



7th Annual Traffic and Safety Review

Codrington Pit

Northumberland County

July 24, 2023 — Project # 17169

Votorantim Cimentos (CBM Aggregates)

TYLin

EXECUTIVE SUMMARY

This study represents the Seventh (7th) 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 little growth in traffic along this section of roadway since the last annual traffic and safety review (or even over the last 14 years).
- Intersection analyses indicates 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 collisions related to pit operations (including aggregate trucks) in the study area since the opening of the Pit access. There was no current collision data for review in the study area from Northumberland County.
- TYLin finds the Codrington Pit access is operating as intended, and given the available information, provides an acceptable degree of efficiency and safety.

It is TYLin's opinion that there is no further need to conduct annual studies or at a minimum reduce the frequency of the study to every second or third year. This would be based on our historic findings that there have been no incidents that necessitates indefinite / ongoing study of this entrance, the impact on traffic has been minimal, the traffic growth in the area has been less than predicted, and the as-constructed design elements continue to exceed the operational requirements of the pit-related traffic volumes.

PROJECT TEAM

Technical Assistance:

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A handwritten signature in black ink that reads "Michael Dowdall". The signature is written in a cursive, flowing style.

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TABLE OF CONTENTS

EXECUTIVE SUMMARY	II
1 INTRODUCTION	1
1.1 Retainer and Objective	1
1.2 Study Background	2
1.3 Site Area	2
2 BASELINE TRAFFIC	3
2.1 Haul Route	3
2.2 County Road 30 Traffic Growth Review	3
2.3 Traffic Data	4
2.3.1 Adjacent Street Traffic	4
2.3.2 Peak Truck Activity	5
2.4 Baseline Traffic Volumes	6
3 CAPACITY ANALYSIS	7
3.1 Baseline Capacity Analysis	7
3.2 Six-year Traffic Analysis Summary	8
4 INCIDENT REPORTS	10
4.1 Collision Reports	10
4.2 CBM-Reported Incidents	10
4.3 Seven-Year Collision and Incident Summary	10
5 CONCLUSION	11
6 RECOMMENDATION	12

APPENDICES

APPENDIX A Traffic Data

APPENDIX B Capacity Analysis

APPENDIX C Collision Reports

LIST OF FIGURES

Figure 1-1	Site Location.....	1
Figure 2-1	2023 Existing Adjacent Street Traffic Volumes	5
Figure 2-2	2023 Peak Truck Activity.....	5
Figure 2-3	2023 Baseline Traffic Volumes	6
Figure 3-1	2023 Baseline Traffic Volumes – PCE Adjusted.....	7

LIST OF TABLES

Table 2-1	Two-way Traffic Volumes 2007 - 2023	4
Table 3-1	Capacity Analysis of Codrington Pit Access and County Road 30	8
Table 3-2	Capacity Summary 2017-2023.....	9
Table 4-1	Collision and Incident Summary 2017 - 2023	10

1 INTRODUCTION

1.1 Retainer and Objective

T.Y. Lin International Canada Inc. (TYLin) was retained by Votorantim Cimentos (CBM Aggregates) to prepare a seventh 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. Mary’s [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. Mary’s”.

The enclosed report is the seventh annual examination following the opening of the Pit in 2016 and builds on the first, second, third, fourth, fifth, and sixth annual traffic and safety reviews completed between 2017 and 2022 by TYLin (formerly known as 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 (2023) traffic volume 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 assumed 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 2023 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 six prior annual traffic and safety reviews.

In the p.m., volumes along County Road 30 have increased by about 11.9% (when compared to 2007 traffic volumes), while the a.m. peak hour flows have decreased over the last 15 years (when compared to 2007 traffic volumes), by 0.4% as shown in **Table 2-1**.

Table 2-1 Two-way Traffic Volumes 2007 - 2023

Year	AM Two-way Traffic	PM Two-way Traffic
2007	507	446
2018	436	470
2019	464	532
2020	425	458
2021	385	552
2022	408	532
2023	505	499

The original traffic study forecasted growth on County Road 30 at the rate of 2% per year (equating to a compounded 16-year growth of 32%), 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.

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.

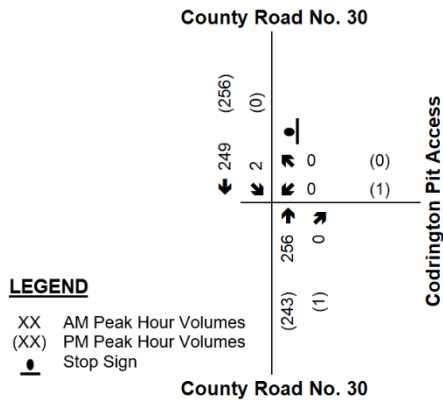
2.3 Traffic Data

A weekday turning movement count was conducted by Ontario Traffic Inc. on May 31, 2023 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 2023 Existing Adjacent Street Traffic Volumes



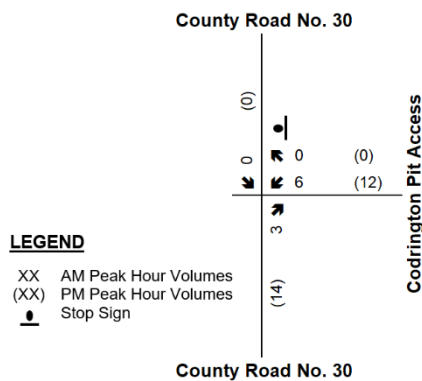
2.3.2 Peak Truck Activity

The peak hour of truck traffic entering and exiting from the site access was extracted from the May 2023 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.

In the a.m. peak period, no passenger vehicles were recorded turning right into the site access, therefore the number of aggregate truck trips was a total of 3 trips, with 3 trucks turning northbound right, and no truck turning southbound left into the site access while there are 14 trucks that go into the site access from the northbound right during the p.m. peak as shown in **Figure 2-2**.

Accordingly, in the periods of highest truck traffic as per the 2023 turning movement counts, there are 6 and 12 truck trips in/out of the site during both the a.m. and p.m. truck peak hours, respectively, as shown in **Figure 2-2**.

Figure 2-2 2023 Peak Truck Activity



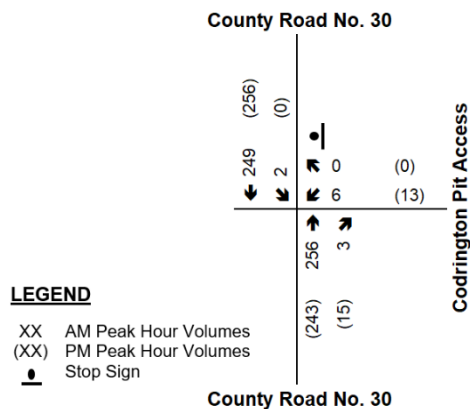
The inbound and outbound splits continue to be consistent with the forecasted haulage of material back in the 2007 Traffic Study, which predicted the vast majority of truck trips to be destined to, and originating from, the south along County Road 30. As can be seen from a review of the 2023 traffic data, the counts indicate minimal truck traffic to and from the north which can be attributed to some local delivery of material to destinations north of the site (seen in the midday peak counts in **Appendix A**). 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 2023 were 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 'worst case' scenario of busiest combined corridor activity.

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

Figure 2-3 2023 Baseline Traffic Volumes



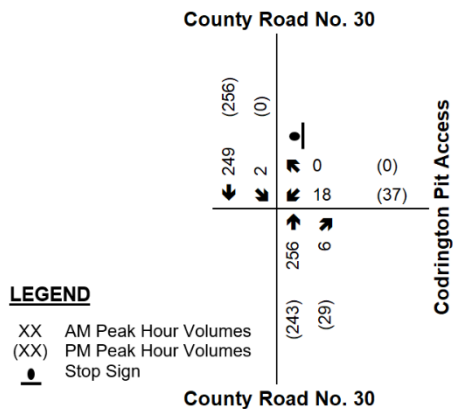
3 CAPACITY ANALYSIS

3.1 Baseline 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 2023 truck traffic volumes expressed as PCEs are shown in **Figure 3-1**. Note that the two passenger cars turning left and three turning right out of the site access were included in the p.m. westbound left and right movements, resulting in two trips for the westbound left, and resulting in zero trips for the westbound right.

Figure 3-1 2023 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 11 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 2023	WBLR: 0.04 (B); 1 veh; 13 s SBLT: 0.00 (A); 0 veh; 0 s	WBLR: 0.11 (C); 1 veh; 16 s SBLT: 0.00 (-); 0 veh; 0 s

Under 2023 baseline conditions, the intersection of County Road 30 and the Codrington Pit Access is operating with excellent operational characteristics and 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' during weekday a.m. and at 'C' during p.m. peak hours. 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.

3.2 Six-year Traffic Analysis Summary

The results of the capacity analyses from the previous five annual safety reviews are presented in **Table 3-2**.

Table 3-2 Capacity Summary 2017-2023

Year	Movement											
	WBLR						SBLT					
	AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
	v/c	LOS	Delay (s)	v/c	LOS	Delay (s)	v/c	LOS	Delay (s)	v/c	LOS	Delay (s)
Baseline 2017	0.06	B	14	0.09	B	15	0.00	A	1	0.02	A	1
Baseline 2018	0.06	B	14	0.07	B	15	0.02	A	1	0.02	A	1
Baseline 2019	0.05	B	12	0.08	C	16	0.00	A	1	0.00	A	0
Baseline 2020	0.08	B	12	0.11	C	12	0.00	A	1	0.00	A	0
Baseline 2021	0.14	B	12	0.26	C	20	0.00	-	0	0.00	-	0
Baseline 2022	0.03	B	12	0.03	B	13	0.00	A	0	0.00	-	0
Baseline 2023	0.04	B	13	0.11	C	16	0.00	A	0	0.00	-	0

Under the baseline 2023 existing conditions, the study intersection is operating well within capacity and acceptable delays during both the a.m. and p.m. peak hours. Similarly the movements have operated similarly for the past six years, indicating no operational issues and have reserve capacities at all movements. The v/c ratio has increased for all the westbound left-right movement in the a.m. and p.m. between 2022 and 2023, and although the delay has increased for the westbound movement in the p.m. peak hour, the values indicate that there is still reserve capacity for the movement during both peak hours. It would be reasonable to assume that these trends would continue in future years, thus there is low cause for concern for road network impacts related to pit operations.

4 INCIDENT REPORTS

4.1 Collision Reports

TYLin have consulted with the County of Northumberland, the agency responsible for collision reports near the site. At the time of the report, TYLin have not received any information regarding the updated collision data within the study area (September 2021 to June 27, 2023).

4.2 CBM-Reported Incidents

Since the last Safety Review, no incidents were reported along the truck haul route to CBM for the past year. As such no incidents have been reported since October 10, 2020.

4.3 Seven-Year Collision and Incident Summary

The number of collisions and incidents reported by CBM within the vicinity of the pit over the past seven years are shown below in **Table 4-1**.

Table 4-1 Collision and Incident Summary 2017 - 2023

Year	Number of Collisions		Number of CBM Reported Incidents	
	Pit-Related	Non-Pit-Related	Pit-Related	Non-Pit-Related
2017	0	0	1	0
2018	0	0	1	0
2019	0	0	1	1
2020	0	1	0	0
2021	0	3	1	0
2022	-	-	0	0
2023	-	-	0	0

A review of the past seven years shows that the number of pit-related collisions, which have been reported, have consistently remained zero. Additionally, the number of pit-related incidents has been one or fewer per year since 2017. Overall, the pit has had an excellent road safety record, and it would be reasonable to assume that these safety trends will continue in future years as the pit operates.

5 CONCLUSION

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.

County Road 30 passing traffic was also observed to be less than forecasted in the original traffic study and there has been little growth in traffic along this section of roadway since the last annual traffic and safety review.

The Pit access turn lanes constructed to accommodate the future condition are still more than adequate to handle present day peaks. They continue to exceed the operational requirements of the Pit-related traffic volumes, as all movements operate at LOS C or better for 2023. The traffic volume in the area has also been very stable over the course of previous study years.

TYLin have consulted with the County of Northumberland, the agency responsible for collision reports near the site. At the time of the report, TYLin have not received any information regarding the updated collision data within the study area (September 2021 to June 2023).

CBM staff confirmed they have not received any traffic related complaints over the past year involving pit-related vehicles.

TYLin finds the Codrington Pit access is operating as intended, and given the available information, provides an acceptable degree of efficiency and safety.

6 RECOMMENDATION

TYLin recommends concluding the practice of safety reviews for Codrington Pit as the site has historically and currently demonstrated low traffic impact, recorded no pit-related collisions, and received minimal incident complaints relating to the pit operations, over the past seven safety reviews.

It is TYLin's opinion that there is no further need to conduct annual studies or at a minimum reduce the frequency of the study to every second or third year. This would be based on our historic findings that there have been no incidents that necessitates indefinite / ongoing study of this entrance, the impact on traffic has been minimal, the traffic growth in the area has been less than predicted, and the as-constructed design elements continue to exceed the operational requirements of the pit-related traffic volumes.

APPENDIX A

Traffic Data



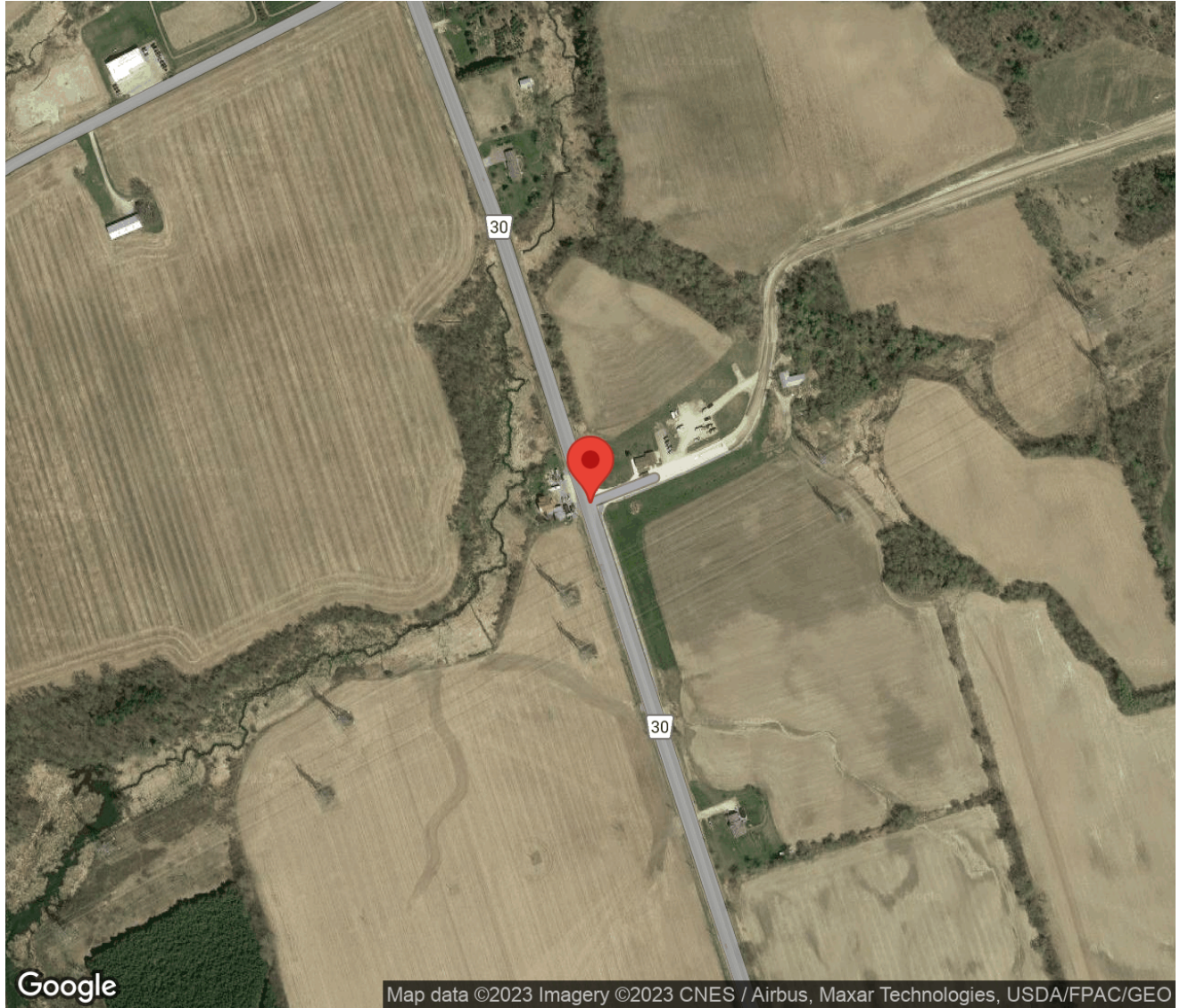
Project #23-166 - TYLin

Intersection Count Report

Intersection: CR 30 & Codrington Pit
Municipality: Codrington
Count Date: Wednesday, May 31, 2023
Site Code: 2316600001
Count Categories: Cars, Trucks, Aggregate Trucks, Pedestrians
Count Period: 06:00-19:00
Weather: Clear
Comments:

Traffic Count Map

Intersection: CR 30 & Codrington Pit
Site Code: 2316600001
Municipality: Codrington
Count Date: May 31, 2023



Traffic Count Summary

Intersection: CR 30 & Codrington Pit
 Site Code: 2316600001
 Municipality: Codrington
 Count Date: May 31, 2023

CR 30 - Traffic Summary

Hour	North Approach Totals						South Approach Totals						Total
	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	6	167	0	0	173	0	0	140	9	0	149	0	322
07:00 - 08:00	1	223	0	0	224	0	0	221	9	0	230	0	454
08:00 - 09:00	2	226	0	0	228	0	0	225	0	0	225	0	453
09:00 - 10:00	0	161	0	0	161	0	0	169	12	0	181	0	342
10:00 - 11:00	0	215	0	0	215	0	0	177	8	0	185	0	400
11:00 - 12:00	3	185	0	0	188	0	0	193	12	0	205	0	393
12:00 - 13:00	0	155	0	0	155	0	0	132	4	0	136	0	291
13:00 - 14:00	0	174	0	0	174	0	0	184	10	0	194	0	368
14:00 - 15:00	0	248	0	0	248	0	0	187	10	0	197	0	445
15:00 - 16:00	0	256	0	0	256	0	0	243	15	0	258	0	514
16:00 - 17:00	0	177	0	0	177	0	0	173	0	0	173	0	350
17:00 - 18:00	0	207	0	0	207	0	0	240	0	0	240	0	447
18:00 - 19:00	0	149	0	0	149	0	0	149	6	0	155	0	304
GRAND TOTAL	12	2543	0	0	2555	0	0	2433	95	0	2528	0	5083

Traffic Count Data

Intersection: CR 30 & Codrington Pit
 Site Code: 2316600001
 Municipality: Codrington
 Count Date: May 31, 2023

North Approach - CR 30

Start Time	Cars					Trucks					Aggregate Trucks					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
06:00	2	20	0	0	22	0	1	0	0	1	0	0	0	0	0	0
06:15	2	43	0	0	45	0	2	0	0	2	0	0	0	0	0	0
06:30	2	61	0	0	63	0	2	0	0	2	0	0	0	0	0	0
06:45	0	34	0	0	34	0	2	0	0	2	0	2	0	0	2	0
07:00	0	43	0	0	43	0	1	0	0	1	1	6	0	0	7	0
07:15	0	49	0	0	49	0	3	0	0	3	0	2	0	0	2	0
07:30	0	46	0	0	46	0	1	0	0	1	0	1	0	0	1	0
07:45	0	65	0	0	65	0	5	0	0	5	0	1	0	0	1	0
08:00	1	54	0	0	55	0	4	0	0	4	0	0	0	0	0	0
08:15	1	55	0	0	56	0	3	0	0	3	0	1	0	0	1	0
08:30	0	56	0	0	56	0	5	0	0	5	0	0	0	0	0	0
08:45	0	43	0	0	43	0	4	0	0	4	0	1	0	0	1	0
09:00	0	35	0	0	35	0	5	0	0	5	0	2	0	0	2	0
09:15	0	41	0	0	41	0	3	0	0	3	0	1	0	0	1	0
09:30	0	29	0	0	29	0	2	0	0	2	0	2	0	0	2	0
09:45	0	34	0	0	34	0	6	0	0	6	0	1	0	0	1	0
10:00	0	51	0	0	51	0	5	0	0	5	0	1	0	0	1	0
10:15	0	35	0	0	35	0	8	0	0	8	0	3	0	0	3	0
10:30	0	49	0	0	49	0	7	0	0	7	0	2	0	0	2	0
10:45	0	49	0	0	49	0	4	0	0	4	0	1	0	0	1	0

Start Time	Cars					Trucks					Aggregate Trucks					Total Peds
	↶	↷	↷	↶	Total	↶	↷	↷	↶	Total	↶	↷	↷	↶	Total	
11:00	1	36	0	0	37	0	2	0	0	2	0	2	0	0	2	0
11:15	1	33	0	0	34	0	6	0	0	6	0	3	0	0	3	0
11:30	1	55	0	0	56	0	3	0	0	3	0	0	0	0	0	0
11:45	0	40	0	0	40	0	4	0	0	4	0	1	0	0	1	0
12:00	0	34	0	0	34	0	1	0	0	1	0	2	0	0	2	0
12:15	0	33	0	0	33	0	2	0	0	2	0	2	0	0	2	0
12:30	0	32	0	0	32	0	3	0	0	3	0	0	0	0	0	0
12:45	0	41	0	0	41	0	4	0	0	4	0	1	0	0	1	0
13:00	0	38	0	0	38	0	6	0	0	6	0	1	0	0	1	0
13:15	0	28	0	0	28	0	0	0	0	0	0	0	0	0	0	0
13:30	0	40	0	0	40	0	6	0	0	6	0	3	0	0	3	0
13:45	0	46	0	0	46	0	4	0	0	4	0	2	0	0	2	0
14:00	0	59	0	0	59	0	4	0	0	4	0	4	0	0	4	0
14:15	0	48	0	0	48	0	8	0	0	8	0	2	0	0	2	0
14:30	0	45	0	0	45	0	2	0	0	2	0	3	0	0	3	0
14:45	0	69	0	0	69	0	3	0	0	3	0	1	0	0	1	0
15:00	0	60	0	0	60	0	2	0	0	2	0	0	0	0	0	0
15:15	0	60	0	0	60	0	4	0	0	4	0	0	0	0	0	0
15:30	0	49	0	0	49	0	4	0	0	4	0	0	0	0	0	0
15:45	0	69	0	0	69	0	7	0	0	7	0	1	0	0	1	0
16:00	0	43	0	0	43	0	5	0	0	5	0	0	0	0	0	0
16:15	0	33	0	0	33	0	6	0	0	6	0	1	0	0	1	0
16:30	0	34	0	0	34	0	7	0	0	7	0	0	0	0	0	0
16:45	0	45	0	0	45	0	2	0	0	2	0	1	0	0	1	0
17:00	0	44	0	0	44	0	3	0	0	3	0	0	0	0	0	0
17:15	0	61	0	0	61	0	1	0	0	1	0	1	0	0	1	0
17:30	0	42	0	0	42	0	1	0	0	1	0	0	0	0	0	0
17:45	0	51	0	0	51	0	3	0	0	3	0	0	0	0	0	0
18:00	0	37	0	0	37	0	2	0	0	2	0	1	0	0	1	0
18:15	0	37	0	0	37	0	1	0	0	1	0	0	0	0	0	0

Start Time	Cars					Trucks					Aggregate Trucks					Total Peds
	↶	↷	↸	↹	Total	↶	↷	↸	↹	Total	↶	↷	↸	↹	Total	
18:30	0	44	0	0	44	0	1	0	0	1	0	0	0	0	0	0
18:45	0	26	0	0	26	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	11	2304	0	0	2315	0	180	0	0	180	1	59	0	0	60	0
GRAND TOTAL	11	2304	0	0	2315	0	180	0	0	180	1	59	0	0	60	0





Traffic Count Data

Intersection: CR 30 & Codrington Pit
 Site Code: 2316600001
 Municipality: Codrington
 Count Date: May 31, 2023

South Approach - CR 30

Start Time	Cars					Trucks					Aggregate Trucks					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
06:00	0	20	2	0	22	0	1	0	0	1	0	0	0	0	0	0
06:15	0	23	2	0	25	0	5	1	0	6	0	0	0	0	0	0
06:30	0	44	1	0	45	0	2	0	0	2	0	0	0	0	0	0
06:45	0	45	0	0	45	0	0	0	0	0	0	0	3	0	3	0
07:00	0	33	0	0	33	0	3	0	0	3	0	1	2	0	3	0
07:15	0	37	0	0	37	0	4	0	0	4	0	2	2	0	4	0
07:30	0	57	0	0	57	0	2	0	0	2	0	1	2	0	3	0
07:45	0	75	0	0	75	0	4	0	0	4	0	2	3	0	5	0
08:00	0	54	0	0	54	0	2	0	0	2	0	2	0	0	2	0
08:15	0	55	0	0	55	0	1	0	0	1	0	1	0	0	1	0
08:30	0	56	0	0	56	0	3	0	0	3	0	1	0	0	1	0
08:45	0	45	0	0	45	0	2	0	0	2	0	3	0	0	3	0
09:00	0	35	0	0	35	0	5	0	0	5	0	2	2	0	4	0
09:15	0	28	1	0	29	0	5	0	0	5	0	0	2	0	2	0
09:30	0	44	0	0	44	0	5	0	0	5	0	1	2	0	3	0
09:45	0	38	0	0	38	0	2	0	0	2	0	4	5	0	9	0
10:00	0	39	0	0	39	0	3	0	0	3	0	0	0	0	0	0
10:15	0	36	0	0	36	0	7	0	0	7	0	2	4	0	6	0
10:30	0	37	0	0	37	0	5	0	0	5	0	1	1	0	2	0
10:45	0	38	0	0	38	0	9	0	0	9	0	0	3	0	3	0

Start Time	Cars					Trucks					Aggregate Trucks					Total Peds
					Total					Total					Total	
11:00	0	46	0	0	46	0	7	0	0	7	0	1	2	0	3	0
11:15	0	35	0	0	35	0	7	0	0	7	0	1	5	0	6	0
11:30	0	50	0	0	50	0	2	0	0	2	0	2	2	0	4	0
11:45	0	36	0	0	36	0	3	0	0	3	0	3	3	0	6	0
12:00	0	21	0	0	21	0	1	0	0	1	0	2	3	0	5	0
12:15	0	32	1	0	33	0	1	0	0	1	0	2	0	0	2	0
12:30	0	33	0	0	33	0	2	0	0	2	0	1	0	0	1	0
12:45	0	34	0	0	34	0	2	0	0	2	0	1	0	0	1	0
13:00	0	34	0	0	34	0	1	0	0	1	0	1	3	0	4	0
13:15	0	51	0	0	51	0	2	0	0	2	0	2	1	0	3	0
13:30	0	41	0	0	41	0	4	0	0	4	0	1	4	0	5	0
13:45	0	40	0	0	40	0	1	0	0	1	0	6	2	0	8	0
14:00	0	38	0	0	38	0	3	0	0	3	0	0	3	0	3	0
14:15	0	33	0	0	33	0	3	0	0	3	0	1	2	0	3	0
14:30	0	48	0	0	48	0	5	0	0	5	0	1	4	0	5	0
14:45	0	49	0	0	49	0	5	0	0	5	0	1	1	0	2	0
15:00	0	44	0	0	44	0	6	0	0	6	0	2	2	0	4	0
15:15	0	57	0	0	57	0	3	0	0	3	0	4	5	0	9	0
15:30	0	50	1	0	51	0	2	0	0	2	0	4	4	0	8	0
15:45	0	63	0	0	63	0	6	0	0	6	0	2	3	0	5	0
16:00	0	32	0	0	32	0	3	0	0	3	0	1	0	0	1	0
16:15	0	34	0	0	34	0	4	0	0	4	0	2	0	0	2	0
16:30	0	44	0	0	44	0	5	0	0	5	0	0	0	0	0	0
16:45	0	45	0	0	45	0	2	0	0	2	0	1	0	0	1	0
17:00	0	61	0	0	61	0	1	0	0	1	0	1	0	0	1	0
17:15	0	64	0	0	64	0	1	0	0	1	0	0	0	0	0	0
17:30	0	63	0	0	63	0	0	0	0	0	0	1	0	0	1	0
17:45	0	48	0	0	48	0	0	0	0	0	0	0	0	0	0	0
18:00	0	39	0	0	39	0	1	0	0	1	0	0	0	0	0	0
18:15	0	34	6	0	40	0	1	0	0	1	0	0	0	0	0	0

Start Time	Cars					Trucks					Aggregate Trucks					Total Peds
	↶	↑	↷	↻	Total	↶	↑	↷	↻	Total	↶	↑	↷	↻	Total	
18:30	0	37	0	0	37	0	0	0	0	0	0	0	0	0	0	0
18:45	0	35	0	0	35	0	2	0	0	2	0	0	0	0	0	0
SUBTOTAL	0	2210	14	0	2224	0	156	1	0	157	0	67	80	0	147	0
GRAND TOTAL	0	2210	14	0	2224	0	156	1	0	157	0	67	80	0	147	0





Traffic Count Data

Intersection: CR 30 & Codrington Pit
 Site Code: 2316600001
 Municipality: Codrington
 Count Date: May 31, 2023

East Approach - Codrington Pit

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	0
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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	0
07:15	0	0	0	0	0	1	0	0	0	1	4	0	0	0	4	0
07:30	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
07:45	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0
08:00	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
08:15	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
08:30	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0
08:45	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
09:00	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	0
09:15	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0
09:30	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	0
09:45	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
10:00	0	0	0	0	0	0	0	0	0	0	6	0	0	0	6	0
10:15	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
10:30	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	0
10:45	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0

Start Time	Cars					Trucks					Aggregate Trucks					Total Peds
	↶	↷	↷	↶	Total	↶	↷	↷	↶	Total	↶	↷	↷	↶	Total	
18:30	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0
18:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	4	0	3	0	7	1	0	0	0	1	87	0	1	0	88	0
GRAND TOTAL	4	0	3	0	7	1	0	0	0	1	87	0	1	0	88	0

Peak Hour Diagram

Specified Period

From: 06:00:00
To: 10:00:00

One Hour Peak

From: 07:45:00
To: 08:45:00


Intersection: CR 30 & Codrington Pit
Site Code: 2316600001
Count Date: May 31, 2023

Weather conditions: Clear


**** Unsignalized Intersection ****

Major Road: CR 30 runs N/S

North Approach

	Out	In	Total
	232	240	472
T	17	10	27
AT	2	6	8
Totals	251	256	507

CR 30


AT	2	0	0
T	17	0	0
	230	2	0
Totals	249	2	0



Peds: 0




Peds: 0


Totals	256	3	0
	240	0	0
T	10	0	0
AT	6	3	0

CR 30


East Approach

	Out	In	Total
	0	2	2
T	0	0	0
AT	6	3	9
Totals	6	5	11

Codrington Pit

Totals		T	AT
0	0	0	0
0	0	0	0
6	0	0	6

South Approach

	Out	In	Total
	240	230	470
T	10	17	27
AT	9	8	17
Totals	259	255	514

 - Cars

T - Trucks

AT - Aggregate Trucks

Comments



Peak Hour Summary

Intersection: CR 30 & Codrington Pit
 Site Code: 2316600001
 Count Date: May 31, 2023
 Period: 06:00 - 10:00

Peak Hour Data (07:45 - 08:45)

Start Time	North Approach CR 30						South Approach CR 30						East Approach Codrington Pit						West Approach						Total Vehicles	
	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total		
07:45	0	71		0	0	71		81	3	0	0	84	2		0	0	0	2					0		157	
08:00	1	58		0	0	59		58	0	0	0	58	1		0	0	0	1					0		118	
08:15	1	59		0	0	60		57	0	0	0	57	1		0	0	0	1					0		118	
08:30	0	61		0	0	61		60	0	0	0	60	2		0	0	0	2					0		123	
Grand Total	2	249		0	0	251		256	3	0	0	259	6		0	0	0	6					0	0	516	
Approach %	0.8	99.2		0	-			98.8	1.2	0	-		100		0	0	-									
Totals %	0.4	48.3		0	48.6			49.6	0.6	0	50.2		1.2		0	0	1.2									
PHF	0.5	0.88		0	0.88			0.79	0.25	0	0.77		0.75		0	0	0.75						0	0.82		
Cars	2	230		0	232			240	0	0	240		0	0	0	0	0						0		472	
% Cars	100	92.4		0	92.4			93.8	0	0	92.7		0	0	0	0	0						0		91.5	
Trucks	0	17		0	17			10	0	0	10		0	0	0	0	0						0		27	
% Trucks	0	6.8		0	6.8			3.9	0	0	3.9		0	0	0	0	0						0		5.2	
Aggregate Trucks	0	2		0	2			6	3	0	9		6	0	0	6							0		17	
% Aggregate Trucks	0	0.8		0	0.8			2.3	100	0	3.5		100	0	0	100							0		3.3	
Peds					0	-					0	-					0	-					0	-	0	
% Peds					0	-					0	-					0	-					0	-	0	

Peak Hour Diagram

Specified Period

From: 10:00:00
To: 14:00:00

One Hour Peak

From: 10:45:00
To: 11:45:00


Intersection: CR 30 & Codrington Pit
Site Code: 2316600001
Count Date: May 31, 2023

Weather conditions: Clear


**** Unsignalized Intersection ****

Major Road: CR 30 runs N/S

North Approach

	Out	In	Total
	176	170	346
T	15	25	40
AT	6	4	10
Totals	197	199	396

CR 30


AT	6	0	0
T	15	0	0
	173	3	0
Totals	194	3	0




Peds: 0




East Approach

	Out	In	Total
	1	3	4
T	0	0	0
AT	11	12	23
Totals	12	15	27


Codrington Pit

Totals		T	AT
0	0	0	0
1	1	0	0
11	0	0	11

South Approach

	Out	In	Total
	169	173	342
T	25	15	40
AT	16	17	33
Totals	210	205	415

CR 30

Totals	198	12	0
	169	0	0
T	25	0	0
AT	4	12	0

 - Cars

T - Trucks

AT - Aggregate Trucks

Comments



Peak Hour Summary

Intersection: CR 30 & Codrington Pit
 Site Code: 2316600001
 Count Date: May 31, 2023
 Period: 10:00 - 14:00

Peak Hour Data (10:45 - 11:45)

Start Time	North Approach CR 30						South Approach CR 30						East Approach Codrington Pit						West Approach						Total Vehicles	
	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total		
10:45	0	54		0	0	54		47	3	0	0	50	1		0	0	0	1					0			105
11:00	1	40		0	0	41		54	2	0	0	56	4		0	0	0	4					0			101
11:15	1	42		0	0	43		43	5	0	0	48	3		1	0	0	4					0			95
11:30	1	58		0	0	59		54	2	0	0	56	3		0	0	0	3					0			118
Grand Total	3	194		0	0	197		198	12	0	0	210	11		1	0	0	12					0		0	419
Approach %	1.5	98.5		0	-	-		94.3	5.7	0	-	-	91.7		8.3	0	-	-					-		-	-
Totals %	0.7	46.3		0	47	50.1		47.3	2.9	0	50.1	50.1	2.6		0.2	0	2.9	2.9					0		0	0
PHF	0.75	0.84		0	0.83	0.83		0.92	0.6	0	0.94	0.94	0.69		0.25	0	0.75	0.75					0		0.89	0.89
Cars	3	173		0	176	176		169	0	0	169	169	0		1	0	1	1					0		0	346
% Cars	100	89.2		0	89.3	89.3		85.4	0	0	80.5	80.5	0		100	0	8.3	8.3					0		0	82.6
Trucks	0	15		0	15	15		25	0	0	25	25	0		0	0	0	0					0		0	40
% Trucks	0	7.7		0	7.6	7.6		12.6	0	0	11.9	11.9	0		0	0	0	0					0		0	9.5
Aggregate Trucks	0	6		0	6	6		4	12	0	16	16	11		0	0	11	11					0		0	33
% Aggregate Trucks	0	3.1		0	3	3		2	100	0	7.6	7.6	100		0	0	91.7	91.7					0		0	7.9
Peds					0	-					0	-					0	-					0		-	0
% Peds					0	-					0	-					0	-					0		-	-

Peak Hour Diagram

Specified Period

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

One Hour Peak

From: 15:00:00
To: 16:00:00


Intersection: CR 30 & Codrington Pit
Site Code: 2316600001
Count Date: May 31, 2023

Weather conditions: Clear


**** Unsignalized Intersection ****

Major Road: CR 30 runs N/S

North Approach

	Out	In	Total
	238	214	452
T	17	17	34
AT	1	12	13
Totals	256	243	499

CR 30


AT	1	0	0
T	17	0	0
	238	0	0
Totals	256	0	0







Peds: 0




East Approach


	Out	In	Total
	1	1	2
T	0	0	0
AT	12	14	26
Totals	13	15	28

Codrington Pit

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

South Approach

	Out	In	Total
	215	239	454
T	17	17	34
AT	26	13	39
Totals	258	269	527

Totals	243	15	0
	214	1	0
T	17	0	0
AT	12	14	0

CR 30

 - Cars

T - Trucks

AT - Aggregate Trucks

Comments



Peak Hour Summary

Intersection: CR 30 & Codrington Pit
 Site Code: 2316600001
 Count Date: May 31, 2023
 Period: 14:00 - 19:00

Peak Hour Data (15:00 - 16:00)











Start Time	North Approach CR 30						South Approach CR 30						East Approach Codrington Pit						West Approach						Total Vehicles
	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	
15:00	0	62		0	0	62		52	2	0	0	54	2		0	0	0	2					0		118
15:15	0	64		0	0	64		64	5	0	0	69	3		0	0	0	3					0		136
15:30	0	53		0	0	53		56	5	0	0	61	4		0	0	0	4					0		118
15:45	0	77		0	0	77		71	3	0	0	74	4		0	0	0	4					0		155
Grand Total	0	256	0	0	256		243	15	0	0	258		13	0	0	0	13					0	0		527
Approach %	0	100	0	-			94.2	5.8	0	-			100	0	0	-									
Totals %	0	48.6	0	48.6			46.1	2.8	0	49			2.5	0	0	2.5									0
PHF	0	0.83	0	0.83			0.86	0.75	0	0.87			0.81	0	0	0.81						0			0.85
Cars	0	238	0	238			214	1	0	215			1	0	0	1							0		454
% Cars	0	93	0	93			88.1	6.7	0	83.3			7.7	0	0	7.7							0		86.1
Trucks	0	17	0	17			17	0	0	17			0	0	0	0							0		34
% Trucks	0	6.6	0	6.6			7	0	0	6.6			0	0	0	0							0		6.5
Aggregate Trucks	0	1	0	1			12	14	0	26			12	0	0	12							0		39
% Aggregate Trucks	0	0.4	0	0.4			4.9	93.3	0	10.1			92.3	0	0	92.3							0		7.4
Peds				0	-				0	-						0	-					0	-		0
% Peds				0	-				0	-						0	-					0	-		0

APPENDIX B

Capacity Analysis











HCM Unsignalized Intersection Capacity Analysis
 1: County Road 30 & Pit Access

2023 AM Peak Hour
 06/14/2023

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	18	0	256	6	2	249
Future Volume (Veh/h)	18	0	256	6	2	249
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	20	0	284	7	2	277
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	565	284			291	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	565	284			291	
tC, single (s)	6.4	7.1			4.1	
tC, 2 stage (s)						
tF (s)	3.5	4.1			2.2	
p0 queue free %	96	100			100	
cM capacity (veh/h)	489	589			1282	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1		
Volume Total	20	284	7	279		
Volume Left	20	0	0	2		
Volume Right	0	0	7	0		
cSH	489	1700	1700	1282		
Volume to Capacity	0.04	0.17	0.00	0.00		
Queue Length 95th (m)	1.0	0.0	0.0	0.0		
Control Delay (s)	12.7	0.0	0.0	0.1		
Lane LOS	B			A		
Approach Delay (s)	12.7	0.0		0.1		
Approach LOS	B					
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			24.7%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 1: County Road 30 & Pit Access

PM Peak Hour
 06/14/2023

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	37	0	243	29	0	256
Future Volume (Veh/h)	37	0	243	29	0	256
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	41	0	270	32	0	284
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	554	270			302	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	554	270			302	
tC, single (s)	7.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	4.4	3.3			2.2	
p0 queue free %	89	100			100	
cM capacity (veh/h)	361	774			1270	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1		
Volume Total	41	270	32	284		
Volume Left	41	0	0	0		
Volume Right	0	0	32	0		
cSH	361	1700	1700	1270		
Volume to Capacity	0.11	0.16	0.02	0.00		
Queue Length 95th (m)	2.9	0.0	0.0	0.0		
Control Delay (s)	16.3	0.0	0.0	0.0		
Lane LOS	C					
Approach Delay (s)	16.3	0.0		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			1.1			
Intersection Capacity Utilization			23.5%		ICU Level of Service	A
Analysis Period (min)			15			

APPENDIX C

Collision Reports