

# Appendix A

Screening Form and City Comments

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City of Ottawa 2017 TIA Guidelines

Date

13-Jun-18

## TIA Screening Form

Project

Petrie's Landing I Towers 3 to 5

Project Number

476705

Results of Screening	Yes/No
Development Satisfies the Trip Generation Trigger	Yes
Development Satisfies the Location Trigger	Yes
Development Satisfies the Safety Trigger	Yes

Module 1.1 - Description of Proposed Development	
Municipal Address	8900 Jeanne D'Arc Boulevard, Orleans, ON, K4A 0S9
Description of location	Existing tower with 89 residential units and a second tower consisting of 145 residential units currently under construction. Access to tower 1 provided at the end of Jeanne D'Arc Boulevard. Construction access to tower 2 provided through Jeanne D'Arc former Cul-De-Sac.
Land Use	Residential
Development Size	806 Apartment Units (high-rise) distributed in Towers 3, 4, 5A and 5B.
Number of Accesses and Locations	1 vehicular access from the West via Jeanne D'Arc Blvd to towers 3, 4 and 5. 1 additional vehicular access from Jeanne D'Arc Blvd to tower 5 via Inlet Private former Cul-De-Sac.
Development Phasing	Two Phases: Towers 3 to 4 by 2022. Tower 5 by 2024.
Buildout Year	Year 2024 (Towers 3 to 5)
Sketch Plan / Site Plan	See attached

Module 1.2 - Trip Generation Trigger		
Land Use Type	Townhomes or Apartments	
Development Size	806	Units
Trip Generation Trigger Met?	Yes	

Module 1.3 - Location Triggers		
Development Proposes a new driveway to a boundary street that is designated as part of the City's Transit Priority, Rapid Transit, or Spine Bicycle Networks (See Sheet 3)	No	
Development is in a Design Priority Area (DPA) or Transit-oriented Development (TOD) zone. (See Sheet 3)	Yes	Development is partially within Trim TOD Zone
Location Trigger Met?	Yes	

Module 1.4 - Safety Triggers		
Posted Speed Limit on any boundary road	>80	km/h
Horizontal / Vertical Curvature on a boundary street limits sight lines at a proposed driveway	No	
A proposed driveway is within the area of influence of an adjacent traffic signal or roundabout (i.e. within 300 m of intersection in rural conditions, or within 150 m of intersection in urban/ suburban conditions) or within auxiliary lanes of an intersection;	No	
A proposed driveway makes use of an existing median break that serves an existing site	No	
There is a documented history of traffic operations or safety concerns on the boundary streets within 500 m of the development	No	
The development includes a drive-thru facility	No	
Safety Trigger Met?	Yes	

April 30, 2019

City of Ottawa  
Planning and Infrastructure  
110 Laurier Avenue West  
Ottawa, Ontario  
K1P 1J1

Attention: Ms. Shoma Murshid  
Development Services Department

**Re: Zoning By-law Amendment and Site Plan Applications  
Brigil's Petries Landing 1 Towers 3-5  
Transportation Comments**

Dear Ms. Murshid:

The following letter outlines the response to City comments received November 30, 2018. Our response have been provide in red.

**14. Traffic Review Comments:**

- a. Does the traffic report include assessment of the proposed commercial uses and vehicles?

**Response:** It is our understanding that retail uses to be accommodated within Towers 5 and 6, will be small scale and oriented to the local development only. They are not expected to impact the adjacent transportation network as trips generated for commercial purposes are expected to come from within the site, i.e. internal trips only. Furthermore, the location of this site is not a favorable pass-by location for trips destined outside the site due to it being at a dead-end road that is not directly accessible via the 174.

- a. Development Design section broaches traffic calming measures. Please have the removable speed humps replaced with permanent speed humps. Transfer traffic calming measures to site plan, with details.

**Response:** Noted, TIA and site plan amended accordingly.

- b. Traffic Signals: No comments to this circulation. Traffic Signal Design and Specification reserves the right to make future comments based on subsequent submissions.

**Response:** Noted.

Future considerations:

If there are any future proposed changes in the existing roadway geometry for the purpose of construction of a new traffic control signal (TCS) or modifications to existing TCS including roundabouts, the City of Ottawa Traffic Signal Design and Specification Unit is required to complete a review for traffic signal plant design or re-design and provide the actual design or re-design.

If the proposed traffic signals or roundabout are warranted/approved for installation, or modifications to existing TCS are approved (RMA approved), please forward approved geometry detail design drawings (dwg digital format in NAD 83 coordinates). Drawings must include base mapping, existing and new underground utilities/sewers, new/existing catch basins, Turn-Radius Modeling and approved pavement markings drawings in separate files for detail traffic plant design lay out.

Please send all digital (CADD) design files to [Peter.Graicar@ottawa.ca](mailto:Peter.Graicar@ottawa.ca) 613-580-2424 ext. 23035.

**Response:** Noted.

- c. Street Lighting No comments with this circulation. Street Lighting reserves the right to make future comments based on subsequent submissions.

**Response:** Noted.

Future considerations may include but are not limited to as follows:

If there are any proposed changes to the existing roadway geometry, additional traffic requirements, roundabouts, etc., the City of Ottawa Street Light Asset Management Group is required to provide a full street light design. Upon completion of proposed roadway geometry design changes, please submit digital Micro Station drawings with proposed roadway geometry changes to the Street Lighting Department, so that we may proceed with the detailed street light design and coordination with the Street Light maintenance provider and all necessary parties. Be advised that the applicant will be 100% responsible for all costs associated with any Street Light design as a result of the roadway geometry change.

Alterations and/or repairs are required where the existing street light plant is directly, indirectly or adversely affected by the scope of work under this circulation, due to the proposed road reconstruction process. All street light plant alterations and/or repairs must be performed by the City of Ottawa's Street Light maintenance provider.

Be advised that the applicant will be 100% responsible for all costs associated with any relocations/modifications to the existing street light plant.

**Response:** **Noted.**

e. Traffic Engineering

Section 3.4 - The diagram geometry does not match description nor the actual geometry.

**Response:** **Noted, TIA amended accordingly.**

Peak hour factors used are not in conformance with 2017 TIA Guidelines. Revise.

**Response:** **Noted, TIA amended accordingly.**

Section 18.3 - Report mentions mitigated measures from 2029 background analysis. No mitigated measures were mentioned previously in report. Furthermore, the intersection of Trim Road and 174 will be an interchange, so not sure where the suggested mitigated measure to provide dual eastbound left lanes and triple northbound left lanes comes from.

**Response:** **Noted, the appropriate section was updated to reflect latest designs for Trim/174 as per Stage 2 LRT Design Briefing.**

The summary suggests that in 2029 the City should consider traffic signals at the Jeanne D'Arc Boulevard and 174 WB ramp terminals. This is not examined in the report body. A review of signal warrant and LOS is required. In addition, the NB movement is projected to have a LOS C in the AM with only background traffic, but will experience LOS E with total traffic; implying that the subject development causes the movement to fail.

**Response:** **Noted, the updated TIA reflects latest Stage 2 LRT plans, which no longer triggers significant traffic delays to Jeanne D'Arc and thus, no signal warrant was required.**

Year 2024 and 2029 analyses do not show the impact south of OR174 on Trim Road where the future 174 EB ramps tie into Trim Road (at Dairy Road, as well

as ramp terminals at Dairy Road). The subject development will add traffic to these intersections and should be included in the analyses.

**Response:** Noted, the updated TIA reflects latest Stage 2 LRT designs, which no longer includes an interchange.

Synchro models should show the southbound left turn at Trim Road and 174 as protected, not permissive protected. There are also no recalls for north-south.

A revised Synchro analysis is required.

**Response:** Noted, the synchro analysis was updated to reflect the latest Stage 2 LRT designs.

f. Transportation Engineering Services

Review the proposed parking spaces for reduction and enhance the TDM strategies to support the reduction.

**Response:** Noted, parking figures have been updated in the latest proposal. A detailed rationale has been provided in a previous comment (4. Zoning By-Law Amendment Review). A summary was included in Section 4.2 of the TIA.

Underground ramps should be limited to a 12% grade and must contain a subsurface melting device when exceeding 6%.

**Response:** Noted

a. Traffic Report is missing MUP discussion and details. Include.

**Response:** Noted, TIA amended accordingly.

## Appendix B

City of Ottawa Traffic Data

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# Transportation Services - Traffic Services

## Turning Movement Count - Full Study Peak Hour Diagram

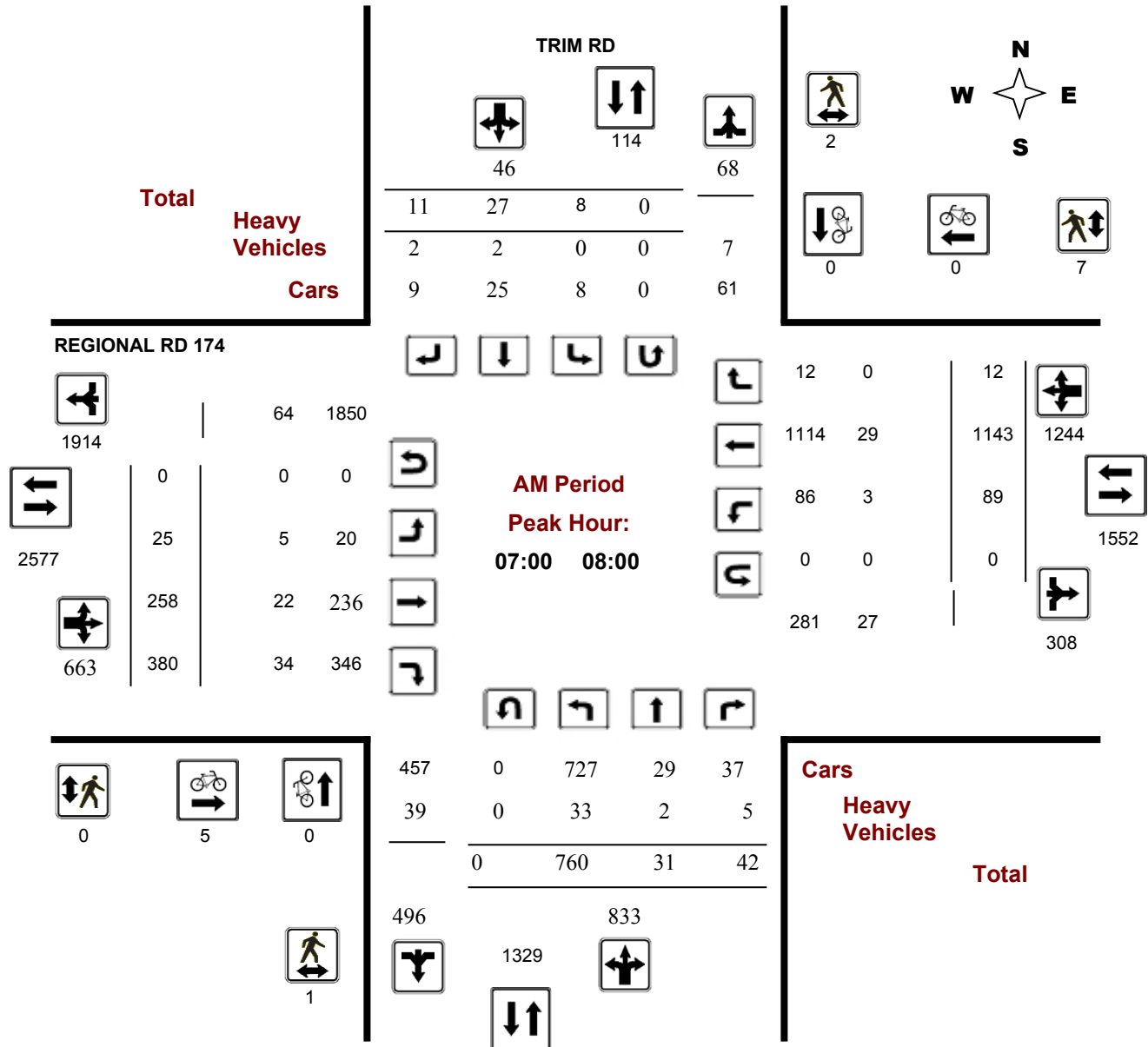
### REGIONAL RD 174 @ TRIM RD

**Survey Date:** Wednesday, April 19, 2017

**Start Time:** 07:00

**WO No:** 36942

**Device:** Miovision

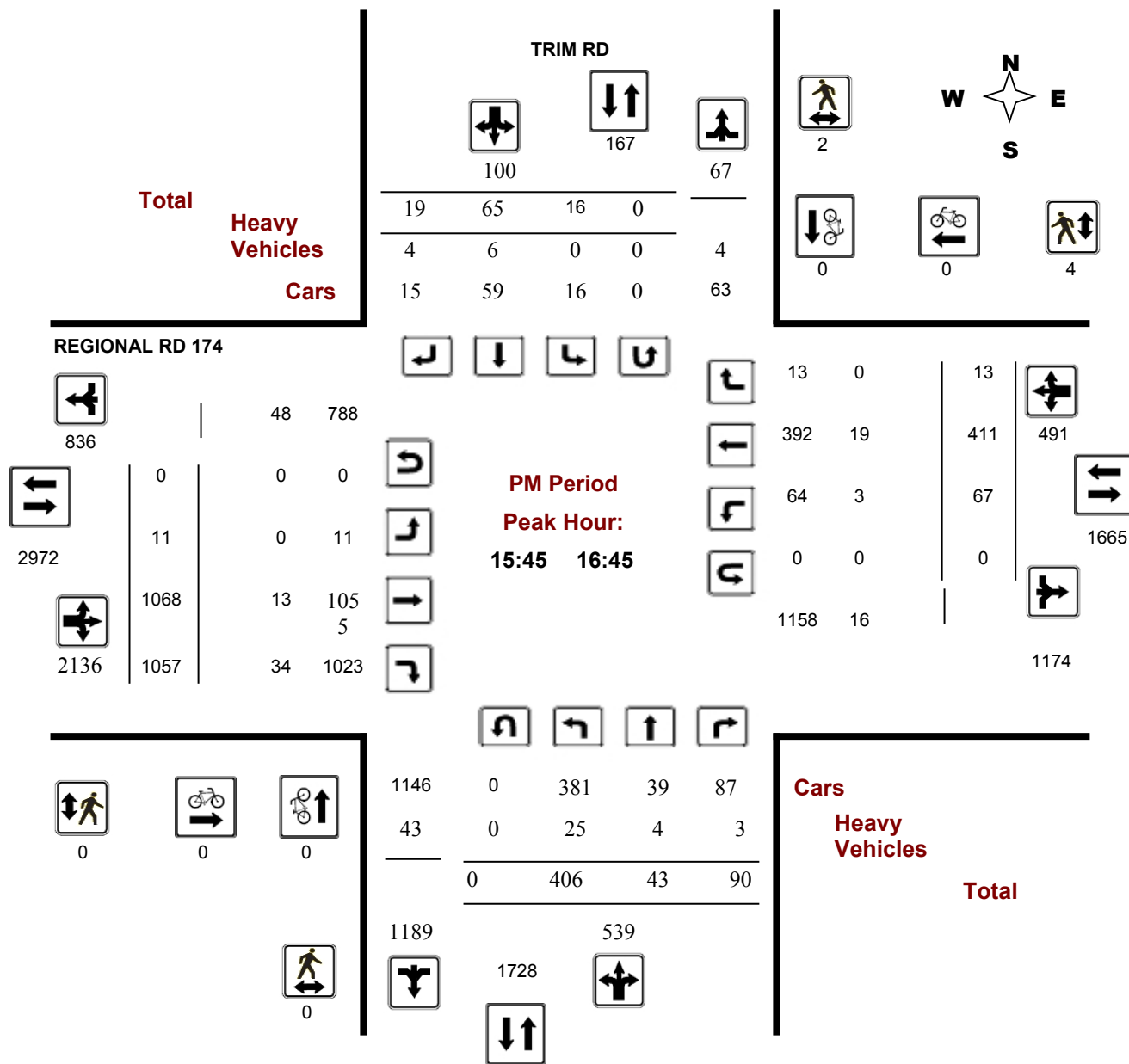


**Survey Date:** Wednesday, April 19, 2017

**Start Time:** 07:00

**WO No:** 36942

**Device:** Miovision





# Turning Movement Count Summary, AM and PM Peak Hour Flow Diagrams

Automobiles, Taxis, Light  
Trucks, Vans, SUV's,  
Motorcycles, Heavy Trucks,  
Buses, and School Buses

## Jeanne d'Arc Boulevard North & Trim Road

## Orléans, ON

### All Vehicles

(Except Bicycles & Electric Scooters)

Wednesday, 2 May 2018

0700-0900 & 1600-1800

4 Hour Survey

City of Ottawa Ward 1

Jeanne d'Arc Blvd. (N)

Jeanne d'Arc Blvd. (N)

Trim Rd.

Trim Rd.

Total Volume  
**680**

Approaching Intersection  
(A+B+C+D)

(D) **57**

**114**

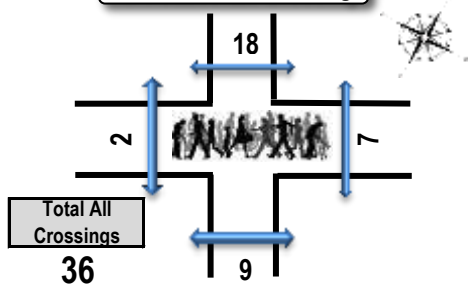
**57**

**312**

**300** (C)

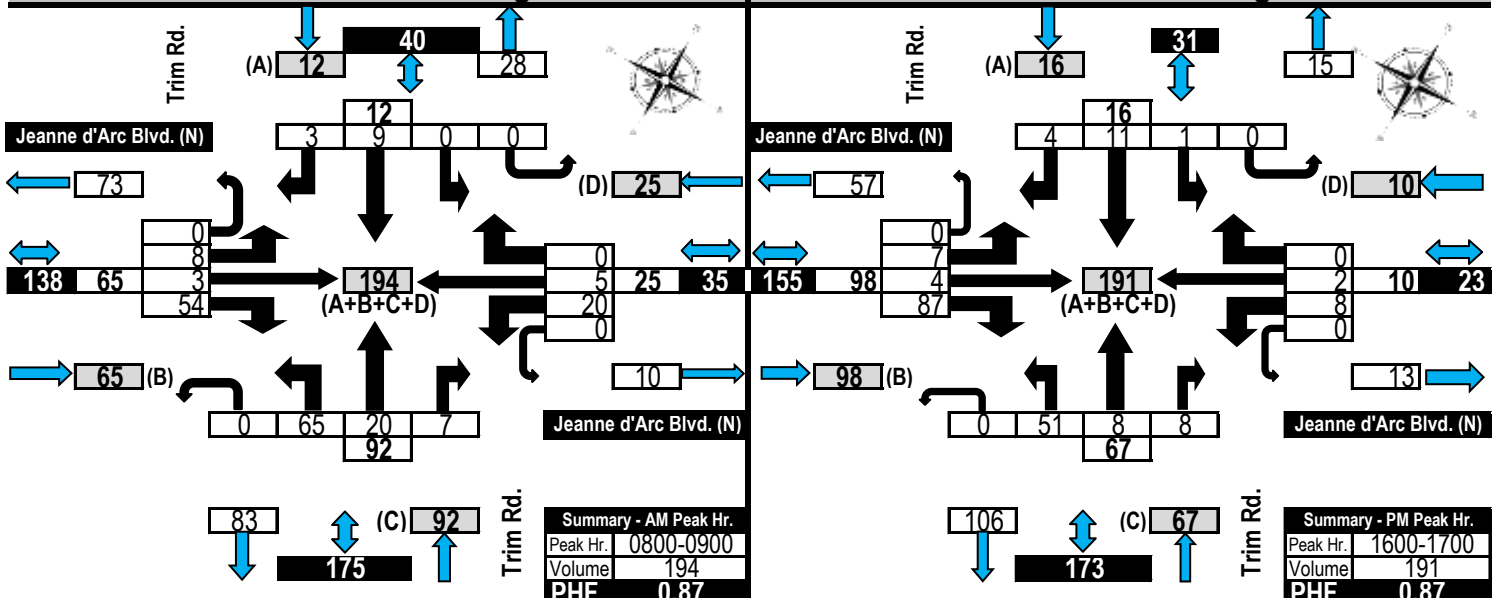
**612**

All Pedestrian Crossings



### AM Peak Hour Flow Diagram

### PM Peak Hour Flow Diagram



# Appendix C

Collision Data and Analysis

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Total Area

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total
P.D. only	39	5	6	1	0	2	0	2	55
Non-fatal injury	12	1	0	1	0	0	0	0	14
Non reportable	0	0	0	0	0	0	0	0	0
Total	51	6	6	2	0	2	0	2	69
	# 1 or 74%	# 2 or 9%	# 2 or 9%	# 4 or 3%	# 7 or 0%	# 4 or 3%	# 7 or 0%	# 4 or 3%	

80%  
20%  
0%  
100%

REGIONAL RD 174/TRIM RD

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2012-2016	69	34,176	1825	1.11

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total
P.D. only	39	5	6	1	0	2	0	2	55
Non-fatal injury	12	1	0	1	0	0	0	0	14
Non reportable	0	0	0	0	0	0	0	0	0
Total	51	6	6	2	0	2	0	2	69
	74%	9%	9%	3%	0%	3%	0%	3%	

80%  
20%  
0%  
100%

JEANNE D'ARC BOULEVARD/TRIM RD

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2012-2016	0	2,391	1825	0.00

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total
P.D. only	0	0	0	0	0	0	0	0	0
Non-fatal injury	0	0	0	0	0	0	0	0	0
Non reportable	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0

0%

# Collision Main Detail Summary

OnTRAC Reporting System

FROM: 2012-01-01 TO: 2013-01-01

## REGIONAL RD 174 & TRIM RD

Former Municipality: Cumberland

Traffic Control: Traffic signal

Number of Collisions: 11

	DATE	DAY	TIME	ENV	LIGHT	IMPACT TYPE	CLASS	DIR	SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	No. PED
1	2012-03-21	We	08:45	Fog,	Daylight	Angle	Non-fatal	V1 E V2 N V3 N	Dry Dry Dry	Going ahead Turning left Turning left	Automobile, station Automobile, station Automobile, station	Other motor vehicle Other motor vehicle Other motor vehicle	0
2	2012-04-13	Fri	21:21	Clear	Dark	Turning	Non-fatal	V1 E V2 E V3 E	Dry Dry Dry	Turning right Going ahead Going ahead	Automobile, station Passenger van Automobile, station	Other motor vehicle Other motor vehicle Other motor vehicle	0
3	2012-05-11	Fri	08:00	Clear	Daylight	Rear end	P.D. only	V1 W V2 W	Dry Dry	Going ahead Going ahead	Automobile, station Pick-up truck	Other motor vehicle Other motor vehicle	0
4	2012-06-15	Fri	18:05	Clear	Daylight	Rear end	Non-fatal	V1 E V2 E	Dry Dry	Slowing or Stopped	Automobile, station Pick-up truck	Other motor vehicle Other motor vehicle	0
5	2012-06-16	Sat	12:05	Clear	Daylight	Rear end	Non-fatal	V1 E V2 E	Dry Dry	Slowing or Slowing or	Automobile, station Automobile, station	Other motor vehicle Other motor vehicle	0
6	2012-06-28	Thu	08:55	Clear	Daylight	Rear end	P.D. only	V1 E V2 E V3 E	Dry Dry Dry	Going ahead Stopped Stopped	Automobile, station Automobile, station Automobile, station	Other motor vehicle Other motor vehicle Other motor vehicle	0
7	2012-07-17	Tue	16:22	Clear	Daylight	Rear end	Non-fatal	V1 E V2 E	Dry Dry	Going ahead Slowing or	Pick-up truck Automobile, station	Other motor vehicle Other motor vehicle	0
8	2012-08-22	We	11:57	Clear	Daylight	Rear end	P.D. only	V1 S V2 S	Dry Dry	Slowing or Stopped	Automobile, station Truck and trailer	Other motor vehicle Other motor vehicle	0
9	2012-10-11	Thu	17:35	Rain	Daylight	Rear end	P.D. only	V1 E V2 E	Wet Wet	Turning right Turning right	Automobile, station Automobile, station	Other motor vehicle Other motor vehicle	0
10	2012-10-13	Sat	11:07	Clear	Daylight	Rear end	P.D. only	V1 N V2 N	Dry Dry	Going ahead Going ahead	Automobile, station Pick-up truck	Other motor vehicle Other motor vehicle	0
11	2012-11-26	Mo	17:58	Clear	Dark	Rear end	P.D. only	V1 E V2 E	Dry Dry	Going ahead Slowing or	Automobile, station Automobile, station	Other motor vehicle Other motor vehicle	0

(Note: Time of Day = "00:00" represents unknown collision time)

Wednesday, April 25, 2018

Page 1 of 1



# City Operations - Transportation Services

## Collision Details Report - Public Version

**From:** January 1, 2013 **To:** December 31, 2016

**Location:** REGIONAL RD 174 @ TRIM RD

**Traffic Control:** Traffic signal

**Total Collisions:** 59

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2016-Dec-09, Fri,17:22	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					West	Slowing or stopping	Pick-up truck	Other motor vehicle	
2016-Oct-27, Thu,07:05	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					North	Turning left	Automobile, station wagon	Other motor vehicle	
2016-Jun-28, Tue,10:14	Clear	Rear end	Non-fatal injury	Dry	West	Slowing or stopping	Passenger van	Other motor vehicle	
					West	Slowing or stopping	Pick-up truck	Other motor vehicle	
2016-Jun-21, Tue,07:20	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	
					West	Slowing or stopping	Pick-up truck	Other motor vehicle	
2016-May-14, Sat,20:00	Rain	Rear end	Non-fatal injury	Wet	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Feb-22, Mon,16:20	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	

					West	Stopped	Automobile, station wagon	Other motor vehicle
2016-Feb-21, Sun,12:56	Clear	Rear end	Non-fatal injury	Dry	West	Slowing or stopping	Pick-up truck	Other motor vehicle
					West	Stopped	Pick-up truck	Other motor vehicle
2016-Feb-08, Mon,16:15	Clear	Rear end	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Slowing or stopping	Pick-up truck	Other motor vehicle
2016-Feb-05, Fri,15:15	Clear	Rear end	P.D. only	Dry	North	Going ahead	Pick-up truck	Other motor vehicle
					North	Unknown	Unknown	Other motor vehicle
2016-Jan-20, Wed,15:15	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Stopped	Passenger van	Other motor vehicle
2016-Jan-04, Mon,14:50	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Pick-up truck	Other motor vehicle
2015-Oct-25, Sun,20:17	Clear	Turning movement	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Turning left	Pick-up truck	Other motor vehicle
2015-Oct-07, Wed,12:59	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Truck - dump	Other motor vehicle

					West	Stopped	Automobile, station wagon	Other motor vehicle
2015-Sep-29, Tue,13:06	Rain	Sideswipe	P.D. only	Wet	North	Changing lanes	Automobile, station wagon	Other motor vehicle
					North	Turning left	Truck - dump	Other motor vehicle
2015-Sep-14, Mon,18:51	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Passenger van	Other motor vehicle
2015-Sep-08, Tue,12:37	Clear	Rear end	Non-fatal injury	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2015-Jul-24, Fri,17:00	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2015-Jul-03, Fri,19:00	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Pick-up truck	Other motor vehicle
2015-Jun-29, Mon,14:30	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle

2015-Jun-12, Fri,11:11	Rain	Rear end	Non-fatal injury	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Slowing or stopping	Pick-up truck	Other motor vehicle
2015-May-23, Sat,12:20	Clear	Sideswipe	P.D. only	Dry	South	Overtaking	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Mar-10, Tue,19:34	Clear	Sideswipe	P.D. only	Wet	West	Turning left	Pick-up truck	Other motor vehicle
					West	Turning left	Automobile, station wagon	Other motor vehicle
2015-Jan-21, Wed,08:30	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Pick-up truck	Other motor vehicle
					North	Stopped	Pick-up truck	Other motor vehicle
2015-Jan-21, Wed,07:43	Clear	Rear end	P.D. only	Dry	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2015-Jan-13, Tue,16:59	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					West	Stopped	Pick-up truck	Other motor vehicle
2015-Jan-13, Tue,16:15	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle

2014-Dec-21, Sun,11:03	Clear	Rear end	P.D. only	Wet	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					East	Stopped	Pick-up truck	Other motor vehicle
2014-Dec-07, Sun,03:06	Clear	SMV other	P.D. only	Dry	East	Turning right	Automobile, station wagon	Ran off road
2014-Nov-29, Sat,12:35	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					East	Stopped	Passenger van	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2014-Nov-25, Tue,06:06	Clear	Turning movement	P.D. only	Dry	West	Turning left	Pick-up truck	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Nov-16, Sun,07:45	Snow	Angle	P.D. only	Packed snow	East	Turning right	Pick-up truck	Other motor vehicle
					North	Turning left	Unknown	Other motor vehicle
2014-Oct-29, Wed,12:20	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Pick-up truck	Other motor vehicle
					East	Stopped	Pick-up truck	Other motor vehicle
2014-Sep-02, Tue,10:17	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Passenger van	Other motor vehicle
					East	Stopped	Pick-up truck	Other motor vehicle

2014-Jun-27, Fri,07:15	Clear	Rear end	P.D. only	Dry	West	Going ahead	Pick-up truck	Other motor vehicle
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2014-Jul-14, Mon,13:40	Clear	Rear end	Non-fatal injury	Dry	West	Going ahead	Passenger van	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2014-Jul-02, Wed,06:10	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2014-Jun-17, Tue,16:11	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Pick-up truck	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2014-May-04, Sun,13:08	Rain	Sideswipe	P.D. only	Wet	West	Pulling away from shoulder or curb	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Pick-up truck	Other motor vehicle
2014-Apr-15, Tue,12:07	Rain	Rear end	P.D. only	Wet	West	Going ahead	Pick-up truck	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2014-Mar-14, Fri,14:18	Clear	Rear end	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle

2014-Feb-17, Mon,08:40	Clear	Other	P.D. only	Wet	North	Reversing	Pick-up truck	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2014-Feb-17, Mon,00:53	Clear	SMV other	Fatal injury	Dry	East	Going ahead	Automobile, station wagon	Ran off road
2014-Feb-07, Fri,09:25	Clear	Rear end	P.D. only	Dry	East	Merging	Automobile, station wagon	Other motor vehicle
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2014-Feb-05, Wed,02:30	Clear	SMV other	P.D. only	Wet	South	Turning left	Municipal transit bus	Skidding/sliding
2013-Nov-29, Fri,20:26	Clear	Turning movement	P.D. only	Wet	North	Turning left	Pick-up truck	Other motor vehicle
					North	Turning left	Pick-up truck	Other motor vehicle
2013-Nov-10, Sun,21:35	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Truck - closed	Other motor vehicle
2013-Nov-07, Thu,18:45	Clear	Rear end	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle
					North	Turning left	Pick-up truck	Other motor vehicle
2013-Nov-01, Fri,09:15	Clear	Rear end	Non-fatal injury	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle
					North	Turning left	Passenger van	Other motor vehicle

2013-Oct-21, Mon,13:00	Clear	Rear end	P.D. only	Dry	East	Going ahead	Passenger van	Other motor vehicle
					East	Stopped	Pick-up truck	Other motor vehicle
2013-Sep-11, Wed,08:25	Clear	Other	P.D. only	Dry	West	Unknown	Pick-up truck	Other motor vehicle
					West	Unknown	Truck - closed	Other motor vehicle
2013-Sep-09, Mon,13:34	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2013-Apr-14, Sun,11:22	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Pick-up truck	Other motor vehicle
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2013-Apr-12, Fri,08:30	Freezing Rain	Rear end	P.D. only	Ice	West	Turning left	Automobile, station wagon	Other motor vehicle
					West	Turning left	Pick-up truck	Other motor vehicle
2013-Feb-24, Sun,20:30	Clear	Rear end	P.D. only	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2013-Feb-14, Thu,15:40	Clear	Rear end	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle

2013-Feb-04, Mon,07:31	Clear	Sideswipe	P.D. only	Wet	West	Changing lanes	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Truck and trailer	Other motor vehicle
2013-Jan-25, Fri,08:38	Clear	Rear end	P.D. only	Ice	North	Turning left	Automobile, station wagon	Other motor vehicle
					North	Turning left	Automobile, station wagon	Other motor vehicle
2013-Jan-25, Fri,07:00	Clear	Rear end	P.D. only	Dry	North	Turning left	Passenger van	Other motor vehicle
					North	Turning left	Automobile, station wagon	Other motor vehicle
2013-Jan-19, Sat,07:45	Snow	Rear end	P.D. only	Loose snow	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					West	Stopped	School bus	Other motor vehicle

# Appendix D

Petrie's Landing I Traffic Calming Concept

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30 August 2016

OUR REF: 982847-02311

Brigil  
98 rue Lois  
Gatineau (Hull), QC J8Y 3R7

**Attention: Jean-Luc Rivard, Director – Land Development**

Dear Jean-Luc:

## Re: Petrie's Landing I TIS Towers II, III and IV – Addendum #3

This Addendum #3 has been prepared in response to the City of Ottawa's comments regarding potential traffic calming concerns within the Petrie's Landing development. The concerns raised to date include potential sight line issues at underground parking entrances, vehicle conflict zones with multiple accesses or bends on Inlet Private, and speeding along Inlet Private along the south limits of the site. To address these, a conceptual traffic-calming plan was developed and provided to the City for comment on June 30, 2016. Subsequent to this conceptual submission, additional comments were provided by the City and the plan was revised to focus solely on Tower II.

The traffic-calming plan has been developed with the intention of the Tower II recommendations to be implemented during construction. The Tower I recommendations are conceptual in nature and can be implemented during Tower II construction. Table 1 summarizes the traffic calming measures proposed for Petrie's Landing and Figure 1 illustrates the location of each of the proposed/conceptual features.

Table 1 Petrie's Landing Proposed Traffic Calming Measures

Phase	Measure	Location	Notes
Tower II	Removable Speed Hump	Along one-way access between Tower I and II site limits	<ul style="list-style-type: none"> <li>Introduces vertical deflection along the one-way access road to limit cut through vehicles and speed in front of Towers I and II</li> </ul>
	Removable Speed Hump	Along Inlet Private, between Tower II and III site limits	<ul style="list-style-type: none"> <li>Introduces vertical deflection along Inlet Private between Towers II and III to limit speed along the road</li> </ul>
	Signage – Stop Signs	Introduce all-way stop control at the Tower II underground parking exit to Inlet Private	<ul style="list-style-type: none"> <li>Controls access to Inlet Private</li> </ul>
Tower I (conceptual)	Pavement Markings – Gore Area	Exit from Tower I drop off area onto Inlet Private	<ul style="list-style-type: none"> <li>Delineates approach angle and lane width for exiting vehicles from the Tower I drop-off area to reduce vehicle conflicts on Inlet Private</li> </ul>
	Pavement Markings – Centerline	Along Inlet Private at the 90 bend in the southwest corner of the site	<ul style="list-style-type: none"> <li>Delineates the lane widths (3.5m) and improve adherence to driving line on the curve</li> </ul>
	Signage – Stop Sign	At one-way access from Towers I and II to Inlet Private, south of Tower I	<ul style="list-style-type: none"> <li>Controls access to Inlet Private</li> </ul>
	Signage – Warning Curve Sign	On Inlet Private on both sides of the 90 degree bend in the southwest corner of the site	<ul style="list-style-type: none"> <li>Warning for vehicles approaching the curve to reduce speed, in conjunction with the centerline pavement marking</li> </ul>

# PARSONS

In conclusion, the proposed traffic calming measures are anticipated to address the City's comments and aggregated public feedback regarding the existing and future site operations. Should the conceptual plans be agreed upon, they can be implemented into the existing Tower II Site Plan Control submission and further implemented as the Petrie's Landing site develops.

Prepared By:

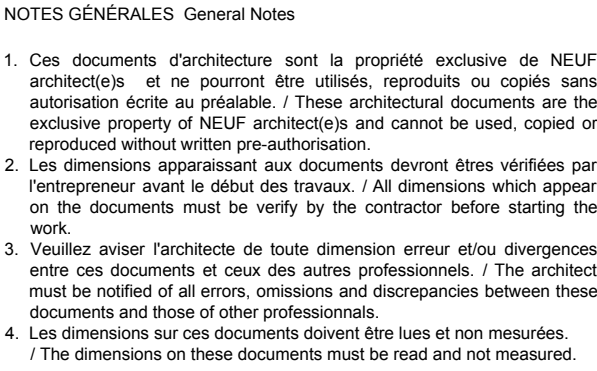


Andrew Harte, P.Eng.  
Transportation Engineer

Reviewed by:

A handwritten signature in black ink, reading "Chris Gordon".

Christopher Gordon, P, Eng.  
Senior Project Manager

[illegible]

**A100**  
**#14602**

# Appendix E

Adjacent Developments Trip Generation and Distribution

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24 February 2015

OUR REF: TO3131TOY

Brigil  
98 rue Lois  
Gatineau (Hull), QC J8Y 3R7

**Attention: Jean-Luc Rivard**

Dear Jean-Luc:

## **Re: Petrie's Landing I TIS Towers II, III and IV - Addendum #2**

This Addendum #2 has been prepared in response to a City of Ottawa comment regarding the number of assumed residential units identified in the original TIS prepared December 2013 by Delcan (now known as Parsons). It has come to the City's attention that number of proposed residential units identified in the original TIS is less than the number of residential units identified in the Zoning By-Law Amendment/Official Plan Amendment for Towers I to IV.

Based on information provided at the time, the number of residential units identified in the original TIS are as follows:

### ***Petrie's Landing I - original TIS***

- **Phase I** consists of a 89 unit residential tower (Tower I);
- **Phase II** consists of a 336 unit retirement building; and
- **Phase III** consists of Towers II, III and IV, each comprised of 140 residential condo units for a total of 420 residential condo units.

The number of residential units identified in the Zoning By-Law Amendment/Official Plan Amendment is as follows:

### ***Petrie's Landing I - Zoning By-Law Amendment/Official Plan Amendment***

- **Phase I** consists of a 89 unit residential tower (Tower I);
- **Phase II** consists of a 314 unit retirement building; and
- **Phase III** consists of Towers II, III and IV, each comprised of 145, 175 and 145 residential condo units, respectively, for a total of 465 residential condo units.

The net difference between the original TIS and the Zoning By-Law Amendment/Official Plan Amendment equates to 23 fewer residential units assumed in the original TIS. As such, the following Tables 1 and 2 summarize the projected site-generated traffic from the original TIS report and the revised projected site-generated traffic, respectively. The revised projected site-generated traffic summarized in Table 2 is based on the number of residential units identified in the Zoning By-Law Amendment/Official Plan Amendment and the same appropriate trip generation rates/modal shares identified in the original TIS.



**Table 1: Original Projected Site-Generated Traffic**

Land Use	Dwelling Units	AM Peak (veh/hr)			PM Peak (veh/hr)		
		In	Out	Total	In	Out	Total
Retirement Residence	336	17	33	50	39	24	63
Tower I	89	8	35	43	22	14	36
Tower II	140	13	55	68	38	24	62
Tower III	140	13	55	68	38	24	62
Tower IV	140	13	55	68	38	24	62
<b>Total 'New' Auto Trips</b>		<b>64</b>	<b>233</b>	<b>297</b>	<b>175</b>	<b>110</b>	<b>285</b>

As shown in Table 1, the total projected two-way site-generated traffic for Petrie's Landing I is approximately 300 and 285 veh/h during the weekday morning and afternoon peak hours, respectively.

The following Table 2 summarizes the projected two-way site-generated traffic for Petrie's Landing I based on the number of residential units identified in the Zoning By-Law Amendment/Official Plan Amendment.

**Table 2: Revised Project Site-Generated Traffic**

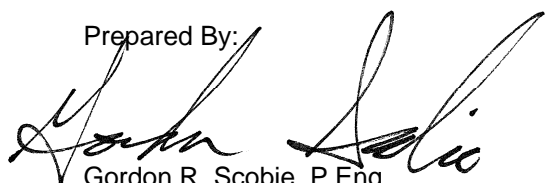
Land Use	Dwelling Units	AM Peak (veh/hr)			PM Peak (veh/hr)		
		In	Out	Total	In	Out	Total
Retirement Residence	314	16	30	46	35	24	59
Tower I	89	8	35	43	22	14	36
Tower II	145	13	57	70	39	24	63
Tower III	175	15	63	78	45	28	73
Tower IV	145	13	57	70	39	24	63
<b>Total 'New' Auto Trips</b>		<b>65</b>	<b>242</b>	<b>307</b>	<b>180</b>	<b>114</b>	<b>294</b>

As shown in Table 2, the total projected two-way site-generated traffic for Petrie's Landing I, based on the number of residential units identified in the Zoning By-Law Amendment/Official Plan Amendment, is approximately 310 and 295 veh/h during the weekday morning and afternoon peak hours, respectively.

The approximate net difference in the total projected two-way site-generated traffic equates to an additional 10 veh/h (or approximately 1 additional vehicle every 6 minutes) during both weekday morning and afternoon peak hours. This amount of additional site-generated is considered negligible and will have no effect on the results, findings or conclusions included in the original TIS or the subsequent Addendum #1.

Therefore, based on the foregoing, the results, findings and conclusions include in the original TIS and the subsequent Addendum #1 remain valid and no further analysis is required from a transportation perspective. If there any questions, please call.

Prepared By:



Gordon R. Scobie, P.Eng.

Transportation Engineer

Ottawa Operations



# Trip Generation - Petrie's Landing II

20/12/2013 11:00 AM

## ITE Vehicle Trip Generation Rates

Land Use	Data Source	Trip Rate	
		AM Peak	PM Peak
Residential Condominiums/Townhouses	ITE 230	0.44	0.52

## Modified Person Trip Generation Rates

Land Use	Data Source	Person Trip Rate	
		AM Peak	PM Peak
Residential Condominiums/Townhouses	ITE 230	0.57	0.68

Note: 1.3 factor to account for typical North American auto occupancy values of approximately 1.15 and combined transit and non-motorized modal shares of less than 10%

## ITE Fitted Curve Equations

Land Use	Data Source	Fitted Curve Equation	
		AM Peak	PM Peak
Residential Condominiums/Townhouses	ITE 230	$\ln(T) = 0.80\ln(x) + 0.26$	$\ln(T) = 0.82\ln(x) + 0.32$

## Modified Person Trip Generation

Land Use	Data Source	Area	AM Peak (Persons/hr)			PM Peak (Persons/hr)		
			In	Out	Total	In	Out	Total
Units			17%	83%		67%	33%	
Residential Condominiums/Townhouses	ITE 230	430 du	36	180	216	172	86	258
Total			36	180	216	172	86	258

## Total Site Trip Generation

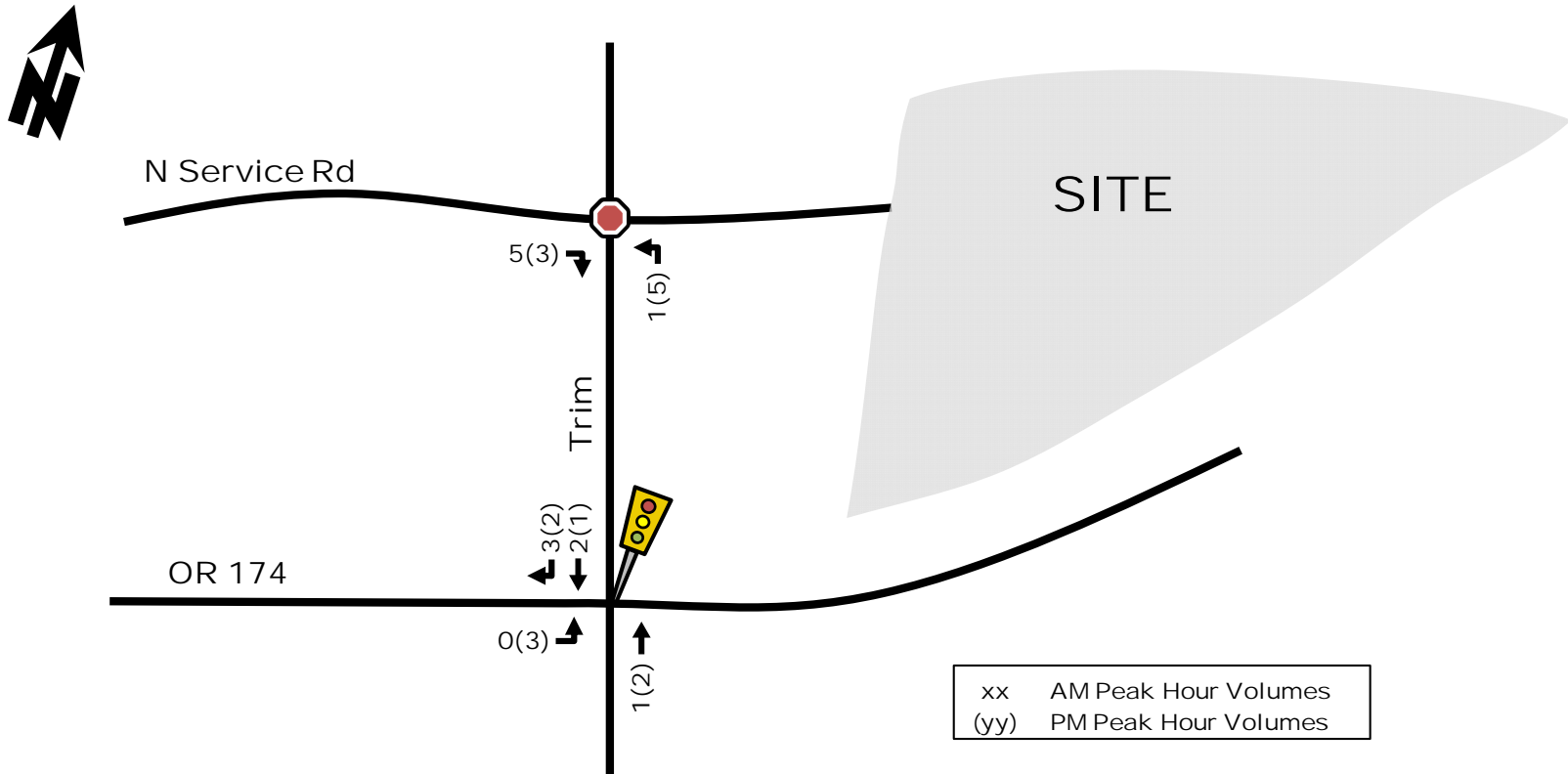
Travel Mode	Mode Share	AM Peak (Persons/hr)			PM Peak (Persons/hr)		
		In	Out	Total	In	Out	Total
Auto Driver	60%	22	108	130	104	52	156
Auto Passenger	10%	4	18	22	17	9	26
Transit	25%	9	45	54	43	21	64
Non-motorized	5%	1	9	10	8	4	12
Total Person Trips	100%	36	180	216	172	86	258
Total 'New' Auto Trips		22	108	130	104	52	156

## Total Site Vehicle Trip Generation

Travel Mode	AM Peak (veh/hr)			PM Peak (veh/hr)		
	In	Out	Total	In	Out	Total
Total Site Trip Generation	22	108	130	104	52	156
Total 'New' Auto Trips	22	108	130	104	52	156

# Petrie's Landing II

## New Trips



# Trip Generation - Petrie's Landing III

20/12/2013 11:03 AM

## ITE Vehicle Trip Generation Rates

Land Use	Data Source	Trip Rate	
		AM Peak	PM Peak
Residential Condominiums/Townhouses	ITE 230	0.44	0.52
General Office	ITE 710	1.56	1.49
Specialty Retail	ITE 826	1.36	2.71

## Modified Person Trip Generation Rates

Land Use	Data Source	Person Trip Rate	
		AM Peak	PM Peak
Residential Condominiums/Townhouses	ITE 230	0.57	0.68
General Office	ITE 710	2.03	1.94
Specialty Retail	ITE 826	1.76	3.52

Note: 1.3 factor to account for typical North American auto occupancy values of approximately 1.15 and combined transit and non-motorized modal shares of less than 10%

## ITE Fitted Curve Equations

Land Use	Data Source	Fitted Curve Equation			
		AM Peak		PM Peak	
Residential Condominiums/Townhouses	ITE 230	$\ln(T) = 0.80\ln(x) + 0.26$		$\ln(T) = 0.82\ln(x) + 0.32$	
General Office	ITE 710	$\ln(T) = 0.80\ln(x) + 1.57$		$T = 1.12(x) + 78.45$	
Specialty Retail	ITE 826	$T = 1.20(x) + 10.74$		$T = 2.40(x) + 21.48$	

## Modified Person Trip Generation

Land Use	Data Source	Area	AM Peak (Persons/hr)			PM Peak (Persons/hr)		
			In	Out	Total	In	Out	Total
Units			17%	83%		67%	33%	
Residential Condominiums/Townhouses	ITE 230	790 du	59	292	351	285	141	426
ft <sup>2</sup>			88%	12%		17%	83%	
General Office	ITE 710	370,000 ft <sup>2</sup>	623	86	709	108	533	641
ft <sup>2</sup>			56%	44%		44%	56%	
Specialty Retail	ITE 826	23,000 ft <sup>2</sup>	28	22	50	44	56	100
Total			710	400	1,110	437	730	1,167

## Residential Condominiums/Townhouses Trip Generation

Travel Mode	Mode Share	AM Peak (Persons/hr)			PM Peak (Persons/hr)		
		In	Out	Total	In	Out	Total
Auto Driver	60%	36	176	212	171	85	256
Auto Passenger	10%	6	29	35	29	14	43
Transit	25%	15	73	88	71	35	106
Non-motorized	5%	2	14	16	14	7	21
Total Person Trips	100%	59	292	351	285	141	426
Total 'New' Residential Condominiums/Townhouses Auto Trips		36	176	212	171	85	256

## General Office Trip Generation

Travel Mode	Mode Share	AM Peak (Persons/hr)			PM Peak (Persons/hr)		
		In	Out	Total	In	Out	Total
Auto Driver	60%	374	52	426	65	320	385
Auto Passenger	10%	63	9	72	11	54	65
Transit	25%	155	21	176	27	133	160
Non-motorized	5%	31	4	35	5	26	31
Total Person Trips	100%	623	86	709	108	533	641
Total 'New' General Office Auto Trips		374	52	426	65	320	385

## Specialty Retail Trip Generation

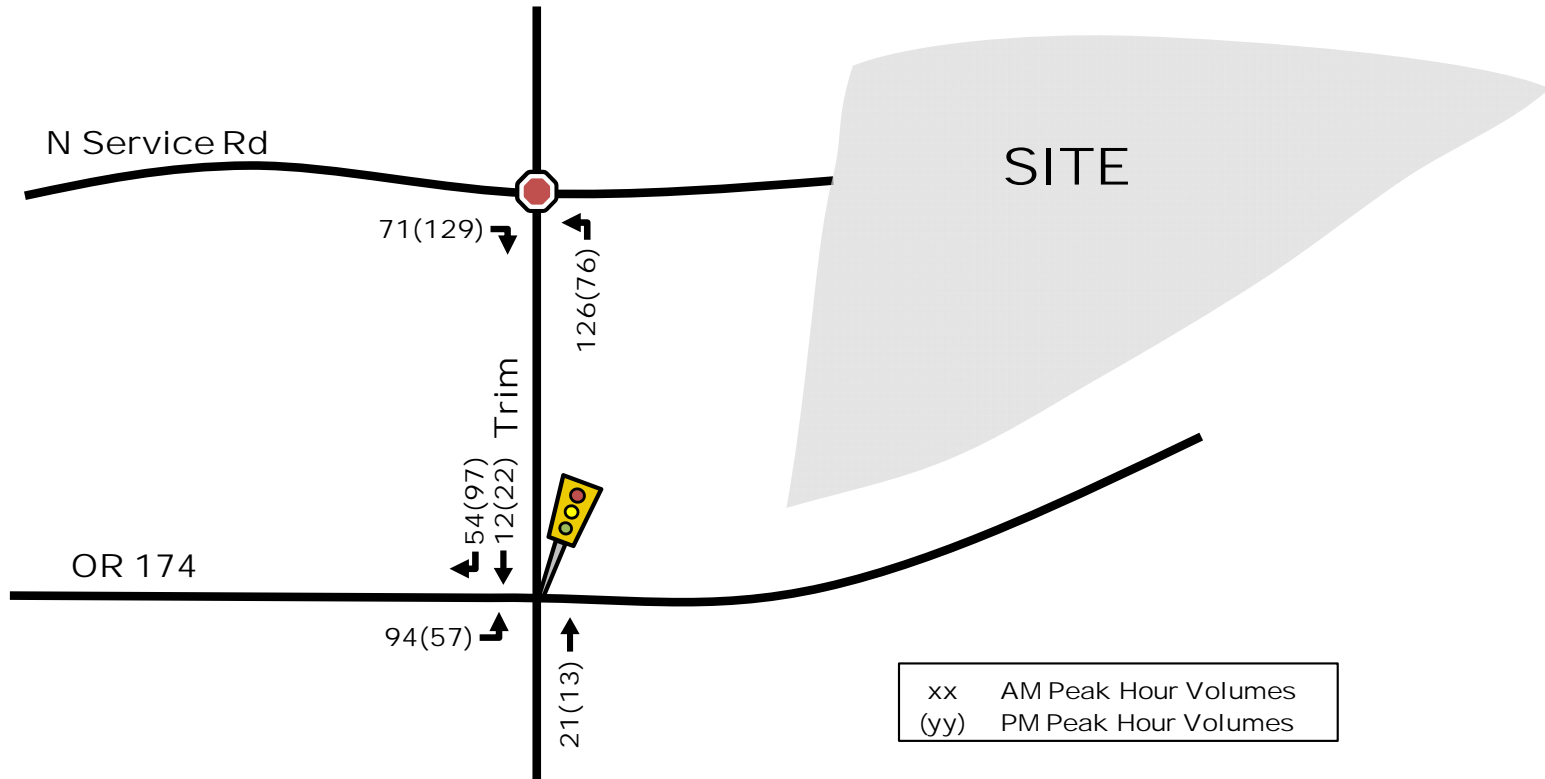
Travel Mode	Mode Share	AM Peak (Persons/hr)			PM Peak (Persons/hr)		
		In	Out	Total	In	Out	Total
Auto Driver	60%	17	14	31	27	34	61
Auto Passenger	10%	3	2	5	4	6	10
Transit	25%	7	5	12	11	14	25
Non-motorized	5%	1	1	2	2	2	4
Total Person Trips	100%	28	22	50	44	56	100
Less Pass-by (30%)		-5	-5	-10	-9	-9	-18
Total 'New' Specialty Retail Auto Trips		12	9	21	18	25	43

## Total Site Vehicle Trip Generation

Travel Mode	AM Peak (veh/hr)			PM Peak (veh/hr)		
	In	Out	Total	In	Out	Total
Condominiums/Townhouses Trip Generation	36	176	212	171	85	256
General Office Trip Generation	374	52	426	65	320	385
Specialty Retail Trip Generation	17	14	31	27	34	61
Less Specialty Retail Pass-by (30%)	-5	-5	-10	-9	-9	-18
<b>Total 'New' Auto Trips</b>	<b>422</b>	<b>237</b>	<b>659</b>	<b>254</b>	<b>430</b>	<b>684</b>

# Petrie's Landing III

## New Trips



# (#) = AM (PM), veh/h  
 ■ = EXISTING ROAD  
 ||||| = FUTURE ROAD



EXHIBIT 11  
Site Generated Traffic  
(Phases 1 to 7)

PROJECT No. 31539  
DATE: October 2013  
SCALE:  
0m 200m 400m

# Appendix F

Background Growth Analysis

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Trim/OR 174  
8 hrs

Year	Date	North Leg		South Leg		East Leg		West Leg		Total
		SB	NB	NB	SB	WB	EB	EB	WB	
2007	Wednesday 31 January	322	242	4191	4602	5927	5317	8831	9110	38542
2008	Friday 20 June	618	391	4770	5319	6281	6058	10034	9935	43406
2010	Friday 9 July	744	722	5389	4539	6433	6484	9542	10363	44216
2012	Friday 8 June	329	441	4696	4430	5833	5818	8875	9044	39466
2017	Wednesday 19 April	590	518	4739	5742	5522	5570	10003	9024	41708

North Leg	Year	Counts				% Change			
		NB	SB	NB+SB	INT	NB	SB	NB+SB	INT
	2007	242	322	564	38542				
	2008	391	618	1009	43406	61.6%	91.9%	78.9%	12.6%
	2010	722	744	1466	44216	84.7%	20.4%	45.3%	1.9%
	2012	441	329	770	39466	-38.9%	-55.8%	-47.5%	-10.7%
	2017	518	590	1108	41708	17.5%	79.3%	43.9%	5.7%

Regression Estimate	2007	393	490	883	41312
Regression Estimate	2017	576	570	1147	41722
Average Annual Change		3.89%	1.53%	2.64%	0.10%

West Leg	Year	Counts				% Change			
		EB	WB	EB+WB	INT	EB	WB	EB+WB	INT
	2007	8831	9110	17941	38542				
	2008	10034	9935	19969	43406	13.6%	9.1%	11.3%	12.6%
	2010	9542	10363	19905	44216	-4.9%	4.3%	-0.3%	1.9%
	2012	8875	9044	17919	39466	-7.0%	-12.7%	-10.0%	-10.7%
	2017	10003	9024	19027	41708	12.7%	-0.2%	6.2%	5.7%

Regression Estimate	2007	9252	9733	18985	
Regression Estimate	2017	9791	9108	18899	
Average Annual Change		0.57%	-0.66%	-0.05%	

East Leg	Year	Counts				% Change			
		EB	WB	EB+WB	INT	EB	WB	EB+WB	INT
	2007	5317	5927	11244	38542				
	2008	6058	6281	12339	43406	13.9%	6.0%	9.7%	12.6%
	2010	6484	6433	12917	44216	7.0%	2.4%	4.7%	1.9%
	2012	5818	5833	11651	39466	-10.3%	-9.3%	-9.8%	-10.7%
	2017	5570	5522	11092	41708	-4.3%	-5.3%	-4.8%	5.7%

Regression Estimate	2007	5900	6242	12143	
Regression Estimate	2017	5767	5602	11369	
Average Annual Change		-0.23%	-1.08%	-0.66%	

South Leg	Year	Counts				% Change			
		NB	SB	NB+SB	INT	NB	SB	NB+SB	INT
	2007	4191	4602	8793	38542				
	2008	4770	5319	10089	43406	13.8%	15.6%	14.7%	12.6%
	2010	5389	4539	9928	44216	13.0%	-14.7%	-1.6%	1.9%
	2012	4696	4430	9126	39466	-12.9%	-2.4%	-8.1%	-10.7%
	2017	4739	5742	10481	41708	0.9%	29.6%	14.8%	5.7%

Regression Estimate	2007	4671	4630	9300	
Regression Estimate	2017	4898	5411	10308	
Average Annual Change		0.48%	1.57%	1.03%	

Trim/OR 174  
AM Peak

Year	Date	North Leg		South Leg		East Leg		West Leg		Total
		SB	NB	NB	SB	WB	EB	EB	WB	
2007	Wednesday 31 January	50	32	626	402	1346	395	658	1651	5160
2008	Friday 20 June	34	14	649	439	1326	294	674	1836	5266
2010	Friday 9 July	42	46	819	454	1309	387	720	2003	5780
2012	Friday 8 June	62	64	875	414	1292	313	578	2016	5614
2017	Wednesday 19 April	48	51	807	537	1324	428	727	1890	5812

North Leg	Year	Counts				% Change			
		NB	SB	NB+SB	INT	NB	SB	NB+SB	INT
	2007	32	50	82	5160				
	2008	14	34	48	5266	-56.3%	-32.0%	-41.5%	2.1%
	2010	46	42	88	5780	228.6%	23.5%	83.3%	9.8%
	2012	64	62	126	5614	39.1%	47.6%	43.2%	-2.9%
	2017	51	48	99	5812	-20.3%	-22.6%	-21.4%	3.5%

Regression Estimate	2007	30	44	74	5297
Regression Estimate	2017	61	52	113	5901
Average Annual Change		7.45%	1.78%	4.40%	1.09%

West Leg	Year	Counts				% Change			
		EB	WB	EB+WB	INT	EB	WB	EB+WB	INT
	2007	658	1651	2309	5160				
	2008	674	1836	2510	5266	2.4%	11.2%	8.7%	2.1%
	2010	720	2003	2723	5780	6.8%	9.1%	8.5%	9.8%
	2012	578	2016	2594	5614	-19.7%	0.6%	-4.7%	-2.9%
	2017	727	1890	2617	5812	25.8%	-6.3%	0.9%	3.5%

Regression Estimate	2007	657	1811	2468
Regression Estimate	2017	695	1990	2685
Average Annual Change		0.56%	0.94%	0.84%

East Leg	Year	Counts				% Change			
		EB	WB	EB+WB	INT	EB	WB	EB+WB	INT
	2007	395	1346	1741	5160				
	2008	294	1326	1620	5266	-25.6%	-1.5%	-7.0%	2.1%
	2010	387	1309	1696	5780	31.6%	-1.3%	4.7%	9.8%
	2012	313	1292	1605	5614	-19.1%	-1.3%	-5.4%	-2.9%
	2017	428	1324	1752	5812	36.7%	2.5%	9.2%	3.5%

Regression Estimate	2007	339	1326	1666
Regression Estimate	2017	402	1308	1710
Average Annual Change		1.72%	-0.14%	0.26%

South Leg	Year	Counts				% Change			
		NB	SB	NB+SB	INT	NB	SB	NB+SB	INT
	2007	626	402	1028	5160				
	2008	649	439	1088	5266	3.7%	9.2%	5.8%	2.1%
	2010	819	454	1273	5780	26.2%	3.4%	17.0%	9.8%
	2012	875	414	1289	5614	6.8%	-8.8%	1.3%	-2.9%
	2017	807	537	1344	5812	-7.8%	29.7%	4.3%	3.5%

Regression Estimate	2007	682	406	1089
Regression Estimate	2017	874	519	1393
Average Annual Change		2.50%	2.47%	2.49%

Trim/OR 174  
PM Peak

Year	Date	North Leg		South Leg		East Leg		West Leg		Total
		SB	NB	NB	SB	WB	EB	EB	WB	
2007	Wednesday 31 January	144	50	455	788	672	1440	2018	911	6478
2008	Friday 20 June	64	60	494	1051	424	1354	2206	723	6376
2010	Friday 9 July	107	40	603	1007	664	1334	2131	1124	7010
2012	Friday 8 June	94	69	634	905	624	1353	2024	1049	6752
2017	Wednesday 19 April	56	61	587	801	657	1284	1839	993	6278

North Leg	Year	Counts				% Change			
		NB	SB	NB+SB	INT	NB	SB	NB+SB	INT
	2007	50	144	194	6478				
	2008	60	64	124	6376	20.0%	-55.6%	-36.1%	-1.6%
	2010	40	107	147	7010	-33.3%	67.2%	18.5%	9.9%
	2012	69	94	163	6752	72.5%	-12.1%	10.9%	-3.7%
	2017	61	56	117	6278	-11.6%	-40.4%	-28.2%	-7.0%

Regression Estimate	2007	52	114	166	6642
Regression Estimate	2017	63	58	121	6475
Average Annual Change		2.00%	-6.52%	-3.09%	-0.25%

West Leg	Year	Counts				% Change			
		EB	WB	EB+WB	INT	EB	WB	EB+WB	INT
	2007	2018	911	2929	6478				
	2008	2206	723	2929	6376	9.3%	-20.6%	0.0%	-1.6%
	2010	2131	1124	3255	7010	-3.4%	55.5%	11.1%	9.9%
	2012	2024	1049	3073	6752	-5.0%	-6.7%	-5.6%	-3.7%
	2017	1839	993	2832	6278	-9.1%	-5.3%	-7.8%	-7.0%

Regression Estimate	2007	2148	898	3045	
Regression Estimate	2017	1874	1062	2936	
Average Annual Change		-1.35%	1.69%	-0.37%	

East Leg	Year	Counts				% Change			
		EB	WB	EB+WB	INT	EB	WB	EB+WB	INT
	2007	1440	672	2112	6478				
	2008	1354	424	1778	6376	-6.0%	-36.9%	-15.8%	-1.6%
	2010	1334	664	1998	7010	-1.5%	56.6%	12.4%	9.9%
	2012	1353	624	1977	6752	1.4%	-6.0%	-1.1%	-3.7%
	2017	1284	657	1941	6278	-5.1%	5.3%	-1.8%	-7.0%

Regression Estimate	2007	1398	575	1973	
Regression Estimate	2017	1279	663	1942	
Average Annual Change		-0.88%	1.43%	-0.16%	

South Leg	Year	Counts				% Change			
		NB	SB	NB+SB	INT	NB	SB	NB+SB	INT
	2007	455	788	1243	6478				
	2008	494	1051	1545	6376	8.6%	33.4%	24.3%	-1.6%
	2010	603	1007	1610	7010	22.1%	-4.2%	4.2%	9.9%
	2012	634	905	1539	6752	5.1%	-10.1%	-4.4%	-3.7%
	2017	587	801	1388	6278	-7.4%	-11.5%	-9.8%	-7.0%

Regression Estimate	2007	506	952	1458	
Regression Estimate	2017	634	842	1476	
Average Annual Change		2.29%	-1.22%	0.12%	

Time Period	Percent Annual Change				
	North Leg	South Leg	East Leg	West Leg	Overall
8 hrs	2.64%	1.03%	-0.66%	-0.05%	<b>0.13%</b>
AM Peak	4.40%	2.49%	0.26%	0.84%	<b>1.13%</b>
PM Peak	-3.09%	0.12%	-0.16%	-0.37%	<b>-0.24%</b>

# Appendix G

Multimodal Level of Service Analysis: Existing Conditions

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## Multi-Modal Level of Service - Segments Form

Consultant	<b>PARSONS</b>	Project	<b>Petrie's Landing I</b>
Scenario	<b>Jeanne D'Arc East of Trim</b>	Date	<b>5/18/2018</b>
Comments	<b>Existing Conditions and Possible Improvements</b>		

SEGMENTS		Street A	Section Site Access	Section Former Cul-de-Sac	Section Mid-block
Pedestrian	Sidewalk Width	-	≥ 2 m	≥ 2 m	≥ 2 m
	Boulevard Width		< 0.5	< 0.5	< 0.5
	Avg Daily Curb Lane Traffic Volume		≤ 3000	≤ 3000	≤ 3000
	Operating Speed		> 30 to 50 km/h no	> 30 to 50 km/h no	> 50 to 60 km/h no
	On-Street Parking				
	<b>Exposure to Traffic PLoS</b>		<b>B</b>	<b>B</b>	<b>C</b>
	Effective Sidewalk Width		2.0 m	2.0 m	2.0 m
	Pedestrian Volume				
Bicycle	<b>Crowding PLoS</b>	A	-	-	-
	<b>Level of Service</b>		-	-	-
	Type of Cycling Facility		Mixed Traffic	Mixed Traffic	Mixed Traffic
	Number of Travel Lanes		2-3 lanes total	2-3 lanes total	2-3 lanes total
	Operating Speed		≤ 40 km/h	>40 to <50 km/h	≥ 50 to 60 km/h
	<b># of Lanes &amp; Operating Speed LoS</b>		<b>B</b>	<b>D</b>	<b>E</b>
	Bike Lane (+ Parking Lane) Width				
	<b>Bike Lane Width LoS</b>		-	-	-
	Bike Lane Blockages				
	<b>Blockage LoS</b>		-	-	-
	Median Refuge Width (no median = < 1.8 m)				
	No. of Lanes at Unsignalized Crossing				
	Sidestreet Operating Speed				
	<b>Unsignalized Crossing - Lowest LoS</b>		-	-	-
	<b>Level of Service</b>		-	-	-

# Multi-Modal Level of Service - Intersections Form

Consultant  
Scenario  
Comments

<b>PARSONS</b>
Jeanne D'Arc @ Trim
Year 2022 Before LRT Conditions

Project  
Date

<b>Petries Landing I</b>
7/12/2018

INTERSECTIONS		Existing Conditions			
Crossing Side		NORTH	SOUTH	EAST	WEST
Pedestrian	Lanes	0 - 2	0 - 2	0 - 2	0 - 2
	Median	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m
	Conflicting Left Turns	Permissive	Permissive	Permissive	Permissive
	Conflicting Right Turns	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control
	Right Turns on Red (RTOR) ?	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed
	Ped Signal Leading Interval?	No	No	No	No
	Right Turn Channel	No Channel	No Channel	No Channel	No Channel
	Corner Radius	10-15m	10-15m	10-15m	10-15m
	Crosswalk Type	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings
	<b>PETSI Score</b>	<b>85</b>	<b>85</b>	<b>85</b>	<b>85</b>
	<b>Ped. Exposure to Traffic LoS</b>	<b>B</b>	<b>B</b>	<b>B</b>	<b>B</b>
	Cycle Length				
	Effective Walk Time				
	<b>Average Pedestrian Delay</b>				
	<b>Pedestrian Delay LoS</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
	<b>Level of Service</b>	<b>B</b>	<b>B</b>	<b>B</b>	<b>B</b>
		<b>B</b>			
Approach From		NORTH	SOUTH	EAST	WEST
Bicycle	Bicycle Lane Arrangement on Approach	Mixed Traffic	Curb Bike Lane, Cycletrack or MUP	Mixed Traffic	Curb Bike Lane, Cycletrack or MUP
	Right Turn Lane Configuration	≤ 50 m	Not Applicable	≤ 50 m	Not Applicable
	Right Turning Speed	≤ 25 km/h	≤ 25 km/h	≤ 25 km/h	≤ 25 km/h
	<b>Cyclist relative to RT motorists</b>	<b>D</b>	<b>Not Applicable</b>	<b>D</b>	<b>Not Applicable</b>
	<b>Separated or Mixed Traffic</b>	<b>Mixed Traffic</b>	<b>Separated</b>	<b>Mixed Traffic</b>	<b>Separated</b>
	Left Turn Approach	No lane crossed	1 lane crossed	No lane crossed	1 lane crossed
	Operating Speed	> 50 to < 60 km/h	> 50 to < 60 km/h	> 50 to < 60 km/h	≥ 60 km/h
	<b>Left Turning Cyclist</b>	<b>C</b>	<b>D</b>	<b>C</b>	<b>E</b>
	<b>Level of Service</b>	<b>D</b>	<b>D</b>	<b>D</b>	<b>E</b>
		<b>E</b>			

# Appendix H

Multimodal Level of Service: Planned Network

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Multi-Modal Level of Service - Intersections Form

Consultant  
Scenario  
Comments

Parsons  
Towers 3-5

Project  
Date

Petrie's Landing 1  
17-Apr-19

Unlocked Rows for Replicating

INTERSECTIONS													
Crossing Side		Trim/OR174 (existing)				Dairy/Or174 (future int)				Intersection C			
Pedestrian		NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
	Lanes	5	5	5		5	6	8					
	Median	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m		No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m					
	Conflicting Left Turns	Protected	Protected	Protected		Protected	Protected	Protected					
	Conflicting Right Turns	Permissive or yield control	Permissive or yield control	Permissive or yield control		Permissive or yield control	Permissive or yield control	Permissive or yield control					
	Right Turns on Red (RTor) ?	RTOR allowed	RTOR allowed	RTOR allowed		RTOR allowed	RTOR allowed	RTOR allowed					
	Ped Signal Leading Interval?	No	No	No		No	No	No					
	Right Turn Channel	No Channel	No Channel	No Channel		Conv'tl without Receiving Lane	Conv'tl without Receiving Lane	Conv'tl without Receiving Lane					
	Corner Radius	5-10m	10-15m	10-15m		10-15m	10-15m	10-15m					
	Crosswalk Type	Std transverse markings	Std transverse markings	Std transverse markings		Std transverse markings	Textured/coloured pavement	Textured/coloured pavement					
	PETSI Score	46	45	45		49	35	3					
	Ped. Exposure to Traffic LoS	D	D	D	-	D	E	F	-	-	-	-	-
	Cycle Length	120	120	120									
	Effective Walk Time	5	8	8									
Average Pedestrian Delay		55	52	52									
Pedestrian Delay LoS		E	E	E	-	-	-	-	-	-	-	-	-
Level of Service		E	E	E	-	D	E	F	-	-	-	-	-
		E				F				-			
Approach From		NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
Bicycle	Bicycle Lane Arrangement on Approach	Pocket Bike Lane	Curb Bike Lane, Cycletrack or MUP			Pocket Bike Lane	Curb Bike Lane, Cycletrack or MUP						
	Right Turn Lane Configuration	> 50 m Introduced right turn lane	Not Applicable			Bike lane shifts to the left of right turn	Not Applicable						
	Right Turning Speed	≤ 25 km/h	Not Applicable			≤ 25 km/h	Not Applicable						
	Cyclist relative to RT motorists	D	Not Applicable	-	-	D	Not Applicable	-	-	-	-	-	-
	Separated or Mixed Traffic	Separated	Separated	-	-	Separated	Separated	-	-	-	-	-	-
	Left Turn Approach	No lane crossed	No lane crossed			No lane crossed	No lane crossed						
	Operating Speed	> 40 to ≤ 50 km/h	> 40 to ≤ 50 km/h			> 40 to ≤ 50 km/h	> 40 to ≤ 50 km/h						
	Left Turning Cyclist	B	B	-	-	B	B	-	-	-	-	-	-
	Level of Service	D	B	-	-	D	B	-	-	-	-	-	-
		D				D				-			
Transit	Average Signal Delay												
	Level of Service	-	-	-	-	-	-	-	-	-	-	-	-
		-				-				-			
Truck	Effective Corner Radius												
	Number of Receiving Lanes on Departure from Intersection												
	Level of Service	-	-	-	-	-	-	-	-	-	-	-	-
		-				-				-			
Auto	Volume to Capacity Ratio												
	Level of Service	-				-				-			

# Appendix I

Transportation Demand Management Checklist

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**TDM Measures Checklist:**  
*Residential Developments (multi-family, condominium or subdivision)*

<b>Legend</b>	
<b>BASIC</b>	The measure is generally feasible and effective, and in most cases would benefit the development and its users
<b>BETTER</b>	The measure could maximize support for users of sustainable modes, and optimize development performance
<b>★</b>	The measure is one of the most dependably effective tools to encourage the use of sustainable modes

<b>TDM measures: <i>Residential developments</i></b>		<b>Check if proposed &amp; add descriptions</b>
<b>1. TDM PROGRAM MANAGEMENT</b>		
<b>1.1 Program coordinator</b>		
<b>BASIC ★</b>	1.1.1 Designate an internal coordinator, or contract with an external coordinator	<input type="checkbox"/>
<b>1.2 Travel surveys</b>		
<b>BETTER</b>	1.2.1 Conduct periodic surveys to identify travel-related behaviours, attitudes, challenges and solutions, and to track progress	<input type="checkbox"/>
<b>2. WALKING AND CYCLING</b>		
<b>2.1 Information on walking/cycling routes &amp; destinations</b>		
<b>BASIC</b>	2.1.1 Display local area maps with walking/cycling access routes and key destinations at major entrances ( <i>multi-family, condominium</i> )	<input type="checkbox"/>
<b>2.2 Bicycle skills training</b>		
<b>BETTER</b>	2.2.1 Offer on-site cycling courses for residents, or subsidize off-site courses	<input type="checkbox"/>

TDM measures: <i>Residential developments</i>		Check if proposed & add descriptions
<b>3. TRANSIT</b>		
<b>3.1 Transit information</b>		
BASIC	3.1.1 Display relevant transit schedules and route maps at entrances ( <i>multi-family, condominium</i> )	<input checked="" type="checkbox"/>
BETTER	3.1.2 Provide real-time arrival information display at entrances ( <i>multi-family, condominium</i> )	<input checked="" type="checkbox"/> After LRT opening
<b>3.2 Transit fare incentives</b>		
BASIC ★	3.2.1 Offer PRESTO cards preloaded with one monthly transit pass on residence purchase/move-in, to encourage residents to use transit	<input checked="" type="checkbox"/> During first 6 months after LRT opening
BETTER	3.2.2 Offer at least one year of free monthly transit passes on residence purchase/move-in	<input type="checkbox"/>
<b>3.3 Enhanced public transit service</b>		
BETTER ★	3.3.1 Contract with OC Transpo to provide early transit services until regular services are warranted by occupancy levels ( <i>subdivision</i> )	<input type="checkbox"/>
<b>3.4 Private transit service</b>		
BETTER	3.4.1 Provide shuttle service for seniors homes or lifestyle communities (e.g. scheduled mall or supermarket runs)	<input checked="" type="checkbox"/> For phase 5 - Retirement Units
<b>4. CARSHARING &amp; BIKESHARING</b>		
<b>4.1 Bikeshare stations &amp; memberships</b>		
BETTER	4.1.1 Contract with provider to install on-site bikeshare station ( <i>multi-family</i> )	<input type="checkbox"/>
BETTER	4.1.2 Provide residents with bikeshare memberships, either free or subsidized ( <i>multi-family</i> )	<input type="checkbox"/>
<b>4.2 Carshare vehicles &amp; memberships</b>		
BETTER	4.2.1 Contract with provider to install on-site carshare vehicles and promote their use by residents	<input type="checkbox"/>
BETTER	4.2.2 Provide residents with carshare memberships, either free or subsidized	<input type="checkbox"/>
<b>5. PARKING</b>		
<b>5.1 Priced parking</b>		
BASIC ★	5.1.1 Unbundle parking cost from purchase price ( <i>condominium</i> )	<input type="checkbox"/>
BASIC ★	5.1.2 Unbundle parking cost from monthly rent ( <i>multi-family</i> )	<input type="checkbox"/>

TDM measures: <i>Residential developments</i>		Check if proposed & add descriptions
<b>6. TDM MARKETING &amp; COMMUNICATIONS</b>		
<b>6.1 Multimodal travel information</b>		
<b>BASIC</b> ★	6.1.1 Provide a multimodal travel option information package to new residents	<input type="checkbox"/>
<b>6.2 Personalized trip planning</b>		
<b>BETTER</b> ★	6.2.1 Offer personalized trip planning to new residents	<input type="checkbox"/>

## **TDM-Supportive Development Design and Infrastructure Checklist:** *Residential Developments (multi-family or condominium)*

<b>Legend</b>	
<b>REQUIRED</b>	The Official Plan or Zoning By-law provides related guidance that must be followed
<b>BASIC</b>	The measure is generally feasible and effective, and in most cases would benefit the development and its users
<b>BETTER</b>	The measure could maximize support for users of sustainable modes, and optimize development performance

<b>TDM-supportive design &amp; infrastructure measures:</b> <i>Residential developments</i>		<b>Check if completed &amp; add descriptions, explanations or plan/drawing references</b>
<b>1. WALKING &amp; CYCLING: ROUTES</b>		
<b>1.1 Building location &amp; access points</b>		
<b>BASIC</b>	1.1.1 Locate building close to the street, and do not locate parking areas between the street and building entrances	<input checked="" type="checkbox"/>
<b>BASIC</b>	1.1.2 Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations	<input checked="" type="checkbox"/>
<b>BASIC</b>	1.1.3 Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort	<input checked="" type="checkbox"/>
<b>1.2 Facilities for walking &amp; cycling</b>		
<b>REQUIRED</b>	1.2.1 Provide convenient, direct access to stations or major stops along rapid transit routes within 600 metres; minimize walking distances from buildings to rapid transit; provide pedestrian-friendly, weather-protected (where possible) environment between rapid transit accesses and building entrances; ensure quality linkages from sidewalks through building entrances to integrated stops/stations ( <i>see Official Plan policy 4.3.3</i> )	<input checked="" type="checkbox"/> Phase V: a further improvement would be to provide a walking connection between Tower V west entrance and Inlet Private sidewalk
<b>REQUIRED</b>	1.2.2 Provide safe, direct and attractive pedestrian access from public sidewalks to building entrances through such measures as: reducing distances between public sidewalks and major building entrances; providing walkways from public streets to major building entrances; within a site, providing walkways along the front of adjoining buildings, between adjacent buildings, and connecting areas where people may congregate, such as courtyards and transit stops; and providing weather protection through canopies, colonnades, and other design elements wherever possible ( <i>see Official Plan policy 4.3.12</i> )	<input checked="" type="checkbox"/>

TDM-supportive design & infrastructure measures: <i>Residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
REQUIRED	1.2.3 Provide sidewalks of smooth, well-drained walking surfaces of contrasting materials or treatments to differentiate pedestrian areas from vehicle areas, and provide marked pedestrian crosswalks at intersection sidewalks ( <i>see Official Plan policy 4.3.10</i> )	<input checked="" type="checkbox"/>
REQUIRED	1.2.4 Make sidewalks and open space areas easily accessible through features such as gradual grade transition, depressed curbs at street corners and convenient access to extra-wide parking spaces and ramps ( <i>see Official Plan policy 4.3.10</i> )	<input checked="" type="checkbox"/>
REQUIRED	1.2.5 Include adequately spaced inter-block/street cycling and pedestrian connections to facilitate travel by active transportation. Provide links to the existing or planned network of public sidewalks, multi-use pathways and on-road cycle routes. Where public sidewalks and multi-use pathways intersect with roads, consider providing traffic control devices to give priority to cyclists and pedestrians ( <i>see Official Plan policy 4.3.11</i> )	<input checked="" type="checkbox"/>
BASIC	1.2.6 Provide safe, direct and attractive walking routes from building entrances to nearby transit stops	<input checked="" type="checkbox"/> See 1.2.1
BASIC	1.2.7 Ensure that walking routes to transit stops are secure, visible, lighted, shaded and wind-protected wherever possible	<input checked="" type="checkbox"/>
BASIC	1.2.8 Design roads used for access or circulation by cyclists using a target operating speed of no more than 30 km/h, or provide a separated cycling facility	<input checked="" type="checkbox"/>
<b>1.3 Amenities for walking &amp; cycling</b>		
BASIC	1.3.1 Provide lighting, landscaping and benches along walking and cycling routes between building entrances and streets, sidewalks and trails	<input checked="" type="checkbox"/>
BASIC	1.3.2 Provide wayfinding signage for site access (where required, e.g. when multiple buildings or entrances exist) and egress (where warranted, such as when directions to reach transit stops/stations, trails or other common destinations are not obvious)	<input checked="" type="checkbox"/>

TDM-supportive design & infrastructure measures: <i>Residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
<b>2. WALKING &amp; CYCLING: END-OF-TRIP FACILITIES</b>		
<b>2.1 Bicycle parking</b>		
REQUIRED	2.1.1 Provide bicycle parking in highly visible and lighted areas, sheltered from the weather wherever possible (see <i>Official Plan policy 4.3.6</i> )	<input checked="" type="checkbox"/>
REQUIRED	2.1.2 Provide the number of bicycle parking spaces specified for various land uses in different parts of Ottawa; provide convenient access to main entrances or well-used areas (see <i>Zoning By-law Section 111</i> )	<input checked="" type="checkbox"/> Bicycle parking spaces will be required for Phase V should independent living seniors reside in Tower 5
REQUIRED	2.1.3 Ensure that bicycle parking spaces and access aisles meet minimum dimensions; that no more than 50% of spaces are vertical spaces; and that parking racks are securely anchored (see <i>Zoning By-law Section 111</i> )	<input checked="" type="checkbox"/>
BASIC	2.1.4 Provide bicycle parking spaces equivalent to the expected number of resident-owned bicycles, plus the expected peak number of visitor cyclists	<input type="checkbox"/>
<b>2.2 Secure bicycle parking</b>		
REQUIRED	2.2.1 Where more than 50 bicycle parking spaces are provided for a single residential building, locate at least 25% of spaces within a building/structure, a secure area (e.g. supervised parking lot or enclosure) or bicycle lockers (see <i>Zoning By-law Section 111</i> )	<input checked="" type="checkbox"/>
BETTER	2.2.2 Provide secure bicycle parking spaces equivalent to at least the number of units at condominiums or multi-family residential developments	<input type="checkbox"/>
<b>2.3 Bicycle repair station</b>		
BETTER	2.3.1 Provide a permanent bike repair station, with commonly used tools and an air pump, adjacent to the main bicycle parking area (or secure bicycle parking area, if provided)	<input checked="" type="checkbox"/> One bike repair station to serve all residents and users of City planned MUP
<b>3. TRANSIT</b>		
<b>3.1 Customer amenities</b>		
BASIC	3.1.1 Provide shelters, lighting and benches at any on-site transit stops	<input type="checkbox"/>
BASIC	3.1.2 Where the site abuts an off-site transit stop and insufficient space exists for a transit shelter in the public right-of-way, protect land for a shelter and/or install a shelter	<input type="checkbox"/>
BETTER	3.1.3 Provide a secure and comfortable interior waiting area by integrating any on-site transit stops into the building	<input type="checkbox"/>

TDM-supportive design & infrastructure measures: <i>Residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
<b>4. RIDESHARING</b>		
<b>4.1 Pick-up &amp; drop-off facilities</b>		
<b>BASIC</b>	4.1.1 Provide a designated area for carpool drivers (plus taxis and ride-hailing services) to drop off or pick up passengers without using fire lanes or other no-stopping zones	<input checked="" type="checkbox"/>
<b>5. CARSHARING &amp; BIKESHARING</b>		
<b>5.1 Carshare parking spaces</b>		
<b>BETTER</b>	5.1.1 Provide up to three carshare parking spaces in an R3, R4 or R5 Zone for specified residential uses (see <i>Zoning By-law Section 94</i> )	<input type="checkbox"/>
<b>5.2 Bikeshare station location</b>		
<b>BETTER</b>	5.2.1 Provide a designated bikeshare station area near a major building entrance, preferably lighted and sheltered with a direct walkway connection	<input type="checkbox"/>
<b>6. PARKING</b>		
<b>6.1 Number of parking spaces</b>		
<b>REQUIRED</b>	6.1.1 Do not provide more parking than permitted by zoning, nor less than required by zoning, unless a variance is being applied for	<input checked="" type="checkbox"/>
<b>BASIC</b>	6.1.2 Provide parking for long-term and short-term users that is consistent with mode share targets, considering the potential for visitors to use off-site public parking	<input checked="" type="checkbox"/>
<b>BASIC</b>	6.1.3 Where a site features more than one use, provide shared parking and reduce the cumulative number of parking spaces accordingly (see <i>Zoning By-law Section 104</i> )	<input type="checkbox"/>
<b>BETTER</b>	6.1.4 Reduce the minimum number of parking spaces required by zoning by one space for each 13 square metres of gross floor area provided as shower rooms, change rooms, locker rooms and other facilities for cyclists in conjunction with bicycle parking (see <i>Zoning By-law Section 111</i> )	<input type="checkbox"/>
<b>6.2 Separate long-term &amp; short-term parking areas</b>		
<b>BETTER</b>	6.2.1 Provide separate areas for short-term and long-term parking (using signage or physical barriers) to permit access controls and simplify enforcement (i.e. to discourage residents from parking in visitor spaces, and vice versa)	<input checked="" type="checkbox"/>

# Appendix J

















SYNCHRO Capacity Analysis: Existing Conditions

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# HCM Unsignalized Intersection Capacity Analysis

## 6: Trim & Jeanne D'Arc/Inlet

















03/18/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	8	3	54	20	5	0	64	20	7	0	9	3
Future Volume (vph)	8	3	54	20	5	0	64	20	7	0	9	3
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
Hourly flow rate (vph)	9	3	60	22	6	0	71	22	8	0	10	3
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	72	28	101	13								
Volume Left (vph)	9	22	71	0								
Volume Right (vph)	60	0	8	3								
Hadj (s)	-0.44	0.19	0.13	-0.10								
Departure Headway (s)	3.7	4.4	4.2	4.1								
Degree Utilization, x	0.07	0.03	0.12	0.01								
Capacity (veh/h)	928	789	820	847								
Control Delay (s)	7.0	7.6	7.8	7.2								
Approach Delay (s)	7.0	7.6	7.8	7.2								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay				7.5								
Level of Service				A								
Intersection Capacity Utilization				24.9%	ICU Level of Service	A						
Analysis Period (min)				15								

# HCM Unsignalized Intersection Capacity Analysis

## 6: Trim & Jeanne D'Arc/Inlet























04/17/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	7	4	87	8	2	0	51	8	8	1	11	4
Future Volume (vph)	7	4	87	8	2	0	51	8	8	1	11	4
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
Hourly flow rate (vph)	8	4	97	9	2	0	57	9	9	1	12	4
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	109	11	75	17								
Volume Left (vph)	8	9	57	1								
Volume Right (vph)	97	0	9	4								
Hadj (s)	-0.49	0.20	0.11	-0.10								
Departure Headway (s)	3.6	4.4	4.3	4.1								
Degree Utilization, x	0.11	0.01	0.09	0.02								
Capacity (veh/h)	963	793	813	842								
Control Delay (s)	7.1	7.5	7.7	7.2								
Approach Delay (s)	7.1	7.5	7.7	7.2								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay				7.3								
Level of Service				A								
Intersection Capacity Utilization				23.4%	ICU Level of Service	A						
Analysis Period (min)				15								

# Timings

## 3: Trim /Trim & OR 174

03/18/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	258	380	89	1143	12	760	31	42	14	49	20
Future Volume (vph)	25	258	380	89	1143	12	760	31	42	14	49	20
Satd. Flow (prot)	1695	3390	1517	1695	3383	0	3288	3095	0	1695	1784	1517
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1695	3390	1517	1695	3383	0	3288	3095	0	1695	1784	1517
Satd. Flow (RTOR)			422		1			47				217
Lane Group Flow (vph)	28	287	422	99	1283	0	844	81	0	16	54	22
Turn Type	Prot	NA	Free	Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			Free									4
Detector Phase	5	2		1	6		3	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	12.1	41.2		17.5	41.2		12.2	42.4		11.9	17.4	17.4
Total Split (s)	15.0	50.0		20.0	55.0		42.0	43.0		17.0	18.0	18.0
Total Split (%)	11.5%	38.5%		15.4%	42.3%		32.3%	33.1%		13.1%	13.8%	13.8%
Yellow Time (s)	3.3	5.1		3.3	5.1		3.3	3.3		3.3	3.3	3.3
All-Red Time (s)	3.8	2.1		4.2	2.1		3.9	4.1		3.6	4.1	4.1
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)	7.1	7.2		7.5	7.2		7.2	7.4		6.9	7.4	7.4
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lead		Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Max		None	C-Max		None	Max		None	Max	Max
Act Effect Green (s)	7.0	43.8	130.0	11.7	54.1		34.6	45.6		7.6	10.6	10.6
Actuated g/C Ratio	0.05	0.34	1.00	0.09	0.42		0.27	0.35		0.06	0.08	0.08
v/c Ratio	0.31	0.25	0.28	0.65	0.91		0.96	0.07		0.16	0.37	0.07
Control Delay	67.6	32.2	0.5	77.3	47.5		70.0	16.0		60.6	64.4	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	67.6	32.2	0.5	77.3	47.5		70.0	16.0		60.6	64.4	0.4
LOS	E	C	A	E	D		E	B		E	E	A
Approach Delay		15.4			49.6			65.3			48.5	
Approach LOS		B			D			E			D	
Queue Length 50th (m)	7.0	28.3	0.0	24.8	~183.6		110.2	2.7		4.0	13.3	0.0
Queue Length 95th (m)	17.1	39.8	0.0	#45.5	#228.1		#149.7	9.7		11.4	27.0	0.0
Internal Link Dist (m)		353.5			594.5			361.2			134.5	
Turn Bay Length (m)	155.0		255.0	130.0			190.0			125.0		50.0
Base Capacity (vph)	103	1142	1517	162	1407		880	1116		131	145	323
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	0.27	0.25	0.28	0.61	0.91		0.96	0.07		0.12	0.37	0.07

### Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 24 (18%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 115

Control Type: Actuated-Coordinated

## Timings

### 3: Trim /Trim & OR 174

03/18/2019

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 46.1

Intersection LOS: D

Intersection Capacity Utilization 85.6%

ICU Level of Service E

Analysis Period (min) 15

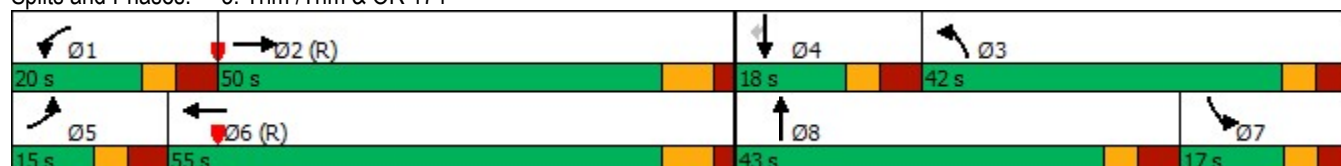
~ Volume exceeds capacity, queue is theoretically infinite.

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: 3: Trim /Trim & OR 174



# Lanes, Volumes, Timings

## 3: Trim /Trim & OR 174

04/17/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	1068	1057	67	411	13	406	43	90	16	65	19
Future Volume (vph)	11	1068	1057	67	411	13	406	43	90	16	65	19
Satd. Flow (prot)	1695	3390	1517	1695	3377	0	3288	3048	0	1695	1784	1517
Flt Permitted	0.463			0.076			0.950			0.950		
Satd. Flow (perm)	826	3390	1517	136	3377	0	3288	3048	0	1695	1784	1517
Satd. Flow (RTOR)			888		3			100				217
Lane Group Flow (vph)	12	1187	1174	74	471	0	451	148	0	18	72	21
Turn Type	pm+pt	NA	Free	pm+pt	NA		Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		Free	6								4
Detector Phase	5	2		1	6		3	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	12.1	41.2		11.0	41.2		12.2	42.4		11.9	17.4	17.4
Total Split (s)	16.0	54.0		16.0	54.0		33.0	43.0		17.0	27.0	27.0
Total Split (%)	12.3%	41.5%		12.3%	41.5%		25.4%	33.1%		13.1%	20.8%	20.8%
Yellow Time (s)	3.3	5.1		4.0	5.1		3.3	3.3		3.3	3.3	3.3
All-Red Time (s)	3.8	2.1		2.0	2.1		3.9	4.1		3.6	4.1	4.1
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)	7.1	7.2		6.0	7.2		7.2	7.4		6.9	7.4	7.4
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lead		Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Max		None	C-Max		None	Max		None	Max	Max
Act Effct Green (s)	59.4	54.4	130.0	65.8	60.7		22.4	42.5		7.6	19.6	19.6
Actuated g/C Ratio	0.46	0.42	1.00	0.51	0.47		0.17	0.33		0.06	0.15	0.15
v/c Ratio	0.03	0.84	0.77	0.44	0.30		0.80	0.14		0.18	0.27	0.05
Control Delay	17.6	41.8	3.9	26.2	23.7		62.4	12.6		61.5	51.9	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	17.6	41.8	3.9	26.2	23.7		62.4	12.6		61.5	51.9	0.2
LOS	B	D	A	C	C		E	B		E	D	A
Approach Delay		22.9			24.0			50.1			43.7	
Approach LOS		C			C			D			D	
Queue Length 50th (m)	1.5	147.6	0.0	9.3	35.2		57.5	4.0		4.5	16.5	0.0
Queue Length 95th (m)	5.0	#203.5	0.0	19.1	59.7		74.0	13.1		12.4	31.2	0.0
Internal Link Dist (m)		353.5			594.5			361.2			134.5	
Turn Bay Length (m)	155.0		255.0	130.0			190.0			125.0		50.0
Base Capacity (vph)	450	1417	1517	188	1578		652	1064		131	268	413
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	0.03	0.84	0.77	0.39	0.30		0.69	0.14		0.14	0.27	0.05

### Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 125 (96%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

# Lanes, Volumes, Timings

## 3: Trim /Trim & OR 174

04/17/2019

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 28.2

Intersection LOS: C

Intersection Capacity Utilization 71.4%

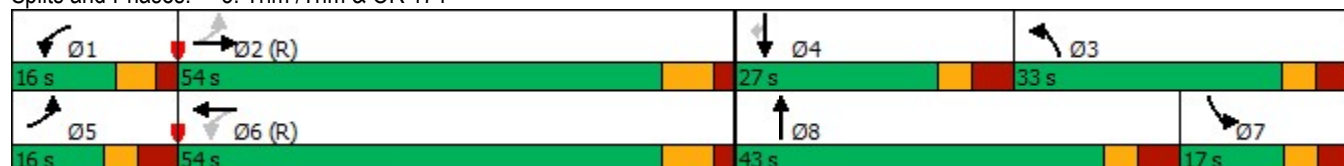
ICU Level of Service C

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 3: Trim /Trim & OR 174



# Appendix K










SYNCHRO Capacity Analysis: Background Conditions

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Background 2022 Horizon Year

















## Existing AM

## 2: Dairy &amp; Inlet Private

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	4	82	75	8	105	19
Future Volume (vph)	4	82	75	8	105	19
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	4	82	75	8	105	19
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total (vph)	86	83	124			
Volume Left (vph)	0	75	105			
Volume Right (vph)	82	0	19			
Hadj (s)	-0.54	0.21	0.11			
Departure Headway (s)	3.7	4.5	4.4			
Degree Utilization, x	0.09	0.10	0.15			
Capacity (veh/h)	923	776	789			
Control Delay (s)	7.1	8.0	8.1			
Approach Delay (s)	7.1	8.0	8.1			
Approach LOS	A	A	A			
Intersection Summary						
Delay			7.8			
Level of Service			A			
Intersection Capacity Utilization			25.5%	ICU Level of Service	A	
Analysis Period (min)			15			

## Existing AM

















## 3: Jeanne D'Arc &amp; Trim

																				
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR								
Lane Configurations																				
Sign Control		Stop			Stop			Stop			Stop									
Traffic Volume (vph)	8	86	0	0	114	0	0	0	0	0	9	3								
Future Volume (vph)	8	86	0	0	114	0	0	0	0	0	9	3								
Peak Hour 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								
Hourly flow rate (vph)	8	86	0	0	114	0	0	0	0	0	9	3								
Direction, Lane #	EB 1	WB 1	NB 1	SB 1																
Volume Total (vph)	94	114	0	12																
Volume Left (vph)	8	0	0	0																
Volume Right (vph)	0	0	0	3																
Hadj (s)	0.05	0.03	0.00	-0.12																
Departure Headway (s)	4.1	4.0	4.4	4.2																
Degree Utilization, x	0.11	0.13	0.00	0.01																
Capacity (veh/h)	869	879	794	808																
Control Delay (s)	7.6	7.6	7.4	7.3																
Approach Delay (s)	7.6	7.6	0.0	7.3																
Approach LOS	A	A	A	A																
Intersection Summary																				
Delay			7.6																	
Level of Service			A																	
Intersection Capacity Utilization			21.8%	ICU Level of Service		A														
Analysis Period (min)			15																	





















# HCM Unsignalized Intersection Capacity Analysis

## 6: Trim & Jeanne D'Arc/Inlet

04/17/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	7	4	87	8	2	0	51	8	8	1	11	4
Future Volume (vph)	7	4	87	8	2	0	51	8	8	1	11	4
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
Hourly flow rate (vph)	8	4	97	9	2	0	57	9	9	1	12	4
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	109	11	75	17								
Volume Left (vph)	8	9	57	1								
Volume Right (vph)	97	0	9	4								
Hadj (s)	-0.49	0.20	0.11	-0.10								
Departure Headway (s)	3.6	4.4	4.3	4.1								
Degree Utilization, x	0.11	0.01	0.09	0.02								
Capacity (veh/h)	963	793	813	842								
Control Delay (s)	7.1	7.5	7.7	7.2								
Approach Delay (s)	7.1	7.5	7.7	7.2								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay				7.3								
Level of Service				A								
Intersection Capacity Utilization				23.4%	ICU Level of Service	A						
Analysis Period (min)				15								

Existing AM  
1: Dairy & OR174

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	69	271	10	94	1200	14	860	39	44	18	68	84
Future Volume (vph)	69	271	10	94	1200	14	860	39	44	18	68	84
Satd. Flow (prot)	1695	3373	0	1695	4861	0	4780	1642	0	1695	1636	0
Flt Permitted	0.115			0.492			0.950			0.950		
Satd. Flow (perm)	205	3373	0	878	4861	0	4780	1642	0	1695	1636	0
Satd. Flow (RTOR)		3			1			44			40	
Lane Group Flow (vph)	69	281	0	94	1214	0	860	83	0	18	152	0
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	25.2		12.5	25.2		12.2	25.4		11.9	25.4	
Total Split (s)	13.0	48.6		16.6	52.2		39.0	47.8		17.0	25.8	
Total Split (%)	10.0%	37.4%		12.8%	40.2%		30.0%	36.8%		13.1%	19.8%	
Yellow Time (s)	4.0	5.1		3.3	5.1		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.0	2.1		4.2	2.1		3.9	4.1		3.6	4.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	7.2		7.5	7.2		7.2	7.4		6.9	7.4	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)	41.5	33.5		46.2	39.3		28.4	59.6		7.0	30.1	
Actuated g/C Ratio	0.32	0.26		0.36	0.30		0.22	0.46		0.05	0.23	
v/c Ratio	0.48	0.32		0.26	0.83		0.82	0.11		0.20	0.37	
Control Delay	34.4	38.3		26.2	47.3		55.5	14.6		63.3	37.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	34.4	38.3		26.2	47.3		55.5	14.6		63.3	37.6	
LOS	C	D		C	D		E	B		E	D	
Approach Delay		37.6			45.8			51.9			40.3	
Approach LOS		D			D			D			D	
Queue Length 50th (m)	10.7	29.7		15.1	105.8		74.3	5.2		4.5	24.9	
Queue Length 95th (m)	18.8	39.3		24.8	115.7		87.5	18.9		12.5	49.6	
Internal Link Dist (m)		572.1			692.6			218.7			259.5	
Turn Bay Length (m)	150.0			150.0			200.0			150.0		
Base Capacity (vph)	146	1076		369	1683		1169	777		131	409	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.47	0.26		0.25	0.72		0.74	0.11		0.14	0.37	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 46.5













Intersection LOS: D

Intersection Capacity Utilization 78.6%

ICU Level of Service D

Analysis Period (min) 15























Splits and Phases: 1: Dairy & OR174

					
Ø1	Ø2 (R)		Ø3	Ø4	
17 s	47.8 s		16.6 s	48.6 s	
					
Ø5	Ø6 (R)		Ø7	Ø8	
39 s	25.8 s		13 s	52.2 s	

# Timings

## 3: Trim /Trim & OR 174

04/17/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	1068	1057	67	411	13	406	43	90	16	65	19
Future Volume (vph)	11	1068	1057	67	411	13	406	43	90	16	65	19
Satd. Flow (prot)	1695	3390	1517	1695	3377	0	3288	3048	0	1695	1784	1517
Flt Permitted	0.463			0.076			0.950			0.950		
Satd. Flow (perm)	826	3390	1517	136	3377	0	3288	3048	0	1695	1784	1517
Satd. Flow (RTOR)			888		3			100				217
Lane Group Flow (vph)	12	1187	1174	74	471	0	451	148	0	18	72	21
Turn Type	pm+pt	NA	Free	pm+pt	NA		Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		Free	6								4
Detector Phase	5	2		1	6		3	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	10.0
Minimum Split (s)	12.1	41.2		11.0	41.2		12.2	42.4		11.9	17.4	17.4
Total Split (s)	16.0	54.0		16.0	54.0		33.0	43.0		17.0	27.0	27.0
Total Split (%)	12.3%	41.5%		12.3%	41.5%		25.4%	33.1%		13.1%	20.8%	20.8%
Yellow Time (s)	3.3	5.1		4.0	5.1		3.3	3.3		3.3	3.3	3.3
All-Red Time (s)	3.8	2.1		2.0	2.1		3.9	4.1		3.6	4.1	4.1
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)	7.1	7.2		6.0	7.2		7.2	7.4		6.9	7.4	7.4
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lead		Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Max		None	C-Max		None	Max		None	Max	Max
Act Effct Green (s)	59.4	54.4	130.0	65.8	60.7		22.4	42.5		7.6	19.6	19.6
Actuated g/C Ratio	0.46	0.42	1.00	0.51	0.47		0.17	0.33		0.06	0.15	0.15
v/c Ratio	0.03	0.84	0.77	0.44	0.30		0.80	0.14		0.18	0.27	0.05
Control Delay	17.6	41.8	3.9	26.2	23.7		62.4	12.6		61.5	51.9	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	17.6	41.8	3.9	26.2	23.7		62.4	12.6		61.5	51.9	0.2
LOS	B	D	A	C	C		E	B		E	D	A
Approach Delay		22.9			24.0			50.1			43.7	
Approach LOS		C			C			D			D	
Queue Length 50th (m)	1.5	147.6	0.0	9.3	35.2		57.5	4.0		4.5	16.5	0.0
Queue Length 95th (m)	5.0	#203.5	0.0	19.1	59.7		74.0	13.1		12.4	31.2	0.0
Internal Link Dist (m)		353.5			594.5			361.2			134.5	
Turn Bay Length (m)	155.0		255.0	130.0			190.0			125.0		50.0
Base Capacity (vph)	450	1417	1517	188	1578		652	1064		131	268	413
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	0.03	0.84	0.77	0.39	0.30		0.69	0.14		0.14	0.27	0.05

### Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 125 (96%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

## Timings

### 3: Trim /Trim & OR 174

04/17/2019

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 28.2

Intersection LOS: C

Intersection Capacity Utilization 71.4%

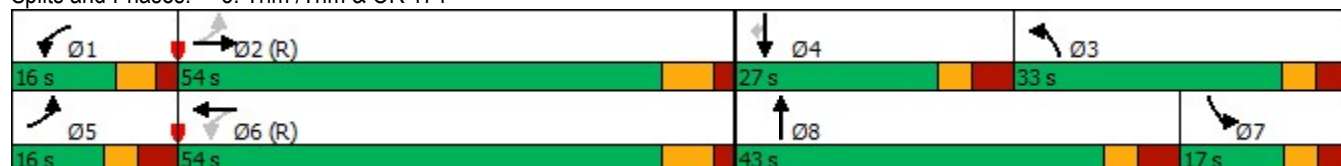
ICU Level of Service C

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.










Splits and Phases: 3: Trim /Trim & OR 174



Background 2024 Horizon Year

















## Existing AM

## 2: Dairy &amp; Inlet Private











						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	4	106	75	8	146	20
Future Volume (vph)	4	106	75	8	146	20
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	4	106	75	8	146	20
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total (vph)	110	83	166			
Volume Left (vph)	0	75	146			
Volume Right (vph)	106	0	20			
Hadj (s)	-0.54	0.21	0.14			
Departure Headway (s)	3.9	4.6	4.5			
Degree Utilization, x	0.12	0.11	0.21			
Capacity (veh/h)	890	737	773			
Control Delay (s)	7.4	8.2	8.6			
Approach Delay (s)	7.4	8.2	8.6			
Approach LOS	A	A	A			
Intersection Summary						
Delay			8.1			
Level of Service			A			
Intersection Capacity Utilization			28.0%	ICU Level of Service	A	
Analysis Period (min)			15			

## Existing AM

## 3: Jeanne D'Arc &amp; Trim





																				
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR								
Lane Configurations																				
Sign Control		Stop			Stop			Stop			Stop									
Traffic Volume (vph)	9	110	0	0	154	0	0	0	0	0	10	3								
Future Volume (vph)	9	110	0	0	154	0	0	0	0	0	10	3								
Peak Hour 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								
Hourly flow rate (vph)	9	110	0	0	154	0	0	0	0	0	10	3								
Direction, Lane #	EB 1	WB 1	NB 1	SB 1																
Volume Total (vph)	119	154	0	13																
Volume Left (vph)	9	0	0	0																
Volume Right (vph)	0	0	0	3																
Hadj (s)	0.05	0.03	0.00	-0.10																
Departure Headway (s)	4.1	4.1	4.5	4.4																
Degree Utilization, x	0.14	0.17	0.00	0.02																
Capacity (veh/h)	859	872	762	761																
Control Delay (s)	7.8	7.9	7.5	7.4																
Approach Delay (s)	7.8	7.9	0.0	7.4																
Approach LOS	A	A	A	A																
Intersection Summary																				
Delay			7.8																	
Level of Service			A																	
Intersection Capacity Utilization			24.0%	ICU Level of Service		A														
Analysis Period (min)			15																	

## 2: Dairy & Inlet Private





















						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	6	173	32	3	106	46
Future Volume (vph)	6	173	32	3	106	46
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	6	173	32	3	106	46
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total (vph)	179	35	152			
Volume Left (vph)	0	32	106			
Volume Right (vph)	173	0	46			
Hadj (s)	-0.55	0.22	-0.01			
Departure Headway (s)	3.8	4.6	4.3			
Degree Utilization, x	0.19	0.05	0.18			
Capacity (veh/h)	922	732	792			
Control Delay (s)	7.6	7.9	8.3			
Approach Delay (s)	7.6	7.9	8.3			
Approach LOS	A	A	A			
Intersection Summary						
Delay			7.9			
Level of Service			A			
Intersection Capacity Utilization			34.1%	ICU Level of Service	A	
Analysis Period (min)			15			

### 3: Jeanne D'Arc & Trim



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	8	179	0	0	109	0	0	0	0	1	12	4
Future Volume (vph)	8	179	0	0	109	0	0	0	0	1	12	4
Peak Hour 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
Hourly flow rate (vph)	8	179	0	0	109	0	0	0	0	1	12	4
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	187	109	0	17								
Volume Left (vph)	8	0	0	1								
Volume Right (vph)	0	0	0	4								
Hadj (s)	0.04	0.03	0.00	-0.10								
Departure Headway (s)	4.1	4.2	4.6	4.4								
Degree Utilization, x	0.21	0.13	0.00	0.02								
Capacity (veh/h)	869	854	750	749								
Control Delay (s)	8.2	7.7	7.6	7.5								
Approach Delay (s)	8.2	7.7	0.0	7.5								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			8.0									
Level of Service			A									
Intersection Capacity Utilization			26.8%	ICU Level of Service					A			
Analysis Period (min)			15									

Existing AM  
1: Dairy & OR174

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	276	10	95	1223	14	890	43	45	19	75	107
Future Volume (vph)	105	276	10	95	1223	14	890	43	45	19	75	107
Satd. Flow (prot)	1695	3373	0	1695	4861	0	4780	1647	0	1695	1627	0
Flt Permitted	0.101			0.561			0.950			0.950		
Satd. Flow (perm)	180	3373	0	1001	4861	0	4780	1647	0	1695	1627	0
Satd. Flow (RTOR)		3			1			40			46	
Lane Group Flow (vph)	105	286	0	95	1237	0	890	88	0	19	182	0
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	25.2		12.5	25.2		12.2	25.4		11.9	25.4	
Total Split (s)	13.0	52.0		13.0	52.0		39.0	43.0		22.0	26.0	
Total Split (%)	10.0%	40.0%		10.0%	40.0%		30.0%	33.1%		16.9%	20.0%	
Yellow Time (s)	4.0	5.1		3.3	5.1		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.0	2.1		4.2	2.1		3.9	4.1		3.6	4.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	7.2		7.5	7.2		7.2	7.4		6.9	7.4	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)	47.8	39.6		44.8	39.6		29.2	56.6		7.1	26.4	
Actuated g/C Ratio	0.37	0.30		0.34	0.30		0.22	0.44		0.05	0.20	
v/c Ratio	0.71	0.28		0.25	0.83		0.83	0.12		0.21	0.50	
Control Delay	50.4	34.0		26.1	47.5		55.4	16.2		63.4	41.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	50.4	34.0		26.1	47.5		55.4	16.2		63.4	41.5	
LOS	D	C		C	D		E	B		E	D	
Approach Delay		38.4			46.0			51.9			43.6	
Approach LOS		D			D			D			D	
Queue Length 50th (m)	16.5	28.8		15.2	107.8		76.9	6.4		4.8	31.3	
Queue Length 95th (m)	#34.2	38.3		25.0	118.7		90.9	20.9		12.8	58.7	
Internal Link Dist (m)		572.1			692.6			218.7			259.5	
Turn Bay Length (m)	150.0			150.0			200.0			150.0		
Base Capacity (vph)	147	1164		374	1675		1171	740		196	367	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.71	0.25		0.25	0.74		0.76	0.12		0.10	0.50	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 46.8

Intersection LOS: D

Intersection Capacity Utilization 83.5%

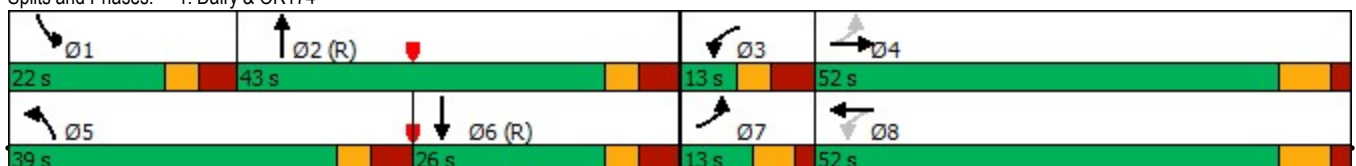
ICU Level of Service E

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.





















Splits and Phases: 1: Dairy & OR174















Parsons

Synchro 9 - Report

# 1: Dairy & OR174









												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	84	1143	10	72	440	18	479	58	96	23	90	116
Future Volume (vph)	84	1143	10	72	440	18	479	58	96	23	90	116
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	150.0		0.0	150.0		150.0	200.0		0.0	150.0		0.0
Storage Lanes	1		0	1		0	3		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1695	3387	0	1695	4842	0	4780	1617	0	1695	1634	0
Flt Permitted	0.448			0.107			0.950			0.950		
Satd. Flow (perm)	799	3387	0	191	4842	0	4780	1617	0	1695	1634	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			6			56			42	
Link Speed (k/h)		100			90			50			50	
Link Distance (m)		596.1			716.6			242.7			283.5	
Travel Time (s)		21.5			28.7			17.5			20.4	
Lane Group Flow (vph)	84	1153	0	72	458	0	479	154	0	23	206	0
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	25.2		12.5	25.2		12.2	25.4		11.9	25.4	
Total Split (s)	16.0	73.0		13.0	70.0		18.0	31.0		13.0	26.0	
Total Split (%)	12.3%	56.2%		10.0%	53.8%		13.8%	23.8%		10.0%	20.0%	
Yellow Time (s)	4.0	5.1		3.3	5.1		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.0	2.1		4.2	2.1		3.9	4.1		3.6	4.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	7.2		7.5	7.2		7.2	7.4		6.9	7.4	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effect Green (s)	62.1	53.8		54.9	49.7		20.9	42.1		7.3	23.1	
Actuated g/C Ratio	0.48	0.41		0.42	0.38		0.16	0.32		0.06	0.18	
v/c Ratio	0.19	0.82		0.50	0.25		0.62	0.27		0.24	0.63	
Control Delay	15.7	39.0		27.9	26.4		55.6	27.1		64.1	50.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	15.7	39.0		27.9	26.4		55.6	27.1		64.1	50.6	
LOS	B	D		C	C		E	C		E	D	
Approach Delay		37.4			26.6			48.7			52.0	
Approach LOS		D			C			D			D	
Queue Length 50th (m)	10.4	135.4		9.1	27.5		40.8	19.8		5.8	40.7	
Queue Length 95th (m)	16.2	145.2		14.7	32.6		#63.4	43.5		14.8	#76.6	
Internal Link Dist (m)		572.1			692.6			218.7			259.5	
Turn Bay Length (m)	150.0			150.0			200.0			150.0		
Base Capacity (vph)	455	1714		144	2342		769	561		96	325	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	

# 1: Dairy & OR174

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.18	0.67		0.50	0.20		0.62	0.27		0.24	0.63	

Intersection Summary	
Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.82
Intersection Signal Delay:	39.2
Intersection LOS:	D
Intersection Capacity Utilization	84.4%
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.	










Splits and Phases: 1: Dairy & OR174

 Ø1	 Ø2 (R)	 Ø3	 Ø4
13 s	31 s	13 s	73 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
18 s	26 s	16 s	70 s

Background 2029 Horizon Year

















## Existing AM

## 2: Dairy &amp; Inlet Private










						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	4	137	77	9	199	20
Future Volume (vph)	4	137	77	9	199	20
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	4	137	77	9	199	20
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total (vph)	141	86	219			
Volume Left (vph)	0	77	199			
Volume Right (vph)	137	0	20			
Hadj (s)	-0.55	0.21	0.16			
Departure Headway (s)	4.0	4.8	4.6			
Degree Utilization, x	0.16	0.11	0.28			
Capacity (veh/h)	851	703	754			
Control Delay (s)	7.7	8.4	9.3			
Approach Delay (s)	7.7	8.4	9.3			
Approach LOS	A	A	A			
Intersection Summary						
Delay			8.6			
Level of Service			A			
Intersection Capacity Utilization			37.1%	ICU Level of Service	A	
Analysis Period (min)			15			

## Existing AM

















## 3: Jeanne D'Arc &amp; Trim

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	9	141	0	0	208	0	0	0	0	0	10	3
Future Volume (vph)	9	141	0	0	208	0	0	0	0	0	10	3
Peak Hour 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
Hourly flow rate (vph)	9	141	0	0	208	0	0	0	0	0	10	3
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	150	208	0	13								
Volume Left (vph)	9	0	0	0								
Volume Right (vph)	0	0	0	3								
Hadj (s)	0.05	0.03	0.00	-0.10								
Departure Headway (s)	4.2	4.1	4.7	4.6								
Degree Utilization, x	0.17	0.24	0.00	0.02								
Capacity (veh/h)	848	865	723	721								
Control Delay (s)	8.1	8.4	7.7	7.6								
Approach Delay (s)	8.1	8.4	0.0	7.6								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			8.2									
Level of Service			A									
Intersection Capacity Utilization			25.6%	ICU Level of Service		A						
Analysis Period (min)			15									





















## 2: Dairy & Inlet Private

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	7	229	32	3	138	46
Future Volume (vph)	7	229	32	3	138	46
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	7	229	32	3	138	46
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total (vph)	236	35	184			
Volume Left (vph)	0	32	138			
Volume Right (vph)	229	0	46			
Hadj (s)	-0.55	0.22	0.03			
Departure Headway (s)	3.8	4.8	4.5			
Degree Utilization, x	0.25	0.05	0.23			
Capacity (veh/h)	898	703	759			
Control Delay (s)	8.1	8.0	8.8			
Approach Delay (s)	8.1	8.0	8.8			
Approach LOS	A	A	A			
Intersection Summary						
Delay			8.4			
Level of Service			A			
Intersection Capacity Utilization			39.7%	ICU Level of Service	A	
Analysis Period (min)			15			

### 3: Jeanne D'Arc & Trim

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	8	236	0	0	141	0	0	0	0	1	12	5
Future Volume (vph)	8	236	0	0	141	0	0	0	0	1	12	5
Peak Hour 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
Hourly flow rate (vph)	8	236	0	0	141	0	0	0	0	1	12	5
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	244	141	0	18								
Volume Left (vph)	8	0	0	1								
Volume Right (vph)	0	0	0	5								
Hadj (s)	0.04	0.03	0.00	-0.12								
Departure Headway (s)	4.1	4.2	4.8	4.6								
Degree Utilization, x	0.28	0.16	0.00	0.02								
Capacity (veh/h)	861	840	700	711								
Control Delay (s)	8.7	8.0	7.8	7.7								
Approach Delay (s)	8.7	8.0	0.0	7.7								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			8.4									
Level of Service			A									
Intersection Capacity Utilization			29.9%	ICU Level of Service		A						
Analysis Period (min)			15									

Existing AM  
1: Dairy & OR174

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	152	289	10	100	1280	14	990	49	47	22	82	136
Future Volume (vph)	152	289	10	100	1280	14	990	49	47	22	82	136
Satd. Flow (prot)	1695	3373	0	1695	4861	0	4780	1654	0	1695	1617	0
Flt Permitted	0.097			0.569			0.950			0.950		
Satd. Flow (perm)	173	3373	0	1015	4861	0	4780	1654	0	1695	1617	0
Satd. Flow (RTOR)		3			1			41			54	
Lane Group Flow (vph)	152	299	0	100	1294	0	990	96	0	22	218	0
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	25.2		12.5	25.2		12.2	25.4		11.9	25.4	
Total Split (s)	16.0	50.2		14.0	48.2		40.0	53.0		12.8	25.8	
Total Split (%)	12.3%	38.6%		10.8%	37.1%		30.8%	40.8%		9.8%	19.8%	
Yellow Time (s)	4.0	5.1		3.3	5.1		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.0	2.1		4.2	2.1		3.9	4.1		3.6	4.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	7.2		7.5	7.2		7.2	7.4		6.9	7.4	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)	52.5	41.3		45.5	39.3		31.0	52.4		5.9	21.9	
Actuated g/C Ratio	0.40	0.32		0.35	0.30		0.24	0.40		0.05	0.17	
v/c Ratio	0.81	0.28		0.26	0.88		0.87	0.14		0.29	0.69	
Control Delay	59.1	33.3		25.1	51.0		56.6	17.1		70.1	51.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	59.1	33.3		25.1	51.0		56.6	17.1		70.1	51.3	
LOS	E	C		C	D		E	B		E	D	
Approach Delay		42.0			49.1			53.1			53.0	
Approach LOS		D			D			D			D	
Queue Length 50th (m)	23.2	29.2		15.1	113.1		85.4	9.4		5.6	41.4	
Queue Length 95th (m)	#57.9	41.0		26.5	131.9		101.7	21.9		14.7	#79.9	
Internal Link Dist (m)		572.1			692.6			218.7			259.5	
Turn Bay Length (m)	150.0			150.0			200.0			150.0		
Base Capacity (vph)	187	1117		389	1533		1206	691		77	317	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.81	0.27		0.26	0.84		0.82	0.14		0.29	0.69	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 49.8

Intersection LOS: D

Intersection Capacity Utilization 91.7%

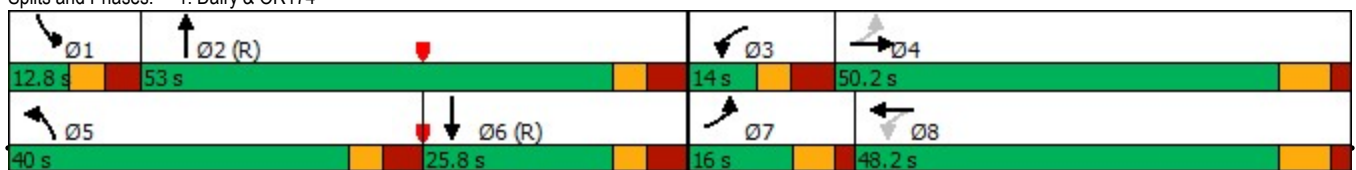
ICU Level of Service F

Analysis Period (min) 15





















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

Queue shown is maximum after two cycles.

Splits and Phases: 1: Dairy & OR174



# 1: Dairy & OR174

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	112	1196	10	75	460	19	536	62	101	27	103	169
Future Volume (vph)	112	1196	10	75	460	19	536	62	101	27	103	169
Satd. Flow (prot)	1695	3387	0	1695	4842	0	4780	1618	0	1695	1618	0
Flt Permitted	0.425			0.094			0.950			0.950		
Satd. Flow (perm)	758	3387	0	168	4842	0	4780	1618	0	1695	1618	0
Satd. Flow (RTOR)		1			6			57			53	
Lane Group Flow (vph)	112	1206	0	75	479	0	536	163	0	27	272	0
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	25.2		12.5	25.2		12.2	25.4		11.9	25.4	
Total Split (s)	17.0	69.0		13.0	65.0		22.0	35.0		13.0	26.0	
Total Split (%)	13.1%	53.1%		10.0%	50.0%		16.9%	26.9%		10.0%	20.0%	
Yellow Time (s)	4.0	5.1		3.3	5.1		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.0	2.1		4.2	2.1		3.9	4.1		3.6	4.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	7.2		7.5	7.2		7.2	7.4		6.9	7.4	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)	63.7	54.4		54.5	49.3		18.9	42.0		6.9	24.5	
Actuated g/C Ratio	0.49	0.42		0.42	0.38		0.15	0.32		0.05	0.19	
v/c Ratio	0.25	0.85		0.56	0.26		0.77	0.29		0.30	0.78	
Control Delay	16.6	40.3		32.2	26.9		62.0	27.2		68.2	58.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	16.6	40.3		32.2	26.9		62.0	27.2		68.2	58.5	
LOS	B	D		C	C		E	C		E	E	
Approach Delay		38.3			27.6			53.9			59.4	
Approach LOS		D			C			D			E	
Queue Length 50th (m)	13.9	143.5		9.3	29.1		46.3	21.8		6.8	57.7	
Queue Length 95th (m)	21.1	157.0		15.4	34.9		#72.5	44.8		16.8	#113.7	
Internal Link Dist (m)		572.1			692.6			218.7			259.5	
Turn Bay Length (m)	150.0			150.0			200.0			150.0		
Base Capacity (vph)	455	1610		134	2156		693	560		90	347	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.25	0.75		0.56	0.22		0.77	0.29		0.30	0.78	

## Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 42.2

Intersection LOS: D

Intersection Capacity Utilization 91.5%

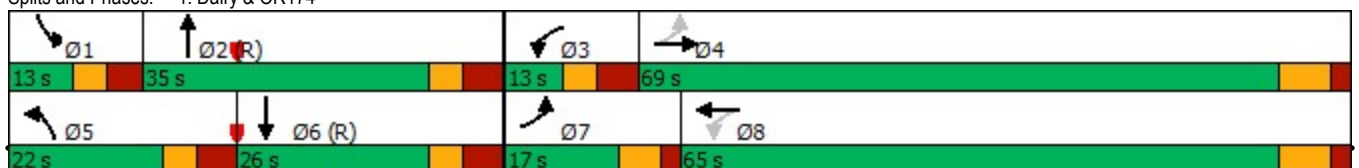
ICU Level of Service F

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

## Splits and Phases: 1: Dairy & OR174



# Appendix L











SYNCHRO Capacity Analysis: Total Projected Conditions

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Total Future 2022 Horizon Year

















## Existing AM

## 2: Dairy &amp; Inlet Private

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	4	82	195	8	105	65
Future Volume (vph)	4	82	195	8	105	65
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	4	82	195	8	105	65
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total (vph)	86	203	170			
Volume Left (vph)	0	195	105			
Volume Right (vph)	82	0	65			
Hadj (s)	-0.54	0.23	-0.07			
Departure Headway (s)	4.0	4.6	4.5			
Degree Utilization, x	0.10	0.26	0.21			
Capacity (veh/h)	849	744	756			
Control Delay (s)	7.4	9.3	8.7			
Approach Delay (s)	7.4	9.3	8.7			
Approach LOS	A	A	A			
Intersection Summary						
Delay			8.7			
Level of Service			A			
Intersection Capacity Utilization			35.5%	ICU Level of Service	A	
Analysis Period (min)			15			

## Existing AM











## 3: Jeanne D'Arc &amp; Trim

																				
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR								
Lane Configurations																				
Sign Control		Stop			Stop			Stop			Stop									
Traffic Volume (vph)	8	86	0	0	114	0	0	0	0	0	9	3								
Future Volume (vph)	8	86	0	0	114	0	0	0	0	0	9	3								
Peak Hour 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								
Hourly flow rate (vph)	8	86	0	0	114	0	0	0	0	0	9	3								
Direction, Lane #	EB 1	WB 1	NB 1	SB 1																
Volume Total (vph)	94	114	0	12																
Volume Left (vph)	8	0	0	0																
Volume Right (vph)	0	0	0	3																
Hadj (s)	0.05	0.03	0.00	-0.12																
Departure Headway (s)	4.1	4.0	4.4	4.2																
Degree Utilization, x	0.11	0.13	0.00	0.01																
Capacity (veh/h)	869	879	794	808																
Control Delay (s)	7.6	7.6	7.4	7.3																
Approach Delay (s)	7.6	7.6	0.0	7.3																
Approach LOS	A	A	A	A																
Intersection Summary																				
Delay			7.6																	
Level of Service			A																	
Intersection Capacity Utilization			21.8%	ICU Level of Service		A														
Analysis Period (min)			15																	

# HCM Unsignalized Intersection Capacity Analysis

## 2: Dairy & Inlet Private

















04/17/2019

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	6	132	102	3	80	140
Future Volume (vph)	6	132	102	3	80	140
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	6	132	102	3	80	140
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total (vph)	138	105	220			
Volume Left (vph)	0	102	80			
Volume Right (vph)	132	0	140			
Hadj (s)	-0.54	0.23	-0.28			
Departure Headway (s)	4.0	4.8	4.2			
Degree Utilization, x	0.15	0.14	0.25			
Capacity (veh/h)	853	709	821			
Control Delay (s)	7.7	8.5	8.6			
Approach Delay (s)	7.7	8.5	8.6			
Approach LOS	A	A	A			
Intersection Summary						
Delay			8.3			
Level of Service			A			
Intersection Capacity Utilization			38.8%	ICU Level of Service	A	
Analysis Period (min)			15			





















# HCM Unsignalized Intersection Capacity Analysis

## 3: Jeanne D'Arc & Trim

04/17/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	7	139	0	0	83	0	0	0	0	1	12	4
Future Volume (vph)	7	139	0	0	83	0	0	0	0	1	12	4
Peak Hour 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
Hourly flow rate (vph)	7	139	0	0	83	0	0	0	0	1	12	4
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	146	83	0	17								
Volume Left (vph)	7	0	0	1								
Volume Right (vph)	0	0	0	4								
Hadj (s)	0.04	0.03	0.00	-0.10								
Departure Headway (s)	4.1	4.1	4.4	4.3								
Degree Utilization, x	0.16	0.09	0.00	0.02								
Capacity (veh/h)	874	863	782	793								
Control Delay (s)	7.9	7.5	7.4	7.4								
Approach Delay (s)	7.9	7.5	0.0	7.4								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay				7.7								
Level of Service				A								
Intersection Capacity Utilization				23.7%	ICU Level of Service	A						
Analysis Period (min)				15								

Existing AM  
1: Dairy & OR174

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	271	10	93	1200	16	860	48	44	24	92	174
Future Volume (vph)	104	271	10	93	1200	16	860	48	44	24	92	174
Satd. Flow (prot)	1695	3373	0	1695	4861	0	4780	1656	0	1695	1609	0
Flt Permitted	0.108			0.531			0.950			0.950		
Satd. Flow (perm)	193	3373	0	947	4861	0	4780	1656	0	1695	1609	0
Satd. Flow (RTOR)		3			2			35			61	
Lane Group Flow (vph)	104	281	0	93	1216	0	860	92	0	24	266	0
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	25.2		12.5	25.2		12.2	25.4		11.9	25.4	
Total Split (s)	14.0	48.6		16.4	51.0		39.0	44.0		21.0	26.0	
Total Split (%)	10.8%	37.4%		12.6%	39.2%		30.0%	33.8%		16.2%	20.0%	
Yellow Time (s)	4.0	5.1		3.3	5.1		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.0	2.1		4.2	2.1		3.9	4.1		3.6	4.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	7.2		7.5	7.2		7.2	7.4		6.9	7.4	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)	46.0	36.9		47.1	39.0		28.4	53.3		7.4	26.9	
Actuated g/C Ratio	0.35	0.28		0.36	0.30		0.22	0.41		0.06	0.21	
v/c Ratio	0.65	0.29		0.24	0.83		0.82	0.13		0.25	0.70	
Control Delay	43.5	36.2		25.0	47.9		55.5	19.0		64.3	48.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	43.5	36.2		25.0	47.9		55.5	19.0		64.3	48.9	
LOS	D	D		C	D		E	B		E	D	
Approach Delay		38.2			46.3			52.0			50.2	
Approach LOS		D			D			D			D	
Queue Length 50th (m)	16.3	29.3		14.8	106.0		74.3	9.5		6.0	50.1	
Queue Length 95th (m)	#30.1	39.3		24.5	117.6		87.5	23.4		14.8	#106.0	
Internal Link Dist (m)		572.1			692.6			218.7			259.5	
Turn Bay Length (m)	150.0			150.0			200.0			150.0		
Base Capacity (vph)	160	1076		397	1639		1169	700		183	381	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.65	0.26		0.23	0.74		0.74	0.13		0.13	0.70	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 47.5

Intersection LOS: D

Intersection Capacity Utilization 87.7%

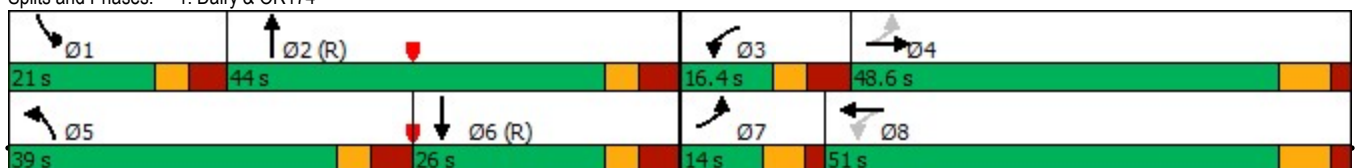
ICU Level of Service E

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.





















Splits and Phases: 1: Dairy & OR174



# Lanes, Volumes, Timings

## 1: Dairy & OR174

04/17/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	132	1121	10	70	432	23	462	74	95	24	95	130
Future Volume (vph)	132	1121	10	70	432	23	462	74	95	24	95	130
Satd. Flow (prot)	1695	3387	0	1695	4832	0	4780	1634	0	1695	1629	0
Flt Permitted	0.431			0.110			0.950			0.950		
Satd. Flow (perm)	769	3387	0	196	4832	0	4780	1634	0	1695	1629	0
Satd. Flow (RTOR)		1			8			45			44	
Lane Group Flow (vph)	132	1131	0	70	455	0	462	169	0	24	225	0
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	25.2		12.5	25.2		12.2	25.4		11.9	25.4	
Total Split (s)	17.0	70.0		13.0	66.0		21.0	34.0		13.0	26.0	
Total Split (%)	13.1%	53.8%		10.0%	50.8%		16.2%	26.2%		10.0%	20.0%	
Yellow Time (s)	4.0	5.1		3.3	5.1		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.0	2.1		4.2	2.1		3.9	4.1		3.6	4.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	7.2		7.5	7.2		7.2	7.4		6.9	7.4	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)	61.8	52.2		51.6	46.4		17.4	43.9		7.2	28.2	
Actuated g/C Ratio	0.48	0.40		0.40	0.36		0.13	0.34		0.06	0.22	
v/c Ratio	0.30	0.83		0.50	0.26		0.72	0.29		0.26	0.58	
Control Delay	18.4	40.6		29.0	28.5		61.0	29.5		65.2	46.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	18.4	40.6		29.0	28.5		61.0	29.5		65.2	46.2	
LOS	B	D		C	C		E	C		E	D	
Approach Delay		38.3			28.5			52.6			48.0	
Approach LOS		D			C			D			D	
Queue Length 50th (m)	17.3	134.5		9.1	28.6		40.3	25.1		6.0	43.8	
Queue Length 95th (m)	24.8	145.7		14.9	33.7		53.4	50.2		14.9	#88.3	
Internal Link Dist (m)		572.1			692.6			218.7			259.5	
Turn Bay Length (m)	150.0			150.0			200.0			150.0		
Base Capacity (vph)	445	1636		141	2189		640	581		95	388	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.30	0.69		0.50	0.21		0.72	0.29		0.25	0.58	
Intersection Summary												
Cycle Length: 130												
Actuated Cycle Length: 130												
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green												
Natural Cycle: 90												
Control Type: Actuated-Coordinated												

# Lanes, Volumes, Timings

## 1: Dairy & OR174

04/17/2019

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 40.7

Intersection LOS: D

Intersection Capacity Utilization 84.6%

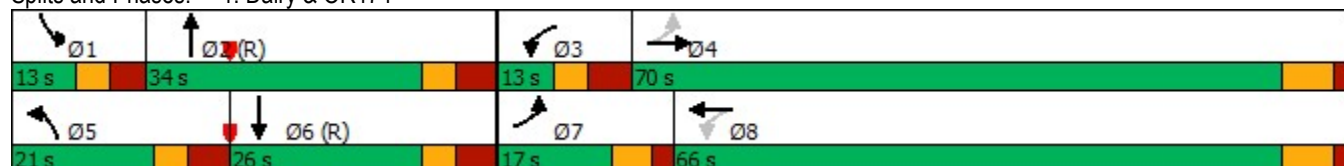
ICU Level of Service E

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.










Splits and Phases: 1: Dairy & OR174



Total Future 2024 Horizon Year

















## Existing AM

## 2: Dairy &amp; Inlet Private

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	4	106	228	8	146	79
Future Volume (vph)	4	106	228	8	146	79
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	4	106	228	8	146	79
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total (vph)	110	236	225			
Volume Left (vph)	0	228	146			
Volume Right (vph)	106	0	79			
Hadj (s)	-0.54	0.23	-0.05			
Departure Headway (s)	4.2	4.8	4.7			
Degree Utilization, x	0.13	0.32	0.29			
Capacity (veh/h)	789	710	726			
Control Delay (s)	7.8	10.0	9.6			
Approach Delay (s)	7.8	10.0	9.6			
Approach LOS	A	B	A			
Intersection Summary						
Delay			9.4			
Level of Service			A			
Intersection Capacity Utilization			40.7%	ICU Level of Service	A	
Analysis Period (min)			15			

## Existing AM











## 3: Jeanne D'Arc &amp; Trim

																				
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR								
Lane Configurations																				
Sign Control		Stop			Stop			Stop			Stop									
Traffic Volume (vph)	9	110	0	0	154	0	0	0	0	0	10	3								
Future Volume (vph)	9	110	0	0	154	0	0	0	0	0	10	3								
Peak Hour 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								
Hourly flow rate (vph)	9	110	0	0	154	0	0	0	0	0	10	3								
Direction, Lane #	EB 1	WB 1	NB 1	SB 1																
Volume Total (vph)	119	154	0	13																
Volume Left (vph)	9	0	0	0																
Volume Right (vph)	0	0	0	3																
Hadj (s)	0.05	0.03	0.00	-0.10																
Departure Headway (s)	4.1	4.1	4.5	4.4																
Degree Utilization, x	0.14	0.17	0.00	0.02																
Capacity (veh/h)	859	872	762	761																
Control Delay (s)	7.8	7.9	7.5	7.4																
Approach Delay (s)	7.8	7.9	0.0	7.4																
Approach LOS	A	A	A	A																
Intersection Summary																				
Delay			7.8																	
Level of Service			A																	
Intersection Capacity Utilization			24.0%	ICU Level of Service		A														
Analysis Period (min)			15																	

# HCM Unsignalized Intersection Capacity Analysis

## 2: Dairy & Inlet Private

















04/17/2019

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	6	173	109	3	106	151
Future Volume (vph)	6	173	109	3	106	151
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	6	173	109	3	106	151
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total (vph)	179	112	257			
Volume Left (vph)	0	109	106			
Volume Right (vph)	173	0	151			
Hadj (s)	-0.55	0.23	-0.24			
Departure Headway (s)	4.1	4.9	4.3			
Degree Utilization, x	0.20	0.15	0.31			
Capacity (veh/h)	818	683	789			
Control Delay (s)	8.1	8.8	9.2			
Approach Delay (s)	8.1	8.8	9.2			
Approach LOS	A	A	A			
Intersection Summary						
Delay			8.8			
Level of Service			A			
Intersection Capacity Utilization			44.2%	ICU Level of Service	A	
Analysis Period (min)			15			





















# HCM Unsignalized Intersection Capacity Analysis

## 3: Jeanne D'Arc & Trim

04/17/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	8	179	0	0	109	0	0	0	0	1	12	4
Future Volume (vph)	8	179	0	0	109	0	0	0	0	1	12	4
Peak Hour 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
Hourly flow rate (vph)	8	179	0	0	109	0	0	0	0	1	12	4
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	187	109	0	17								
Volume Left (vph)	8	0	0	1								
Volume Right (vph)	0	0	0	4								
Hadj (s)	0.04	0.03	0.00	-0.10								
Departure Headway (s)	4.1	4.2	4.6	4.4								
Degree Utilization, x	0.21	0.13	0.00	0.02								
Capacity (veh/h)	869	854	750	749								
Control Delay (s)	8.2	7.7	7.6	7.5								
Approach Delay (s)	8.2	7.7	0.0	7.5								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			8.0									
Level of Service			A									
Intersection Capacity Utilization			26.8%	ICU Level of Service		A						
Analysis Period (min)			15									

Existing AM  
1: Dairy & OR174

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	149	276	10	95	1223	17	890	55	45	27	106	222
Future Volume (vph)	149	276	10	95	1223	17	890	55	45	27	106	222
Satd. Flow (prot)	1695	3373	0	1695	4861	0	4780	1663	0	1695	1602	0
Flt Permitted	0.103			0.569			0.950			0.950		
Satd. Flow (perm)	184	3373	0	1015	4861	0	4780	1663	0	1695	1602	0
Satd. Flow (RTOR)		3			2			35			69	
Lane Group Flow (vph)	149	286	0	95	1240	0	890	100	0	27	328	0
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	25.2		12.5	25.2		12.2	25.4		11.9	25.4	
Total Split (s)	15.0	48.6		14.4	48.0		39.0	54.2		12.8	28.0	
Total Split (%)	11.5%	37.4%		11.1%	36.9%		30.0%	41.7%		9.8%	21.5%	
Yellow Time (s)	4.0	5.1		3.3	5.1		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.0	2.1		4.2	2.1		3.9	4.1		3.6	4.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	7.2		7.5	7.2		7.2	7.4		6.9	7.4	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)	49.1	38.9		44.9	38.3		29.1	54.2		6.2	25.8	
Actuated g/C Ratio	0.38	0.30		0.35	0.29		0.22	0.42		0.05	0.20	
v/c Ratio	0.86	0.28		0.25	0.87		0.83	0.14		0.34	0.88	
Control Delay	67.7	34.9		25.7	50.6		55.5	18.2		71.7	65.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	67.7	34.9		25.7	50.6		55.5	18.2		71.7	65.2	
LOS	E	C		C	D		E	B		E	E	
Approach Delay		46.1			48.8			51.8			65.7	
Approach LOS		D			D			D			E	
Queue Length 50th (m)	23.6	28.8		14.8	108.6		76.9	11.0		6.8	67.9	
Queue Length 95th (m)	#59.0	40.0		25.8	125.2		90.9	23.6		16.9	#134.7	
Internal Link Dist (m)		572.1			692.6			218.7			259.5	
Turn Bay Length (m)	150.0			150.0			200.0			150.0		
Base Capacity (vph)	173	1076		386	1526		1169	714		81	373	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.86	0.27		0.25	0.81		0.76	0.14		0.33	0.88	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 51.3

Intersection LOS: D

Intersection Capacity Utilization 95.4%

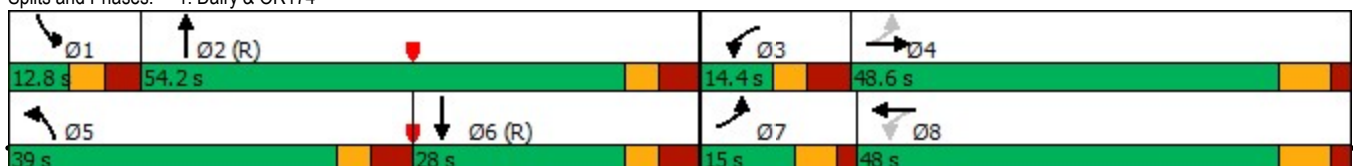
ICU Level of Service F

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: Dairy & OR174























Parsons

Synchro 9 - Report

# Lanes, Volumes, Timings

## 1: Dairy & OR174

04/17/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	163	1143	10	72	440	23	479	79	96	27	105	174
Future Volume (vph)	163	1143	10	72	440	23	479	79	96	27	105	174
Satd. Flow (prot)	1695	3387	0	1695	4837	0	4780	1638	0	1695	1617	0
Flt Permitted	0.426			0.098			0.950			0.950		
Satd. Flow (perm)	760	3387	0	175	4837	0	4780	1638	0	1695	1617	0
Satd. Flow (RTOR)		1			7			43			53	
Lane Group Flow (vph)	163	1153	0	72	463	0	479	175	0	27	279	0
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	25.2		12.5	25.2		12.2	25.4		11.9	25.4	
Total Split (s)	19.0	65.6		15.0	61.6		24.0	36.0		13.4	25.4	
Total Split (%)	14.6%	50.5%		11.5%	47.4%		18.5%	27.7%		10.3%	19.5%	
Yellow Time (s)	4.0	5.1		3.3	5.1		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.0	2.1		4.2	2.1		3.9	4.1		3.6	4.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	7.2		7.5	7.2		7.2	7.4		6.9	7.4	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)	62.5	51.6		52.9	46.0		17.2	43.2		6.9	27.4	
Actuated g/C Ratio	0.48	0.40		0.41	0.35		0.13	0.33		0.05	0.21	
v/c Ratio	0.36	0.86		0.46	0.27		0.76	0.31		0.30	0.73	
Control Delay	18.9	42.7		26.2	29.0		62.8	30.5		68.1	52.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	18.9	42.7		26.2	29.0		62.8	30.5		68.1	52.9	
LOS	B	D		C	C		E	C		E	D	
Approach Delay		39.8			28.6			54.2			54.3	
Approach LOS		D			C			D			D	
Queue Length 50th (m)	21.2	139.3		9.1	29.1		42.1	27.5		6.8	57.6	
Queue Length 95th (m)	30.2	154.0		15.3	35.2		55.1	51.6		16.8	#120.0	
Internal Link Dist (m)		572.1			692.6			218.7			259.5	
Turn Bay Length (m)	150.0			150.0			200.0			150.0		
Base Capacity (vph)	462	1522		159	2028		650	572		92	383	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.35	0.76		0.45	0.23		0.74	0.31		0.29	0.73	
Intersection Summary												
Cycle Length: 130												
Actuated Cycle Length: 130												
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green												
Natural Cycle: 90												
Control Type: Actuated-Coordinated												

# Lanes, Volumes, Timings

## 1: Dairy & OR174

04/17/2019

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 42.6

Intersection LOS: D

Intersection Capacity Utilization 89.0%

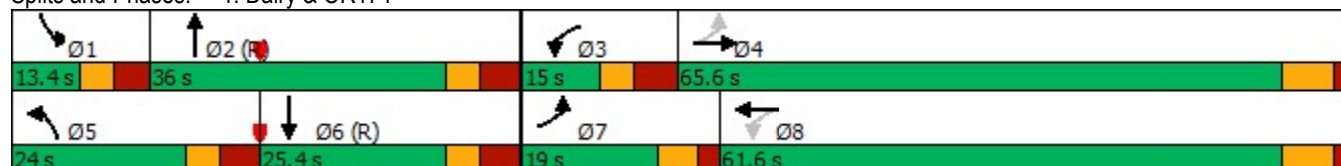
ICU Level of Service E

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.










Splits and Phases: 1: Dairy & OR174



Total Future 2029 Horizon Year

















## Existing AM

## 2: Dairy &amp; Inlet Private











						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	4	137	230	9	199	79
Future Volume (vph)	4	137	230	9	199	79
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	4	137	230	9	199	79
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total (vph)	141	239	278			
Volume Left (vph)	0	230	199			
Volume Right (vph)	137	0	79			
Hadj (s)	-0.55	0.23	0.01			
Departure Headway (s)	4.4	5.0	4.8			
Degree Utilization, x	0.17	0.33	0.37			
Capacity (veh/h)	755	678	705			
Control Delay (s)	8.3	10.5	10.7			
Approach Delay (s)	8.3	10.5	10.7			
Approach LOS	A	B	B			
Intersection Summary						
Delay			10.1			
Level of Service			B			
Intersection Capacity Utilization			49.8%	ICU Level of Service	A	
Analysis Period (min)			15			

## Existing AM

















## 3: Jeanne D'Arc &amp; Trim

																				
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR								
Lane Configurations																				
Sign Control		Stop			Stop			Stop			Stop									
Traffic Volume (vph)	9	141	0	0	208	0	0	0	0	0	10	3								
Future Volume (vph)	9	141	0	0	208	0	0	0	0	0	10	3								
Peak Hour 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								
Hourly flow rate (vph)	9	141	0	0	208	0	0	0	0	0	10	3								
Direction, Lane #	EB 1	WB 1	NB 1	SB 1																
Volume Total (vph)	150	208	0	13																
Volume Left (vph)	9	0	0	0																
Volume Right (vph)	0	0	0	3																
Hadj (s)	0.05	0.03	0.00	-0.10																
Departure Headway (s)	4.2	4.1	4.7	4.6																
Degree Utilization, x	0.17	0.24	0.00	0.02																
Capacity (veh/h)	848	865	723	721																
Control Delay (s)	8.1	8.4	7.7	7.6																
Approach Delay (s)	8.1	8.4	0.0	7.6																
Approach LOS	A	A	A	A																
Intersection Summary																				
Delay			8.2																	
Level of Service			A																	
Intersection Capacity Utilization			25.6%	ICU Level of Service	A															
Analysis Period (min)			15																	





















## 2: Dairy & Inlet Private

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	7	229	109	3	199	79
Future Volume (vph)	7	229	109	3	199	79
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	7	229	109	3	199	79
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total (vph)	236	112	278			
Volume Left (vph)	0	109	199			
Volume Right (vph)	229	0	79			
Hadj (s)	-0.55	0.23	0.01			
Departure Headway (s)	4.2	5.1	4.7			
Degree Utilization, x	0.28	0.16	0.36			
Capacity (veh/h)	799	656	725			
Control Delay (s)	8.8	9.1	10.4			
Approach Delay (s)	8.8	9.1	10.4			
Approach LOS	A	A	B			
Intersection Summary						
Delay			9.5			
Level of Service			A			
Intersection Capacity Utilization			48.6%	ICU Level of Service	A	
Analysis Period (min)			15			

### 3: Jeanne D'Arc & Trim

																				
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR								
Lane Configurations																				
Sign Control		Stop			Stop			Stop			Stop									
Traffic Volume (vph)	8	236	0	0	141	0	0	0	0	1	12	5								
Future Volume (vph)	8	236	0	0	141	0	0	0	0	1	12	5								
Peak Hour 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								
Hourly flow rate (vph)	8	236	0	0	141	0	0	0	0	1	12	5								
Direction, Lane #	EB 1	WB 1	NB 1	SB 1																
Volume Total (vph)	244	141	0	18																
Volume Left (vph)	8	0	0	1																
Volume Right (vph)	0	0	0	5																
Hadj (s)	0.04	0.03	0.00	-0.12																
Departure Headway (s)	4.1	4.2	4.8	4.6																
Degree Utilization, x	0.28	0.16	0.00	0.02																
Capacity (veh/h)	861	840	700	711																
Control Delay (s)	8.7	8.0	7.8	7.7																
Approach Delay (s)	8.7	8.0	0.0	7.7																
Approach LOS	A	A	A	A																
Intersection Summary																				
Delay			8.4																	
Level of Service			A																	
Intersection Capacity Utilization			29.9%	ICU Level of Service		A														
Analysis Period (min)			15																	

Existing AM  
1: Dairy & OR174

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	196	289	10	100	1280	17	990	61	47	30	113	251
Future Volume (vph)	196	289	10	100	1280	17	990	61	47	30	113	251
Satd. Flow (prot)	1695	3373	0	1695	4861	0	4780	1668	0	1695	1601	0
Flt Permitted	0.103			0.569			0.950			0.950		
Satd. Flow (perm)	184	3373	0	1015	4861	0	4780	1668	0	1695	1601	0
Satd. Flow (RTOR)		3			1			34			77	
Lane Group Flow (vph)	196	299	0	100	1297	0	990	108	0	30	364	0
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	25.2		12.5	25.2		12.2	25.4		11.9	25.4	
Total Split (s)	18.0	46.2		14.2	42.4		35.8	56.0		13.6	33.8	
Total Split (%)	13.8%	35.5%		10.9%	32.6%		27.5%	43.1%		10.5%	26.0%	
Yellow Time (s)	4.0	5.1		3.3	5.1		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.0	2.1		4.2	2.1		3.9	4.1		3.6	4.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	7.2		7.5	7.2		7.2	7.4		6.9	7.4	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)	52.2	39.0		41.6	35.2		28.4	54.0		6.4	26.6	
Actuated g/C Ratio	0.40	0.30		0.32	0.27		0.22	0.42		0.05	0.20	
v/c Ratio	0.92	0.29		0.28	0.99		0.95	0.15		0.36	0.94	
Control Delay	75.9	35.6		27.7	68.7		67.8	18.4		71.8	72.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	75.9	35.6		27.7	68.7		67.8	18.4		71.8	72.9	
LOS	E	D		C	E		E	B		E	E	
Approach Delay		51.5			65.7			62.9			72.8	
Approach LOS		D			E			E			E	
Queue Length 50th (m)	34.7	30.6		16.0	121.4		89.1	12.3		7.6	75.3	
Queue Length 95th (m)	#79.9	43.0		28.0	#154.2		#115.1	25.2		17.8	#134.4	
Internal Link Dist (m)		572.1			692.6			218.7			259.5	
Turn Bay Length (m)	150.0			150.0			200.0			150.0		
Base Capacity (vph)	213	1014		359	1316		1051	712		87	388	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.92	0.29		0.28	0.99		0.94	0.15		0.34	0.94	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 63.6

Intersection LOS: E

Intersection Capacity Utilization 103.6%

ICU Level of Service G

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.





















Splits and Phases: 1: Dairy & OR174



Parsons

Synchro 9 - Report

# 1: Dairy & OR174

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	191	1196	10	75	460	24	538	83	101	31	118	227
Future Volume (vph)	191	1196	10	75	460	24	538	83	101	31	118	227
Satd. Flow (prot)	1695	3387	0	1695	4837	0	4780	1638	0	1695	1608	0
Flt Permitted	0.394			0.088			0.950			0.950		
Satd. Flow (perm)	703	3387	0	157	4837	0	4780	1638	0	1695	1608	0
Satd. Flow (RTOR)		1			7			45			64	
Lane Group Flow (vph)	191	1206	0	75	484	0	538	184	0	31	345	0
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.0	25.2		12.5	25.2		12.2	25.4		11.9	25.4	
Total Split (s)	26.2	62.2		15.0	51.0		24.0	39.0		13.8	28.8	
Total Split (%)	20.2%	47.8%		11.5%	39.2%		18.5%	30.0%		10.6%	22.2%	
Yellow Time (s)	4.0	5.1		3.3	5.1		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.0	2.1		4.2	2.1		3.9	4.1		3.6	4.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	7.2		7.5	7.2		7.2	7.4		6.9	7.4	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Act Effct Green (s)	63.6	51.5		51.0	44.0		17.5	43.4		6.7	27.2	
Actuated g/C Ratio	0.49	0.40		0.39	0.34		0.13	0.33		0.05	0.21	
v/c Ratio	0.43	0.90		0.51	0.29		0.84	0.32		0.36	0.89	
Control Delay	20.3	46.4		31.9	31.0		67.5	30.0		70.9	67.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	20.3	46.4		31.9	31.0		67.5	30.0		70.9	67.4	
LOS	C	D		C	C		E	C		E	E	
Approach Delay		42.9			31.1			57.9			67.7	
Approach LOS		D			C			E			E	
Queue Length 50th (m)	25.0	147.7		9.4	30.8		47.6	29.5		7.8	~84.5	
Queue Length 95th (m)	37.4	173.2		19.1	41.0		#67.1	52.1		18.3	#144.0	
Internal Link Dist (m)		572.1			692.6			218.7			259.5	
Turn Bay Length (m)	150.0			150.0			200.0			150.0		
Base Capacity (vph)	504	1433		150	1759		646	577		91	387	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.38	0.84		0.50	0.28		0.83	0.32		0.34	0.89	

## Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 47.3

Intersection LOS: D

Intersection Capacity Utilization 96.1%

ICU Level of Service F

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: 1: Dairy & OR174

