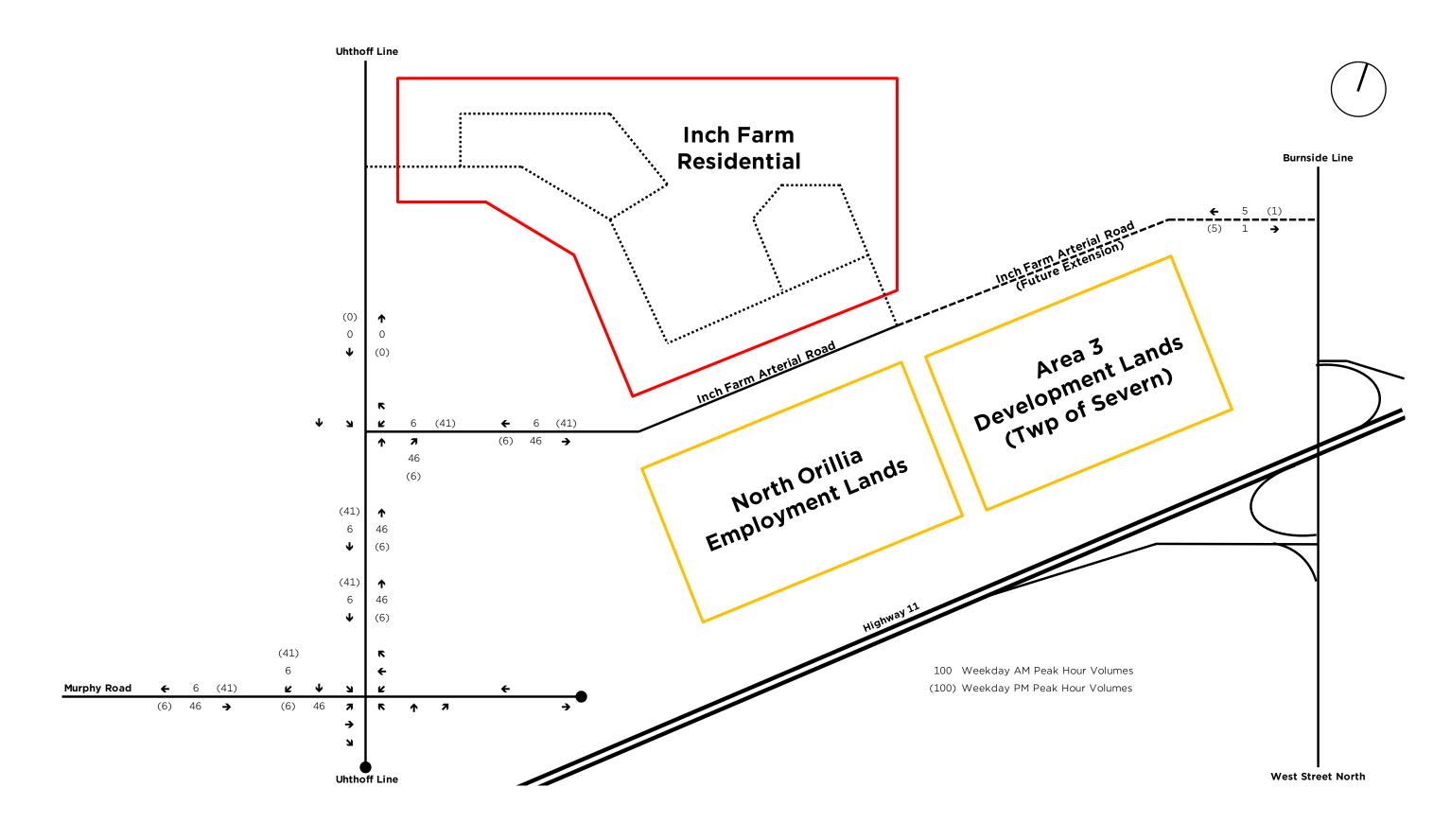














APPENDIX H

Industrial Road Intersection Design



CORPORATION OF THE CITY OF ORILLIA

INCH FARM ARTERIAL ROAD ISSUED FOR CONSTRUCTION



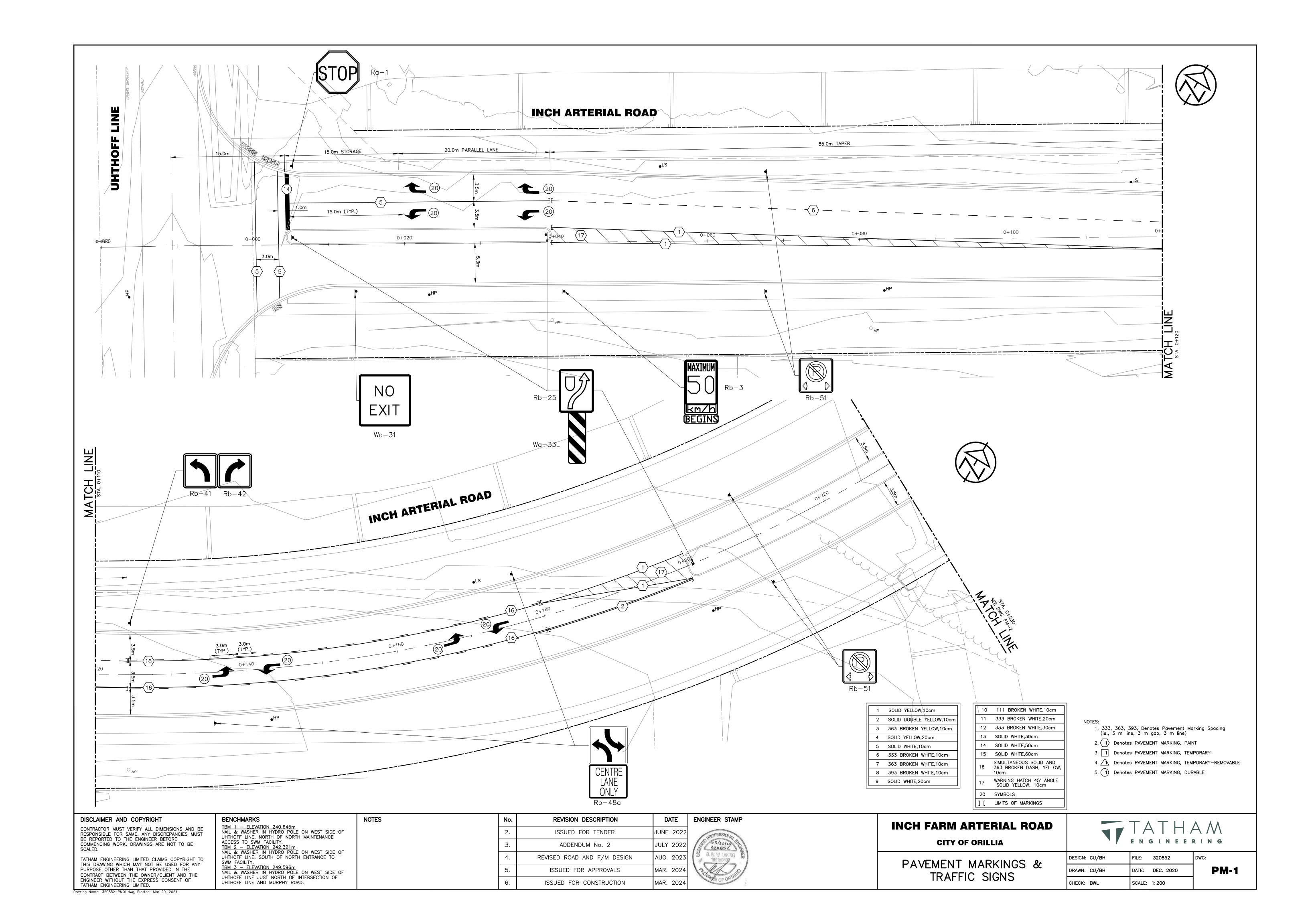
KE	Y	PLAN	
	N.	T.S.	



TELEPHONE NUMBERS	PHONE (705)	AFTER HOURS
CITY OF ORILLIA	325–1311	326-4671
WATER & SANITARY SEWERS	325-2293	
ROADS & STORM SEWERS	329-7249	
TRANSIT	325-8434	
TATHAM ENGINEERING	325–1753	
BELL CANADA	611	
ROGERS CABLE (LOCATES)	1-800-738	3–7893
ROGERS CABLE (CABLE HITS & REPAIRS)	1-888-R0	GERS1
ORILLIA POWER DISTRIBUTION CORP. (HYDRO)	326-7315	
UNION GAS	325–1505	
EMERGENCY (FIRE-POLICE-AMBULANCE)	911	
ONTARIO PROVINCIAL POLICE	1-800-31	0–1122
FIRE DEPARTMENT	325-5201	
AMBULANCE	325–1578	

LEGEND

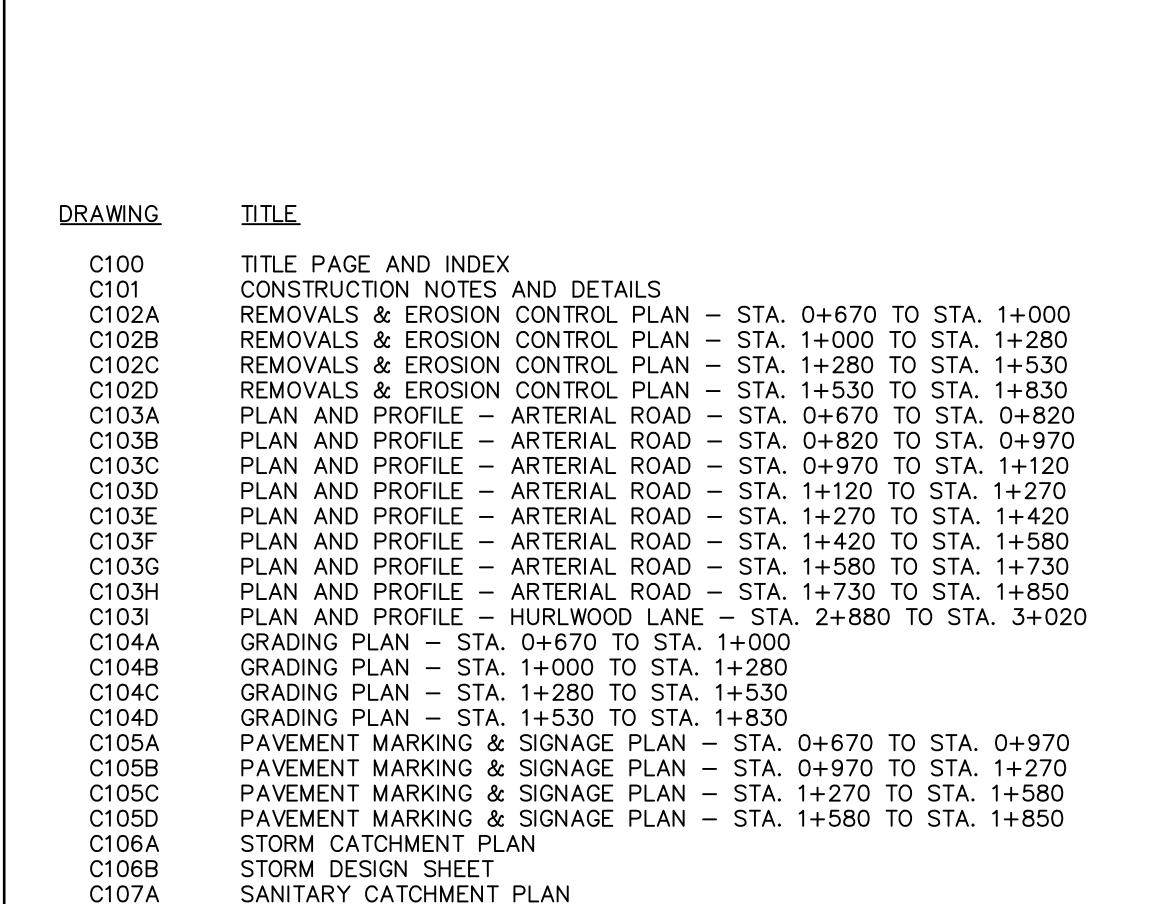
2000 SAN	EXISTING SANITARY MAIN/ SIZE
375ø STM	EXISTING STORM SEWER/ SIZE
150¢ WATERMAIN_	EXISTING WATERMAIN/ SIZE
o	EXISTING GAS MAIN
·	EXISTING SANITARY SERVICE
·	EXISTING PROPERTY LINE
	EXISTING EASEMENT LINE EXISTING CENTERLINE
	EXISTING EDGE OF ASPHALT
	EXISTING EDGE OF SHOULDER
· —	EXISTING DITCH EXISTING FENCE LINE
	EXISTING FENCE LINE EXISTING EDGE OF BUSH
В ТВМ	EXISTING TEMPORARY BENCHMARK
⊕ BH9	EXISTING BOREHOLE/ NUMBER
AN MH17	EXISTING SANITARY MANHOLE/ NUMBER
	EXISTING CULVERT
CABLE PED ©	EXISTING WATERMAIN PLUG AND THRUST BLOCK EXISTING CABLE PEDESTAL
O BELL MH	EXISTING BELL MANHOLE
BELL B	EXISTING BELL PEDISTAL
OBP	EXISTING BELL POLE
○ ^{HP}	EXISTING HYDRO POLE
○ <i>HGP</i> >—	EXISTING HYDRO GUY POLE EXISTING HYDRO GUY WIRE
<i>></i> —	EXISTING GAS MARKER
- - SIB	EXISTING STANDARD IRON BAR
-S/GN	EXISTING TRAFFIC SIGN
	EXISTING DECIDUOUS TREE
袋	EXISTING CONIFEROUS TREE
200ø SAN	PROPOSED SANITARY SEWER/ SIZE/
450¢ STM	DIRECTION OF FLOW PROPOSED STORM SEWER/ SIZE/
	DIRECTION OF FLOW
<u>60¢ WATERMAIN</u>	WATERMAIN/SIZE PROPOSED SANITARY SERVICE
	PROPOSED SANITARY SERVICE PROPOSED WATER SERVICE
·	PROPOSED DITCH
	PROPERTY LINE
	LOT LINE PROPOSED CENTERLINE
	PROPOSED EDGE OF ASPHALT
	PROPOSED EDGE OF SHOULDER
●SAN MH2	PROPOSED SANITARY MANHOLE/ NUMBER
. C.O.	PROPOSED SANITARY CLEANOUT
■ DICB	PROPOSED DITCH INLET CATCHBASIN
STM	PROPOSED STORM MANHOLE/ NUMBER
●MH2 ■ CB	PROPOSED CATCHBASIN
_ DCB	PROPOSED DOUBLE CATCHBASIN
	PROPOSED CULVERT
88	PROPOSED RIPRAP
♦ HYD & WV	PROPOSED HYDRANT & WATER VALVE
► W V	PROPOSED WATER VALVE
• CSV	PROPOSED WATER CURB STOP
▼ vc	PROPOSED WATER VALVE CHAMBER
■ BBVC	PROPOSED PRESSURE REDUCING WATER VALVE CHAMBER
PRVC	
€ ARVC	PROPOSED AIR RELIEF VALVE CHAMBER
0	PROPOSED BLOWOFF
_	PROPOSED CURB CUT
LS σ	PROPOSED WATERMAIN PLUG AND THRUST BLOCK
LS ⊕	PROPOSED CURP CUT
_	PROPOSED CURB CUT PROPOSED TRAFFIC SIGN
_	EDVENOUS INSELL SIGN





AREA3 ARTERIAL ROAD

TOWNSHIP OF SEVERN COUNTY OF SIMCOE





MUNICIPALITY

TOWNSHIP OF SEVERN 1024 HURLWOOD LANE SEVERN, ONTARIO L3V 0Y6

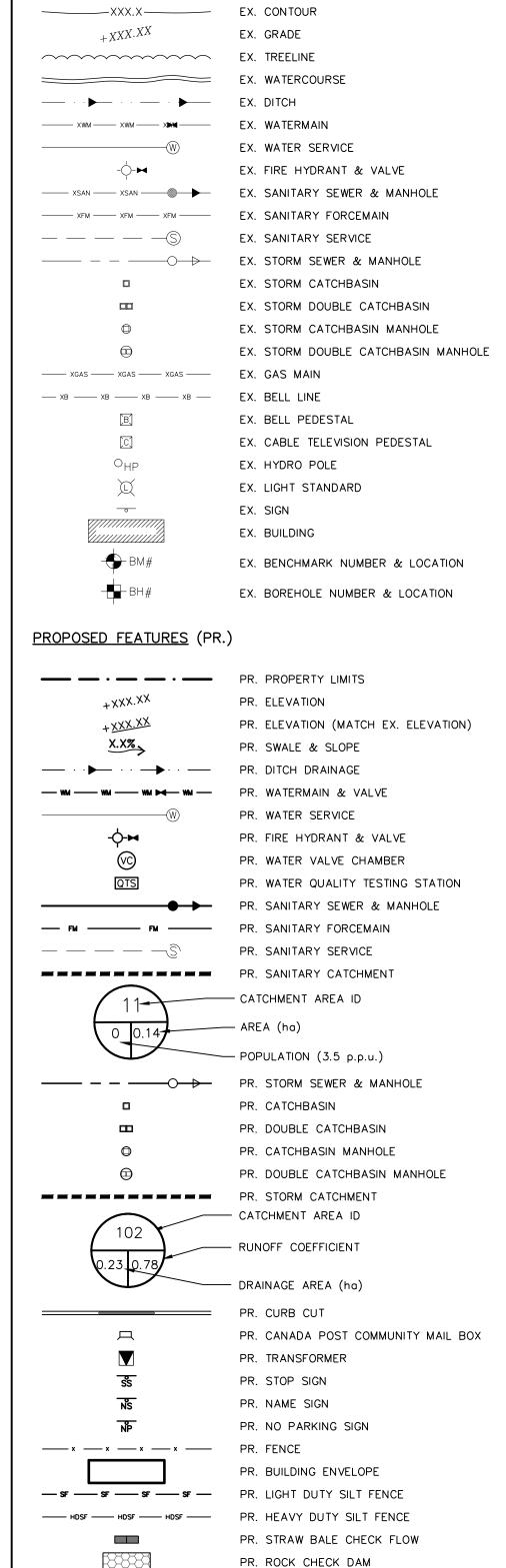
<u>DEVELOPER</u>

LIV COMMUNITIES 1005 SKYVIEW DRIVE, SUITE 301 BURLINGTON, ONTARIO L7P 5B1

DEVELOPER'S ENGINEER



70 HURON STREET, SUITE 201 COLLINGWOOD, ON, L9Y 4L4 705-446-3510 T 705-446-3520 F www.cfcrozier.ca info@cfcrozier.ca



PR. SLOPE (3:1 MAX.)

PR. TREE PRESERVATION AREA

PR. TOPSOIL STOCKPILE LOCATION

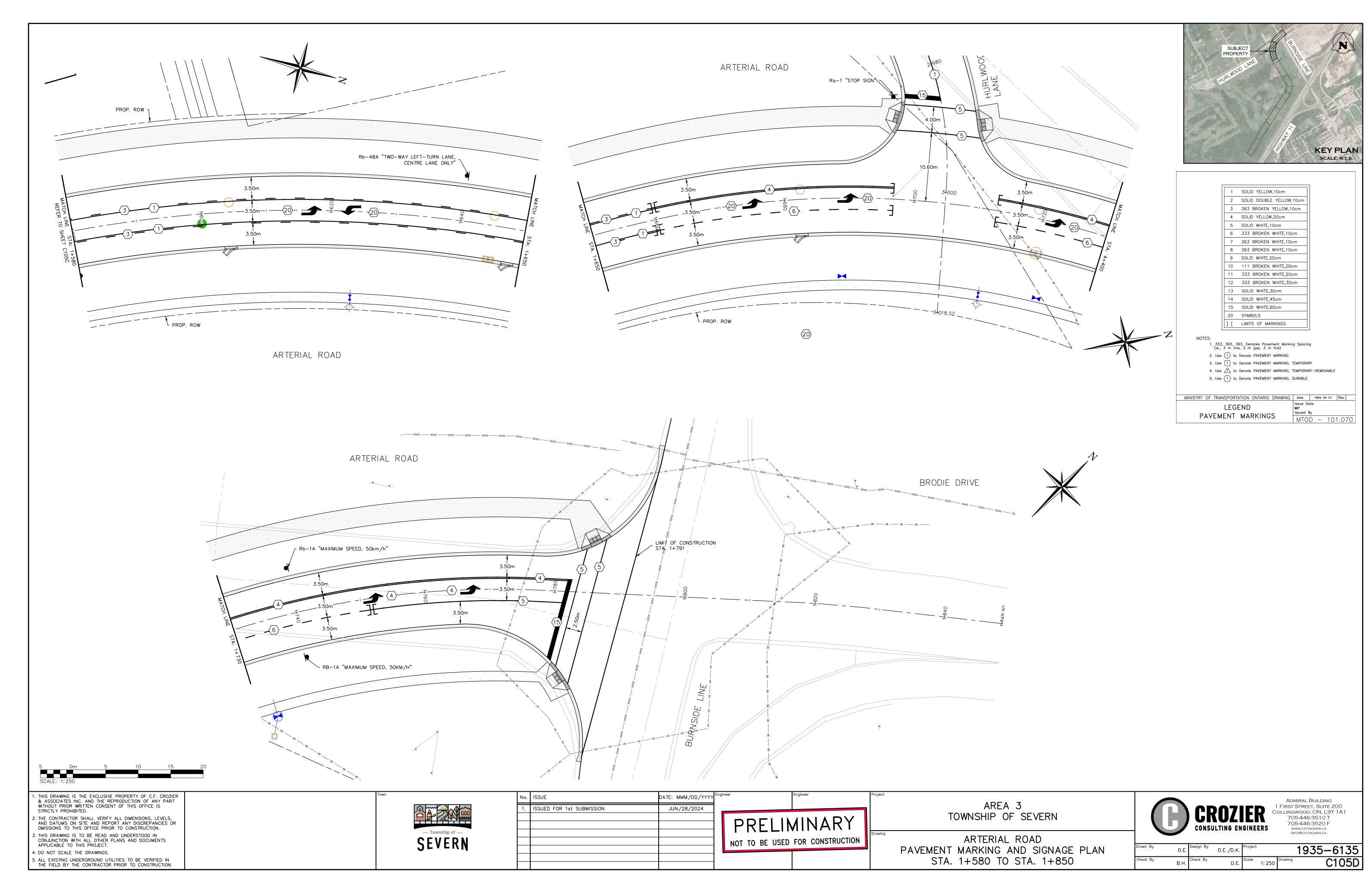
MASTER LEGEND

EXISTING FEATURES (EX.)

C:\Users\dkovacs\DC\ACCDocs\Crozier Consulting Engineers\1935 - 6135 LIV Communities - Area 3\Project Files\Transportation\Sheets\C100 COVER.dwg, 2024-07-19 11:57:44 AM, AutoCAD PDF (General Documentation).pc3

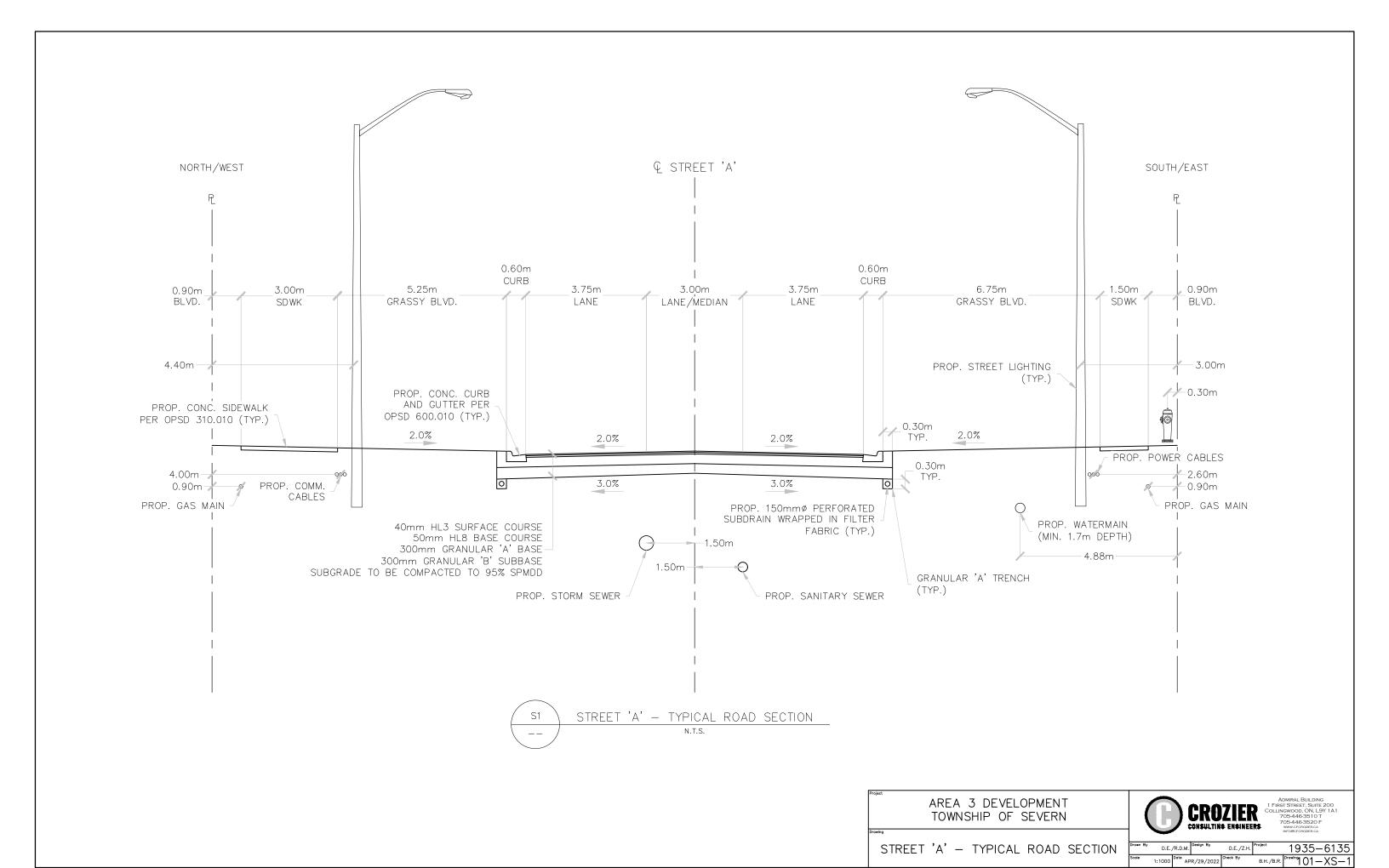
SANITARY DESIGN SHEET

C107B



APPENDIX I

Industrial Road Proposed Cross-Section



APPENDIX J

Inch Farm Residential Development TIS (Tatham, 2023)



Enhancing our communities



Inch Farm Residential Development

LIV Communities

1 Introduction

This study is intended to provide a transportation review in support of the Inch Farm Residential Development, the location of which is illustrated in Figure 1. It is noted that there have been a number of transportation studies completed over the past 15 years within the Orillia West planning area which have given due consideration to the Inch Farm development. These studies include:

- the overall *Orillia West Transportation Planning Study* (April 2008)¹;
- the Orillia West Transportation Planning Study 5 & 10 Year Implementation Plans (June 2011)²;
- the West Orillia Employment Lands Transportation Review (August 2013)³;
- the Traffic Impact Study Proposed Costco University Avenue (March 2014)4;
- the Proposed Costco, University Avenue Traffic Impact Study Response to MTO Comments (April 21, 2015)⁵;
- the Traffic Impact Study 600 Harvie Settlement Road (February 2017)⁶;
- the Highway 12 Improvements from West Ridge Boulevard/Murphy Road to the Highway 12 North/Highway 11 (Coldwater Road) Interchange Design and Construction Report (January 2018)⁷;
- the Traffic Operations Analysis Update 600 Harvie Settlement Road (March 15, 2018)⁸;
- the MTO Highway 12 Preliminary Design Study;
- the Orillia West Transportation Planning Study Update (April 2021)9; and
- the Inch Farm & North Orillia Employment Lands Transportation Needs & Justification (September 9, 2021)¹⁰.

¹⁰ Inch Farm & North Orillia Employment Lands Transportation Needs & Justification. Tatham Engineering, September 9, 2021.



¹ Orillia West Transportation Planning Study. C.C. Tatham & Associates Ltd, April 2008.

² Orillia West Transportation Planning Study - 5 & 10 Year Implementation Plans. C.C. Tatham & Associates Ltd, June 2011.

³ West Orillia Employment Lands Transportation Review. C.C. Tatham & Associates Ltd, August 30, 2013.

⁴ Traffic Impact Study Proposed Costco University Avenue. R.J. Burnside & Associates Limited, March 2014.

⁵ Proposed Costco, University Avenue Traffic Impact Study - Response to MTO Comments R.J. Burnside & Associates Limited, April 21, 2015.

⁶ Traffic Impact Study 600 Harvie Settlement Road. C.F. Crozier & Associates Inc., February 2017.

⁷ Highway 12 Improvements from West Ridge Boulevard/Murphy Road to the Highway 12 North/Highway 11 (Coldwater Road) Interchange Design and Construction Report. The Ainley Group, January 2018.

⁸ Traffic Operations Analysis Update 600 Harvie Settlement Road. C.F. Crozier & Associates Inc., March 15, 2018.

⁹ Orillia West Transportation Planning Study Update. Tatham Engineering Limited, April 22, 2021.

Recognizing that the above noted studies considered the traffic operations and implications of development growth on the broader area road system, including consideration for the Inch Farm development, the scope of such has not been repeated within this study. Rather, the intent of this study is to provide a review of the key intersections within the immediate area of the Inch Farm development with consideration for the 2023 revised draft plan as proposed by LIV Communities. The key intersections include:

- Highway 12 and Murphy Road/West Ridge Boulevard;
- Murphy Road and Uhthoff Line;
- Uhthoff Line and the proposed means of access to the subdivision, namely
 - Uhthoff Line & Street 'A'; and
 - Uhthoff Line & Inch Arterial Road



2 Inch Farm Development

This chapter will provide additional details with respect to the proposed development, including the land uses and size, location, vehicular access, the projected site generated traffic volumes and the assignment of such to the adjacent road network.

2.1 SITE LOCATION

As illustrated in Figure 1, the Inch Farm development lands are located between Uhthoff Line and Highway 11 in the City of Orillia.

2.2 SITE DRAFT PLANS

2.2.1 1993 Approved Draft Plan

A draft plan of subdivision was approved in 1993, consisting of the following:

- 123 detached residential units:
- 46 semi-detached residential units; and
- 3.88 ha (9.6 acres) of prestige industrial lands.

Overall, 169 residential units would be provided; the corresponding development plan is provided in Figure 2, illustrating the development lots and associated road system.

2.2.2 2023 Revised Draft Plan (LIV Communities)

A revised plan has been prepared as illustrated in Figure 3 and summarized below:

West Block 25 single detached units and 197 townhouse units;

East Block
 14 single detached units and 115 townhouse units; and

Total 351 residential units.

It is noted that the industrial lands contained within the 1993 Draft Plan will be developed separately by the City of Orillia (referred to as the North Orillia Employment Lands) and thus have not been considered as part of LIV's 2023 residential subdivision. Further consideration for the North Orillia Employment Lands is provided in Section 3.1.1.

With respect to phasing, it is assumed that full build-out of the revised Inch Farm Residential Development will be achieved by 2028. Subsequent horizon years of 2033 (5 years beyond build-out) and 2038 (10 years beyond) will also be considered.



Table 3: Trip Generation Estimates - 1993 Approved Draft Plan

LAND USE & UNI	АМ	PEAK H	OUR	PM	PEAK H	OUR	SAT PEAK HOUR			
		In	Out	Total	In	Out	Total	In	Out	Total
single detached units	123	22	64	86	73	43	116	61	52	113
semi-detached units	46	7	15	22	15	11	26	13	14	26
Totals	169	29	79	108	88	54	142	74	66	139

2.4.3 Trip Generation Estimates - 2023 Revised Draft Plan

The trip estimates corresponding to the 2023 Revised Draft Plan are summarized in Table 4, with reference to location within the overall development (West Block and East Block as illustrated in Figure 3).

Table 4: Trip Generation Estimates - 2023 Revised Draft Plan

LAN	LAND USE & UNITS			AM PEAK HOUR			PEAK H	OUR	SAT PEAK HOUR			
				Out	Total	In	Out	Total	In	Out	Total	
ck	singles	25	5	13	18	15	9	24	12	11	23	
West Block	towns	197	29	65	95	64	48	112	54	58	112	
We	Total	222	34	78	112	79	57	136	66	69	135	
쑹	singles	14	3	7	10	8	5	13	7	6	13	
st Block	towns	115	17	38	55	37	28	66	31	34	66	
East	Total	129	20	45	65	46	33	79	38	40	78	
Gran	nd Total	351	54	124	177	124	90	215	105	109	214	
-	increase vs Units		24	45	69	37	36	73	31	43	74	

The current residential development proposal will generate 177 trips in the AM peak hour, 215 trips in the PM peak and 214 trips in the Saturday peak hour.



As compared to the trip estimates associated with the 1993 approved draft plan (169 units), the increase in units will generate 69 more trips in the AM peak hour, 73 in the PM peak hour and 74 in the Saturday peak hour (which is considered a nominal increase - approximately 1 to 2 additional trips per minute).

2.4.4 Trip Distribution & Assignment

The distribution of the site-generated traffic to the area road system reflects the following overall distribution, as maintained from the *Orillia West Transportation Study Update*:

- 20% to/from the west via Highway 12;
- 30% to/from the south via West Ridge Boulevard; and
- 50% to/from the east via Highway 12.

Significant traffic is assigned east along Highway 12, reflective of both traffic travelling to/from the built-up areas of Orillia (east of the subject site) and north/south via Highway 11.

The assignment of the site generated trips to the individual access points was based on the location of the residential units with respect to the access points and the directness of the internal road system.

The resulting site generated traffic volumes are indicated in Figure 5 and Figure 6, reflective of full build-out, considering the following development scenarios:

- 169 units as per the 1993 approved draft plan (Figure 5); and
- 351 units as per the 2023 revised draft plan (Figure 6).

In comparing the corresponding volume projections, the increased unit count will result in the following:

- 20 to 40 additional peak hour trips per direction on Murphy Road;
- 5 to 20 additional peak hour trips per direction on Highway 12; and
- 5 to 15 additional peak hour trips per direction on West Ridge Boulevard.

While the 2023 revised draft plan will result in additional volumes, the impacts will be somewhat comparable to those associated with the approved draft plan.

In considering the site access volumes, the following are noted:

- 54 to 65 vehicles per hour (vph) to use Street A via Uhthoff Line (total of inbound and outbound directions) during the AM, PM and Saturday peak hours;
- 58 to 71 vph to use Street B via the future arterial;



Other Area Developments 3

3.1 **DEVELOPMENT LISTING**

There are a number of other developments within the immediate area that are currently under development or in the planning stage, with the expectation that they will be developed within the horizon years considered as part of this study. As illustrated in Figure 7, these include:

- North Orillia (formerly referred to as the Inch Farm Industrial Lands), West Orillia, Charter and Murphy Road Employment Lands;
- continued growth at Lakehead University;
- continued development at Stone Ridge Phase 1;
- development at Stone Ridge Phase 2;
- SmartCentres Development;
- Xchange Development (600 Harvie Settlement Road);
- Hydro One Development;
- OPP Development;
- 4 Mulcahy Court; and
- RioCan (former Walmart site).

Additional details/assumptions regarding each, as referenced from the above noted developments, are summarized below, as determined from the previously referenced studies and/or information provided by the City.

3.1.1 North Orillia Employment Lands

The North Orillia Employment Lands, formerly considered as part of the Inch Farm Development, has 3.88 hectares of lands designated for prestige industrial development.

3.1.2 West Orillia Employment Lands

The West Orillia Employment Lands have a total area of approximately 14 hectares (34.6 acres), of which 9.78 hectares (24.2 acres) are considered developable (i.e. net of road and SWM requirements). The employment lands include 17 industrial lots and will be served via a cul-desac with connection to Swinimer Drive. A total gross floor area equal to 20% of the developable area has been assumed (19,587 m² or 210,830 ft²).



developed into a commercial/retail use consisting of a 3,455 m² (37,200 ft²) gross floor area. This reflects approximately 20% lot coverage of the developable land.

3.1.12 RioCan Commercial

The RioCan property is an existing commercial development (former Walmart site) located on Monarch Drive. As per the RioCan website, two standalone buildings remain to be built within the existing property with a total gross floor area of 606 m² (6,523 ft²)

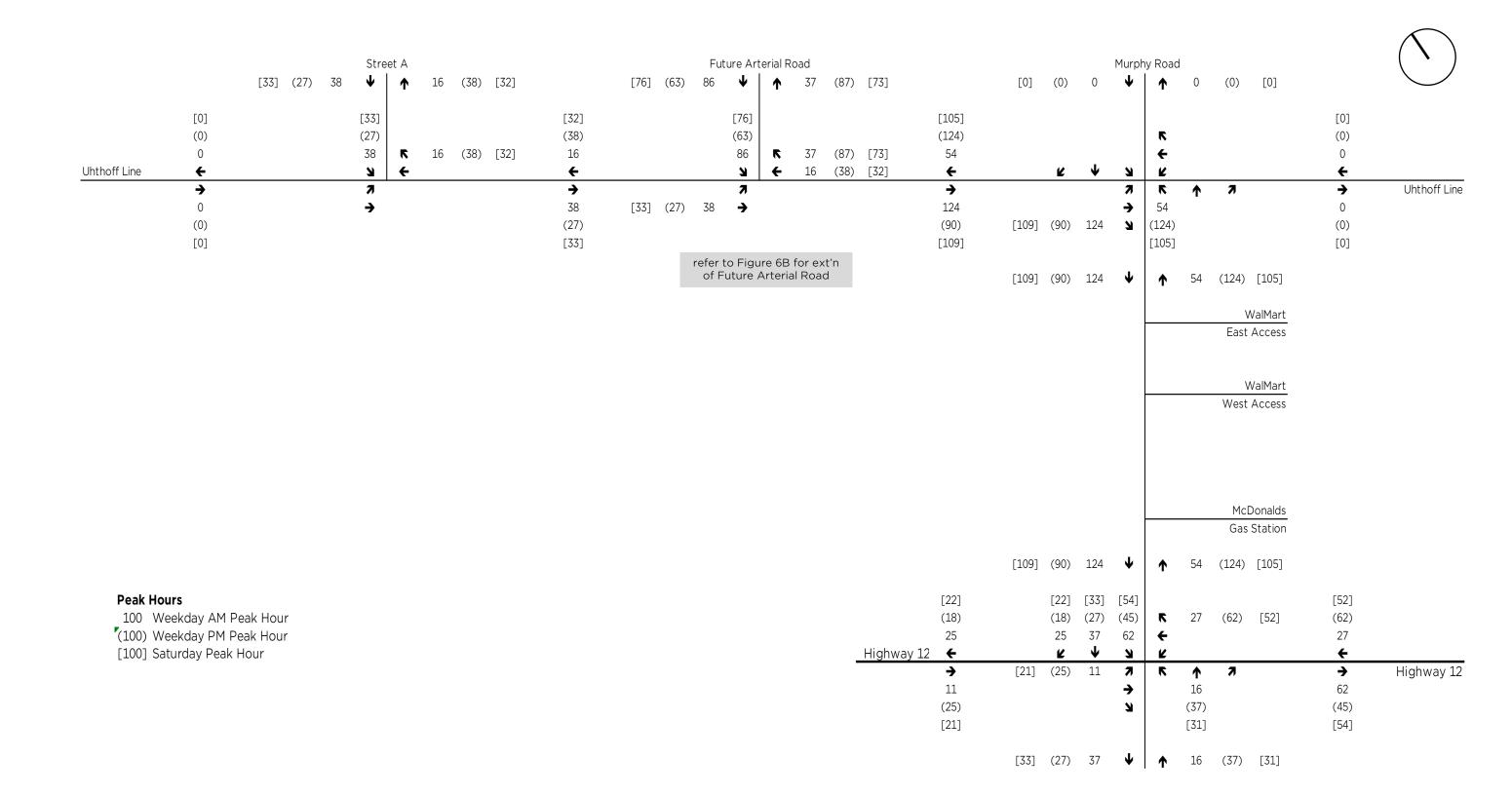
3.2 **DEVELOPMENT TRAFFIC**

A summary of the trip estimates for the various developments considered (under the development assumptions previously presented) is provided in Table 5, considering full build-out of each. The associated traffic volumes anticipated through the study area network are illustrated in Appendix A, premised on the travel assumptions of the Orillia West Transportation Study Update.

Table 5: Other Development Traffic

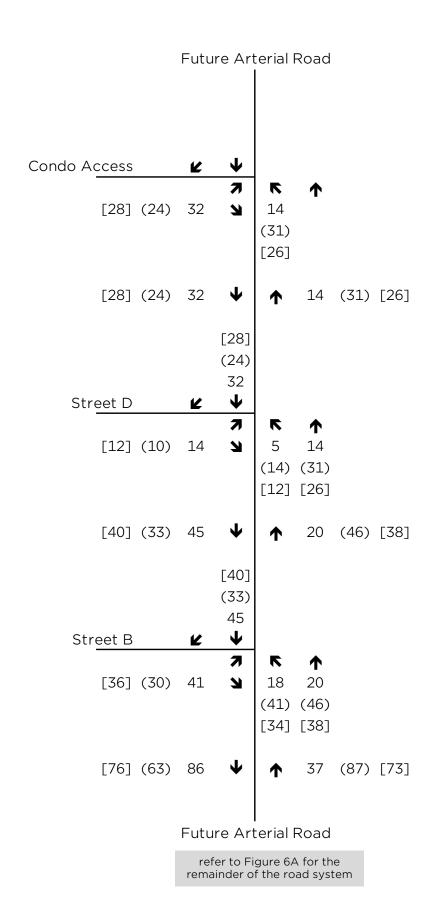
DEVELOPMENT	AM F	PEAK H	IOUR	PM F	PEAK H	OUR	SAT PEAK HOUR		
DEVELOPMENT	In	Out	Total	In	Out	Total	In	Out	Total
North Orillia Employment Land	51	7	58	7	45	52	16	18	34
West Orillia Employment Lands	159	30	189	44	131	175	48	65	113
Charter Employment Lands	59	11	70	16	49	65	17	24	41
Murphy Road Employment Land	70	14	84	19	58	77	22	29	51
Lakehead University	655	185	840	269	571	840	336	224	560
Stone Ridge Phase 1	132	382	514	400	248	648	323	312	635
Stone Ridge Phase 2	241	722	963	811	476	1287	653	556	1209
Xchange Development	97	76	173	85	99	184	96	86	182
SmartCentres	36	22	58	113	123	236	145	134	279
Hydro One	158	20	178	26	145	171	43	43	86
OPP	54	7	61	9	49	58	15	15	30
4/8/10 Mulcahy Court	56	38	94	106	113	218	133	126	259
RioCan Commercial	4	2	6	12	13	25	15	14	30
Total Trips	1,772	1,516	3,288	1,917	2,120	4,037	1,862	1,646	3,508



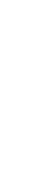














APPENDIX K

Area 3 Subdivision TIS (Crozier, 2024)

TRAFFIC IMPACT STUDY UPDATE

AREA 3 LIV (Hawk Ridge) LP FILE: 43T-99002

TOWNSHIP OF SEVERN

PREPARED BY:

C.F. CROZIER & ASSOCIATES INC. 1 FIRST STREET, SUITE 200 COLLINGWOOD, ON L9Y 1A1

> ORIGINAL: MAY 2022 UPDATE: JULY 2024

CFCA FILE NO. 1935-6135

The material in this report reflects best judgment in light of the information available at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions made based on it, are the responsibilities of such third parties. C.F. Crozier & Associates Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.



1.0 Executive Summary

C.F. Crozier & Associates Inc. was retained by LIV (Hawk Ridge) LP to complete a Traffic Impact Study (TIS) to support the Draft Plan of Subdivision for part of Lot 4, Concession 4 in the Township of Severn. The proposed development is referred to as Area 3 and is located to the west of Highway11.

An original TIS was prepared prior to an Ontario Municipal Board (OMB) decision in September 2000 and a revised transportation review was completed in February 2005 (File: 43T-99002). An updated TIS was completed in May 2022 to account for updates to the Draft Plan and to fulfill the Draft Plan conditions. This TIS Update (February 2024) has been prepared to address recent comments provided by the Township's reviewed, dated October 13, 2023.

The proposed Conceptual Master Plan consists of 297 condominium townhouses, the existing Hawkridge Golf Course and 6.35 ha of industrial lands. Based on the permitted zoning, a lot coverage of 60% has been utilized as the gross floor area (GFA) of the industrial units. It is noted that the trip generation is based on an old plan that identified an industrial area of 6.47 ha. Applying a 60% lot coverage to the 6.47 ha equates to a GFA of 38,820 m² (417,855 ft²). This area has been maintained in this analysis to provide a conservative assessment. The Conceptual Master Plan residential statistics were used for the analysis of this report.

The future arterial roadway (referred to herein as "Industrial Road") is a continuation of the Inch Farm Arterial Road and divides the Draft Plan between residential and industrial areas. The arterial roadway will connect Uhthoff Line to Burnside Line when completed. In addition, the following key intersections within the study area have been analysed:

- Burnside Line/West Street N and the Highway 11 northbound ramps
- Burnside Line/West Street N and the Highway 11 southbound ramps
- Hurlwood Lane/Brodie Drive and Burnside Line
- Murphy Road and Uhthoff Line
- Highway 12 and Murphy Road/West Ridge Boulevard

Turning movement counts at the study intersections were undertaken by Spectrum Traffic Data Inc. on Tuesday April 12, 2022. Under the existing traffic conditions, the study intersections operate with a LOS "C" or better in the weekday a.m. and p.m. peak hours. The maximum control delay of 27.9 s and maximum volume-to-capacity ratio of 0.85 (EBT) at the intersection of Murphy Road/West Ridge Boulevard and Highway 12 indicate that the boundary road network is operating acceptably and has capacity for increases in traffic volumes.

In accordance with the agreed upon Terms of Reference, full build-out is expected by the year 2027. As such, 5 and 10-years beyond build-out (2032 and 2037) were also assessed. A growth rate of 2% was utilized to forecast background growth on the boundary road network. This growth rate was established based on historic growth along Highway 11.

Construction work on the reconfiguration of the Highway 11 overpass of Burnside Line/ West Street N that was ongoing at the time of the second TIS submission, has been completed at the time of this updated report. Construction drawings provided by the MTO illustrate that the eastbound volumes on Burnside Line will now have a separate on-ramp for merging southbound onto Highway 11. As this on-ramp will operate with free flow conditions, it has not been included as an intersection analysed under future background or future total conditions. A future 1.8 m sidewalk and 1.8 m bike lane are also noted on the construction drawings. The analysis contained herein accounts for the changes to the roadway and demonstrates the acceptable operations of the future ramps.

As previously stated, the new Industrial Road will connect Uhthoff Line and Burnside Line. The roadway will run parallel to Highway 11. Appendix A of the Inch Farm Arterial Road & Industrial Employment Land Environmental Study Report (ESR) (Tatham, December 2021) provides the expected roadway alignment. The ESR also outlines the redistribution of existing volumes with the opening of the roadway.

In addition to the Area 3 subdivision, the adjacent Inch Farm Subdivision and North Orillia Employment Lands will contribute additional volumes to the boundary road network. The trip assignment for the residential development and employment lands was included as part of the ESR. Tatham prepared an updated Traffic Impact Study for the residential development in January 2023, which was provided by LIV Communities.

Under the 2037 future background horizon the study intersections are expected to operate with a LOS "D" or better in the weekday a.m. and p.m. peak hours. A maximum control delay and volume-to-capacity ratio of 43.1 s and 0.90 (EBTR) is forecasted at the intersection of West Ridge Boulevard/Murphy Road and Highway 12.

These results indicate that the boundary road network is forecasted to continue operating acceptably with reserve capacity for additional traffic volumes at the majority of intersections. The MTO has previously noted that when right-turn movements exceed 200 vehicles per hour an exclusive right-turn lane should be considered. If implemented, an eastbound right-turn lane could mitigate the eastbound through movement critical v/c ratio at Highway 12 and West Ridge Boulevard.

A total of 149 a.m. and 174 p.m. two-way volumes are forecasted to be generated by the residential dwelling units, while 309 a.m. and 272 p.m. two-way volumes are forecasted to be generated by the industrial development. The trips generated were distributed to the boundary road network based on Transportation Tomorrow Survey (TTS) data. No additional signals were found to be warranted based on future total volumes.

The study intersections are anticipated to continue operating with a LOS "D" or better in the a.m. and p.m. peak hours with exception of Murphy Road and Uhthoff Line which is forecasted to operate with LOS "E" during p.m. peak hours. There is an opportunity to reorient the stop signs at the intersection, to allow for free-flowing conditions for the increased northbound left-turn movements. This would shift the delay to the low volume dead-end segment of Uhthoff Line.

The optimized intersection of West Ridge Boulevard/Murphy Road and Highway 12 is expected to operate with a maximum control delay of 45.2 s and maximum volume-to-capacity ratio of 0.91 (EBTR). The 95th percentile queue for the northbound left-turn movement at the intersection is expected to be 89.3 m which will be contained within the 110 m of parallel length available for queued vehicles. Additionally, the southbound volumes have an effective storage length of 135 m to the commercial access and Synchro forecasts the95th percentile queue to be 135.5 m. SimTraffic modelling estimates the southbound left-turn 95th percentile queue to be 101.4 m, which can be contained within the available storage.

With the introduction of a protected-permissive signal for the southbound left-turn movement on Brodie Drive in the p.m. peak hour, the 60 m of storage provided is sufficient. In the a.m. peak hour, the westbound left-turn 95th percentile queue is anticipated to be 48.9 m, which can be accommodated within the available taper and is not expected to impact the through volumes.

These results indicate that the boundary road network is forecast to continue operating acceptably. As previously stated under future background conditions, an eastbound right turn lane on Highway 12 at West Ridge Boulevard should be considered by the MTO should volumes reach their 200-vehicle threshold in the future. An assessment of the operations at the internal residential and industrial

accesses was performed. The site accesses are anticipated to operate with a LOS "B" or better with minimal delays and excess capacity. No operational concerns are forecasted at the internal site accesses.

The improvements outlined in **Table E1** are both planned background improvements as well as future background and future total recommendations. Signal timings should be continually monitored by the MTO and municipalities to confirm when optimization is required.

Table E1: Network Improvements

Table ET. Network improvements											
Location	Improvement	Timeline	Intention	Responsibility							
	Planned Background Im	provement									
Highway 11 Overpass on Burnside Line	Relocation of Highway 11 Southbound on-ramp on Burnside Line as a right-in/right-out south leg access just east of Hurlwood Line/Brodie Drive and Burnside Line Construction of westbound outbound dual lanes at Highway 11 Southbound off-ramp and Burnside Line.	Completed 2024	Planned Highway Improvements	МТО							
	Recommended Background	d Improvemer	nt								
Murphy Road/West Ridge Boulevard and Highway 12	Optimization of signal timings and increase of cycle length to 120 s.	2027	In support of the Inch Farm development	MTO							
Murphy Road and Uhthoff Line	Consideration for reorientation of two-way stop control	2027	In support of development	LIV Communities							
Industrial Road	 Construction of Industrial Road (arterial) Creation of T-intersection at Industrial Road and Hurlwood Lane Creation of T-intersection at Industrial Road and Unthoff Line 	2027	In support of development	LIV Communities							
lo el setri el	Addition of a southbound right-turn lane on Brodie Drive	2027	In support of development	LIV Communities							
Industrial Road/Brodie Drive and Burnside Line	Optimization of signal timings and increase of cycle length to 75 s with a southbound-left protected-permissive phase in the p.m. peak hour.	2032	In support of development	LIV Communities							
Murphy Road/West Ridge Boulevard and Highway 12	Eastbound right-turn lane	2032	Support operation of more than 200 right-turning vehicles	МТО							
	Recommended Future In	nprovement									
Industrial Road	Industrial Road transit stops	TBD	In support of development	Orillia Transit							

Several of the proposed private residential accesses have reduced spacing from the 200 m recommended by the Transportation Association of Canda for arterial roads. This distance is recommended to accommodate back-to-back left turn lanes. However, the Industrial Road is proposed to have a two-way left-turn lane which will accommodate any queueing.

Based on the internal assessment, the forecasted 95th percentile left-turn queue is anticipated to be less than 5 m and can be accommodated between accesses without conflict. Exact access locations will be finalized through Site Plan Applications.

The required intersection sight distances were determined to be 130 m for a posted speed limit of 50 km/h (design speed of 60 km/h). With the exception of the south access to Block 2, all proposed access location will achieve a minimum of 130 m of sight distance.

The southern access to Block 2 will achieve more than 130 m of sight distance to the north. To the south, 98 m of linear sight distance (>40 km/h design speed requirement of 85m) can be achieved within the limits of the ROW. The field of vision for a person looking to make a left turn may extend past this point. Approaching vehicles will be on the curve and any left-turning vehicles will be slowing down. Additionally, vehicles exiting the access will have the centre left-turn lane available for two-stage gap acceptance, if required. Therefore, maintaining a full-moves access is recommended.

The emergency access proposed for Block 3 will achieve 130 m of sight distance to the east, as long as future signage and vegetation is trimmed back along the edge of the right-of-way (ROW). It is recommended that future access to the industrial block be aligned with the access to Block 3 to avoid left-turn conflicts and delays.

The proposed cross-section for Industrial Road illustrates that the roadway will have a 1.5 m sidewalk on one side and a 3.0 m sidewalk/multi-use path on the opposite side. These facilities will provide pedestrians and cyclists with connections to the proposed sidewalks and bike lanes on Burnside Line. The analysis described herein was prepared based on the Master Concept Plan, dated April 27, 2023. Any minor changes to the Plan will not materially impact the conclusions of this report.

It is concluded that the proposed development can be supported from a traffic operations perspective, with the noted recommendations.

2.0 Introduction

2.1 Background

C.F. Crozier & Associates Inc. (Crozier) was retained by LIV (Hawk Ridge) LP to complete a Traffic Impact Study (TIS) to support the Draft Plan of Subdivision for part of Lot 4, Concession 4 in the Township of Severn (Township). The proposed development is referred to as Area 3 and is located to the west of Highway 11.

An original TIS was prepared prior to an Ontario Municipal Board (OMB) decision in September 2000 and a revised transportation review was completed in February 2005 (File: 43T-99002). An updated TIS was completed in May 2022 to account for updates to the Draft Plan and fulfill the Draft Plan conditions. This TIS update (July 2023) has been prepared to address recent comments provided by the Township and changes to the Draft Plan.

The current Draft Plan (dated May 4, 2022) has been included as **Figure 1**. The Conceptual Master Plan (dated April 27, 2023) has been included as **Figure 2**.

2.2 Purpose & Scope

The purpose of the study is to assess the impacts of the proposed development on the boundary road network and to recommend warranted mitigation measures. The study reviewed aspects of the proposed development from a transportation engineering perspective including the forecasted trip generation of the proposed development and the existing, future background, and future total traffic operations at the study intersections.

The Traffic Impact Study was conducted in accordance with the original Terms of Reference circulated and based on comments provided by the Township of Severn, City of Orillia, and Ministry of Transportation (MTO). A Comment Response Memo has been prepared to address comments received on the second submission from the Township's reviewer, dated October 13, 2023.

Appendix A contains the Terms of Reference correspondence with the updated work plan and **Appendix B** contains the Comment Response Memo.

2.3 Development Proposal

The proposed Draft Plan of Subdivision consists of the following:

- 297 condominium townhouses
- The existing Hawkridge Golf Course
- 6.35 ha of industrial lands
- Internal road network

Based on the permitted zoning, 60% lot coverage of the industrial lands has been utilized to establish the gross floor area (GFA) of the industrial units. It is noted that the trip generation is based on an old plan that identified an industrial area of 6.47 ha. Applying a 60% lot coverage to the 6.47 ha equates to a GFA of 38,820 m² (417,855 ft²). This area has been maintained in this analysis to provide a conservative assessment.

The future arterial roadway (referred to herein as "Industrial Road") is a continuation of the Inch Farm Arterial Road and divides the Draft Plan between residential and industrial areas. The arterial roadway will connect Uhthoff Line to Burnside Line when completed.

5.0 Site Generated Traffic

5.1 Trip Generation

The development will result in additional vehicles on the boundary road network that previously did not exist.

The trip generation of the development was forecasted using the fitted curve equations provided in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition. Land use code (LUC) 215 "Single-Family Attached Housing" and LUC 110 "General Light Industrial" were used to forecast trips generated by the proposed development with exception of the p.m. peak hour for the General Light Industrial as the average rate was selected for a more conservative assessment.

Based on the permitted zoning, 60% lot coverage of the industrial lands has been utilized to estimate the gross floor area (GFA) of the industrial units. This equates to a GFA of 38,820 m² (417,855 ft²).

Table 9 summarizes the trip generation of the proposed development and **Appendix L** contains the relevant ITE excerpts.

Land Use	Peak Hour	Number of Trips					
Lana use	reak nooi	Inbound	Outbound	Total			
LUC 215 "Single-Family Attached Housing"	Weekday A.M.	37	112	149			
(297 units)	Weekday P.M.	103	71	174			
LUC 110 "General Light Industrial"	Weekday A.M.	272	37	309			
(417,855 ft²)	Weekday P.M.	38	234	272			
TOTAL	Weekday A.M.	309	149	458			
IOIAL	Weekday P.M.	141	305	446			

Table 9: Trip Generation

5.2 Trip Distribution & Assignment

The trips generated by the residential and industrial development were distributed to the boundary road network based on Transportation Tomorrow Survey (TTS) data. TTS data from Zone 8657 (Severn) and 8682 (Orillia) was utilized for the residential development and Zone 8657 (Severn) and 8685 (Orillia) was utilized for the industrial development. The different Orillia zones were used due to their variance in residential and commercial/industrial areas. **Table 10** summarizes the distribution that was applied for both the a.m. and p.m. peak hours.

The residential trip distribution is illustrated in **Figure 11**, with the corresponding trip assignment illustrated in **Figure 12**. The industrial trip distribution is illustrated in **Figure 13**, with the corresponding trip assignment illustrated in **Figure 14**.

Table 10: Trip Distribution

To/From The	Residential	Industrial
South on Highway 11 via Burnside Line	40%	45%
North via Highway 11	5%	5%
East via Burnside Line/West Street	20%	25%
West via Burnside Line	10%	10%
South via Murphy Road/West Ridge	10%	0%
West via Highway 12 WB	5%	5%
South on Highway 11 via Highway 12 EB	10%	10%

6.0 Total Future Conditions

6.1 Future Total Intersection Modelling

The traffic impacts arising from the proposed development were assessed based on the site generated traffic illustrated in **Figure 12** and **Figure 14** being superimposed on the future background traffic volumes in **Figures 8**, **9**, and **10**. The resulting 2027, 2032, and 2037 future total traffic volumes for the weekday a.m. and p.m. peak hours are illustrated in **Figures 15**, **16**, and **17**, respectively.

Figure 18 illustrates the future traffic control and lane configurations.

6.2 Signal Warrant

Signal warrants were evaluated for the intersections of Uhthoff Line and Industrial Road and Uhthoff Line and Murphy Road under the 2037 horizon year. The analysis followed the procedures specified in Chapter 4 of the "Ontario Traffic Manual – Book 12", March 2012. Justification 7 was used to evaluate the projected volumes on the proposed Industrial Road and the Uhthoff Line intersection. For the Uhthoff Line and Murphy Road intersection, Justifications 1 (Minimum Vehicular Volume), 2 (Delay to Cross Traffic), and 3 (Combination of Justifications 1 and 2) were applied using an 8-hr format.

Signal warrants results indicate that signals are not warranted at the two requested intersections. **Appendix M** contains the signal warrants results.

6.3 Intersection Operations

Table 11, Table 12 and, **Table 13** outline the future total traffic operations for the 2027, 2032 and 2037 horizon years, respectively. **Appendix F** contains Level of Service definitions, and **Appendix G** contains detailed capacity analysis worksheets. Signal optimizations under future background conditions have been carried forward to the future total horizons.

APPENDIX L

Signal Warrant



Project and Scenario Summary											
Dusings	Project Hawk Ridge Project Number 1915- Date 2024.										
Project	Hawk Ridge	Date	2024.08.21								
Horizon	2045	Analyst	K. Hagan								
	Study Intersection Summary										
Major Street	Major Street Division Road Direction East/West										
Minor Street	Uhthoff Line	Direction	North/South								
	Intersection Details for Warrant Parameters										
Flow Conditions	Restricted Flow (Urban)	Number of Lanes	1								
T-Intersection?	T-Intersection? No Intersection Type Existing										
Notes: Free	Notes: Free Flow (Rural) is used when the operating speed is greater than or equal to 70km/h. Restricted Flow (Urban) is used otherwise.										
	The Number of Lanes greater than 1 only needs to be for one direction along the major road.										
	An intersection is considered New if at least 1-leg is added to an e	xisting intersection.									

Input Volumes and Average Hourly Volume Determination

Peak Hour		Major: Division Road							Pedestrians Crossing Major				
reak Houl	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Street
AM	0	207	10	44	166	5	5	41	47	8	26	2	0
PM	5	295	17	49	373	20	28	49	94	8	44	2	0
AHV	1	126	7	23	135	6	8	23	35	4	18	1	0

The AHV is determined by the availability of the peak hour estimates. If both Peak 1 and Peak 2 Peak Hour Volume estimates are available then AHV = (Peak1phv + Peak2phv)/4. In only the case that one estimate is available then AHV = Peak1phv/2 or Peak2phv/2.

Justification 7 - OTM Book 12

		MINIMI IM DEOLIIDEME	NT 1 LANE HIGHWAYS	MINIMUM REQUIREM	ENT 2 OR MORE LANE		COMPLIANC	E
JUSTIFICATION	DESCRIPTION	WIINIWOW NEGOTILINE		HIGH	WAYS	Sed	Entire	
ocern loverier	BESONII FION	Free Flow	Restricted Flow	Free Flow	Restricted Flow	Numerical	Percentage	Percentage
Minimum Vehicular	A. Vehicle Volume, All Approaches (Avg. Hour)	480	720	600	900	387	53.8%	52.4%
Volume	B. Vehicle Volume, Along Minor Streets (Avg. Hour)	120	170	120	170	89	52.4%	52.4%
Delay to Cross Traffic	A. Vehicle Volume, Major Street (Avg. Hour)	480	720	600	900	298	41.4%	41.4%
2. Delay to Cross Trailic	B. Combined Vehicle and Pedestrian Volume Crossing Artery From Minor Streets (Avg. Hour)	50	75	50	75	35	46.7%	41.470
Applicable Threshold			х					

Note: For T-intersections the thresholds for 1B have been increased by 50% per OTM Book 12. Existing Intersections Require 120% Justification New/Proposed Intersections Require 150% Justification

> Percent Compliance: 52.4% Percentage Required to be Justified: 120%

> > Yes X No

Signal Justification 7 Met:



Project and Scenario Summary											
Duniont	House Pideo	Project Number	1915-6133								
Project	Hawk Ridge	Date 2024.08.2° Analyst K. Hagan									
Horizon	Horizon 2045 Analyst										
	Study Intersection Summary										
Major Street	Major Street Uhthoff Line Direction North/South										
Minor Street	Industrial Road	Direction	East/West								
	Intersection Details for Warrant Parameters										
Flow Conditions	Restricted Flow (Urban)	Number of Lanes	1								
T-Intersection?	T-Intersection? Yes Intersection Type New										
Notes: Free	Notes: Free Flow (Rural) is used when the operating speed is greater than or equal to 70km/h. Restricted Flow (Urban) is used otherwise.										
	The Number of Lanes greater than 1 only needs to be for one direction along the major road.										
	An intersection is considered New if at least 1-leg is added to an e	xisting intersection.									

Input Volumes and Average Hourly Volume Determination

Peak Hour Major: Uhthoff Line Minor: Industrial Road							Minor: Industrial Road				Pedestrians Crossing Major		
reak Houl	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	Street
AM	0	168	189	34	188	0	0	0	0	159	0	12	0
PM	0	420	193	23	157	0	0	0	0	199	0	36	0
AHV	0	147	96	14	86	0	0	0	0	90	0	12	0

The AHV is determined by the availability of the peak hour estimates. If both Peak 1 and Peak 2 Peak Hour Volume estimates are available then AHV = (Peak1phv + Peak2phv)/4. In only the case that one estimate is available then AHV = Peak1phv/2 or Peak2phv/2.

Justification 7 - OTM Book 12

		MINIMI IM DEOLIIDEME	NT 1 LANE HIGHWAYS	MINIMUM REQUIREM	ENT 2 OR MORE LANE	COMPLIANCE			
JUSTIFICATION	DESCRIPTION	WIINIWOW NEGOTILINE		HIGH	Sed	Entire			
ocern loverier	BESSIAI TION	Free Flow	Restricted Flow	Free Flow	Restricted Flow	Numerical	Percentage	Percentage	
Minimum Vehicular	A. Vehicle Volume, All Approaches (Avg. Hour)	480	720	600	900	445	61.8%	40.0%	
Volume	B. Vehicle Volume, Along Minor Streets (Avg. Hour)	180	255	180	255	102	40.0%	40.0%	
Delay to Cross Traffic	A. Vehicle Volume, Major Street (Avg. Hour)	480	720	600	900	343	47.6%	47.6%	
2. Delay to Cross Trailic	B. Combined Vehicle and Pedestrian Volume Crossing Artery From Minor Streets (Avg. Hour)	50	75	50	75	90	120.0%	47.0%	
Applicable Threshold			х					-	

Note: For T-intersections the thresholds for 1B have been increased by 50% per OTM Book 12. Existing Intersections Require 120% Justification New/Proposed Intersections Require 150% Justification

> Percent Compliance: 47.6% Percentage Required to be Justified: 150%

> > Yes

Signal Justification 7 Met:

X No



Project and Scenario Summary										
Duniant	Haude Bidea	Project Number	1915-6133							
Project	Hawk Ridge	Date	2024.08.21							
Horizon	2045	Analyst	K. Hagan							
	Study Intersection Summary									
Major Street	Uhthoff Line	Direction	North/South							
Minor Street	Murphy Road	Direction East/West								
	Intersection Details for Warrant Parameters									
Flow Conditions	Flow Conditions Restricted Flow (Urban) Number of Lanes									
T-Intersection?	Existing									
Notes: Free	Notes: Free Flow (Rural) is used when the operating speed is greater than or equal to 70km/h. Restricted Flow (Urban) is used otherwise.									
	The Number of Lanes greater than 1 only needs to be for one direction along the major road.									

An intersection is considered New if at least 1-leg is added to an existing intersection.

Input Volumes and Average Hourly Volume Determination														
Peak Hour	Major: Uhthoff Line								Minor: Murphy Road				Pedestrians Crossing Major	
Feak Houl	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	Street	
AM	0	0	0	0	0	317	331	5	2	0	13	0	0	
PM	2	0	0	2	0	350	609	7	0	4	4	4	0	
AHV	1	0	0	1	0	167	235	3	1	1	4	1	0	

The AHV is determined by the availability of the peak hour estimates. If both Peak 1 and Peak 2 Peak Hour Volume estimates are available then AHV = (Peak1phv + Peak2phv)/4. In only the case that one estimate is available then AHV = Peak1phv/2.

Justification 7 - OTM Book 12											
		MINIMUM REQUIREME	NT 1 LANE HIGHWAYS	MINIMUM REQUIREM	COMPLIANCE						
JUSTIFICATION	DESCRIPTION	WINNINGWINEQUINEWE	INT TEANETHONWATO	HIGH	Sed	Entire					
JOOTH ICATION	BESSI WITTEN	Free Flow	Restricted Flow	Free Flow	Restricted Flow	Numerical	Percentage	Percentage			
1. Minimum Vehicular Volume	A. Vehicle Volume, All Approaches (Avg. Hour)	480	720	600	900	414	57.5%	57.5%			
	B. Vehicle Volume, Along Minor Streets (Avg. Hour)	120	170	120	170	245	144.1%				
2. Delay to Cross Traffic	A. Vehicle Volume, Major Street (Avg. Hour)	480	720	600	900	169	23.5%	23.5%			
	B. Combined Vehicle and Pedestrian Volume Crossing Artery From Minor Streets (Avg. Hour)	50	75	50	75	240	320.0%	23.370			
Арр	olicable Threshold		X								

Note: For T-intersections the thresholds for 1B have been increased by 50% per OTM Book 12.

Existing Intersections Require 120% Justification

New/Proposed Intersections Require 150% Justification

Percent Compliance:	57.5%
Percentage Required to be Justified:	120%

Signal Justification 7 Met:



Project and Scenario Summary										
Devices	Handa Bidan	Project Number	1915-6133							
Project	Hawk Ridge	Date	2024.08.21							
Horizon	2045	Analyst	K. Hagan							
Study Intersection Summary										
Major Street	Industrial Road	Direction	East/West							
Minor Street	Hurlwood Lane	Direction	North/South							
Intersection Details for Warrant Parameters										
Flow Conditions	Flow Conditions Restricted Flow (Urban) Number of Lanes 1									
T-Intersection?	Yes	Intersection Type	New							
Notes: Free	Flow (Rural) is used when the operating speed is greater than or equal to 70km/	h. Restricted Flow (Urban) is used other	wise.							
The Number of Lanes greater than 1 only needs to be for one direction along the major road.										

An intersection is considered New if at least 1-leg is added to an existing intersection.

Input Volumes and Average Hourly Volume Determination

Peak Hour	Major: Industrial Road							Minor: Hurlwood Lane					Pedestrians Crossing Major
i cak iloui	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Street
AM	0	174	0	0	99	92	0	0	0	194	0	0	0
PM	0	150	0	0	178	139	0	0	0	176	0	0	0
AHV	0	81	0	0	69	58	0	0	0	93	0	0	0

The AHV is determined by the availability of the peak hour estimates. If both Peak 1 and Peak 2 Peak Hour Volume estimates are available then AHV = (Peak1phv + Peak2phv)/4. In only the case that one estimate is available then AHV = Peak1phv/2 or Peak2phv/2.

Justification 7 - OTM Book 12

		MINIMUM REQUIREME	NT 1 LANE HIGHWAYS	MINIMUM REQUIREME	ENT 2 OR MORE LANE	COMPLIANCE			
JUSTIFICATION	DESCRIPTION	WINVINIOWINE		HIGH	WAYS	Sed	Entire		
	BESSIAI FISH	Free Flow	Restricted Flow	Free Flow	Restricted Flow	1 1		Percentage	
Minimum Vehicular	A. Vehicle Volume, All Approaches (Avg. Hour)	480	720 600		900	301	41.8%	36.5%	
Volume	B. Vehicle Volume, Along Minor Streets (Avg. Hour)	180	255	180	255	93	36.5%	30.376	
2. Delay to Cross Traffic	A. Vehicle Volume, Major Street (Avg. Hour)	480	720	600	900	208	28.9%	28.9%	
	B. Combined Vehicle and Pedestrian Volume Crossing Artery From Minor Streets (Avg. Hour)	50	75	50	75	93	124.0%	20.9%	
Applicable Threshold			х						

Note: For T-intersections the thresholds for 1B have been increased by 50% per OTM Book 12. Existing Intersections Require 120% Justification New/Proposed Intersections Require 150% Justification

> Percent Compliance: 36.5% Percentage Required to be Justified: 150%

Signal Justification 7 Met: Yes X No

APPENDIX M

Auxiliary Turn Lane Warrant



MTO DESIGN SUPPLEMENT

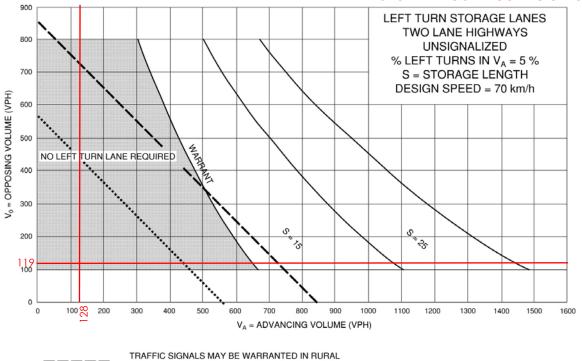
FOR

TAC GEOMETRIC DESIGN GUIDE (GDG) FOR CANADIAN ROADS

APRIL 2020

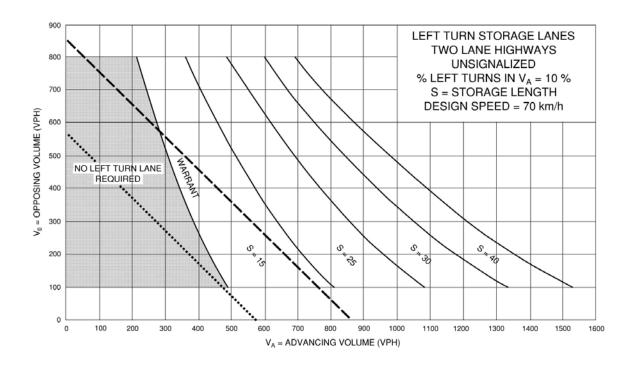
STANDARDS &
SPECIFICATIONS BRANCH
DESIGN STANDARDS &
SPECIFICATIONS OFFICE

Exhibit 9A-11 Uhthoff Line & North Site Access 1 2045 AM Peak Hour Volumes

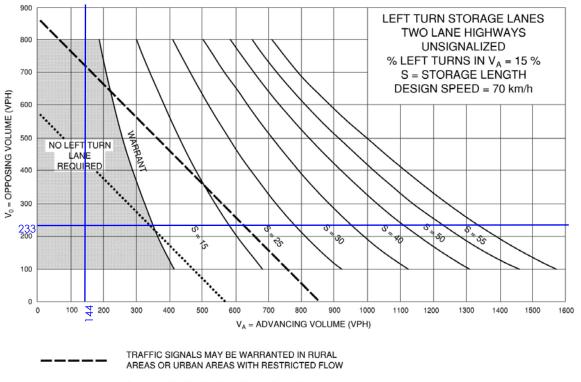


TRAFFIC SIGNALS MAY BE WARRANTED IN RURAL AREAS OR URBAN AREAS WITH RESTRICTED FLOW

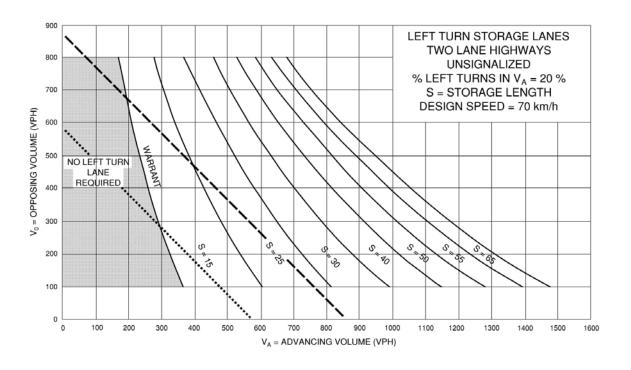
TRAFFIC SIGNALS MAY BE WARRANTED IN
"FREE FLOW" URBAN AREAS



Uhthoff Line & North Site Access 1 Exhibit 9A-12 2045 PM Peak Hour Volumes



TRAFFIC SIGNALS MAY BE WARRANTED IN "FREE FLOW" URBAN AREAS



Uhthoff Line & North Site Access 2 2045 AM Peak Hour Volumes 2045 PM Peak Hour Volumes

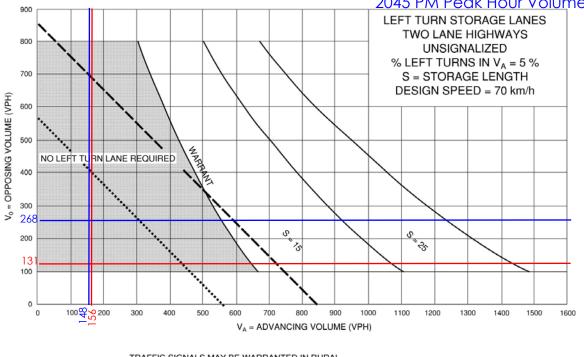


Exhibit 9A-11

TRAFFIC SIGNALS MAY BE WARRANTED IN RURAL
AREAS OR URBAN AREAS WITH RESTRICTED FLOW

TRAFFIC SIGNALS MAY BE WARRANTED IN "FREE FLOW" URBAN AREAS

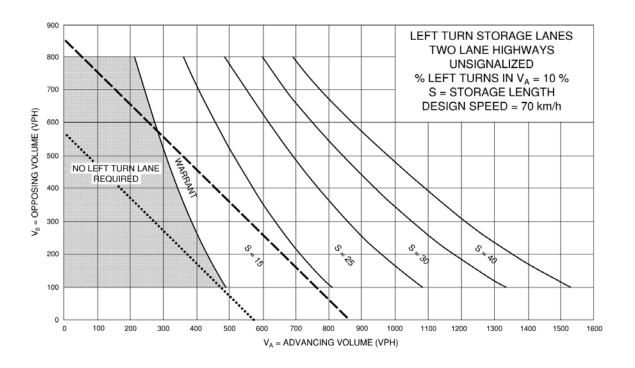
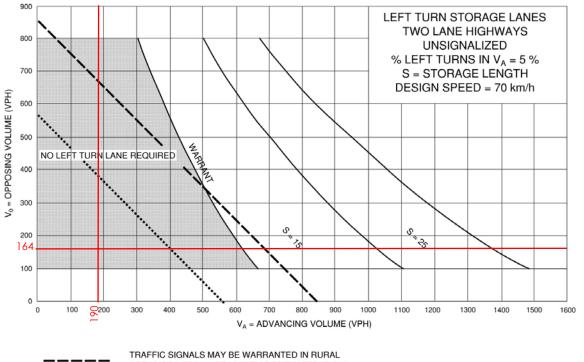


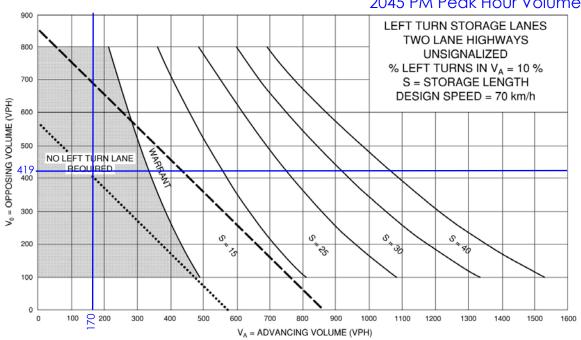
Exhibit 9A-11 Uhthoff Line & South Site Access 2045 AM Peak Hour Volumes



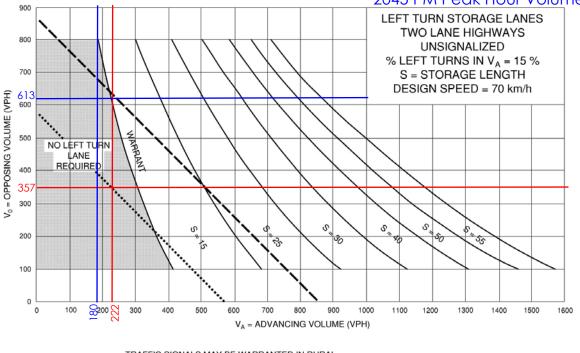
TRAFFIC SIGNALS MAY BE WARRANTED IN RURAL
AREAS OR URBAN AREAS WITH RESTRICTED FLOW

TRAFFIC SIGNALS MAY BE WARRANTED IN
"FREE FLOW" URBAN AREAS

Uhthoff Line & South Site Access 2045 PM Peak Hour Volumes

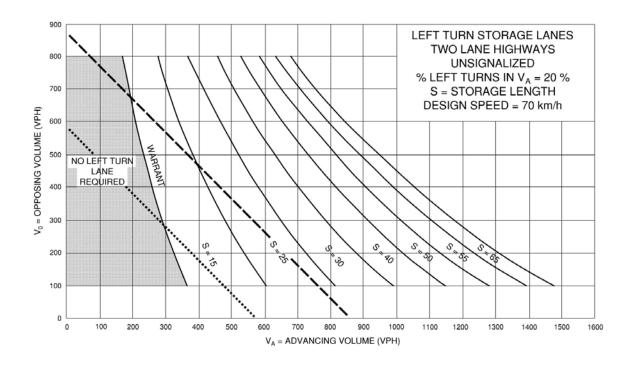


Uhthoff Line & Industrial Road 2045 AM Peak Hour Volumes 2045 PM Peak Hour Volumes



TRAFFIC SIGNALS MAY BE WARRANTED IN RURAL
AREAS OR URBAN AREAS WITH RESTRICTED FLOW

TRAFFIC SIGNALS MAY BE WARRANTED IN "FREE FLOW" URBAN AREAS



APPENDIX N

Division Road West Intersection Photos

Uhthoff Line at Division Road West



Uhthoff Line looking northeast along Division Road West.
Drivers at the stop bar are unable to see approaching traffic from more than 100 m when there are leaves on the trees.



Uhthoff Line looking northwest along Division Road West.

Drivers are unable to see approaching traffic from more than 50 m. Vehicles are approaching the intersection downhill and the speed limit increases from 60 km/h to 80 k/h just east of the intersection. Drivers must move forward on Uhthoff Line to see along the roadway.



Uhthoff Line looking southeast along Division Road West.

Drivers at the stop bar are unable to see more than 30 m when the plants have foliage.

Burnside Line at Division Road West



Division Road West looking northeast along Burnside Line. Currently there is construction equipment impacting sightlines. Google Streetview imagery shows that sightlines are adequate.



Division Road West looking southeast along Burnside Line.
At the stop bar drivers can see approaching traffic from approximately 140 m.



Division Road West looking southwest along Burnside Line.

Drivers at the stop bar are unable to see more than 70 m when the plants have foliage.