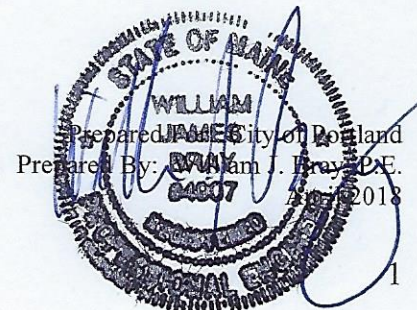


TRAFFIC IMPACT STUDY

FOR

PROPOSED

**City of Portland
Department Headquarters**



INTRODUCTION

The City of Portland is proposing the final phase of renovations to the existing City owned buildings located at #212 and #250 Canco Road. Staff from multiple City departments currently operate from the dual building complex and, with completion of the final phase of renovations, all Staff from Public Works, Parks, Recreation and Public Facilities and Building Trades will operate from the Canco Road campus.

Access to the proposed City Department facilities is currently provided from three (3) two-way driveway entrances, with two driveways serving 250 Canco Road and a single driveway entrance providing ingress and egress to 212 Canco Road. Site circulation will be modified with completion of the last phase of renovation converting the two driveways serving 250 Canco Road to a one-way circulation pattern to accommodate more safely interior circulation through the property.

The purpose of this study is to examine existing traffic conditions in the general vicinity of the City Department complex, estimate the total number of site trips generated by the project and, make a determination as to whether the existing transportation system can safely accommodate the added traffic demand generated by the project.

EXISTING CONDITIONS

Existing Design Hour Traffic: Manual turning movement counts were conducted at the Canco Road/Read Street intersection on Thursday, March 1, 2018 to establish existing travel patterns for Canco Road. All traffic entering and exiting the intersection were recorded in 15-minute intervals between 7:00 and 9:00 AM and, again, between 3:00 and 6:00 PM (A copy of the traffic data is attached as an appendix to the report). From a summary of the data, it was determined that the “*morning*” peak hour occurs between 7:15 and 8:15 AM at the study intersection and the “*evening*” peak hour falls between 4:30 and 5:30 PM.

Traffic data collected during the month of March requires an adjustment to reflect “*peak*” travel conditions experienced during the summer months of July and August. MaineDOT provides factors for adjusting traffic data collected during other periods of time. MaineDOT utilizes highway classifications of I, II, or III for all State and Local roadways. Group I roadways are defined as urban roadways or those roads that typically see commuter traffic and experience little fluctuation from week to week throughout the year. Group II roadways or arterial roads are those that see a combination of commuter and recreational traffic and; therefore, experience moderate fluctuations during the year. Group III roads or recreational roadways are typically used for recreational purposes and experience significant seasonal fluctuations. MaineDOT has designated both Canco Road and Read Street Group 1 roadways, which requires the collected traffic data to be adjusted by a factor of approximately 1.13. Figure 1 illustratively presents the estimated 2018 Design Hour Traffic volumes for the study intersection.

Roadway Safety Conditions: MaineDOT’s Accident Records Section provided the latest three-year (2014 through 2016) crash data for the length of Canco Road between Read Street and Washington Avenue, approximately 0.91 miles in length. MaineDOT’s report is presented as follows:

2014 -2016 Traffic Accident Summary

<u>Location</u>	<u>Total Crashes</u>	<u>Critical Rate Factor</u>
1. Canco Road (S) and Read Street	8	2.67
2. Canco Road (N) and Read Street	8	2.71
3. Canco Road @ Washington Avenue	18	0.75
4. Canco Road btw. Washington Avenue and Read Street	6	0.64

The MaineDOT considers any roadway intersection or segment a high crash location if both of the following criteria are met:

- **8 or more accidents**
- **A Critical Rate Factor greater than 1.00**

MaineDOT considers both off-setting approaches of Canco Road at Read Street separate intersections and, as such, both are evaluated separately. MaineDOT's most recent crash report shows both intersections meet their high crash criteria with a total of 8 crashes and critical rate factors in excess of 2.50.

Detailed vehicle collision diagrams were prepared for both intersections and are attached as an appendix to the report. Six (6) of the 16 total reported vehicle crashes involved vehicles on the north leg of Canco Road entering the intersection and colliding with a through vehicle on either approach of Read Street. Five (5) additional accidents, defined as "rear-end" crashes occurred on either approach of Read Street and the north leg of Canco Road. The remaining five vehicle crash incidents more randomly happened within the intersections for varying reasons. The crash reports do show a high number (9 of the 16 crashes) of the vehicle crashes occurred during either of the two peak commuter times.

SITE TRAFFIC

Site Trip Generation: Trip generation and projected travel patterns for the multi-department facility were developed based upon existing trends measured at the Canco Road complex. Presently, based upon information provided by City staff, a total of 115 employees are assigned and operate from the two-building site. A total of 208 employees will ultimately be assigned to the "new" City facility with completion of the final phase of improvements.

The trip estimation and travel pattern projection process entailed collecting peak site trip information at each of the site three driveway entrances during a typical workday in late February 2018 (February 22, 2018). All site generated traffic was recorded entering and exiting the facility directionally between 7:00 to 9:00 AM and, again, between 3:00 and 6:00 PM. A copy of the traffic data is attached as an appendix to the report. From a summary of the data, it was determined that the morning peak hour occurs between 7:15 and 8:15 AM and the afternoon peak hour falls between 3:15 and 4:15 PM. A total of **44** vehicle trips are generated by the existing site in the morning peak hour and **38** trips in the afternoon peak hour. The next step in the process was to determine the number of existing employees presently operating at the site during the established peak hour times on a Thursday during the winter months. Existing staffing information provided by the City (A copy of the information is attached as an appendix to the report) shows that 95 of the existing 115 staff assigned to the City complex are on-site during the morning peak hour. The number of employees on-site during the afternoon peak hour diminishes somewhat when compared to the morning trends because of seasonal shift assignments, flex schedules, etc. This report has projected that a total of 60 employees are on-site in the afternoon peak hour time period.

Peak hour trip rates were developed for the existing site for both peak time periods based upon the mathematical division of recorded site generated trips by the number of employees. The estimated trip rate for the morning peak hour is 0.46 trip per employee (44 trips ÷ 95 employees = 0.46 trips per employee) and the afternoon peak hour trip rate is slightly greater at 0.63 trips per employee (38 trips ÷ 60 employees = 0.63 trips per employee).

The third and final step in estimating trip generation for the completed multi-department complex requires a determination of the number of employees likely on-site during each of the daily peak hour times. City staff have projected a total of 208 employees will be assigned to the "new" fully renovated complex during a typical summer workday. Traffic Solutions has determined that a total of 203 of the 208 total employees are on-site in the morning peak hour and a total of 154 employees in the afternoon peak hour. Accordingly, the total number of trips

generated in the morning peak hour is estimated at **93** (203 employees x 0.46 trips/employee = 93 trips) and a total of **97** trips (154 employees x 0.63 trips/employee = 97 trips) are forecast for the afternoon peak hour.

Site Trip Distribution: Existing peak traffic data gathered at the Canco Road site suggests the appropriateness of a 50%/50% directional distribution pattern for the morning peak hour and a 30% entering/70% exiting pattern for the afternoon peak hour. In the morning peak hour approximately 47 trips will enter the site and 46 trips will exit. In the afternoon peak hour 29 of the 97 site generated trips will enter the site and the remaining 68 trips will exit the site.

Vehicle Trip Composition: This report has assumed all vehicle trips generated by the Canco Road site are “primary” or “new” vehicle trips to the area street network.

Vehicle Trip Assignment: Vehicle trips estimated to be generated by the proposed fully renovated and staffed Canco Road complex were directionally assigned to the driveway entrances based upon existing staff travel patterns measured during both peak periods. The actual distribution patterns applied include:

AM Peak Hour

Entering Trips:

Left = 75%

Right = 25%

Exiting Trips:

Left = 20%

Right = 80%

PM Peak Hour

Entering Trips:

Left = 60%

Right = 40%

Exiting Trips:

Left = 30%

Right = 70%

Figure 2 presents the Site Traffic assignments for both peak hour time periods at the site driveway entrances to the Canco Road site.

The projected trips were further assigned to the study intersection at Canco Road and Read Street based upon existing vehicles splits recorded at the intersection and the Consultant’s knowledge of travel patterns in the City of Portland. Figure 3 presents the assignment of site trips through the study intersection.

2018 Pre- and Post-Development Traffic

Traffic Solutions has prepared the traffic assessment report for the proposed Canco Road multi- department complex assuming the site will be fully completed and occupied in 2018.

Other Development Traffic: Traffic generated by projects that have been approved by the local Planning Board and/or the Maine Department of Transportation, yet are not open, must be included in the estimate of pre-development traffic. The City’s Development Review Services Manager has noted that there are no pending projects in the area of the proposed Canco Road site that need to be included as Other Development traffic.

2018 Pre-Development Traffic: 2018 design hour traffic volumes for the study intersection, highlighted on Figure 1, represent the 2018 Pre-Development traffic conditions for the study intersection.

2018 Post-Development Traffic: 2018 Post-Development traffic forecasts were prepared for the study intersection by simply adding the estimated site generated trips highlighted on Figure 3 with the 2018 Pre-Development traffic depicted on Figure 1. Figure 4 presents the estimated 2018 Post-Development Traffic forecast for the study intersection.

MOBILITY ANALYSIS

Capacity analyses of both 2018 Pre- and Post-Development traffic conditions were performed for the study intersection utilizing the Synchro and SimTraffic computer models. Level of Service rankings are similar to the academic grading system, where an “A” is very good with little delay and “F” represents very poor conditions. The following table summarizes the relationship between delay and Level of Service for an unsignalized intersection:

Level of Service Criteria for Unsignalized Intersections

<u>Level of Service</u>	<u>Total Control Delay (sec/veh)</u>
A	Up to 10.0
B	10.1 to 15.0
C	15.1 to 25.0
D	25.1 to 35.0
E	35.1 to 50.0
F	Greater than 50.0

The results of the capacity analyses are presented in the following table:

Level of Service Summary
2018 Pre- and Post-Development Conditions

<u>Intersection/Approach</u>	<u>2018 Pre-Development</u>				<u>2018 Post-Development</u>			
	<u>AM Peak Hour</u>		<u>PM Peak Hour</u>		<u>AM Peak Hour</u>		<u>PM Peak Hour</u>	
	<u>Delay (sec.)</u>	<u>LOS</u>	<u>Delay (sec.)</u>	<u>LOS</u>	<u>Delay (sec.)</u>	<u>LOS</u>	<u>Delay (sec.)</u>	<u>LOS</u>
Read Street @ Canco Road (N)								
- Read Street EB	3 sec.	A	3 sec.	A	4 sec.	A	4 sec.	A
- Read Street WB	1 sec.	A	1 sec.	A	1 sec.	A	1 sec.	A
- Canco Road SB	79 sec.	F	24 sec.	C	100+ sec.	F	36 sec.	E
- Overall Intersection	22 sec.	C	6 sec.	A	31 sec.	D	9 sec.	A
Read Street @ Canco Road (S)								
- Read Street EB	1 sec.	A	1 sec.	A	1 sec.	A	1 sec.	A
- Read Street WB	2 sec.	A	1 sec.	A	3 sec.	A	2 sec.	A
- Canco Road NB	19 sec.	C	16 sec.	C	26 sec.	D	22 sec.	C
- Overall Intersection	3 sec.	A	3 sec.	A	4 sec.	A	4 sec.	A

The north Canco Road intersection with Read Street presently operates with a moderate to high level of vehicle delay on the stopped controlled Canco Road approach during the morning peak hour. The level of delay can be expected to increase with the added site trips generated by the proposed expanded site in the morning peak hour. Traffic operations projected for the PM peak hour under both 2018 pre- and post-development travel conditions show the intersection operating at acceptable levels of service under both travel conditions.

The south intersection of Canco Road at Read Street operates at acceptable levels of service on each of the three intersection approaches under both 2018 pre- and post-development conditions.

VEHICLE SIGHT DISTANCE

The City's Standards, which are consistent with the Maine Department of Transportation's Highway Entrance and Driveway Rules, require the following sight distances:

Sight Distance Standards

Speed Limit	Sight Distance
25 mph	200 feet
30	250
35	305
40	360
45	425
50	495
55	570

Canco Road is currently posted at 35mph, which requires an unobstructed sightline of 305 feet. The following directional sight distances were measured at the three site driveway entrances:

Northerly Driveway Building #250

Left = 375 feet
Right = 400 plus feet

Southerly Driveway Building #250

Left = 400 plus feet
Right = 500 plus feet

Driveway Building #212

Left = 500 plus feet
Right = 500 plus feet

The recorded sightline measurements exceed by a considerable distance the minimum design standard for a posted speed limit of 35mph.

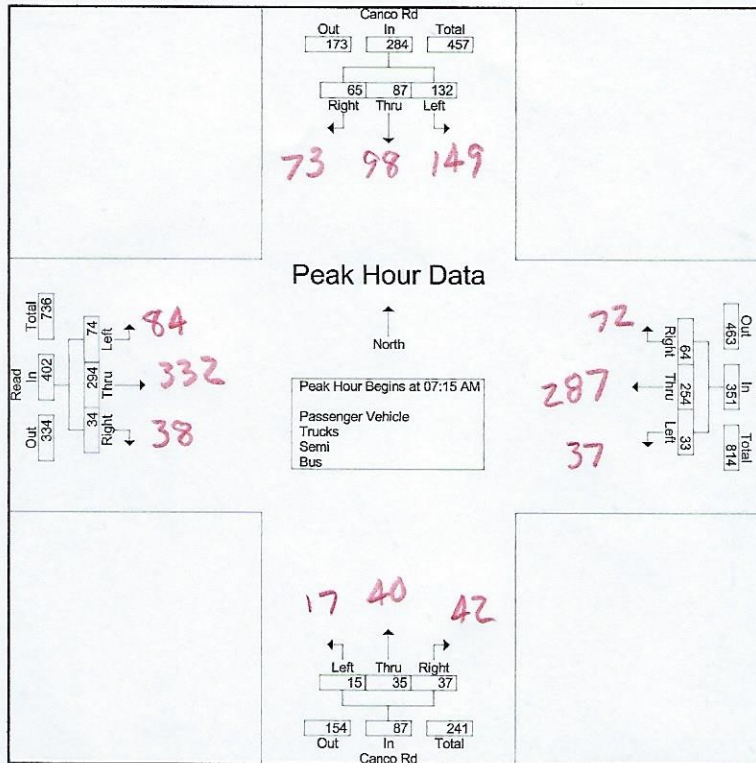
CONCLUSIONS/RECOMMENDATIONS

- The proposed City Department Complex on Canco Road, when fully staffed, is forecast to generate **93** vehicle trips in the "*morning*" peak hour and a slightly higher volume of **97** trips in the "*afternoon*" peak hour.
- MaineDOT's most recent three-year (2014 through 2016) roadway safety data for Canco Road shows that both "*off-set*" approaches of Canco Road at Read Street, evaluated by MaineDOT as separate intersections, meet their criteria as high crash locations. Both intersections had a total of 8 reported accidents and a critical rate factor in excess of 2.50 during the most recent three-year reporting period.
- Detailed vehicle collision diagrams prepared for both intersections show two clear traffic crash patterns at the intersection(s). Six (6) of the 16 total reported vehicle crashes involved vehicles on the north leg of Canco Road entering the intersection and colliding with a through vehicle on either approach of Read Street. The second definable crash pattern with a total of five (5) additional accidents were "*rear-end*" crashes occurring on either approach of Read Street and the north leg of Canco Road.
- The City may want to consider, as a long-term improvement, aligning both Canco Road approaches forming a more traditional "*four-way*" intersection. This improvement strategy would greatly reduce vehicle delay at the intersection, most notably on the north approach of Canco Road and should have a profound impact on reducing the higher than expected accident rate reported for the intersection.

- The mobility analysis, which considered each Canco Road approach at Read Street separate intersections was conducted for both 2018 Pre- and Post-Development travel conditions. The results of the detailed analysis show that both intersections are expected to operate overall at acceptable levels of service under both 2018 travel forecasts. Motorists entering the intersection from the north approach of Canco Road will experience extended vehicle delay in the morning peak hour due to the high volumes of traffic on the approach. The level of delay is marginally exasperated with the added traffic generated by the proposed City Department site. Traffic operations projected for the Canco Road south intersection with Read Street meet level of service D or better conditions under both projected traffic loadings.
- Sightline measurements recorded at the centerline of each of the three driveway entrances to the dual building complex meet and exceed the required standard for a posted speed limit of 35mph, the current posted speed limit on Canco Road. Sightline measurements in excess of 375-feet were determined directionally at each driveway entrance.

Portland: Canco & Read
 Thursday March 1, 2018
 Clear
 Count By: Dawn-Marie Fahey

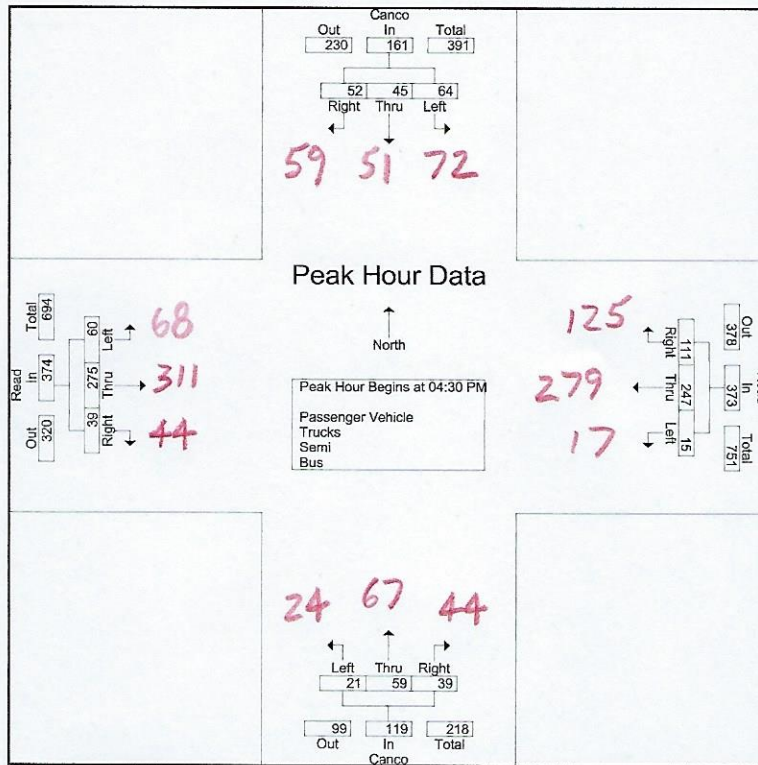
File Name : Portland Canco & Read AM 030118
 Site Code : 00301181
 Start Date : 3/1/2018
 Page No : 6



Conversion Factor = $0.97 \div 0.86 = \underline{1.13}$

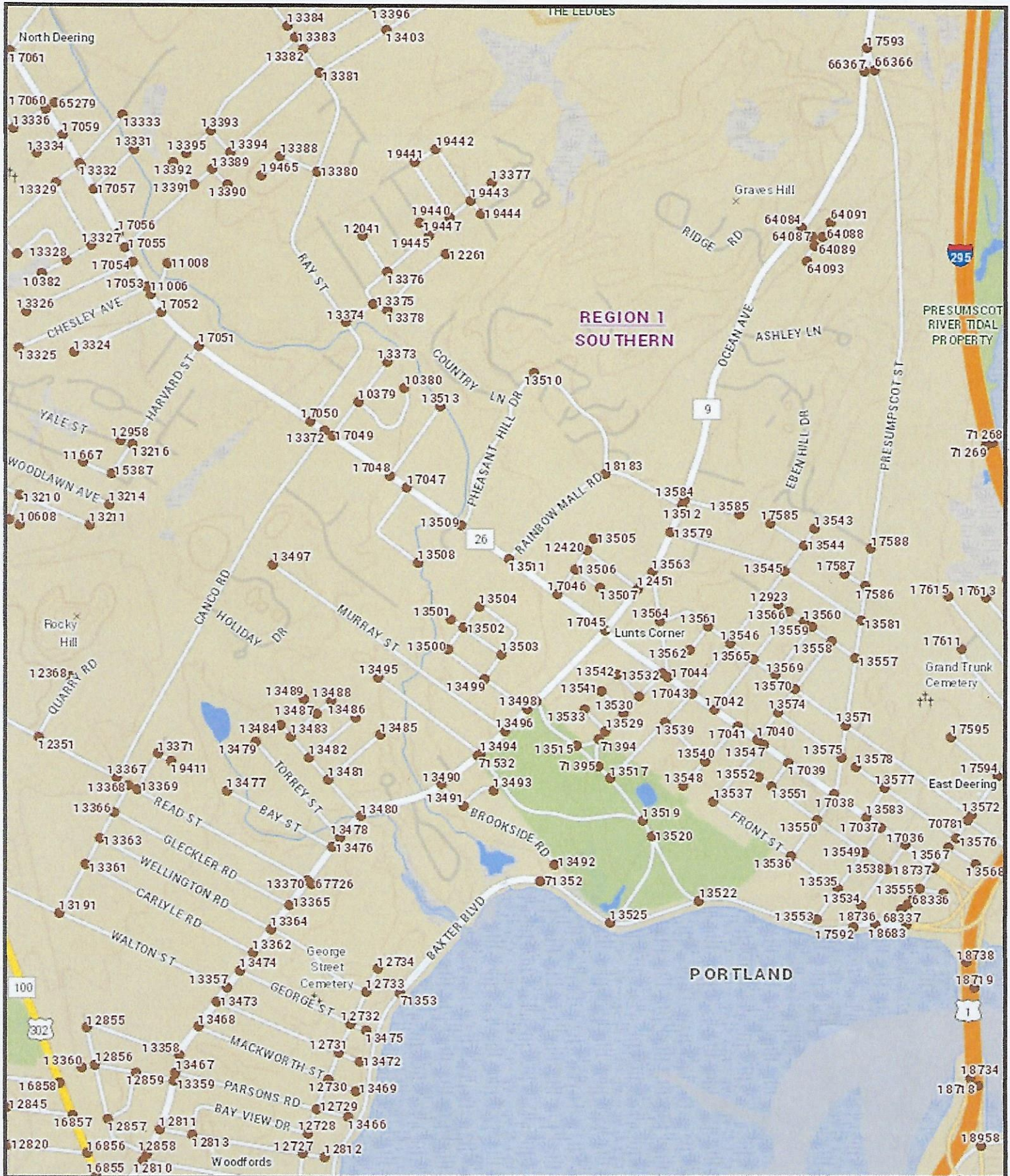
Portland: Canco & Read
 Thursday March 1, 2018
 Clear
 Count By: Dawn-Marie Fahey

File Name : portland canco & read pm 030118
 Site Code : 00301182
 Start Date : 3/1/2018
 Page No : 6




Conversion Factor = $0.97 \div 0.86 = 1.13$

DEFAULT TITLE FROM MAP DOCUMENT



The Maine Department of Transportation provides this publication for information only. Reliance upon this information is at user risk. It is subject to revision and may be incomplete depending upon changing conditions. The Department assumes no liability if injuries or damages result from this information. This map is not intended to support emergency dispatch.

0.25
 Miles
 1 inch = 0.28 miles

Date: 1/31/2018
 Time: 9:03:01 AM

Crash Summary Report

Report Selections and Input Parameters

REPORT SELECTIONS

Crash Summary I Section Detail Crash Summary II 1320 Public 1320 Private 1320 Summary

REPORT DESCRIPTION

Canco Rd in Portland

REPORT PARAMETERS

Year 2014, Start Month 1 through Year 2016 End Month: 12

Route: 0560107	Start Node: 13191 End Node: 13368	Start Offset: 0 End Offset: 0	<input type="checkbox"/> Exclude First Node <input type="checkbox"/> Exclude Last Node
Route: 0560106	Start Node: 13367 End Node: 13372	Start Offset: 0 End Offset: 0	<input type="checkbox"/> Exclude First Node <input type="checkbox"/> Exclude Last Node

Maine Department Of Transportation - Traffic Engineering, Crash Records Section

Crash Summary I

Node	Route - MP	Node Description	U/R	Nodes						Percent Annual M Injury	Annual M Ent-Veh	Crash Rate	Critical Rate	CRF
				Total Crashes	K	A	B	C	PD					
13191	0560107 - 0	Int of CANCO RD WALTON ST	2	0	0	0	0	0	0.0	1.222	0.00	0.51	0.00	
										Statewide Crash Rate:	0.14			
13361	0560107 - 0.08	Int of CANCO RD CARLYLE RD	2	0	0	0	0	0	0.0	0.581	0.00	0.58	0.00	
										Statewide Crash Rate:	0.14			
13363	0560107 - 0.13	Int of CANCO RD WELLINGTON RD	2	0	0	0	0	0	0.0	0.629	0.00	0.58	0.00	
										Statewide Crash Rate:	0.14			
13366	0560107 - 0.18	Int of CANCO RD GLECKLER RD	2	0	0	0	0	0	0.0	0.719	0.00	0.56	0.00	
										Statewide Crash Rate:	0.14			
13368	0560107 - 0.24	Int of CANCO RD READ ST	2	8	0	0	1	1	5	28.6	2.301	1.16	0.43	2.67
										Statewide Crash Rate:	0.14			
13367	0560106 - 0	Int of CANCO RD READ ST	2	8	0	0	0	5	3	62.5	2.258	1.18	0.44	2.71
										Statewide Crash Rate:	0.14			
P13372	0560106 - 0.67	Int of CANCO RD WASHINGTON AV	9	18	0	0	1	7	10	44.4	6.912	0.87	1.16	0.00
										Statewide Crash Rate:	0.71			
Study Years: 3.00				NODE TOTALS:										
				34	0	0	2	13	18	44.1	14.622	0.78	0.65	1.20

Maine Department Of Transportation - Traffic Engineering, Crash Records Section

Crash Summary I

Start Node	End Node	Element	Offset Begin - End	Route - MP	Section Length	U/R	Total Crashes	Sections				Injury Crashes A B C PD	Percent Injury	Annual HMVM	Crash Rate	Critical Rate	CRF	
								K										
13191	13361	187860	0 - 0.08	0560107 - 0	0.08	2	1	0	0	0	0	1	0.0	0.00040	826.01	1471.58	0.00	
Int of CANCO RD WALTON ST				RD INV 05 60107	Statewide Crash Rate: 401.36													
13361	13363	188080	0 - 0.05	0560107 - 0.08	0.05	2	0	0	0	0	0	0	0.0	0.00027	0.00	1599.82	0.00	
Int of CANCO RD CARLYLE RD				RD INV 05 60107	Statewide Crash Rate: 401.36													
13363	13366	188084	0 - 0.05	0560107 - 0.13	0.05	2	0	0	0	0	0	0	0.0	0.00029	0.00	1571.99	0.00	
Int of CANCO RD WELLINGTON RD				RD INV 05 60107	Statewide Crash Rate: 401.36													
13366	13368	188088	0 - 0.06	0560107 - 0.18	0.06	2	0	0	0	0	0	0	0.0	0.00043	0.00	1448.87	0.00	
Int of CANCO RD GLECKLER RD				RD INV 05 60107	Statewide Crash Rate: 401.36													
13367	13372	3106256	0 - 0.67	0560106 - 0	0.67	2	6	0	0	2	2	2	66.7	0.00861	232.34	361.66	0.00	
Int of CANCO RD READ ST				RD INV 05 60106	Statewide Crash Rate: 171.25													
Study Years: 3.00					Section Totals:		0.91	7	0	0	2	2	3	57.1	0.01001	233.20	398.78	0.58
					Grand Totals:		0.91	41	0	0	4	15	21	46.3	0.01001	1365.86	553.90	2.47

COLLISION DIAGRAM

SHEET 1 OF 2

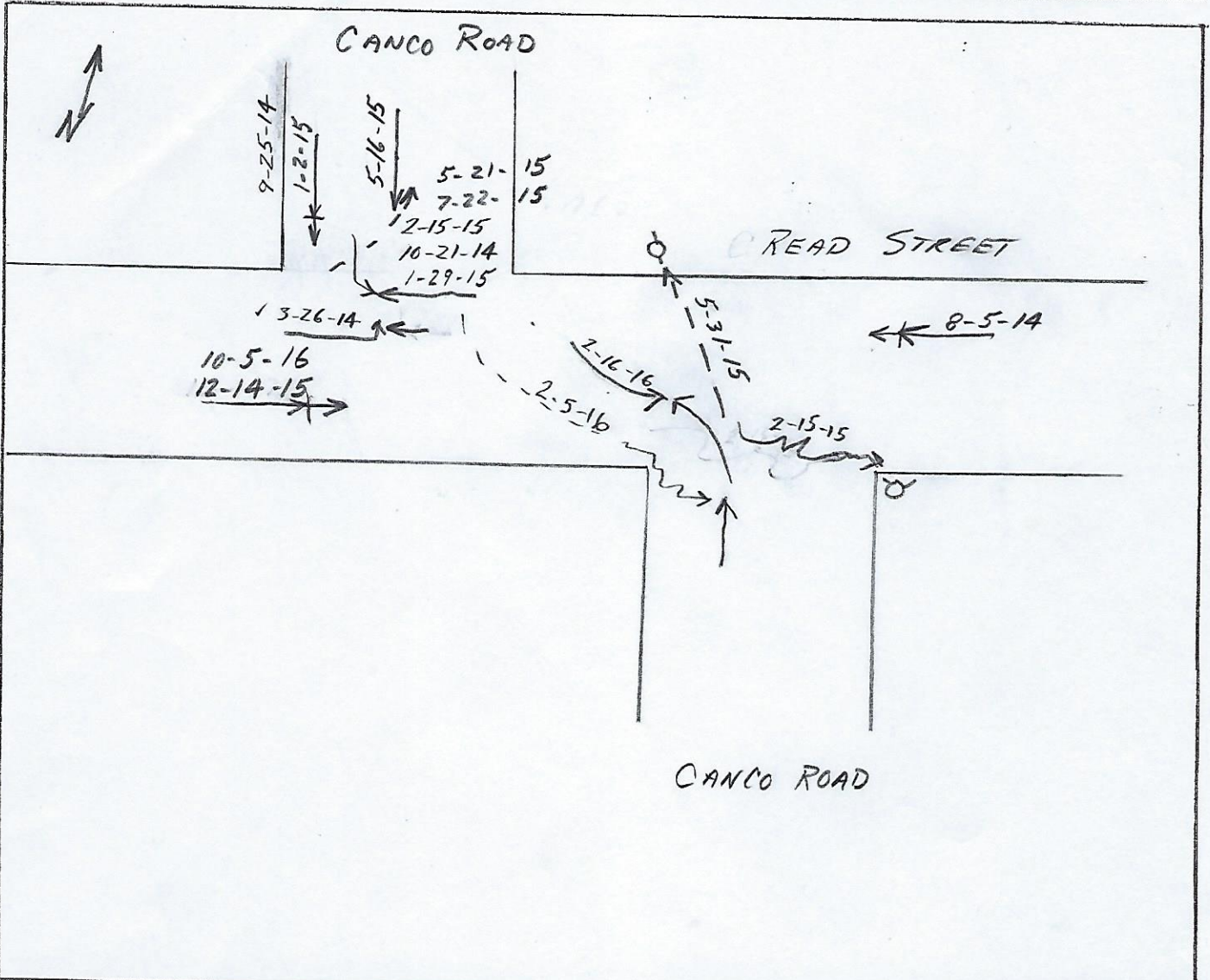
LOCATION Read Street @ Canco Road

TOWN Portland

NODE NO(S) 13367 & 13368

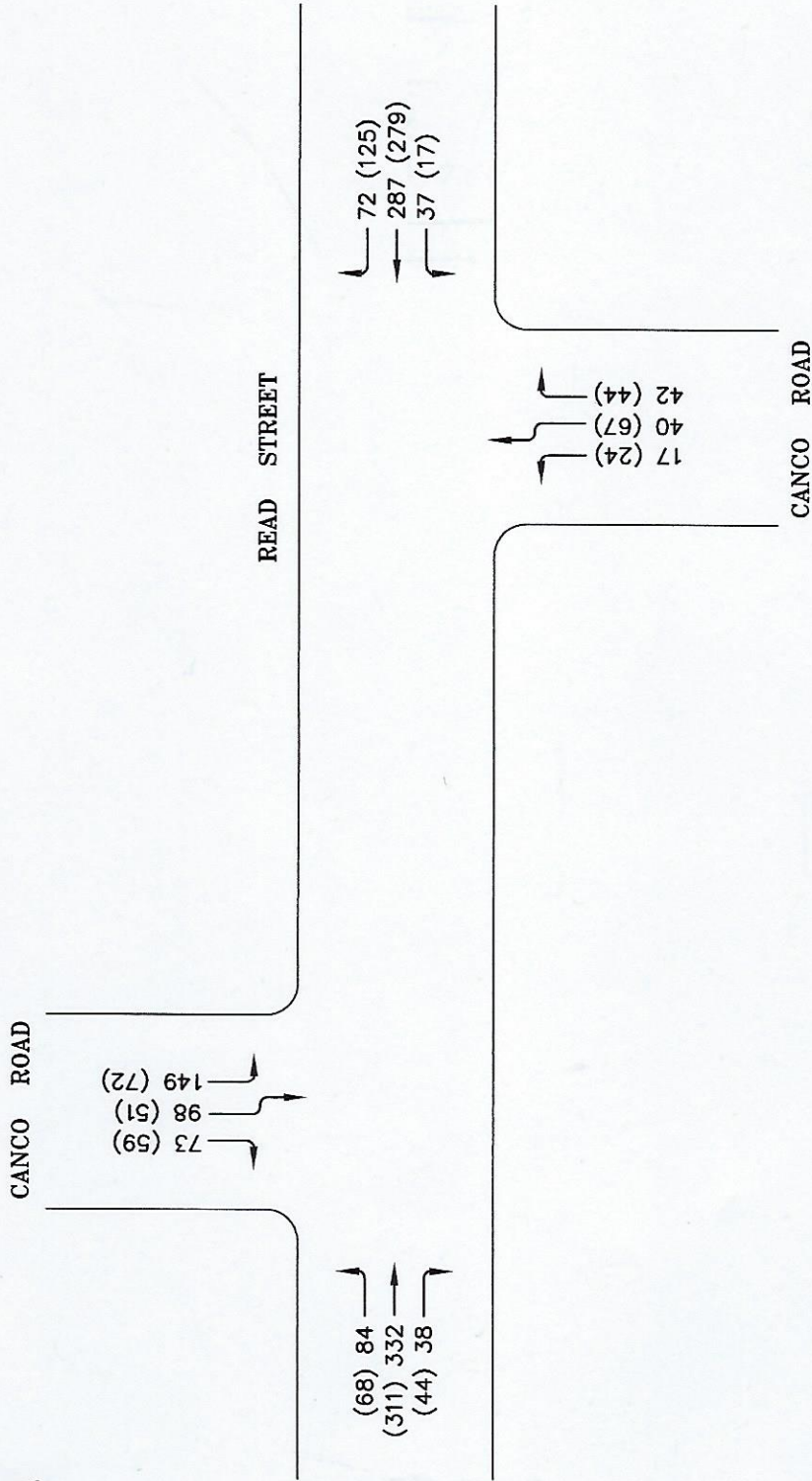
YEARS REVIEWED 2014-2016

DATE PREPARED 4-3-2018



CRITICAL RATE FACTOR	EQUIV. PROP. DAMAGE ACC/YEAR	ACC/MEV
LIGHT 1. DAWN (MORNING) 2. DAYLIGHT 3. DUSK (EVENING) 4. DARK (ST. LIGHTS ON) 5. DARK (NO ST. LIGHTS) 6. DARK (ST. LIGHTS OFF) 7. OTHER		
ROAD SURFACE 1. DRY 2. WET 3. SNOW/SLUSH-SANDED 4. ICE/PACKED SNOW-SANDED 5. MUDDY 6. DEBRIS 7. OILY 8. SNOW/SLUSH-NOT SANDED 9. ICE-PKD. SNOW-NOT SANDED 10. OTHER		
APPARENT CONTRIBUTING FACTORS - HUMAN 1. NO IMPROPER ACTION 2. FAIL TO YLD. RIGHT OF WAY 3. ILLEGAL UNSAFE SPEED 4. FOLLOW TOO CLOSE 5. DISREGARD TRAFFIC CONTROL DEVICE 6. DRIVING LEFT OF CENTER-NO PASSING 7. IMPROPER PASS-OVERTAKING 8. IMP. UNSAFE LANE CHANGE 9. IMP. PARKING START/STOP 10. IMPROPER TURN 11. UNSAFE BACKING 12. NO SIGNAL OR IMP. SIGNAL 13. IMPEDING TRAFFIC 14. DRIVER INATTENTION-DISTRACTION 15. DRIVER INEXPERIENCE 16. PEDEST. VIOLATION ERROR 17. PHYSICAL IMPAIRMENT 18. VISION OBSCURED-WINDSHIELD GLASS 19. VISION OBSCURED-SUN/HEADLIGHTS 20. OTHER VISION OBSCUREMENT 30. OTHER HUMAN VIOLATION FACTOR 31. HIT AND RUN 51. UNKNOWN		
VEHICULAR 41. DEFECTIVE BRAKES 42. DEFECTIVE TIRE/FAILURE 43. DEFECTIVE LIGHTS 44. DEFECTIVE SUSPENSION 45. DEFECTIVE STEERING 50. OTHER VEHICLE DEFECT OR FACTOR 51. UNKNOWN		
SYMBOLS ANGLE PEDESTRIAN FATAL ACCIDENT BACKING REAR END VEHICLE (MOVING) FIXED OBJECT SIDE SWIPE BICYCLE HEAD ON TURNING MOVE ANIMAL OVERTURN CHANGE LANE SLED PARKED VEHICLE OUT OF CONTROL		
WEATHER C = CLEAR F = FOG R = RAIN SL = SLEET S = SNOW CL = CLOUDY XW = CROSS WINDS		
INJURIES K = FATAL B = NON-INCAPACITATING A = INCAPACITATING C = POSSIBLE INJURY		

S:\SHEETS\COLLISION DIAGRAM.DWG



LEGEND

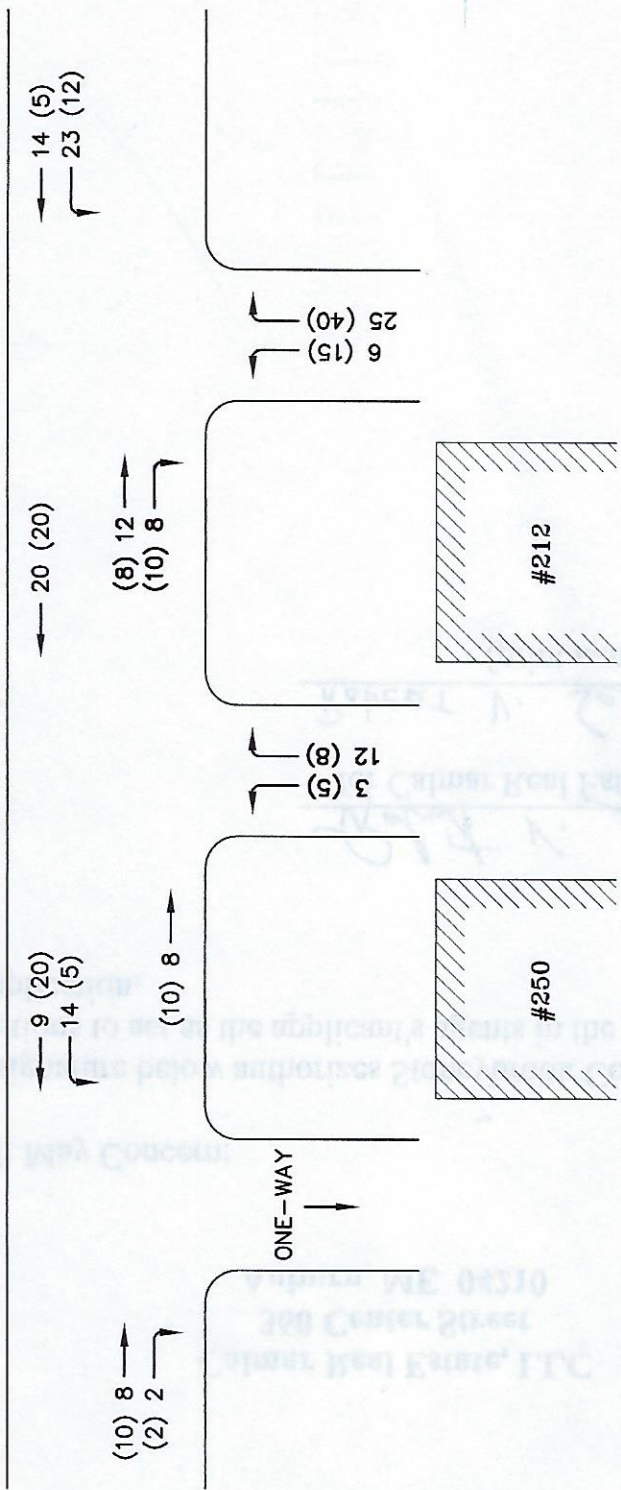
XX = AM PEAK HOUR
(XX) = PM PEAK HOUR

2018 DESIGN HOUR TRAFFIC

FIGURE 1

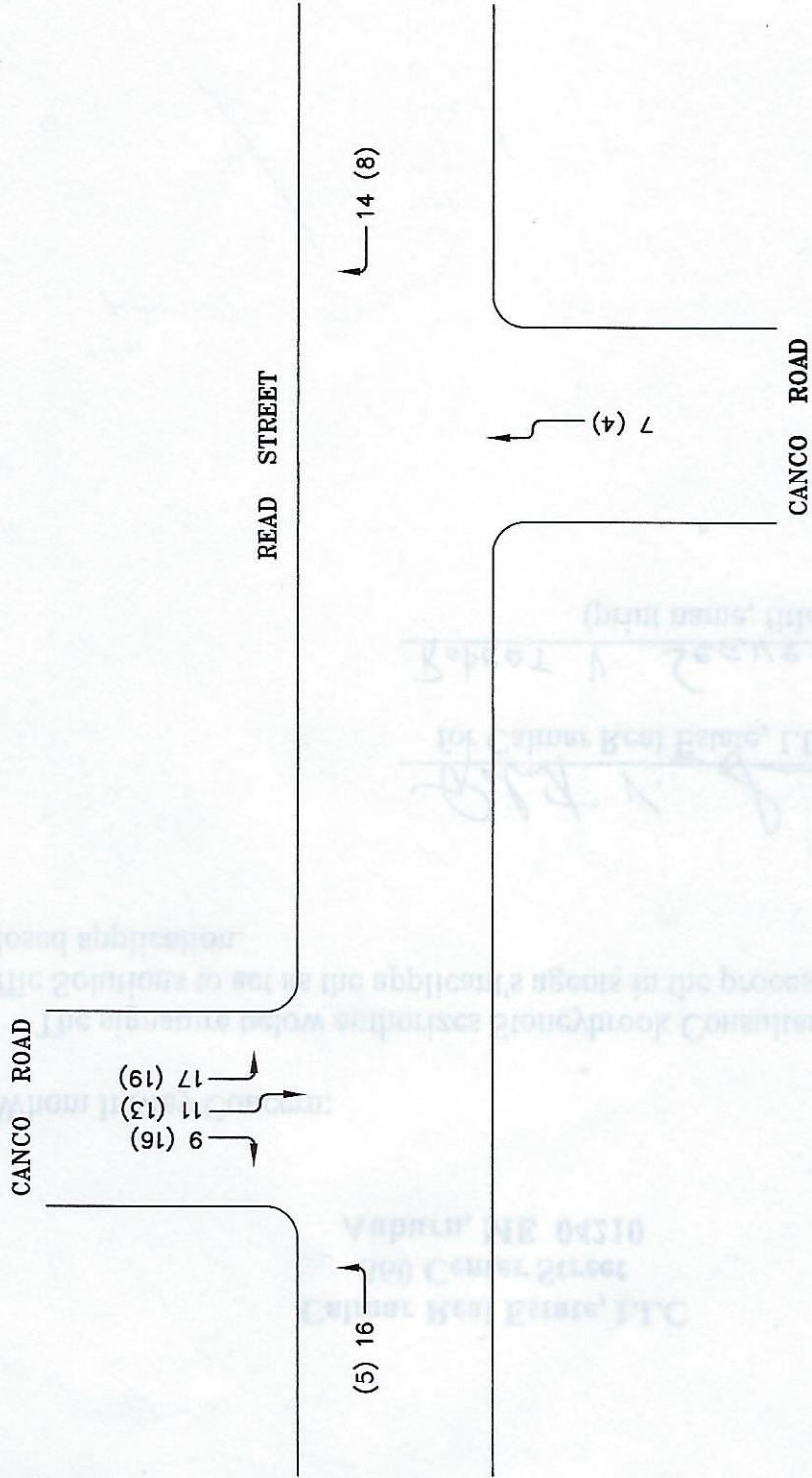


CANCO ROAD



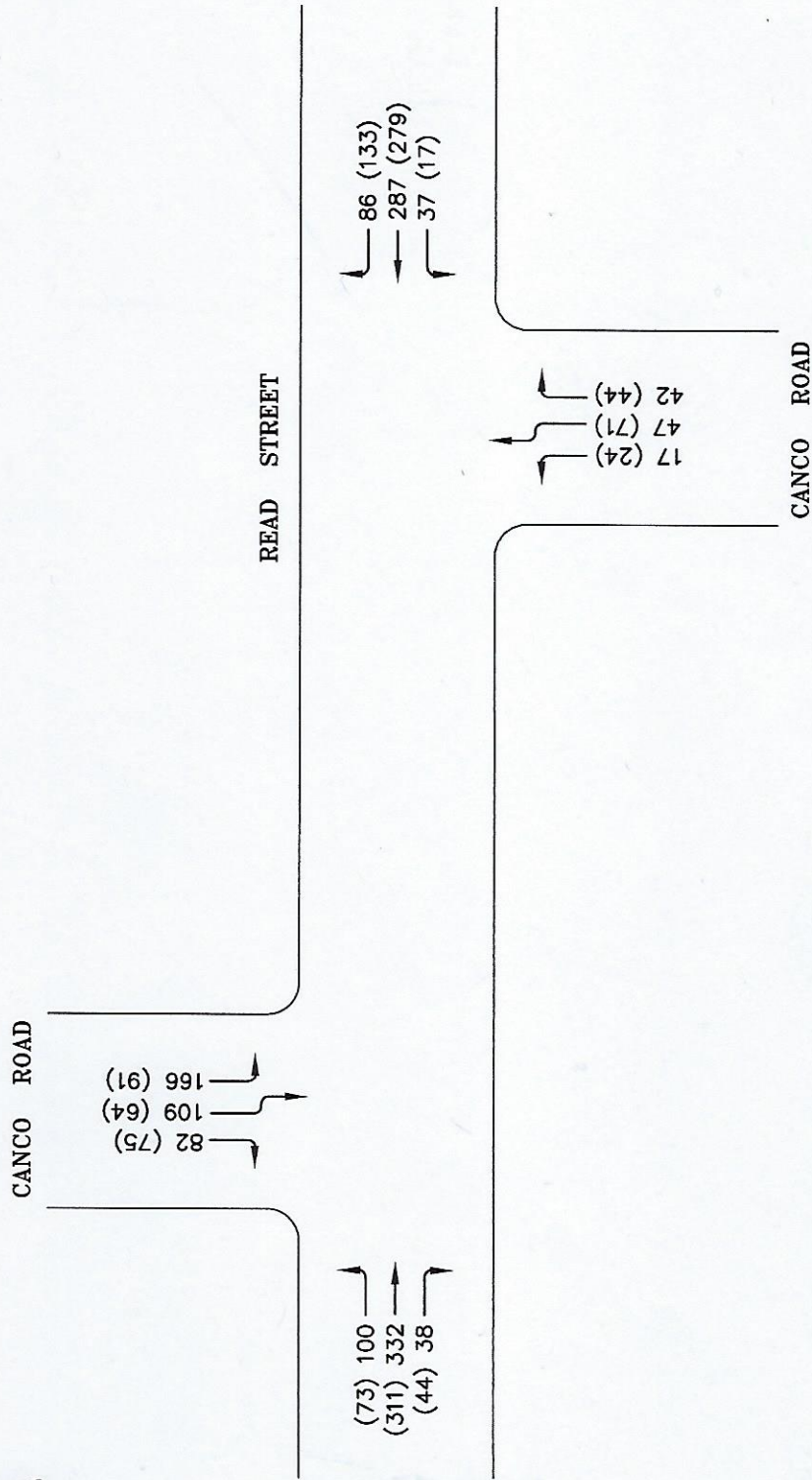
LEGEND
 XX = AM PEAK HOUR
 (XX) = PM PEAK HOUR

**SITE TRIP ASSIGNMENT
 (REFER TO FIGURE 3 FOR TRIP ASSIGNMENT
 AT CANCO ROAD/READ STREET)
 FIGURE 2**



LEGEND
 XX = AM PEAK HOUR
 (XX) = PM PEAK HOUR

**SITE TRIP ASSIGNMENT
 (REFER TO FIGURE 2 FOR TRIP ASSIGNMENT
 AT SITE ENTRANCES)
 FIGURE 3**



LEGEND

XX = AM PEAK HOUR
(XX) = PM PEAK HOUR

2018 POST-DEVELOPMENT TRAFFIC

FIGURE 4

CANCO ROAD PROPOSED STAFFING

Existing Staffing at 212 Canco Road

		<i>Employees AM Period</i>	<i>Employees PM Period</i>
Recreation – 8 employees	8:00 to 4:30	8	8
Public Assemblies – 8 employees	8:00 to 4:30	8	8
4 employees	9:00 to 5:00	0	4
Forestry – 11 employees	7:00 to 3:00	11	11
Parks – 13 employees	6:30 to 2:30	13	0
<i>Parks</i> Administration – 7 employees	8:00 to 4:30	7	7
Trades – 15 employees	7:00 to 3:30	15	15
HVAC – 4 employees	6:00 to 2:30 & 7 to 3:30	4	1
	<i>Revised Total =</i>	66	54
Total Employees = 70 employees			

Existing Staffing at 250 Canco Road

Dispatch – 5 employees		Cover 24 hours in Winter		
1 – 5:00 to 3:00 M-Thurs			1	1
1 – 6:30 to 2:30 M-Fri			1	0
1 – 7:00 pm to 5:00 am M-Thurs			0	0
1 – 5:00 am to 5:30 pm F, Sat, Sun			0	0
1 – 5:00 pm to 5:30 am F, Sat, Sun			0	0
Districing – 27 employees				
First Shift – 14 employees & 1 vacancy	6:30 to 2:30	15	0	
Second Shift – 3 employees	2:30 to 3:30 ^{10:30}	0	3	
Second - 1 Water Resources Supervisor	2:30 to 10:30	0	1	
Third Shift – 4 employees	10:30 to 6:30	0	0	
1 seasonal	10:30 to 6:30	0	0	
Weekend Days – 4 employees F,S,Sun	6:00 am to 7:00 pm	0	0	
Traffic – 8 employees	6:30 to 2:30	8	0	
Plow Bay – 3 employees	6:30 to 2:30	3	0	
Safety & Training Administrator – 1	6:30 to 3:30	1	1	
	<i>Revised Total =</i>	29	6	

Total Employees = 45 employees

G. Total 95 60

Proposed Staffing at 212 Canco Road

Recreation – 8 employees 8:00 to 4:30
Public Assemblies – 8 employees 8:00 to 4:30
4 employees 9:00 to 5:00
Forestry – 11 employees 7:00 to 3:00
Parks – 13 employees 6:30 to 2:30
Administration – 7 employees 8:00 to 4:30
Trades – 15 employees 7:00 to 3:30
HVAC – 4 employees 6:00 to 2:30 & 7 to 3:30
→ Seasonals – 20 (summer-April thru Oct.) Approx. 6:30 to 3:30

DPW Admin – 8 employees 8:00 to 4:30
→ Traffic – 9 employees 7:30 to 3:30

Engineering

Engineering – 17 employees & 3 Interns
7:30 to 3:30 and 8:00 to 4:00

Engineering +

Water Resources – 14 employees
7:30 to 3:30 & 8:00 to 4:00
11 3

Total Employees = 118 employees + 20 seasonals + 3 Interns

cmw@portlandmaine.gov

Proposed Staffing at 250 Canco Road

Safety Training Administrator – 1 employee

7:00 to 4:00

Dispatch – 3 employees

6:30 to 2:30 M-F

6:00 to 4:30 M-Th

1:30 to 6 Tu-Th & 6 to 6 F-Sat

Districting – 29 employees

6:30 to 2:30 M-F

6:30 to 4:30 M-Th & Tues-Fri

Traffic – 9 employees

6:30 to 2:30 and 7:00 to 3:00

Vehicle Maintenance – 25 employees

6:30 to 2:30 & 6:30 to 3:00

20

5

Total Employees = 67 employees

Notes

Wastewater (District Rd.) – no employees will move to Canco Rd.

Solid Waste (District Rd.) – no employees will move to Canco Rd.

5 New Positions Asked for in Budget that would report to 250 Canco Rd.

15 ee M thru Thur. 6:30-4:30
5 Tue thru Friday 6:30-4:30
9 M thru Fri 6:30-2:30

Portland 212 Canco Rd Driveway 3
 Thursday February 22, 2018
 Clear
 Count By: Dawn-Marie Fahey

File Name : portland 212 canco driveway 3 am 022218
 Site Code : 00222183
 Start Date : 2/22/2018
 Page No : 1

Groups Printed- Passenger Vehicle - Trucks - Semi - Bus

Start Time	Canco Rd From North				Canco Rd From South				Driveway #3 From West				Int. Total
	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	
07:00 AM	2	35	0	37	15	1	0	16	8	2	0	10	63
07:15 AM	1	44	0	45	30	2	0	32	5	0	0	5	82
07:30 AM	1	48	0	49	30	2	0	32	1	0	0	1	82
07:45 AM	1	44	0	45	23	4	0	27	2	1	0	3	75
Total	5	171	0	176	98	9	0	107	16	3	0	19	302
08:00 AM	1	39	0	40	32	4	0	36	0	0	0	0	76
08:15 AM	2	48	0	50	32	2	0	34	3	0	0	3	87
08:30 AM	0	38	0	38	30	3	0	33	1	1	0	2	73
08:45 AM	0	29	0	29	31	5	0	36	3	1	0	4	69
Total	3	154	0	157	125	14	0	139	7	2	0	9	305

Portland 212 Canco Rd Driveway 3
 Wednesday February 21, 2018
 Clear
 Count By: Dawn-Marie Fahey

File Name : portland 212 canco driveway 3 pm 022118
 Site Code : 00221181
 Start Date : 2/21/2018
 Page No : 1

Groups Printed- Passenger Vehicle - Trucks - Semi - Bus

Start Time	From North				From South				From West				Int. Total
	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	
03:00 PM	2	31	0	33	29	2	0	31	2	1	0	3	67
03:15 PM	0	32	0	32	41	0	0	41	6	2	0	8	81
03:30 PM	1	33	0	34	46	2	0	48	1	0	0	1	83
03:45 PM	1	30	0	31	51	2	0	53	3	2	0	5	89
Total	4	126	0	130	167	6	0	173	12	5	0	17	320
04:00 PM	0	33	0	33	51	0	0	51	3	1	0	4	88
04:15 PM	0	29	0	29	37	0	0	37	2	1	0	3	69
04:30 PM	0	46	0	46	54	1	0	55	1	1	0	2	103
04:45 PM	0	32	0	32	66	0	0	66	3	0	0	3	101
Total	0	140	0	140	208	1	0	209	9	3	0	12	361
05:00 PM	1	30	0	31	55	0	0	55	2	0	0	2	88
05:15 PM	0	38	0	38	62	0	0	62	1	0	0	1	101
05:30 PM	1	32	0	33	46	0	0	46	1	1	0	2	81
05:45 PM	0	27	0	27	28	0	0	28	1	0	0	1	56
Total	2	127	0	129	191	0	0	191	5	1	0	6	326

Portland 212 Canco Rd Driveway 2
 Thursday February 22, 2018
 Clear
 Count By: Patrick Frie

File Name : portland 212 canco driveway 2 am 022218
 Site Code : 00222182
 Start Date : 2/22/2018
 Page No : 1

Groups Printed- Passenger Vehicle - Trucks

Start Time	Canco Rd From North				Canco Rd From South				Driveway #2 From West				Int. Total
	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	
07:00 AM	0	0	0	0	1	0	0	1	1	0	0	1	2
07:15 AM	0	0	0	0	0	0	0	0	6	0	0	6	6
*** BREAK ***													
07:45 AM	0	0	0	0	0	0	0	0	1	0	0	1	1
Total	0	0	0	0	1	0	0	1	8	0	0	8	9
*** BREAK ***													
08:30 AM	0	0	0	0	0	1	0	1	2	1	0	3	4
08:45 AM	0	0	0	0	0	0	0	0	2	1	0	3	3
Total	0	0	0	0	0	1	0	1	4	2	0	6	7
*** BREAK ***													
Grand Total	0	0	0	0	1	1	0	2	12	2	0	14	16
Apprch %	0	0	0	0	50	50	0		85.7	14.3	0		
Total %	0	0	0	0	6.2	6.2	0	12.5	75	12.5	0	87.5	
Passenger Vehicle	0	0	0	0	1	0	0	1	6	1	0	7	8
% Passenger Vehicle	0	0	0	0	100	0	0	50	50	50	0	50	50
Trucks	0	0	0	0	0	1	0	1	6	1	0	7	8
% Trucks	0	0	0	0	0	100	0	50	50	50	0	50	50

Summary of All Intervals

Run Number	1	2	4	6	7	Avg
Start Time	7:55	7:55	7:55	7:55	7:55	7:55
End Time	9:00	9:00	9:00	9:00	9:00	9:00
Total Time (min)	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	1388	1444	1352	1403	1374	1393
Vehs Exited	1379	1439	1345	1402	1383	1390
Starting Vehs	9	15	9	21	26	15
Ending Vehs	18	20	16	22	17	17
Travel Distance (mi)	237	246	230	241	237	238
Travel Time (hr)	25.8	22.1	20.5	24.5	22.4	23.1
Total Delay (hr)	15.5	11.5	10.5	14.1	12.2	12.8
Total Stops	514	574	555	475	496	524
Fuel Used (gal)	12.7	12.4	11.5	12.5	12.0	12.2

Interval #0 Information Seeding

Start Time	7:55
End Time	8:00
Total Time (min)	5
Volumes adjusted by PHF, Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	8:00
End Time	9:00
Total Time (min)	60
Volumes adjusted by PHF, Growth Factors.	

Run Number	1	2	4	6	7	Avg
Vehs Entered	1388	1444	1352	1403	1374	1393
Vehs Exited	1379	1439	1345	1402	1383	1390
Starting Vehs	9	15	9	21	26	15
Ending Vehs	18	20	16	22	17	17
Travel Distance (mi)	237	246	230	241	237	238
Travel Time (hr)	25.8	22.1	20.5	24.5	22.4	23.1
Total Delay (hr)	15.5	11.5	10.5	14.1	12.2	12.8
Total Stops	514	574	555	475	496	524
Fuel Used (gal)	12.7	12.4	11.5	12.5	12.0	12.2

3: Read St & Canco (N) Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.4	0.0	34.7	9.5
Total Del/Veh (s)	3.0	0.8	79.0	22.4

5: Canco (S) & Read St Performance by approach

Approach	EB	WB	NB	All
Denied Del/Veh (s)	0.0	0.4	0.2	0.2
Total Del/Veh (s)	1.0	2.2	18.6	3.2

Total Network Performance

Denied Del/Veh (s)	8.9
Total Del/Veh (s)	23.8

Intersection: 3: Read St & Canco (N)

Movement	EB	WB	SB	SB
Directions Served	LT	TR	L	R
Maximum Queue (ft)	160	65	340	105
Average Queue (ft)	50	7	264	85
95th Queue (ft)	119	33	401	144
Link Distance (ft)	407	53	291	
Upstream Blk Time (%)		0	42	
Queuing Penalty (veh)		0	0	
Storage Bay Dist (ft)				80
Storage Blk Time (%)			77	1
Queuing Penalty (veh)			61	3

Intersection: 5: Canco (S) & Read St

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	56	151	146
Average Queue (ft)	5	36	55
95th Queue (ft)	27	100	108
Link Distance (ft)	53	448	256
Upstream Blk Time (%)	0		0
Queuing Penalty (veh)	0		0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 65

Summary of All Intervals

Run Number	2	3	4	6	7	Avg
Start Time	4:55	4:55	4:55	4:55	4:55	4:55
End Time	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	1335	1323	1278	1361	1364	1333
Vehs Exited	1329	1326	1275	1365	1363	1332
Starting Vehs	8	14	11	17	11	11
Ending Vehs	14	11	14	13	12	13
Travel Distance (mi)	226	225	217	232	232	226
Travel Time (hr)	12.9	13.1	12.7	13.9	13.8	13.3
Total Delay (hr)	3.1	3.3	3.3	3.9	3.8	3.5
Total Stops	492	496	464	540	537	505
Fuel Used (gal)	9.5	9.5	9.2	9.9	9.9	9.6

Interval #0 Information Seeding

Start Time	4:55
End Time	5:00
Total Time (min)	5
Volumes adjusted by PHF, Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60
Volumes adjusted by PHF, Growth Factors.	

Run Number	2	3	4	6	7	Avg
Vehs Entered	1335	1323	1278	1361	1364	1333
Vehs Exited	1329	1326	1275	1365	1363	1332
Starting Vehs	8	14	11	17	11	11
Ending Vehs	14	11	14	13	12	13
Travel Distance (mi)	226	225	217	232	232	226
Travel Time (hr)	12.9	13.1	12.7	13.9	13.8	13.3
Total Delay (hr)	3.1	3.3	3.3	3.9	3.8	3.5
Total Stops	492	496	464	540	537	505
Fuel Used (gal)	9.5	9.5	9.2	9.9	9.9	9.6

3: Read St & Canco (N) Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.4	0.1	1.5	0.4
Total Del/Veh (s)	3.2	0.9	24.4	5.8

5: Canco (S) & Read St Performance by approach

Approach	EB	WB	NB	All
Denied Del/Veh (s)	0.0	0.4	0.2	0.2
Total Del/Veh (s)	0.8	1.4	16.3	3.3

Total Network Performance

Denied Del/Veh (s)	0.6
Total Del/Veh (s)	8.7

Intersection: 3: Read St & Canco (N)

Movement	EB	WB	SB	SB
Directions Served	LT	TR	L	R
Maximum Queue (ft)	162	63	227	105
Average Queue (ft)	54	8	82	45
95th Queue (ft)	124	37	173	99
Link Distance (ft)	407	53	291	
Upstream Blk Time (%)		0	0	
Queuing Penalty (veh)		1	0	
Storage Bay Dist (ft)				80
Storage Blk Time (%)			13	0
Queuing Penalty (veh)			9	0

Intersection: 5: Canco (S) & Read St

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	4	123	154
Average Queue (ft)	0	17	67
95th Queue (ft)	3	71	120
Link Distance (ft)	53	448	256
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 10

Summary of All Intervals

Run Number	1	2	3	5	6	Avg
Start Time	7:55	7:55	7:55	7:55	7:55	7:55
End Time	9:00	9:00	9:00	9:00	9:00	9:00
Total Time (min)	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	1453	1465	1424	1456	1433	1446
Vehs Exited	1444	1462	1420	1453	1432	1443
Starting Vehs	12	21	15	26	21	20
Ending Vehs	21	24	19	29	22	22
Travel Distance (mi)	246	248	242	248	245	246
Travel Time (hr)	49.4	56.5	70.9	37.5	55.6	54.0
Total Delay (hr)	38.7	45.7	60.4	26.8	45.0	43.3
Total Stops	513	483	473	461	471	481
Fuel Used (gal)	18.4	20.0	23.0	15.7	19.6	19.3

Interval #0 Information Seeding

Start Time	7:55
End Time	8:00
Total Time (min)	5
Volumes adjusted by PHF, Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	8:00
End Time	9:00
Total Time (min)	60
Volumes adjusted by PHF, Growth Factors.	

Run Number	1	2	3	5	6	Avg
Vehs Entered	1453	1465	1424	1456	1433	1446
Vehs Exited	1444	1462	1420	1453	1432	1443
Starting Vehs	12	21	15	26	21	20
Ending Vehs	21	24	19	29	22	22
Travel Distance (mi)	246	248	242	248	245	246
Travel Time (hr)	49.4	56.5	70.9	37.5	55.6	54.0
Total Delay (hr)	38.7	45.7	60.4	26.8	45.0	43.3
Total Stops	513	483	473	461	471	481
Fuel Used (gal)	18.4	20.0	23.0	15.7	19.6	19.3

3: Read St & Canco (N) Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.4	0.0	276.9	78.1
Total Del/Veh (s)	4.0	0.8	114.2	30.5

5: Canco (S) & Read St Performance by approach

Approach	EB	WB	NB	All
Denied Del/Veh (s)	0.0	0.4	0.2	0.2
Total Del/Veh (s)	1.0	2.9	25.6	4.4

Total Network Performance

Denied Del/Veh (s)	72.2
Total Del/Veh (s)	32.0

Intersection: 3: Read St & Canco (N)

Movement	EB	WB	SB	SB
Directions Served	LT	TR	L	R
Maximum Queue (ft)	241	48	346	105
Average Queue (ft)	67	6	313	87
95th Queue (ft)	154	28	375	151
Link Distance (ft)	407	53	291	
Upstream Blk Time (%)		0	86	
Queuing Penalty (veh)		1	0	
Storage Bay Dist (ft)				80
Storage Blk Time (%)			93	2
Queuing Penalty (veh)			83	5

Intersection: 5: Canco (S) & Read St

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	62	158	188
Average Queue (ft)	5	49	70
95th Queue (ft)	28	132	135
Link Distance (ft)	53	448	256
Upstream Blk Time (%)	0		0
Queuing Penalty (veh)	0		0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 89

Summary of All Intervals

Run Number	2	3	4	6	7	Avg
Start Time	4:55	4:55	4:55	4:55	4:55	4:55
End Time	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	1431	1396	1351	1394	1444	1405
Vehs Exited	1427	1398	1354	1407	1442	1406
Starting Vehs	8	14	16	24	17	15
Ending Vehs	12	12	13	11	19	14
Travel Distance (mi)	241	235	228	238	243	237
Travel Time (hr)	15.7	16.3	14.8	15.4	16.0	15.6
Total Delay (hr)	5.3	6.0	4.9	5.1	5.4	5.3
Total Stops	624	620	558	621	634	612
Fuel Used (gal)	10.8	10.7	10.2	10.6	10.9	10.6

Interval #0 Information Seeding

Start Time	4:55
End Time	5:00
Total Time (min)	5
Volumes adjusted by PHF, Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60
Volumes adjusted by PHF, Growth Factors.	

Run Number	2	3	4	6	7	Avg
Vehs Entered	1431	1396	1351	1394	1444	1405
Vehs Exited	1427	1398	1354	1407	1442	1406
Starting Vehs	8	14	16	24	17	15
Ending Vehs	12	12	13	11	19	14
Travel Distance (mi)	241	235	228	238	243	237
Travel Time (hr)	15.7	16.3	14.8	15.4	16.0	15.6
Total Delay (hr)	5.3	6.0	4.9	5.1	5.4	5.3
Total Stops	624	620	558	621	634	612
Fuel Used (gal)	10.8	10.7	10.2	10.6	10.9	10.6

3: Read St & Canco (N) Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.4	0.1	1.8	0.5
Total Del/Veh (s)	4.3	1.0	35.6	9.3

5: Canco (S) & Read St Performance by approach

Approach	EB	WB	NB	All
Denied Del/Veh (s)	0.0	0.4	0.2	0.2
Total Del/Veh (s)	0.9	1.7	22.3	4.2

Total Network Performance

Denied Del/Veh (s)	0.7
Total Del/Veh (s)	12.8

Intersection: 3: Read St & Canco (N)

Movement	EB	WB	SB	SB
Directions Served	LT	TR	L	R
Maximum Queue (ft)	245	70	283	105
Average Queue (ft)	60	12	128	62
95th Queue (ft)	148	47	247	123
Link Distance (ft)	407	53	291	
Upstream Blk Time (%)		0	1	
Queuing Penalty (veh)		1	0	
Storage Bay Dist (ft)				80
Storage Blk Time (%)			33	0
Queuing Penalty (veh)			29	0

Intersection: 5: Canco (S) & Read St

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	16	158	191
Average Queue (ft)	1	22	77
95th Queue (ft)	8	89	149
Link Distance (ft)	53	448	256
Upstream Blk Time (%)			0
Queuing Penalty (veh)			0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 30
