4TH ANNUAL TRAFFIC & SAFETY REVIEW

CODRINGTON PIT

FINAL ▪ SEPTEMBER 2020

REPORT PREPARED FOR

VOTORANTIM CIMENTOS (CBM AGGREGATES)
55 INDUSTRIAL STREET
TORONTO, ON M4G 3W9

REPORT PREPARED BY

THE MUNICIPAL INFRASTRUCTURE GROUP LTD.
8800 DUFFERIN STREET, SUITE 200
VAUGHAN, ON L4K 0C5
(905) 738-5700

TMIG PROJECT NUMBER 17169

this report has been formatted for double-sided printing

EXECUTIVE SUMMARY

This study represents the fourth annual Traffic and Safety Review of the now-operating Codrington Pit and its site access to County Road 30.

This report concludes:

- ✓ The Pit access continues to operate in accordance with the conditions of the OMB Settlement and the executed Development Agreement, and to the satisfaction of the County of Northumberland.
- ✓ Codrington Pit truck activity has again been measured to be less than forecasted in the approved traffic impact study (i.e., much less than the approved annual extraction amount), which is consistent with available shipping activity records obtained from CBM.
- ✓ County Road 30 passing traffic was also observed to be less than forecasted in the original traffic study and there has been virtually no growth in traffic along this section of roadway since the last annual traffic and safety review (or even over the last 13 years).
- ✓ Intersection analyses indicates very good peak hour traffic operations are being experienced at the Pit access, with excess capacity available for future traffic growth and/or increased Pit activity.
- ✓ There were no records of collisions in the study area since the opening of the Pit access related to pit operations including aggregate trucks.
- ✓ TMIG finds the Codrington Pit access is operating as intended, and given the available information, provides an acceptable degree of efficiency and safety.

This page left intentionally blank

CONTENTS

APPENDICES

FIGURES

TABLES

This page left intentionally blank

1 INTRODUCTION

1.1 Retainer and Objective

The Municipal Infrastructure Group Ltd. (TMIG) was retained by Votorantim Cimentos (CBM Aggregates) to prepare a fourth annual Traffic and Safety Review for Codrington Pit, herein after referred to as the 'Pit', in Northumberland County. The Pit site is located south of the hamlet of Codrington on the east side of County Road 30, between of County Road No. 27 and Old Wooler Road, as illustrated on **Figure 1-1.**

Figure 1-1 Site Location

This Review has been prepared to ensure that the Codrington Pit entrance and County Road 30 in the vicinity of the Pit access are operating as anticipated. The report includes information on how the operation of the Pit is affecting traffic on County Road 30 from an operational and safety perspective.

The Traffic and Safety Review will address the following items:

- Review traffic volumes generated by Codrington Pit and the forecasted County Road 30 passing traffic.
- Monitor performance of the Pit access during the periods of typical shipping activity.
- Review available collision statistics at the new Pit access.
- Report on any traffic incidents filed (if any) that have been reported by, or to CBM, through the formal reporting system, by independent truckers or by residents / travelling public.

1.2 Study Background

CBM Aggregates operates Codrington Pit, located in Codrington, Municipality of Brighton, Northumberland County known (municipally) as 2851 County Road 30. The existing Pit is permitted to ship a maximum of 650,000 tonnes per year.

As part of the approved and executed Development Agreement with the County (excerpt copied below), CBM Aggregates is to complete an annual traffic and safety review for County Road 30:

"St. Marys [CBM] *agree that it shall, at its sole cost, provide the County with an annual report with respect to traffic operations and road safety on County Road 30 in the vicinity of the intersection. The report shall be based on traffic and accident information obtained from the Ontario Provincial Police, the County Roads Department and St. Marys".*

The enclosed report is the fourth annual examination following the opening of the Pit in 2016 and builds on the first, second, and third annual traffic and safety reviews completed in 2017, 2018, and 2019 respectively by TMIG. We have also reviewed the approved Traffic Impact Study conducted by Grant A. Bacchus Ltd. (GAB Ltd.) dated June 2007 as well as a Road Safety Assessment conducted by GHD, dated March 2013, and have utilized the information contained in all prior submissions as the basis for the enclosed report and analyses.

1.3 Site Area

The study area includes the following unsignalized intersection:

- County Road 30 at Codrington Pit Access

2 BASELINE TRAFFIC

This section summarizes the proposed haul route, summarizes the data collection program, and presents the existing (2020) traffic volumes conditions at the study intersection (County Road 30 / Codrington Pit Access).

2.1 Haul Route

The 'haul route' for the purposes of this study remains unchanged and includes the Codrington Pit access to County Road 30.

County Road 30 is a north-south provincial highway with a posted speed limit of 80 km/h, a localized two-lane rural cross section, and is a designated haul route as per the Northumberland County Official Plan.

As part of the OMB Settlement for the Pit, as stipulated in the Development Agreement, CBM has constructed the Codrington Pit access to County Road 30 with a northbound auxiliary right turn deceleration and storage lane of approximately 120 metres plus a southbound acceleration lane of approximately 485 metres (excluding tapers). A section of the shoulder on both sides of County Road 30 has also been paved in proximity of the Pit access to facilitate active transportation (pedestrians and cyclists).

The auxiliary lanes were designed and constructed to facilitate safe and efficient access/egress of heavy trucks generated by the Pit in the primary direction of travel to/from the aggregate market (i.e., to/from the south). The original (as approved) traffic studies posited that local deliveries of material (either into or out of the Pit) could very well occur to/from the north, however the vast majority of truck traffic was forecasted to come from, and be destined to, point's south on County Road 30.

2.2 County Road 30 Traffic Growth Review

The 2020 traffic data was reviewed and compared with the historic traffic data collected and presented in the traffic study prepared for the original Pit application, and the three prior traffic and safety reviews in 2017, 2018, and 2019.

It is evident from a review of this data that volumes along County Road 30 have not increased materially since 2007; the p.m. flows have increased by about 19%, while the a.m. peak hour flows have actually *decreased* over the last 13 years (when compared to 2007 traffic volumes):

- Two-way traffic 2007 – 507 and 446 vehicles during the a.m. and p.m. peak hours respectively
- Two-way traffic 2017 – 368 and 440 vehicles during the a.m. and p.m. peak hours respectively
- Two-way traffic 2018 – 436 and 470 vehicles during the a.m. and p.m. peak hours respectively
- Two-way traffic 2019 – 464 and 532 vehicles during the a.m. and p.m. peak hours respectively
- Two-way traffic 2020 – 425 and 458 vehicles during the a.m. and p.m. peak hours respectively

The original traffic study forecasted growth on County Road 30 at the rate of 2% per year (equating to a compounded 12-year growth of 27%), well in excess of what has actually transpired in the period subsequent to the tabling of the 2007 traffic study and the approval of the Pit. It should be noted that a slight decrease in traffic was observed when comparing 2020 to 2019 traffic volumes, this is assumed to attributed to COVID-19.

We would also note that the recommendations for the Pit access lane configurations and design were partially driven by predicted future County Road 30 traffic volumes. Since the predicted growth has not occurred at the rate predicted back in 2007, the Pit access turn lanes constructed to accommodate the future condition are still more than adequate to handle present day peaks. Furthermore, the as-constructed design elements of the site access continue to exceed the operational requirements of the Pit-related traffic volumes.

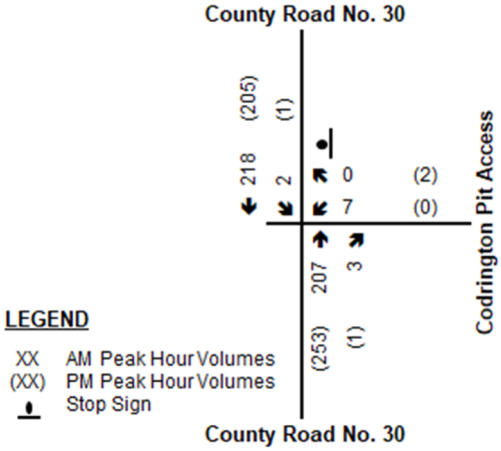
2.3 Traffic Data

A weekday turning movement count was conducted by TMIG in August 2020 at the intersection of County Road 30 and the Pit Access during the weekday from 06:00-19:00.

2.3.1 Adjacent Street Traffic

The weekday a.m. and p.m. peak hour existing *adjacent street* traffic volumes are shown in **Figure 2-1**. Please note that aggregate truck movements to/from the site have been removed from the adjacent street peak hour. However, staff passenger vehicles observed to/from the site during the peak hours remain. The complete traffic survey summary is provided in **Appendix A**.

Figure 2-1 2020 Existing Adjacent Street Traffic Volumes

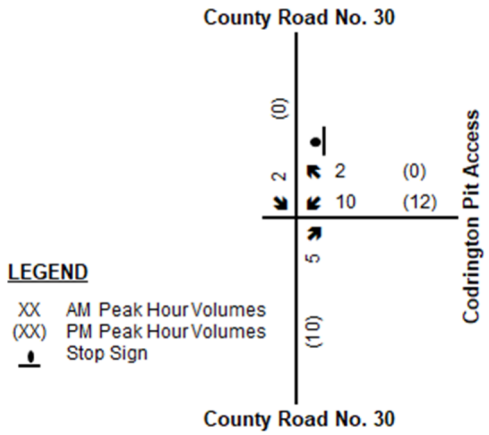


2.3.2 Peak Truck Activity

The peak hour of truck traffic entering and exiting from the site access was extracted from the August 2020 turning movement counts and was used to represent the highest level of subject site traffic. These truck traffic volumes were confirmed as representative of a typical shipping period, based on a review of the shipping activity records provided by CBM. The mid-period peak hour truck traffic exceeded the p.m. peak hour truck traffic, and was conservatively used for the p.m. peak hour truck traffic volumes to provide the most conservative traffic estimate.

Accordingly, in the period of highest truck traffic as per the 2020 turning movement counts, there are 12 truck trips in/out of the site during both the a.m. and p.m. truck peak hours, as shown in **Figure 2-2**.

Figure 2-2 2020 Peak Truck Activity



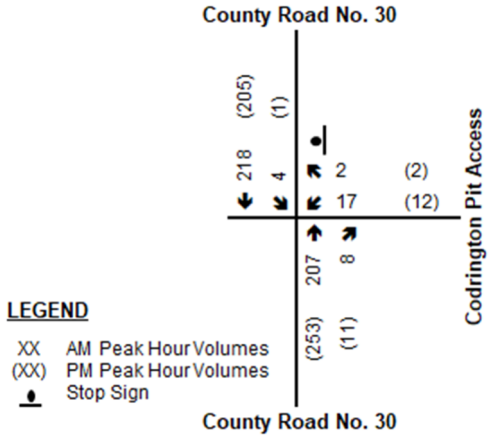
The inbound and outbound splits continue to be consistent with the forecasted haulage of material back in the 2007 Traffic Study, which predicted the vast majority of truck trips to be destined to, and originating from, the south along County Road 30. As can be seen from a review of the 2020 traffic data, the counts indicate some truck traffic to and from the north which can be attributed to some local delivery of material to destinations north of the site. As per the 2007 Traffic Study, we have been advised that the predominant market for the movement of aggregate material would be to the south along County Road No. 30 to its connections with Highway No. 401 as reflected in **Figure 2-2**.

2.4 Baseline Traffic Volumes

The baseline traffic conditions for the peak study hours in 2020 was derived by combining the existing adjacent street a.m. and p.m. peak hour traffic and the peak hour of truck traffic to represent a high demand traffic model. It is important to note that this 'hybrid' peak hour was not in evidence during the counts, but we have adopted it to represent a 'worse case' scenario of busiest combined corridor activity.

Figure 2-3 summarize the total 'hybridized' traffic volume condition during the weekday a.m. and p.m. peak hours.

Figure 2-3 2020 Baseline Traffic Volumes

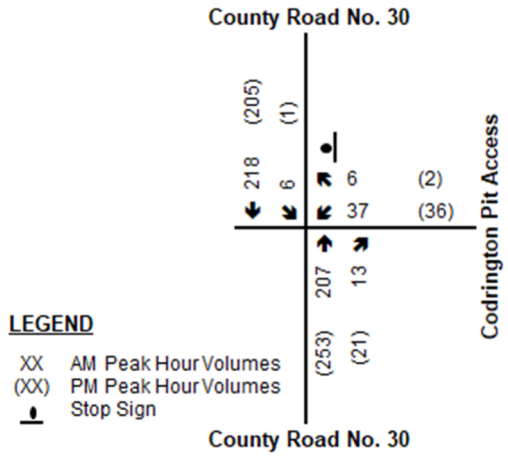


3 CAPACITY ANALYSIS

For the purpose of the traffic analysis, we have employed Passenger Car Equivalent (PCE) factors to account for the additional time it takes a heavy vehicle (in this case, different PCE's for each the loaded and empty gravel trucks) to travel through an intersection. Based on our experience, we have adopted a PCE of 3.0 for loaded trucks and a PCE of 2.0 for empty trucks. As a conservative measure, and to provide a consistent comparative analysis between all existing and future traffic scenarios, the PCE adjustment was applied to baseline turning movement volumes to/from the pit access.

The truck traffic volumes expressed as PCEs are shown in **Figure 3-1**.

Figure 3-1 2020 Baseline Traffic Volumes – PCE Adjusted



The capacity analysis identifies how well an intersection is operating. The analysis contained within this report utilized the Highway Capacity Manual (HCM) 2000 techniques within the Synchro Version 10 Software package. The reported intersection volume-to-capacity ratios (v/c) are a measure of the saturation volume for each turning movement, while the levels-of-service (LOS) are a measure of the average delay for each turning movement. Queuing characteristics are reported as the predicted 95th percentile queue for each turning movement. The existing heavy vehicle proportions are included in the intersection analyses. Detailed capacity sheets are attached in **Appendix B**.

The peak hour entrance operations are summarized in **Table 3-1**.

Table 3-1 Capacity Analysis of Codrington Pit Access and County Road 30

Traffic Condition	Movement v/c (LOS) 95th Percentile Queue, Delay in Seconds	
	AM Peak Hour	PM Peak Hour
Baseline 2020	WBLR: 0.08 (B) 1 veh. 12s SBLT: 0.00 (A) 0 veh. 1s	WBLR: 0.11 (C) 1 veh. 15s SBLT: 0.00 (A) 0 veh. 0s

Under 2020 baseline conditions, the intersection of County Road 30 and the Codrington Pit Access is operating with excellent operational characteristics and substantial reserve capacity during both a.m. and p.m. peak hours. There are no critical movements or queuing issues to report. The outbound (westbound) left and right turns from the Pit are operating at LOS 'B' and 'C' during weekday a.m. and p.m. peak hours respectively. These results indicate the site access design delivered as part of the Pit approval are easily accommodating even the combined 'hybrid' peak hour demands and that substantial excess capacity exists.

4 INCIDENT REPORTS

4.1 Collision Reports

TMIG have consulted with the agencies responsible for collision reports within vicinity of site. The following summarizes the responses received:

- County of Northumberland:
  - The County of Northumberland currently have access to MTO's collision database, unfortunately the information can only be used internally by the County. However, the County's road supervisors confirmed one vehicular collision (non-pit operation related) in 2019 at County Road 30 and Loomis Road.

There have been no accidents related to the pit operations and no accidents involving aggregate trucks within the vicinity of the site within the past year.

4.2 CBM Reported Incidents

No incidents occurred near or at the site during this past year.

5 CONCLUSION

The Pit access turn lanes constructed to accommodate the future condition are still more than adequate to handle present day peaks, and continue to exceed the operational requirements of the Pit-related traffic volumes.

County of Northumberland road supervisors confirmed that they have not heard of any traffic concerns in the study area.

There have been no incidents relating to the pit operations and there were no recorded collisions with aggregate trucks in this past year.

APPENDIX A

Traffic Data

Ontario Traffic Inc.
TRAFFIC MONITORING SERVICES & PRODUCTS

Project #20-126 - TMIG

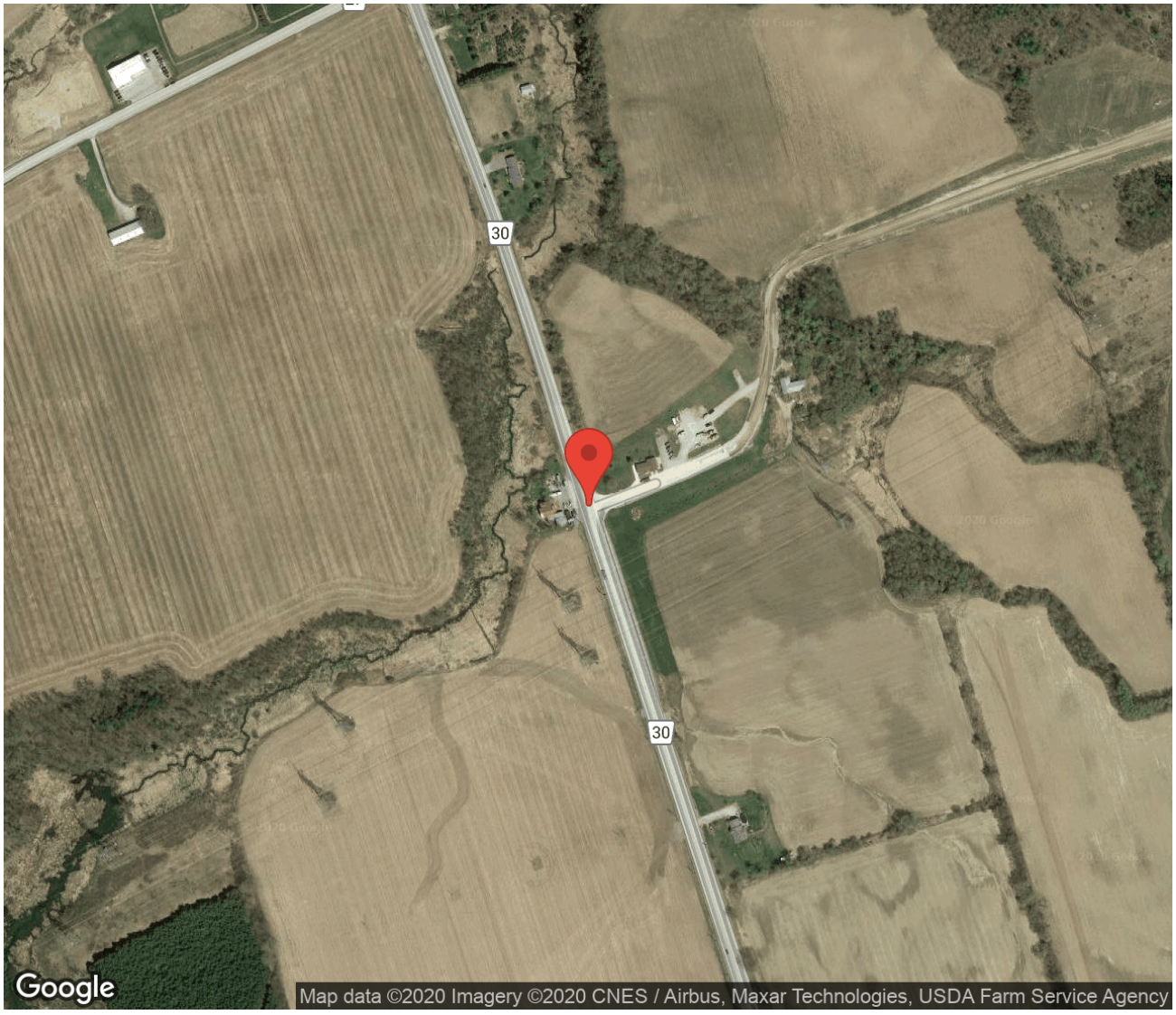
Intersection Count Report

Intersection:	CR 30 & Codrington Pit Access
Municipality:	Codrington
Count Date:	Aug 20, 2020
Site Code:	2012600001
Count Categories:	Cars, Trucks, Aggregate Trucks, Pedestrians
Count Period:	06:00-19:00
Weather:	Clear

Ontario Traffic Inc.
TRAFFIC MONITORING SERVICES & PRODUCTS

Traffic Count Map

Intersection:	CR 30 & Codrington Pit Access
Municipality:	Codrington
Count Date:	Aug 20, 2020



Ontario Traffic Inc.
TRAFFIC MONITORING SERVICES & PRODUCTS

Traffic Count Summary

Intersection: CR 30 & Codrington Pit Access
Municipality: Codrington
Count Date: Aug 20, 2020

CR 30 - Traffic Summary

Hour	North Approach Totals						South Approach Totals					
	Includes Cars, Trucks, Aggregate Trucks						Includes Cars, Trucks, Aggregate Trucks					
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds
06:00 - 07:00	2	176	0	0	178	0	0	181	12	0	193	0
07:00 - 08:00	3	192	0	0	195	0	3	193	8	0	204	4
08:00 - 09:00	2	136	0	0	138	0	0	125	3	0	128	0
09:00 - 10:00	2	146	0	0	148	1	0	142	10	0	152	1
10:00 - 11:00	0	194	0	0	194	0	1	216	11	0	228	0
11:00 - 12:00	0	171	0	0	171	0	1	235	6	0	242	0
12:00 - 13:00	0	112	0	0	112	0	0	188	3	0	191	0
13:00 - 14:00	1	175	0	0	176	0	1	199	6	0	206	1
14:00 - 15:00	1	145	0	0	146	0	0	175	9	0	184	0
15:00 - 16:00	1	188	0	0	189	0	0	222	9	0	231	0
16:00 - 17:00	0	143	0	0	143	0	0	171	2	0	173	0
17:00 - 18:00	1	205	0	0	206	0	0	243	6	0	249	0
18:00 - 19:00	1	193	0	0	194	0	0	256	1	0	257	0
GRAND TOTAL	**14**	**2176**	**0**	**0**	**2190**	**1**	**6**	**2546**	**86**	**0**	**2638**	**6**

Ontario Traffic Inc.
TRAFFIC MONITORING SERVICES & PRODUCTS

Traffic Count Summary

Intersection: CR 30 & Codrington Pit Access
Municipality: Codrington
Count Date: Aug 20, 2020

Codrington Pit Access - Traffic Summary

	East Approach Totals						West Approach Totals					
	Includes Cars, Trucks, Aggregate Trucks						Includes Cars, Trucks, Aggregate Trucks					
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds
06:00 - 07:00	8	1	1	0	10	1	0	0	0	0	0	0
07:00 - 08:00	12	0	2	0	14	10	0	0	0	0	0	0
08:00 - 09:00	9	0	0	0	9	0	0	0	0	0	0	0
09:00 - 10:00	6	0	0	0	6	0	0	0	0	0	0	0
10:00 - 11:00	14	0	1	0	15	0	0	0	0	0	0	0
11:00 - 12:00	9	0	0	0	9	0	0	0	0	0	0	0
12:00 - 13:00	7	0	0	0	7	0	0	0	0	0	0	0
13:00 - 14:00	6	0	0	0	6	0	0	0	0	0	0	0
14:00 - 15:00	7	0	1	0	8	0	0	0	0	0	0	0
15:00 - 16:00	13	0	2	0	15	0	0	0	0	0	0	0
16:00 - 17:00	5	0	0	0	5	0	0	0	0	0	0	0
17:00 - 18:00	6	0	2	0	8	1	0	0	0	0	0	0
18:00 - 19:00	3	2	4	0	9	0	0	0	0	0	0	0
GRAND TOTAL	**105**	**3**	**13**	**0**	**121**	**12**	**0**	**0**	**0**	**0**	**0**	**0**

Ontario Traffic Inc.
TRAFFIC MONITORING SERVICES & PRODUCTS

Traffic Count Data

Intersection: CR 30 & Codrington Pit Access
Municipality: Codrington
Count Date: Aug 20, 2020

North Approach - CR 30

Start Time	Cars					Trucks					Aggregate Trucks					Total Peds
					Total					Total					Total	
06:00	0	25	0	0	25	0	4	0	0	4	0	0	0	0	0	0
06:15	1	25	0	0	26	0	7	0	0	7	0	2	0	0	2	0
06:30	0	38	0	0	38	0	1	0	0	1	0	0	0	0	0	0
06:45	1	64	0	0	65	0	8	0	0	8	0	2	0	0	2	0
07:00	0	31	0	0	31	0	7	0	0	7	0	0	0	0	0	0
07:15	0	41	0	0	41	1	3	0	0	4	2	0	0	0	2	0
07:30	0	57	0	0	57	0	4	0	0	4	0	1	0	0	1	0
07:45	0	45	0	0	45	0	3	0	0	3	0	0	0	0	0	0
08:00	0	32	0	0	32	0	4	0	0	4	0	0	0	0	0	0
08:15	0	33	0	0	33	0	3	0	0	3	0	0	0	0	0	0
08:30	0	34	0	0	34	0	2	0	0	2	0	0	0	0	0	0
08:45	1	25	0	0	26	1	3	0	0	4	0	0	0	0	0	0
09:00	0	24	0	0	24	0	4	0	0	4	0	0	0	0	0	1
09:15	1	26	0	0	27	0	5	0	0	5	0	1	0	0	1	0
09:30	0	29	0	0	29	0	6	0	0	6	1	3	0	0	4	0
09:45	0	41	0	0	41	0	5	0	0	5	0	2	0	0	2	0
10:00	0	52	0	0	52	0	4	0	0	4	0	1	0	0	1	0
10:15	0	48	0	0	48	0	6	0	0	6	0	0	0	0	0	0
10:30	0	43	0	0	43	0	8	0	0	8	0	2	0	0	2	0
10:45	0	26	0	0	26	0	4	0	0	4	0	0	0	0	0	0
11:00	0	43	0	0	43	0	2	0	0	2	0	0	0	0	0	0

Ontario Traffic Inc.
TRAFFIC MONITORING SERVICES & PRODUCTS

Traffic Count Data

Intersection: CR 30 & Codrington Pit Access
Municipality: Codrington
Count Date: Aug 20, 2020

North Approach - CR 30

Start Time	Cars					Trucks					Aggregate Trucks					Total Peds
					Total					Total					Total	
11:15	0	37	0	0	37	0	6	0	0	6	0	0	0	0	0	0
11:30	0	36	0	0	36	0	5	0	0	5	0	1	0	0	1	0
11:45	0	36	0	0	36	0	5	0	0	5	0	0	0	0	0	0
12:00	0	22	0	0	22	0	1	0	0	1	0	0	0	0	0	0
12:15	0	24	0	0	24	0	4	0	0	4	0	0	0	0	0	0
12:30	0	25	0	0	25	0	3	0	0	3	0	0	0	0	0	0
12:45	0	31	0	0	31	0	2	0	0	2	0	0	0	0	0	0
13:00	0	30	0	0	30	0	3	0	0	3	0	0	0	0	0	0
13:15	0	48	0	0	48	0	1	0	0	1	0	0	0	0	0	0
13:30	1	41	0	0	42	0	6	0	0	6	0	1	0	0	1	0
13:45	0	44	0	0	44	0	1	0	0	1	0	0	0	0	0	0
14:00	0	32	0	0	32	0	2	0	0	2	0	0	0	0	0	0
14:15	1	35	0	0	36	0	5	0	0	5	0	1	0	0	1	0
14:30	0	31	0	0	31	0	4	0	0	4	0	0	0	0	0	0
14:45	0	33	0	0	33	0	2	0	0	2	0	0	0	0	0	0
15:00	0	51	0	0	51	0	6	0	0	6	0	0	0	0	0	0
15:15	1	36	0	0	37	0	3	0	0	3	0	0	0	0	0	0
15:30	0	50	0	0	50	0	7	0	0	7	0	0	0	0	0	0
15:45	0	31	0	0	31	0	4	0	0	4	0	0	0	0	0	0
16:00	0	23	0	0	23	0	4	0	0	4	0	0	0	0	0	0
16:15	0	32	0	0	32	0	2	0	0	2	0	0	0	0	0	0

Ontario Traffic Inc.
TRAFFIC MONITORING SERVICES & PRODUCTS

Traffic Count Data

Intersection: CR 30 & Codrington Pit Access
Municipality: Codrington
Count Date: Aug 20, 2020

North Approach - CR 30

Start Time	Cars					Trucks					Aggregate Trucks					Total Peds
					Total					Total					Total	
16:30	0	34	0	0	34	0	3	0	0	3	0	0	0	0	0	0
16:45	0	44	0	0	44	0	1	0	0	1	0	0	0	0	0	0
17:00	0	41	0	0	41	0	4	0	0	4	0	0	0	0	0	0
17:15	0	50	0	0	50	0	4	0	0	4	0	0	0	0	0	0
17:30	1	57	0	0	58	0	3	0	0	3	0	2	0	0	2	0
17:45	0	35	0	0	35	0	9	0	0	9	0	0	0	0	0	0
18:00	0	39	0	0	39	0	6	0	0	6	0	0	0	0	0	0
18:15	1	36	0	0	37	0	3	0	0	3	0	0	0	0	0	0
18:30	0	57	0	0	57	0	5	0	0	5	0	0	0	0	0	0
18:45	0	43	0	0	43	0	4	0	0	4	0	0	0	0	0	0
SUBTOTAL	9	1946	0	0	1955	2	211	0	0	213	3	19	0	0	22	1
GRAND TOTAL	**9**	**1946**	**0**	**0**	**1955**	**2**	**211**	**0**	**0**	**213**	**3**	**19**	**0**	**0**	**22**	**1**

Ontario Traffic Inc.
TRAFFIC MONITORING SERVICES & PRODUCTS

Traffic Count Data

Intersection: CR 30 & Codrington Pit Access
Municipality: Codrington
Count Date: Aug 20, 2020

South Approach - CR 30

Start Time	Cars					Trucks					Aggregate Trucks					Total Peds
	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	
06:00	0	27	1	0	28	0	1	1	0	2	0	0	0	0	0	0
06:15	0	35	0	0	35	0	8	1	0	9	0	2	0	0	2	0
06:30	0	45	2	0	47	0	3	0	0	3	0	1	5	0	6	0
06:45	0	44	0	0	44	0	11	0	0	11	0	4	2	0	6	0
07:00	1	34	0	0	35	0	4	0	0	4	0	1	1	0	2	0
07:15	0	52	0	0	52	0	5	1	0	6	0	0	2	0	2	3
07:30	0	44	2	0	46	1	7	0	0	8	0	1	0	0	1	0
07:45	1	35	0	0	36	0	9	0	0	9	0	1	2	0	3	1
08:00	0	32	0	0	32	0	2	0	0	2	0	1	2	0	3	0
08:15	0	33	0	0	33	0	1	0	0	1	0	0	0	0	0	0
08:30	0	25	0	0	25	0	2	0	0	2	0	0	1	0	1	0
08:45	0	26	0	0	26	0	1	0	0	1	0	2	0	0	2	0
09:00	0	22	0	0	22	0	4	0	0	4	0	0	1	0	1	1
09:15	0	31	1	0	32	0	4	0	0	4	0	1	1	0	2	0
09:30	0	38	1	0	39	0	7	0	0	7	0	0	2	0	2	0
09:45	0	30	0	0	30	0	5	0	0	5	0	0	4	0	4	0
10:00	1	33	0	0	34	0	3	0	0	3	0	4	2	0	6	0
10:15	0	53	1	0	54	0	5	0	0	5	0	1	4	0	5	0
10:30	0	52	0	0	52	0	4	0	0	4	0	3	3	0	6	0
10:45	0	51	0	0	51	0	6	0	0	6	0	1	1	0	2	0
11:00	0	64	0	0	64	0	6	0	0	6	0	0	2	0	2	0

Ontario Traffic Inc.
TRAFFIC MONITORING SERVICES & PRODUCTS

Traffic Count Data

Intersection: CR 30 & Codrington Pit Access
Municipality: Codrington
Count Date: Aug 20, 2020

South Approach - CR 30

Start Time	Cars					Trucks					Aggregate Trucks					Total Peds
	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	
11:15	0	37	0	0	37	0	6	0	0	6	0	1	2	0	3	0
11:30	0	49	1	0	50	0	7	0	0	7	0	0	0	0	0	0
11:45	1	59	0	0	60	0	6	0	0	6	0	0	1	0	1	0
12:00	0	31	0	0	31	0	3	0	0	3	0	1	0	0	1	0
12:15	0	45	0	0	45	0	4	0	0	4	0	0	1	0	1	0
12:30	0	44	0	0	44	0	2	0	0	2	0	0	0	0	0	0
12:45	0	56	0	0	56	0	1	0	0	1	0	1	2	0	3	0
13:00	0	41	2	0	43	0	4	0	0	4	0	0	1	0	1	0
13:15	0	52	0	0	52	0	5	0	0	5	0	0	2	0	2	0
13:30	0	55	1	0	56	0	9	0	0	9	0	0	0	0	0	0
13:45	1	32	0	0	33	0	1	0	0	1	0	0	0	0	0	1
14:00	0	33	0	0	33	0	6	0	0	6	0	0	2	0	2	0
14:15	0	36	0	0	36	0	6	0	0	6	0	0	2	0	2	0
14:30	0	50	2	0	52	0	4	0	0	4	0	2	0	0	2	0
14:45	0	32	1	0	33	0	4	0	0	4	0	2	2	0	4	0
15:00	0	45	2	0	47	0	5	0	0	5	0	0	0	0	0	0
15:15	0	55	3	0	58	0	6	0	0	6	0	0	0	0	0	0
15:30	0	44	0	0	44	0	10	0	0	10	0	1	2	0	3	0
15:45	0	51	2	0	53	0	5	0	0	5	0	0	0	0	0	0
16:00	0	41	0	0	41	0	4	0	0	4	0	2	1	0	3	0
16:15	0	33	0	0	33	0	5	0	0	5	0	0	0	0	0	0

Ontario Traffic Inc.
TRAFFIC MONITORING SERVICES & PRODUCTS

Traffic Count Data

Intersection: CR 30 & Codrington Pit Access
Municipality: Codrington
Count Date: Aug 20, 2020

South Approach - CR 30

Start Time	Cars					Trucks					Aggregate Trucks					Total Peds
					Total					Total					Total	
16:30	0	34	0	0	34	0	4	0	0	4	0	1	1	0	2	0
16:45	0	45	0	0	45	0	2	0	0	2	0	0	0	0	0	0
17:00	0	51	3	0	54	0	6	0	0	6	0	2	2	0	4	0
17:15	0	54	0	0	54	0	3	0	0	3	0	2	0	0	2	0
17:30	0	54	1	0	55	0	5	0	0	5	0	0	0	0	0	0
17:45	0	54	0	0	54	0	11	0	0	11	0	1	0	0	1	0
18:00	0	57	0	0	57	0	12	0	0	12	0	0	0	0	0	0
18:15	0	56	0	0	56	0	5	0	0	5	0	2	0	0	2	0
18:30	0	53	0	0	53	0	7	1	0	8	0	0	0	0	0	0
18:45	0	61	0	0	61	0	3	0	0	3	0	0	0	0	0	0
SUBTOTAL	5	2246	26	0	2277	1	259	4	0	264	0	41	56	0	97	6
GRAND TOTAL	5	2246	26	0	2277	1	259	4	0	264	0	41	56	0	97	6

Ontario Traffic Inc.
TRAFFIC MONITORING SERVICES & PRODUCTS

Traffic Count Data

Intersection: CR 30 & Codrington Pit Access
Municipality: Codrington
Count Date: Aug 20, 2020

East Approach - Codrington Pit Access

Start Time	Cars					Trucks					Aggregate Trucks					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
06:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
06:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
06:45	2	1	0	0	3	3	0	0	0	3	2	0	1	0	3	0
07:00	0	0	0	0	0	0	0	0	0	0	2	0	1	0	3	10
07:15	2	0	0	0	2	0	0	0	0	0	4	0	0	0	4	0
07:30	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0
07:45	1	0	0	0	1	0	0	0	0	0	1	0	1	0	2	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0
08:30	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	0
08:45	2	0	0	0	2	0	0	0	0	0	2	0	0	0	2	0
09:00	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30	1	0	0	0	1	0	0	0	0	0	4	0	0	0	4	0
09:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	0
10:15	1	0	0	0	1	0	0	1	0	1	5	0	0	0	5	0
10:30	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	0
10:45	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
11:00	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	0

Ontario Traffic Inc.
TRAFFIC MONITORING SERVICES & PRODUCTS

Traffic Count Data

Intersection: CR 30 & Codrington Pit Access
Municipality: Codrington
Count Date: Aug 20, 2020

East Approach - Codrington Pit Access

Start Time	Cars					Trucks					Aggregate Trucks					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
11:15	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0
11:30	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0
12:00	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
12:15	2	0	0	0	2	0	0	0	0	0	2	0	0	0	2	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0
13:00	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
13:15	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0
13:30	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
13:45	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
14:00	1	0	1	0	2	0	0	0	0	0	1	0	0	0	1	0
14:15	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	0
14:30	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
14:45	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
15:00	0	0	1	0	1	0	0	0	0	0	2	0	0	0	2	0
15:15	0	0	1	0	1	0	0	0	0	0	2	0	0	0	2	0
15:30	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0
15:45	3	0	0	0	3	0	0	0	0	0	2	0	0	0	2	0
16:00	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0

Ontario Traffic Inc.
TRAFFIC MONITORING SERVICES & PRODUCTS

Traffic Count Data

Intersection: CR 30 & Codrington Pit Access
Municipality: Codrington
Count Date: Aug 20, 2020

East Approach - Codrington Pit Access

Start Time	Cars					Trucks					Aggregate Trucks					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:30	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0
17:00	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1	1
17:15	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0
17:30	0	0	2	0	2	0	0	0	0	0	1	0	0	0	1	0
17:45	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0
18:30	1	0	2	0	3	0	0	1	0	1	0	0	0	0	0	0
18:45	0	1	0	0	1	1	1	0	0	2	0	0	0	0	0	0
SUBTOTAL	34	2	8	0	44	5	1	2	0	8	66	0	3	0	69	12
GRAND TOTAL	34	2	8	0	44	5	1	2	0	8	66	0	3	0	69	12

Peak Hour Diagram

Ontario Traffic Inc.
TRAFFIC MONITORING SERVICES & PRODUCTS

Specified Period		One Hour Peak	
From:	06:00:00	From:	06:45:00
To:	10:00:00	To:	07:45:00

Intersection: CR 30 & Codrington Pit Access
Site ID: 2012600001
Count Date: Aug 20, 2020

Weather conditions:

**** Unsignalized Intersection ****

Major Road: CR 30 runs N/S

North Approach

	Out	In	Total
🚗	194	174	368
T	23	27	50
AT	5	8	13
	222	**209**	**431**

CR 30

AT	3	2	0
T	22	1	0
🚗	193	1	0
Totals	**218**	**4**	**0**

Peds: 0

Peds: 0

Peds: 10

Peds: 3

Totals	**207**	**8**	**0**
🚗	174	2	0
T	27	1	0
AT	6	5	0

CR 30

East Approach

	Out	In	Total
🚗	5	3	8
T	3	2	5
AT	12	7	19
	20	**12**	**32**

Codrington Pit Access

	Totals	🚗	T	AT
	0	0	0	0
	2	0	0	2
	17	4	3	10

South Approach

	Out	In	Total
🚗	177	197	374
T	29	25	54
AT	11	13	24
	217	**235**	**452**

🚗 - Cars T - Trucks AT - Aggregate Trucks

Comments

Ontario Traffic Inc.
TRAFFIC MONITORING SERVICES & PRODUCTS

Peak Hour Summary

Intersection: CR 30 & Codrington Pit Access
Count Date: Aug 20, 2020
Period: 06:00 - 10:00

Peak Hour Data (06:45 - 07:45)

Start Time	North Approach CR 30						South Approach CR 30						East Approach Codrington Pit Access						West Approach						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
06:45	1	74		0	0	75		59	2	0	0	61	7		1	0	0	8					0		144
07:00	0	38		0	0	38		39	1	0	0	40	2		1	0	10	3					0		81
07:15	3	44		0	0	47		57	3	0	3	60	6		0	0	0	6					0		113
07:30	0	62		0	0	62		52	2	0	0	54	2		0	0	0	2					0		118
Grand Total	**4**	**218**		**0**	**0**	**222**		**207**	**8**	**0**	**3**	**215**	**17**		**2**	**0**	**10**	**19**					**0**	**0**	**456**
Approach %	1.8	98.2		0		-		96.3	3.7	0		-	89.5		10.5	0		-						-	
Totals %	0.9	47.8		0		48.7		45.4	1.8	0		47.1	3.7		0.4	0		4.2						0	
PHF	**0.33**	**0.74**		**0**		**0.74**		**0.88**	**0.67**	**0**		**0.88**	**0.61**		**0.5**	**0**		**0.59**						**0**	**0.79**
Cars	1	193		0		194		174	2	0		176	4		0	0		4						0	374
% Cars	25	88.5		0		87.4		84.1	25	0		81.9	23.5		0	0		21.1						0	82
Trucks	1	22		0		23		27	1	0		28	3		0	0		3						0	54
% Trucks	25	10.1		0		10.4		13	12.5	0		13	17.6		0	0		15.8						0	11.8
Aggregate Trucks	2	3		0		5		6	5	0		11	10		2	0		12						0	28
% Aggregate Trucks	50	1.4		0		2.3		2.9	62.5	0		5.1	58.8		100	0		63.2						0	6.1
Peds					0	-					3	-					10	-					0	-	13
% Peds					0	-					23.1	-					76.9	-					0	-	

Peak Hour Diagram

Ontario Traffic Inc.
TRAFFIC MONITORING SERVICES & PRODUCTS

Specified Period		One Hour Peak	
From:	10:00:00	From:	10:15:00
To:	14:00:00	To:	11:15:00

Intersection: CR 30 & Codrington Pit Access
Site ID: 2012600001
Count Date: Aug 20, 2020

Weather conditions:

**** Unsignalized Intersection ****

Major Road: CR 30 runs N/S

North Approach

	Out	In	Total
🚗	160	220	380
T	20	22	42
AT	2	5	7
	182	**247**	**429**

CR 30

AT	2	0	0
T	20	0	0
🚗	160	0	0
Totals	**182**	**0**	**0**

Peds: 0

Peds: 0

Peds: 0

Peds: 0

Totals	**246**	**11**	**0**
🚗	220	1	0
T	21	0	0
AT	5	10	0

CR 30

East Approach

	Out	In	Total
🚗	1	1	2
T	1	0	1
AT	12	10	22
	14	**11**	**25**

Codrington Pit Access

	Totals	🚗	T	AT
	0	0	0	0
	1	0	1	0
	13	1	0	12

South Approach

	Out	In	Total
🚗	221	161	382
T	21	20	41
AT	15	14	29
	257	**195**	**452**

🚗 - Cars T - Trucks AT - Aggregate Trucks

Comments

Ontario Traffic Inc.
TRAFFIC MONITORING SERVICES & PRODUCTS

Peak Hour Summary

Intersection: CR 30 & Codrington Pit Access
Count Date: Aug 20, 2020
Period: 10:00 - 14:00

Peak Hour Data (10:15 - 11:15)

Start Time	North Approach CR 30						South Approach CR 30						East Approach Codrington Pit Access						West Approach						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
10:15	0	54		0	0	54		59	5	0	0	64	6		1	0	0	7					0		125
10:30	0	53		0	0	53		59	3	0	0	62	3		0	0	0	3					0		118
10:45	0	30		0	0	30		58	1	0	0	59	1		0	0	0	1					0		90
11:00	0	45		0	0	45		70	2	0	0	72	3		0	0	0	3					0		120
Grand Total	**0**	**182**		**0**	**0**	**182**		**246**	**11**	**0**	**0**	**257**	**13**		**1**	**0**	**0**	**14**					**0**	**0**	**453**
Approach %	0	100		0		-		95.7	4.3	0		-	92.9		7.1	0		-						-	
Totals %	0	40.2		0		40.2		54.3	2.4	0		56.7	2.9		0.2	0		3.1						0	
PHF	**0**	**0.84**		**0**		**0.84**		**0.88**	**0.55**	**0**		**0.89**	**0.54**		**0.25**	**0**		**0.5**						**0**	**0.91**
Cars	0	160		0		160		220	1	0		221	1		0	0		1						0	382
% Cars	0	87.9		0		87.9		89.4	9.1	0		86	7.7		0	0		7.1						0	84.3
Trucks	0	20		0		20		21	0	0		21	0		1	0		1						0	42
% Trucks	0	11		0		11		8.5	0	0		8.2	0		100	0		7.1						0	9.3
Aggregate Trucks	0	2		0		2		5	10	0		15	12		0	0		12						0	29
% Aggregate Trucks	0	1.1		0		1.1		2	90.9	0		5.8	92.3		0	0		85.7						0	6.4
Peds					0	-					0	-					0	-					0	-	0
% Peds					0	-					0	-					0	-					0	-	

Peak Hour Diagram

Ontario Traffic Inc.
TRAFFIC MONITORING SERVICES & PRODUCTS

Specified Period		One Hour Peak	
From:	14:00:00	From:	17:15:00
To:	19:00:00	To:	18:15:00

Intersection: CR 30 & Codrington Pit Access
Site ID: 2012600001
Count Date: Aug 20, 2020

Weather conditions:

**** Unsignalized Intersection ****

Major Road: CR 30 runs N/S

North Approach

	Out	In	Total
🚗	182	221	403
T	22	31	53
AT	2	3	5
	206	**255**	**461**

CR 30

AT	2	0	0
T	22	0	0
🚗	181	1	0
Totals	**205**	**1**	**0**

Peds: 0

Peds: 0

Peds: 0

Peds: 0

Totals	**253**	**1**	**0**
🚗	219	1	0
T	31	0	0
AT	3	0	0

CR 30

East Approach

	Out	In	Total
🚗	2	2	4
T	0	0	0
AT	4	0	4
	6	**2**	**8**

Codrington Pit Access

	Totals	🚗	T	AT
	0	0	0	0
	2	2	0	0
	4	0	0	4

South Approach

	Out	In	Total
🚗	220	181	401
T	31	22	53
AT	3	6	9
	254	**209**	**463**

🚗 - Cars T - Trucks AT - Aggregate Trucks

Comments

Ontario Traffic Inc.
TRAFFIC MONITORING SERVICES & PRODUCTS

Peak Hour Summary

Intersection: CR 30 & Codrington Pit Access
Count Date: Aug 20, 2020
Period: 14:00 - 19:00

Peak Hour Data (17:15 - 18:15)

Start Time	North Approach CR 30						South Approach CR 30						East Approach Codrington Pit Access						West Approach						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
17:15	0	54		0	0	54		59	0	0	0	59	2		0	0	0	2					0		115
17:30	1	62		0	0	63		59	1	0	0	60	1		2	0	0	3					0		126
17:45	0	44		0	0	44		66	0	0	0	66	1		0	0	0	1					0		111
18:00	0	45		0	0	45		69	0	0	0	69	0		0	0	0	0					0		114
Grand Total	**1**	**205**		**0**	**0**	**206**		**253**	**1**	**0**	**0**	**254**	**4**		**2**	**0**	**0**	**6**					**0**	**0**	**466**
Approach %	0.5	99.5		0		-		99.6	0.4	0		-	66.7		33.3	0		-						-	
Totals %	0.2	44		0		44.2		54.3	0.2	0		54.5	0.9		0.4	0		1.3						0	
PHF	**0.25**	**0.83**		**0**		**0.82**		**0.92**	**0.25**	**0**		**0.92**	**0.5**		**0.25**	**0**		**0.5**						**0**	**0.92**
Cars	1	181		0		182		219	1	0		220	0		2	0		2						0	404
% Cars	100	88.3		0		88.3		86.6	100	0		86.6	0		100	0		33.3						0	86.7
Trucks	0	22		0		22		31	0	0		31	0		0	0		0						0	53
% Trucks	0	10.7		0		10.7		12.3	0	0		12.2	0		0	0		0						0	11.4
Aggregate Trucks	0	2		0		2		3	0	0		3	4		0	0		4						0	9
% Aggregate Trucks	0	1		0		1		1.2	0	0		1.2	100		0	0		66.7						0	1.9
Peds					0	-					0	-					0	-					0	-	0
% Peds					0	-					0	-					0	-					0	-	

APPENDIX B

Capacity Analysis

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	37	6	207	13	6	218
Future Volume (Veh/h)	37	6	207	13	6	218
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	40	6	223	14	6	234
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	469	223			237	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	469	223			237	
tC, single (s)	6.4	7.1			4.1	
tC, 2 stage (s)						
tF (s)	3.5	4.1			2.2	
p0 queue free %	93	99			100	
cM capacity (veh/h)	554	642			1342	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1
Volume Total	46	223	14	240
Volume Left	40	0	0	6
Volume Right	6	0	14	0
cSH	564	1700	1700	1342
Volume to Capacity	0.08	0.13	0.01	0.00
Queue Length 95th (m)	2.0	0.0	0.0	0.1
Control Delay (s)	11.9	0.0	0.0	0.2
Lane LOS	B			A
Approach Delay (s)	11.9	0.0		0.2
Approach LOS	B			

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	26.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	36	2	253	21	1	205
Future Volume (Veh/h)	36	2	253	21	1	205
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	40	2	284	24	1	230
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	516	284			308	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	516	284			308	
tC, single (s)	7.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	4.4	3.3			2.2	
p0 queue free %	90	100			100	
cM capacity (veh/h)	382	760			1264	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1
Volume Total	42	284	24	231
Volume Left	40	0	0	1
Volume Right	2	0	24	0
cSH	391	1700	1700	1264
Volume to Capacity	0.11	0.17	0.01	0.00
Queue Length 95th (m)	2.7	0.0	0.0	0.0
Control Delay (s)	15.3	0.0	0.0	0.0
Lane LOS	C			A
Approach Delay (s)	15.3	0.0		0.0
Approach LOS	C			

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	23.3%	ICU Level of Service	A
Analysis Period (min)	15		