## AVON COMMUNITY SCHOOL CORPORATION PROPOSED MIDDLE SCHOOL

TRAFFIC IMPACT STUDY

SEPTEMBER 6, 2023

THE VERIDUS GROUP
6280 N. SHADELAND AVENUE SUITE A
INDIANAPOLIS IN 46220

PREPARED BY:
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I certify that this Traffic Impact Analysis report has been prepared by me or under my immediate supervision and that I have experience and training in the field of traffic and transportation engineering.


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## INTRODUCTION

The Avon Community School Corporation (ACSC) is proposing a new Middle School campus in the southwest quadrant of the CR100 and CR 450 intersection in Avon, Indiana. The purpose of this traffic study is to document existing traffic conditions and evaluate future traffic operations with the new Middle School. This study has been prepared in accordance with INDOT and ITE impact study guidelines to meet the Town of Avon requirements. The scope of this study was coordinated with the Town of Avon and documented in a Memorandum of Understanding (MOU) dated May 26, 2023. A Traffic Volume Submittal dated July 5, 2023 was submitted to the Town of Avon and Hendricks County to document study assumptions and traffic volumes for use in this study. Project documentation including correspondence from local agencies is included in Appendix A.

## PROPOSED DEVELOPMENT

The proposed plan for the new Avon Middle School campus (west side of CR-450) is shown in Figure 2 and includes the following components:

- The new Avon Middle School Master Plan includes the construction of a new building in the southwest quadrant of the CR-100 and CR-450 intersection.
- The site will also include tennis courts (8), softball fields (2), baseball fields (2), practice football fields (2) and a football/track field.
- Two new points of access are proposed along the west side of CR-450.The northern access point (\#6) will provide passenger vehicle ingress/egress during school arrival and dismissal periods. The southern access point (\#7) will provide bus ingress/egress during school arrival and dismissal periods and event parking.
No additional development is anticipated in the area except for the proposed middle school.


## STUDY AREA

The study area includes the following five existing intersections (shown in Figure 1) and two proposed access points (shown in Figure 2).

1. CR400 @ US36
2. CR100 @ CR450
3. CR100 @ Foxboro Drive
4. CR100 @ CR525
5. CR450 @ CR200
6. CR450 @ North School Access

- Proposed access to new Middle School
- Passenger car entry, No bus entry or exit
unsignalized, side-street stop control
unsignalized, side-street stop control
unsignalized, side-street stop control
Future roundabout (2024)
unsignalized, side-street stop control
Proposed



Figure 2 - Site Plan and Circulation Plan

## Avon New Middle School

Master Plan | May 2023

LEGEND
Car Rider Stacking
Automobile Circulation
Bus Circulation
Student Drop-Off/Pick-Up
 Truck Traffic
Pedestrian Circulation
R.O.W. Trail

Cross Country Route
Cross Country Route

(1)
$=$
7. CR450 @ South School Access

- Proposed access to new Middle School
- Bus entry and exit
- Passenger car exit
- No passenger car entry


## TRAFFIC VOLUMES

Traffic impacts attributed to the proposed Avon Middle School are determined by combining new vehicle trips generated by the school and the growth of background traffic volumes on the adjacent public street system. The combination of school traffic and background traffic is referred to as Build Traffic volumes. The purpose of this study is to determine impacts to the study area intersection resulting from new and redistributed traffic volumes added to the road network. The following sections detail the steps involved in preparing traffic volume projections for this study. Traffic volume plates referenced in this section are included in Appendix C.

## TRAFFIC COUNTS

Turning movement counts using Miovision video technology and manual count boards were collected at the five existing study intersections shown in Figure 1. Counts were collected on Tuesday 6/6/2023 and Wednesday 6/7/2023 from 7:00 to 9:00 AM and from 2:00 to 6:00 PM. Traffic count data is included in Appendix B. Additional information is documented below.

1. Traffic counting periods were selected to coincide with the school's operating hours, which will be from 8:15 AM - 2:45 PM. The peak vehicular travel times are anticipated to be 7:308:30 AM and 2:30-3:30 PM.
2. The morning hour with the highest volume of traffic varied between the five existing intersections. The 7:30-8:30 hour was used since it coincides with the highest generating hour of the proposed school.
3. The afternoon peak hour of the school traffic is expected to be from $2: 30$ to $3: 30 \mathrm{PM}$. The highest hourly volume at the existing intersections ranges between 4:30 PM and 6:00 PM. However, existing volumes during the 2:30-3:30 hour were used since they coincide with the peak hour of the school.
4. Existing peak hour traffic volumes at all study intersections are shown graphically in Figure 3 (AM 7:30-8:30 Peak Hour) and Figure 4 (PM 2:30-3:30 Peak Hour).

## GROWTH RATES

No additional development has been identified in the study area except for the proposed middle school. This assumption was discussed in the project coordination meeting and documented in the study MOU and Traffic Volumes submittal. No increases in existing traffic volumes have been included in this study since the proposed middle school growth will be accounted for in the trip generation procedures described in the following section.

FIGURE 3: 2023 EXISTING VOLUMES - AM PEAK HOUR (7:30-8:30 AM)


FIGURE 4: 2022 EXISTING VOLUMES - PM PEAK HOUR (2:30-3:30 PM)


## TRIP GENERATION AND TRIP DISTRIBUTION

Full occupancy of the proposed middle school will accommodate 1,100 students. This study will assume the school is at full occupancy on opening day for the purpose of evaluating transportation impacts.

- 990 students (90-percent) will be transported via the district's bus services. The remaining 110 students (10-percent) will be transported via private passenger vehicles. Using an average of 55 students per bus, the 990 students will be transported using a total of 18 buses to and from the new Middle School site. It is assumed that the 18 buses will enter and exit the middle school site during the AM arrival period and during the PM dismissal period for a total of 36 bus trips during the AM arrival hour and 36 bus trips during the PM dismissal hour.
- 110 non-bussed students will be transported in private vehicles at a rate of 1 student per vehicle. Each of the 110 private vehicles will make both an entering trip and an exiting trip from the school campus during the arrival hour and during the dismissal hour for a total of 220 vehicle trips per period. (Note that entering and exiting percentages are based on hourly distributions published by ITE)
- Estimate 75 teachers, administrators, and staff at the proposed middle school. Each of the 75 employees will make both an entering trip and an exiting trip during the arrival hour and during the dismissal hour for a total of 150 trips per period. (Note that entering and exiting percentages are based on hourly distributions published by ITE.)

This information was used as the basis for estimating vehicle trips for the new Middle School campus, as shown in Table 1. The combination of 36 bus trips and 370 vehicle passenger vehicle trips results in 406 vehicle trips per period.

Forecasting vehicle trips for traffic studies is traditionally done using data and methodology contained in the Institute of Transportation Engineers document Trip Generation (10th Edition current). The ITE dataset contains trip generation rates for various land uses based on data collected as sites throughout the United States. The ITE trip generation document publishes rates for land use Middle School/Junior High School (Code 522) which is a comparable land use to the proposed Avon Middle School development. Trip generation estimates for 1,100 students using the ITE Middle School/Junior High School land use are summarized in Table 2. However, rates for the Middle School land use are based on a broad range of school sites that have a wide range of bus and car rider demographics.

- The ITE methodology estimates 814 vehicle trips in the AM arrival period compared to 406 vehicle trips using the site-specific parameters for Avon Middle School.
- The ITE methodology estimates 396 vehicle trips during the PM dismissal period compared to 406 vehicle trips using the site-specific parameters.

ITE trip generation is useful for estimating trip generation when site-specific information is not available but may be an over-estimate for sites that have a high percentage of students transported via bus services. Since specific transportation information is available for the Avon Middle School development, use of the site-specific trip generation estimates was used in this study.

## TABLE 1: AVON MIDDLE SCHOOL TRIP GENERATION



TABLE 2: ITE TRIP GENERATION FOR MIDDLE SCHOOL/JUNIOR HIGH SCHOOL (FOR COMPARISON)
$\left.\begin{array}{|ccccc|c|}\hline \text { Land Use } & \text { Students } & \begin{array}{c}\text { Time } \\ \text { Period }\end{array} & \begin{array}{c}\text { ITE } \\ \text { Formula }\end{array} & \begin{array}{c}\text { Total } \\ \text { Trips }\end{array} & \begin{array}{c}\text { Trips } \\ \text { Entering }\end{array} \\ \hline \text { Middle School/Junior High School (6-8) } & 1,100 & & & & \\ \text { Exiting }\end{array}\right\}$

New vehicle trips generated by the Middle School need to be distributed to the access points on CR450 and to the roadways and intersections in the study area. The following procedures were used to determine trip distribution.

## Step 1: Assignment of bus traffic to the proposed access driveways and intersections

The southern access drive will be the point of entry and exit for all bus traffic during arrival and dismissal periods. All new bus generated trips are assigned to the south access drive. The following bus routing information was provided by ACSC for use in this study:

- 3 buses will be assigned to/from the north on CR450 and east on CR100 (to Parks of Prestwick) - 17\% of buses assigned to/from east on CR100
- 0 buses will be assigned to the west on CR100 to avoid the railroad crossing on CR400 just south of US36-0\% buses assigned to/from west on CR100
- 1 bus will be assigned to/from the south on CR450 and west on CR200 - 6\% buses assigned to/from west on CR200
- 14 buses will be assigned to/from the south on CR450 and east on CR200-78\% of buses assigned to/from east on CR200

Buses distribution is shown graphically in Figure 5. New bus trips distributed to the study area roadway network are shown in Figure 6 (AM peak) and Figure 7 (PM peak).

## Step 2: Assignment of passenger car traffic to the proposed access driveways and intersections

The northern-most access drive will be the point of entry for all passenger vehicles during arrival and dismissal periods. Passenger vehicles will be permitted to exit from both the north and south access drive following drop off at the building. 100\% of entering passenger vehicle trips are assigned to the north access. $60 \%$ of exiting passenger vehicle trips are assigned to the south access drive with the remaining $40 \%$ of exiting trips assigned to the north access drive.

Passenger vehicle trips were assigned to CR450 and the adjacent study area intersections according to the following distributions calculated from existing traffic counts:

- To/From the west on CR100

19\%

- To/From the east on CR100

36\%

- To/From the west on CR200

21\%

- To/From the east on CR200

Passenger vehicle distribution is shown graphically in Figure 8. New passenger vehicle trips distributed to the study area roadway network are shown in Figure 9 (AM peak) and Figure 10 (PM peak).

## FIGURE 5: DISTRIBUTION OF BUS TRIPS



FIGURE 6: BUS TRIPS - AM PEAK HOUR


## FIGURE 7: BUS TRIPS - PM PEAK HOUR



## FIGURE 8: DISTRIBUTION OF PASSENGER VEHICLE TRIPS



## FIGURE 9: PASSENGER CAR TRIPS - AM PEAK HOUR

tion - AM Pect
or Car Trips
Passenger Car Tri
Plate $\mathbf{E}$


## FIGURE 10: PASSENGER CAR TRIPS - PM PEAK HOUR



## BUILD TRAFFIC VOLUMES

The 2023 existing volumes were combined with the new bus trips and new passenger vehicle trips expected to be generated by the proposed Middle School to arrive at the Opening Day Build volumes. Opening Day Build Volumes are shown graphically in Figures 11 (AM Peak) and 12 (PM Peak). These are the volumes that will be used for the detailed traffic analyses scoped for this traffic study. Detailed traffic volume calculations are attached.

FIGURE 11: OPENING DAY BUILD TRAFFIC - AM PEAK HOUR


FIGURE 12: OPENING DAY BUILD TRAFFIC - PM PEAK HOUR

2025 Opening Day Build Volumes
PM Peak Hour (2:30-3:30 PM)
Plate $G$


## TRAFFIC ANALYSES

The following traffic analyses were performed as part of this study and are discussed in further detail in the following sections.

- Capacity analyses: To determine if acceptable intersection operation can be maintained with the anticipated growth in school related traffic. See Appendix D.
- Turn lane warrants: To determine if auxiliary turn lanes are warranted at existing intersections and proposed access points to the proposed middle school campus. See Appendix E.
- Traffic signal warrants: To determine if traffic signal control is warranted at the SR234/CR200 intersection. See Appendix F.

Note that storage lane warrants were based on the "need to maintain acceptable levels of service (LOS D or better)" at the unsignalized intersections for the Opening Day Build conditions. The capacity analysis yielded levels of service C or better. Therefore, no storage lane warrants were performed as part of this study.

## CAPACITY ANALYSIS

Intersection capacity was evaluated using Synchro 11 software. Intersections are evaluated using a level of service (LOS) designation expressed in terms of letter grades with LOS A representing the highest quality traffic flow and minimal delay, and LOS F representing poor traffic operations, significant delay, and substantial vehicle queuing. As defined in the Highway Capacity Manual, level of service for intersections is a measure of vehicle delay.

Capacity analysis results are summarized in Table 2. The goal of the capacity analysis was to determine what improvements, if any, are needed to provide an overall intersection level of service $D$ or better with no individual movements below level of service $D$. All capacity analyses were based on 2025 Opening Day Build traffic volumes (Figures 11 and 12).

Details of the capacity analyses are summarized below.

- Capacity analyses used a Peak Hour Factor (PHF) of 0.50 for the intersections within the local roadway network. This PHF was selected since traffic in and around the school site will likely be most concentrated within a 15-30 minute period during the highest generating hour. A PHF of 1.0 indicates that traffic volume in every 15 -minute period is the same and therefore traffic flow is consistent throughout the hour. Lower PHF values indicate more variable traffic flows and that traffic volume has a spike during the peak 15 -minute interval, such as during school arrival and dismissal periods.
- CR-400 / US-36 intersection with stop control NB/SB and existing lane conditions; single lane approaches (NB and SB). This intersection was evaluated with 2023 existing traffic volumes (AM and PM peak hours) and for 2025 conditions assuming build out of the Avon Middle school master plan. A normalized peak hour factor (PHF) of 0.92 was applied to this outlying intersection.
- CR-100 / CR-450 intersection with stop control NB and existing lane conditions; single lane approaches (NB, EB and WB). This intersection was evaluated with 2023 existing
traffic volumes（AM and PM peak hours）and for 2025 conditions assuming build out of the Avon Middle school master plan．
－CR－100／Foxboro intersection with stop control NB and existing lane conditions；single lane approaches（NB，EB and WB）．This intersection was evaluated with 2023 existing traffic volumes（AM and PM peak hours）and for 2025 conditions assuming build out of the Avon Middle school master plan．
－CR－100／CR－525 intersection with proposed single lane roundabout．This intersection was evaluated with 2023 existing traffic volumes（AM and PM peak hours）and for 2025 conditions assuming build out of the Avon Middle school master plan．

TABLE 2A：CAPACITY ANALYSIS SUMMARY

| Year | Time Period | Traffic Control | 「 | $\begin{aligned} & \text { エ } \\ & \text { 苜 } \end{aligned}$ | $\begin{aligned} & \text { 上 } \\ & \stackrel{(1)}{\infty} \\ & \text { il } \end{aligned}$ | － $\stackrel{1}{m}$ | エ $\frac{m}{3}$ | 上 $\cdots$ $m$ 3 | $\frac{\stackrel{5}{m}}{\frac{m}{2}}$ | $\frac{\text { ェ }}{\text { ¢ }}$ | $\frac{\text { 上 }}{\text { c }}$ | $\stackrel{\text {－}}{\text { ¢ }}$ | ェ | 尔 | ¢ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| CR－400E＠US－36 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $2023$ <br> Existing | AM Peak <br> （7：30－8：30AM） | Two－Way Stop Control | A／8．6 | － | － | A／9．5 | － | － | － | C／15．7 | － | － | C／18．2 | － | A／1．3 |
|  | PM Peak （2：30－3：30PM） | Two－Way Stop Control | A／9．3 | － | － | A／8．8 | － | － | － | C／18．3 | － | － | C／19．8 | － | A／1．5 |
| $\begin{aligned} & 2025 \\ & \text { Build } \end{aligned}$ | AM Peak (7:30-8:30AM) | Two－Way Stop Control | A／8．6 | － | － | A／9．6 | － | － | － | C／19．4 | － | － | C／21．4 | － | A／2．2 |
|  | PM Peak (2:30-3:30PM) | Two－Way Stop Control | A／9．3 | － | － | A／8．9 | － | － | － | C／21．1 | － | － | C／22．6 | － | A／2．3 |
| CR－100S＠CR－450E |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2023 | AM Peak (7:30-8:30AM) | Two－Way Stop Control | － | FREE | － | － | A／6．3 | － | A／8．5 | － | A／8．5 | － | － | － | A／5．0 |
| Existing | $\begin{aligned} & \text { PM Peak } \\ & \text { (2:30-3:30PM) } \end{aligned}$ | Two－Way Stop Control | － | FREE | － | － | A／4．3 | － | A／8．6 | － | A／8．6 | － | － | － | A／4．8 |
| 2025 | AM Peak <br> （7：30－8：30AM） | Two－Way Stop Control | － | FREE | － | － | A／7．4 | － | B／11．6 | － | B／11．6 | － | － | － | A／7．7 |
| Build | PM Peak <br> （2：30－3：30PM） | Two－Way Stop Control | － | FREE | － | － | A／6．9 | － | B／12．0 | － | B／12．0 | － | － | － | A／8．3 |
| CR－100S＠Foxboro Drive |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2023 | AM Peak (7:30-8:30AM) | Two－Way Stop Control | － | FREE | － | － | A／3．6 | － | A／8．7 | － | － | － | － | － | A／4．0 |
| Existing | PM Peak （2：30－3：30PM） | Two－Way Stop Control | － | FREE | － | － | A／4．1 | － | A／8．6 | － | － | － | － | － | A／4．3 |
| 2025 | AM Peak <br> （7：30－8：30AM） | Two－Way Stop Control | － | FREE | － | － | A／6．8 | － | B／10．0 | － | － | － | － | － | A／6．8 |
| Build | $\begin{aligned} & \text { PM Peak } \\ & (2: 30-3: 30 P M) \end{aligned}$ | Two－Way Stop Control | － | FREE | － | － | A／6．1 | － | A／9．8 | － | － | － | － | － | A／6．9 |

[^0]TABLE 2B：CAPACITY ANALYSIS SUMMARY

| Year | Time <br> Period | Traffic Control | $\stackrel{\text { 「 }}{\text { ¢ }}$ | 돞 | 岩 | 5 0 0 | I | 5 | $\stackrel{5}{\square}$ | 돌 | 䂝 | $\stackrel{\leftarrow}{\text { ¢ }}$ | ェ | 砍 | ¢ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| CR－100S＠CR－525E |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $\begin{gathered} 2023 \\ \text { Existing } \end{gathered}$ | AM Peak (7:30-8:30AM) | Roundabout | A／4．8 | － | － | A／4．7 | － | － | A／5．1 | － | － | A／4．4 | － | － | A／4．7 |
|  | $\begin{aligned} & \text { PM Peak } \\ & (2: 30-3: 30 \mathrm{PM}) \end{aligned}$ | Roundabout | A／4．4 | － | － | A／6．0 | － | － | A／4．6 | － | － | A／5．3 | － | － | A／5．4 |
| $\begin{aligned} & 2025 \\ & \text { Build } \end{aligned}$ | AM Peak (7:30-8:30AM) | Roundabout | A／8．5 | － | － | A／8．4 | － | － | A／8．8 | － | － | A77．0 | － | － | A／8．2 |
|  | $\begin{aligned} & \text { PM Peak } \\ & (2: 30-3: 30 \mathrm{PM}) \end{aligned}$ | Roundabout | A／6．8 | － | － | B／13．7 | － | － | A／7．6 | － | － | A／7．2 | － | － | A／10．0 |
| CR－450E＠CR－200S |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2023 <br> Existing | AM Peak (7:30-8:30AM) | Two－Way Stop Control | A11．0 | － | － | － | FREE | FREE | － | － | － | A／8．8 | － | － | A／1．8 |
|  | $\begin{aligned} & \text { PM Peak } \\ & \text { (2:30-3:30PM) } \end{aligned}$ | Two－Way Stop Control | A11．9 | － | － | － | FREE | FREE | － | － | － | A／8．9 | － | － | A／1．8 |
| $\begin{aligned} & 2025 \\ & \text { Build } \end{aligned}$ | AM Peak <br> （7：30－8：30AM） | Two－Way Stop Control | A／4．6 | － | － | － | FREE | FREE | － | － | － | B／12．6 | － | － | A／6．0 |
|  | $\begin{aligned} & \text { PM Peak } \\ & (2: 30-3: 30 \mathrm{PM}) \end{aligned}$ | Two－Way Stop Control | A／5．2 | － | － | － | FREE | FREE | － | － | － | B／13．8 | － | － | A／6．5 |
| North Middle School Access＠CR－ 450E |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $\begin{aligned} & 2025 \\ & \text { Build } \end{aligned}$ | AM Peak （7：30－8：30AM） | Two－Way Stop Control | B／14．6 | － | － | － | － | － | － | A／5．3 | － | － | FREE | FREE | A／7．6 |
|  | $\begin{aligned} & \text { PM Peak } \\ & (2: 30-3: 30 \mathrm{PM}) \end{aligned}$ | Two－Way Stop Control | C／20．7 | － | － | － | － | － | － | A／5．0 | － | － | FREE | FREE | A／5．7 |
| South Middle School Access＠CR－ 450E |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $\begin{aligned} & 2025 \\ & \text { Build } \end{aligned}$ | AM Peak (7:45-8:45AM) | Two－Way Stop Control | B／10．7 | － | － | － | － | － | － | A／1．1 | － | － | FREE | FREE | A／5．2 |
|  | $\begin{aligned} & \text { PM Peak } \\ & \text { (2:30-3:30PM) } \end{aligned}$ | Two－Way Stop Control | B／11．2 | － | － | － | － | － | － | A1．1 | － | － | FREE | FREE | A／5．8 |

Letter／Number＝Level of Service $/$ Average Delay Per Vehicle
－CR－450／CR－200 intersection with stop control SB and existing lane conditions；single lane approaches（SB，EB and WB）．This intersection was evaluated with 2023 existing traffic volumes（AM and PM peak hours）and for 2025 conditions assuming build out of the Avon Middle school master plan．
－CR－450 intersections（North School Access and South School Access）with side street stop control．These intersections were evaluated with 2025 traffic volumes assuming full build out of the master plan．The proposed school access driveways are expected to operate at LOS C or better through the 2025 Opening Day Build conditions．

The remaining intersections operate at acceptable levels of service (LOS B or C) for all movements through the 2025 Opening Day Build condition.

## TURN LANE WARRANTS

Section 46-4.0 of the Indiana Department of Transportation Design Manual provide guidance and graphical solutions for determining the need for left and right turn lanes at unsignalized intersections. An exclusive right-turn lane should be considered at an unsignalized intersection on a 2-lane urban or rural highway when criteria shown in Figure 46-4A is satisfied. An exclusive left-turn lane should be considered at an unsignalized intersection on a 2-lane urban or rural highway which satisfies the criteria shown in Figure 46-4C (Volume Guidelines for Left-Turn Lane on a Two-Lane Highway). The left and right turn lane warrant criteria were evaluated at the following intersections using AM and PM peak hour volumes projected for the school development:

- CR-450 @ School South Access Drive - 40 MPH operating speed on CR-450
- CR-450 @ School North Access Drive - 40 MPH operating speed on CR-450
- CR-100 @ CR-450 - 40 MPH operating speed on CR-450

Warrants were not evaluated at the remaining intersections. Warrant results are summarized in Table 3 with detailed warrant graphs included in Appendix E.

TABLE 3: TURN LANE WARRANT SUMMARY

| Intersection | Movement | Turn Lane Warrant Result |
| :--- | :--- | :--- |
| CR-450 @ School South <br> Access Drive | NB Left Turn | Warrant Not Met |
| CR-450 @ School North <br> Access Drive | SB Right Turn | Warrant Not Met |
|  | NB Left Turn | Warrant Met (based on left turn <br> percentage only) |
|  | WB Left Turn | Warrant Met for AM Peak <br> (Marginal) |
|  | EB Right Turn | Warrant Met (with Provisions) |

The intersection of CR100 and CR450 is currently stop controlled for the NB CR450 approach. Traffic on CR100 is free flowing and does not stop at the intersection. The geometric conditions of the CR100 and CR 450 intersection are unusual in that CR450 intersects CR100 in a horizontal curve. The addition of school-generated traffic to the CR450/CR100 intersection adds volume to the WB left turn movement which ranges from 89 to 97 percent of the total WB advancing traffic at intersections. The INDOT turn lane warrant thresholds consider left turn percentages up to $30 \%$. Although the WB left turn percentage exceed $30 \%$, the opposing and advancing through volumes on CR100 are very low and fall well below the warrant thresholds for auxiliary turn lanes. Since through volumes are low on CR 100 and LOS A/B is expected for the stop-controlled movements, a standard left turn lane is not recommended.

A right-turn lane is marginally warranted for the SB movement at the north school driveway on CR-450 for the AM Peak Hour. The lane is not warranted for the PM Peak Hour. The SB right turn volume is 112 vehicles in the AM peak hour with only 17 SB advancing through vehicles. The intersection operates at an acceptable level of service with a single southbound through lane. For these reasons, an exclusive SB right turn lane is not recommended at the north access driveway.

## TRAFFIC SIGNAL WARRANT

Traffic signals should be installed only if an intersection meets at least one of the criteria specified in the Indiana Manual of Uniform Traffic Control Devices, § 4C (Indiana Department of Transportation, 2011 Edition) (hereafter referred to as the IMUTCD). Traffic signal warrant thresholds are dependent on volume of traffic on the major and minor streets, number of approach lanes on the major and minor street, and speed limit on the major street. Direction provided in the scoping meeting for this study was to evaluate traffic signal Warrant 2 (Four Hour Vehicular Volume) for the CR-100/CR-450 intersection.

Warrant 2 requires that certain volume conditions exist for the major street and the minor street on the higher volume approaches during each of any four hours of an average day. Warrant 2 uses a graphical procedure.

The signal warrants were evaluated for the CR-100/CR-450 intersection under the following conditions:

- Using 2023 traffic volumes existing on 06/06/2023 and 06/07/2023. No increase in school generated traffic was included in the analysis.
- Low-volume thresholds were used since the intersection lies within the built-up areas of an isolated community having a population of less than 10,000 . These same lower volume thresholds apply when the major street speed exceeds 40 MPH which is the case for CR100 and the south leg of CR-450.
- Warrants were evaluated assuming CR-100 as the major street and CR-450 as the minor street with single lane approaches. Low-volume thresholds were used since the intersection is in a community with population less than 10,000.

Traffic Signal Warrant results are summarized in Table 4. Detailed warrant reports are included in Appendix E.

TABLE 4: TRAFFIC SIGNAL WARRANT RESULTS

| Description | CR100 as Major Street |
| :--- | :--- |
| Warrant 2: <br> Four Hour Vehicular Volume | 0 hours met of 4 required <br> WARRANT NOT MET |

A four-hour warrant is not met ( 0 of 4 required hours) at the CR-100 / CR-450 for the 2023 volume counts. Signalization should not be considered a required improvement tied to the proposed school redevelopment plan since levels of service are maintained with current conditions.

## CONCLUSIONS

A new Middle School campus for the Avon Community School Corporation is proposed in the southwest quadrant of the CR100 and CR 450 intersection in Avon, Indiana. The new site will include construction of a new school building and associated sports fields. Two driveways are proposed on the west side of CR-450 to provide access to the new school. The purpose of this study is to document existing traffic conditions and evaluate future traffic operations with the new Middle School. Findings of this study are summarized below.

- The proposed Avon Middle School is expected to add 406 new vehicle trips during the AM arrival period and 406 new vehicles trips during the PM dismissal period. These projections are based on the school district's projections for student transportation.
- New school generated trips were distributed to the area roadway network based on percentages shown in the table below:

|  | New Bus Trips | New Vehicle Trips |
| :---: | :--- | :--- |
| To/From east on CR 100 <br> (Parks of Prestwick) | $17 \%$ (3 buses) | $36 \%$ |
| To/From west on CR 100 | $0 \%$ | $19 \%$ |
| To/From east on CR 200 | $78 \%$ (14 buses) | $21 \%$ |
| To/From west on CR 200 | $6 \%$ (1 bus) | $24 \%$ |

- Traffic signals are not expected to be warranted at the school driveways or at the CR 100/CR 450 intersection.
- Good levels of service are expected at all study area intersections. LOS A/B is expected at both school driveways and at the CR 100/CR 450 intersection.
- A northbound left turn lane is warranted on CR 450 at the North School Driveway. The southbound right turn lane is marginally warranted at this location.
- No turn lanes are warranted on CR 450 at the South School Driveway.
- The westbound left turn movement from CR 100 to CR 450 exceeds the left turn percentages of the warrant thresholds. However, the through volumes on CR 100 fall well below thresholds for a left turn lane. There is 30 feet of pavement width on the east leg of CR 100 (Parks at Prestwick leg) available to provide a left turn storage lane or for reconfiguration of the intersection. No pavement widening is recommended on CR 100.


## IMPLEMENTATION PLAN

The draft traffic study dated July 5, 2023 was reviewed by the Town of Avon and Hendricks County. Comments were received by both reviewing agencies with responses. Town and county review comments and responses are included in Appendix G. The project was presented to the Town of Avon Advisory Plan Commission on August 28, 2023. Through discussions with the Town of Avon and Hendricks County, the following improvements will be implemented:

- Dedicated left and right turn lanes will be constructed on CR 450E at both the north and south entrances to the new middle school as required by the Town of Avon ordinance.
- A traffic circle with a three-way stop condition will be developed at the intersection of CR 100 S and CR 450E.
- A restrictive donation calculated by the Town of Avon will be provided for improvements to be implemented by the Town of Avon at the intersection of CR 200S and CR 450E.
- An escrow will be established for traffic calming measures on CR 100S between CR 450E and CR 525E. An estimate for the traffic calming measures will be developed by Hendricks County and the traffic calming measures will be implemented by Hendricks County.


## Avon Schools TIS

APPENDIX A: PROJECT DOCUMENTATION

| From: | William Peeples [wpeeples@avonindiana.gov](mailto:wpeeples@avonindiana.gov) |
| :--- | :--- |
| Sent: | Wednesday, June 28, 2023 8:56 AM |
| To: | Gonzalo Castro Diaz; John Ayers |
| Cc: | Jerry Rolfson, RA, NCARB, DBIA, LEED AP; lan Loera; Scott Knebel |
| Subject: | RE: Avon Middle School traffic submittal |

External Message: This email was sent from someone outside of CMT. Please use caution with links and attachments from unknown senders or receiving unexpected emails.

Good morning,
It was interesting to see the divergence between what the ITE projects and what the site specific projections say. I do concur that the ITE overestimates trips in the morning.

The distribution seems reasonable to me.

From: Gonzalo Castro Diaz [lcastrodiaz@theveridusgroup.com](mailto:lcastrodiaz@theveridusgroup.com)
Sent: Thursday, June 22, 2023 1:43 PM
To: William Peeples [wpeeples@avonindiana.gov](mailto:wpeeples@avonindiana.gov); John Ayers [jayers@co.hendricks.in.us](mailto:jayers@co.hendricks.in.us)
Cc: Jerry Rolfson, RA, NCARB, DBIA, LEED AP [jrolfson@performanceservices.com](mailto:jrolfson@performanceservices.com); lan Loera [iloera@avonindiana.gov](mailto:iloera@avonindiana.gov); Scott Knebel [sknebel@cmtengr.com](mailto:sknebel@cmtengr.com)
Subject: FW: Avon Middle School traffic submittal
Good afternoon Bill and John,
Please see below for a link to the partial report we received for the traffic study. We would appreciate it if you could provide feedback regarding the assumptions being used for the analyses. Let us know if you have any questions.

Thank you,


Gonzalo Castro Diaz uses ShareFile to share documents securely.

From: Scott Knebel [sknebel@cmtengr.com](mailto:sknebel@cmtengr.com)
Sent: Thursday, June 22, 2023 10:43 AM
To: Gonzalo Castro Diaz [lcastrodiaz@theveridusgroup.com](mailto:lcastrodiaz@theveridusgroup.com)
Cc: Jerry Rolfson, RA, NCARB, DBIA, LEED AP [irolfson@PerformanceServices.com](mailto:irolfson@PerformanceServices.com); Beth Sliemers [bsliemers@cmtengr.com](mailto:bsliemers@cmtengr.com)
Subject: Avon Middle School traffic submittal

## Gonzalo

Attached is a partial report showing the traffic volumes we propose to use for the detailed analyses. We committed in the MOU to provide this information to obtain concurrence for the public agencies. Please forward this information and request them to provide feedback regarding the assumptions being used for the analyses.

Due to the timeline, we will advance the analysis at risk. Hopefully the town and county concur with the assumptions outlined in the traffic submittal.

Call with questions.

Scott

SCOTT KNEBEL PE \| Crawford, Murphy \& Tilly \| w 614.468.1215 | m 937.776.1040
Vice President

## From: Scott Knebel

Sent: Thursday, June 8, 2023 9:29 AM
To: Gonzalo Castro Diaz [lcastrodiaz@theveridusgroup.com](mailto:lcastrodiaz@theveridusgroup.com)
Cc: Jerry Rolfson, RA, NCARB, DBIA, LEED AP [jrolfson@PerformanceServices.com](mailto:jrolfson@PerformanceServices.com); Beth Sliemers
[bsliemers@cmtengr.com](mailto:bsliemers@cmtengr.com)
Subject: Avon Middle School trip generation

## Gonzalo

Attached is a memo that outlines the trip generation assumptions for the new school. The trips estimated using the standard ITE methodology are much larger than those if using the site-specific information. Therefore are proposing to use the site-specific data (lower trip rate) but want to confirm that the numbers are reasonable. Can you confirm with the school they concur with using the site-specific data - we may need to defend the use of the much lower data?

We plan to generate a more comprehensive traffic memo (06/14/23?) that summarizes our assumptions for distribution to ACSC, the Town of Avon and Hendricks County. We will proceed with the balance of the analysis so any feedback regarding the traffic assumptions will be helpful to expedite the schedule.

Call with questions.

Scott

SCOTT KNEBEL PE \| Crawford, Murphy \& Tilly \| w 614.468.1215 \| m 937.776.1040
Vice President

## Memorandum of Understanding Avon TIS

DATE: May 31, 2023
TO: Gonzalo Castro Diaz, The Veridus Group
CC: Jerry Rolfson, Performance Systems Cassie Reiter, CMT
RE: Avon traffic study scope
A traffic study in accordance with the Institute of Transportation Engineers (ITS) impact study guidelines is proposed to meet the Town of Avon planning commission requirements. The study is to document existing traffic operations and future operations with the addition of a new middle school located in the southeast quadrant of the E. County Road 100S and S. County Road 450E intersection.

The following scope of work is being advanced unless otherwise directed by the Town.

## STUDY AREA

The site consists of the addition of a new middle school, tennis courts (8), softball fields (2), baseball fields (2), practice football fields (2), and a football/ track field. The study area will include the following existing intersections/new access points as shown on Figure 1:

1. E. County Road 400E at US Route 36
2. E. County Road 100S at S. County Road 450E
3. E. County Road 100S at Foxboro Drive
4. E. County Road 100S at County Road 525 E
5. S. County Road 450E at E County Road 200S
6. North middle school access at S. County Road 450E
7. South middle school access at S. County Road 450E
unsignalized, side street stop control unsignalized, side street stop control unsignalized, side street stop control roundabout (2024)
unsignalized, side street stop control proposed proposed

The traffic study will assume no additional traffic attributed to developments beyond the future property limits of the Avon middle school site.

## DATA COLLECTION

No information was found on the INDOT Traffic Data Management System (MS2) website within the study area. However, 24-hour traffic data does exist on US Route 36 east of S. County Road 400E.

Turning movement counts (TMC) using Miovision video technology are proposed at the existing intersections (5) listed under the STUDY AREA section. Traffic data will be collected for a 6 -hour period (7:00-9:00 AM; 2:00-6:00 PM) on a weekday (Tues-Thurs). Turn counts will be adjusted if multi-cycle queues occur over 15-minute intervals during both peak periods.

Avon Schools Traffic Study
Page 2

Figure 1: Study Area


Full build out of the site (beyond 10 yr horizon) to accommodate 1,100 students - use Full Build for basis of traffic study. School related traffic data will also be included in the traffic study:

- 110 students are dropped off by parents (north access) or $10 \%$ of total student population.
- 990 students being transported via bus (10 yr horizon). A staging area that accommodates up to 18 buses ( 25 bus max capacity on-site) having an average of about 52 students/bus
is proposed to use the south access. Note that the max capacity of a typical school bus is 78 students which accommodates scheduling variations by route and for future expansion.
Trips attributed to the sports fields are assumed to occur during off-peak periods of the adjacent roadways when in-season (see Figure 2). Therefore, the use of the parking lot (south access) for event parking (200 spaces) is assumed to be outside the design hour of the school thus not factored into the peak hour of the school. These numbers and growth factors will be confirmed with the Avon school district prior to the start of the traffic study.

Figure 2: Conceptual Site Plan


## TRIP GENERATION/DISTRIBUTION

The Opening Day BUILD condition will distribute new trips on the existing roadway network for the Build condition ( 987 students). Distribution of traffic will be based on the following information:

- Distribution of traffic volumes on the existing roadway network based on the existing traffic volume data.
- The location of the new school site with respect to the Avon Community School Corporation (ACSC) school district.
- Input from the ACSC school district. With the exception of the three (3) buses that will transport students to The Parks of Prestwick, all others will be routed southward on CR 450E to the intersection of 200S. In order to avoid scheduling buses over RR tracks, nearly all of them will turn east onto CR 200S with the exception of those dropping students in the SW quadrant of the district.

The trip generation data will be based on the proposed Middle School traffic data listed above. This methodology is a conversative estimate since the ITE trip generation for students is expected to be lower than the proposed trip rate.

## No background growth rate is proposed when evaluating the Opening Day of the new school unless otherwise directed.

No internal capture trips are included in the trip generation estimates for new traffic. No other adjustments will be made to account for captured trips (i.e., trips between the Middle school and the sports fields). No capture trips are assumed to represent the worst-case scenario during winter where students do not have after-school activities planned at the on-site sports fields.

CMT is to submit traffic volume, trip distribution, and trip generation information to the Town as part of an interim submittal for concurrence. Detailed capacity analyses will advance to provide a study that meets the Town planning requirements.

## ANALYSES

Analyses are to be performed for the Opening Day (2025) condition. Analysis is assumed to be performed for the peak period of the traffic generator (i.e., the ACSC campus) versus the peak hour of the adjacent street which typically is between 5-6PM. Therefore, the analysis will likely be based on an AM peak period (7:30-8:30AM) and a PM peak period (2:30-3:30 PM) are consistent with ASCS school operations (8:10AM to 2:45 PM).

## Capacity Analysis

Intersection analysis will include capacity analyses for the weekday. Several conditions will have capacity analysis performed to assess impacts to the existing roadway network.

- No Build 2025 Opening Day: Existing Conditions. Analysis of adjusted traffic volumes to identify over capacity conditions due, in part, to the short peak period of typical school related traffic.
- BUILD 2025 Opening Day: Future lane configuration/operations with the two access points on S. County Road 450E.


## Design Year (2035) analyses are not proposed if no background growth rate is applied to the existing traffic volumes.

Capacity analysis (HCM algorithms) using Synchro 11 software will be used for the traffic study. The draft report will include electronic files of the capacity analysis for review. The capacity analysis summary will include the intersection level of service (LOS) and movement LOS in addition to the approach LOS.

## Signal Warrant Analysis

Signal warrant analysis will be performed at the E. County Road 100S at S. County Road 450E intersection. The analysis would be limited to a 4 -hour volume warrant.

## Storage Lane Warrants

The need for auxiliary turn lanes will be based on the need to maintain acceptable levels of service (LOS D or better) in the design year at the unsignalized intersections. A school zone using flashing beacons is assumed to be implemented on County Road 450E when the school is open (2025).

## Storage Length Analysis

Storage lane lengths will be calculated for the design hour. The storage lane length calculations for all warranted and on-site turn lanes for all intersections defined in the Study Area section.

## Progression Analysis

Progression analysis is not proposed since multiple signalized intersections are not being proposed with the future year analyses.

## CONCEPTUAL PLAN

A conceptual plan using aerial data will show improvements if needed to mitigate operational issues. The project limits of the conceptual plan will extend a minimum of 500 feet from the limits of the study area or development boundaries. Internal circulation, site geometrics, and access will be evaluated in the narrative of the traffic impact study.

## REPORT

This memo documents the requirements of the traffic study for review and approval by the Town of Avon. The effort includes the collection of information that will be needed for the detailed analysis: define the study area; background growth rates; CAD files of previous geometric alignments/ easements of adjacent public roadways; and general coordination.

A draft report in a PDF document will be prepared for review by the Town. CMT will address comments and prepare the final TIS document. A PDF file of the final report and appendices and supporting analysis will be furnished in an electronic format.

Formal public presentation of findings is not included as part of this project. Coordination with INDOT if required would be a part of a separate contract.

# Avon Community School Corporation Proposed Middle School 

Traffic Volume Submittal

JUNE 22, 2023

THE VERIDUS GROUP
6280 N. SHADELAND AVENUE
SUITE A
INDIANAPOLIS IN 46220

PREPARED BY:
CRAWFORD, MURPHY \& TILLY, INC.
8790 PURDUE ROAD
INDIANAPOLIS, IN 46268

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## INTRODUCTION

The Avon Community School Corporation (ACSC) is proposing a new Middle School campus in the southwest quadrant of the CR100 and CR 450 intersection in Avon, Indiana. The purpose of this traffic study is to document existing traffic conditions and evaluate future traffic operations with the new Middle School. This study has been prepared in accordance with INDOT and ITE impact study guidelines to meet the Town of Avon requirements. The scope of this study was coordinated with the Town of Avon and documented in a Memorandum of Understanding (MOU) dated May 31, 2023.

## PROPOSED DEVELOPMENT

The proposed Avon Middle School will serve 1,100 students in a new building on the proposed site. The site will also include tennis courts (8), softball fields (2), baseball fields (2), practice football fields (2) and a football/track field. The proposed site and vehicle circulation plan for the proposed Avon Middle School is shown in Figure 2.

Two new access points are proposed on CR 450 to facilitate vehicles entering and exiting the school campus. The northern access point is positioned $X$ feet south of CR 100. The southern access point is positioned $X$ feet south of CR 100.

## STUDY AREA

The study area includes the following five existing intersections (shown in Figure 1) and two proposed access points (shown in Figure 2).

1. CR400 @ US36
2. CR100 @ CR450
3. CR100 @ Foxboro Drive
4. CR100 @ CR525
5. CR450 @ CR200
6. CR450 @ North School Access

- Proposed access to new Middle School
- Passenger car entry
- No bus entry or exit

7. CR450 @ South School Access

- Proposed access to new Middle School
- Bus entry and exit
- Passenger car exit
- No passenger car entry
unsignalized, side-street stop control
unsignalized, side-street stop control
unsignalized, side-street stop control
Future roundabout (2024)
unsignalized, side-street stop control
Proposed

Proposed



LEGEND
Car Rider Stacking
Automobile Circulation

Bus Circulation
Student Drop........... studentorop-Off/Pick-Up миииииииниииииии Truck Traffic
Pedestrian Circulation
R.O.W. Trail

Cross Country Route

Figure 2 - Site Plan and Circulation Plan Avon New Middle School
Master Plan | May 2023
Performance
context
Services

## TRAFFIC VOLUMES

Traffic impacts attributed to the proposed Avon Middle School are determined by combining new vehicle trips generated by the school and the growth of background traffic volumes on the adjacent public street system. The combination of school traffic and background traffic is referred to as Build Traffic volumes. The purpose of this study is to determine impacts to the study area intersection resulting from new and redistributed traffic volumes added to the road network. The following sections detail the steps involved in preparing traffic volume projections for this study. Traffic volume plates referenced in this section are included as an attachment to this document.

## TRAFFIC COUNTS

Turning movement counts using Miovision video technology and manual count boards were collected at the five existing study intersections shown in Figure 1. Counts were collected on Tuesday 6/6/2023 and Wednesday 6/7/2023 from 7:00 to 9:00 AM and from 2:00 to 6:00 PM. Traffic count data is included as an attachment to this document. Additional information is documented below.

1. Traffic counting periods were selected to coincide with the school's operating hours, which will be from 8:15 AM - 2:45 PM. The peak vehicular travel times are anticipated to be 7:308:30 AM and 2:30-3:30 PM.
2. The morning hour with the highest volume of traffic varied between the five counted intersections. The 7:30-8:30 hour was used since it coincides with the highest generating hour of the proposed school.
3. The afternoon peak hour of the school traffic is expected to be from $2: 30$ to $3: 30 \mathrm{PM}$. The highest hourly volume at the existing intersections ranges between 4:30 PM and 6:00 PM. However, volumes counted during the 2:30-3:30 hour were used since they coincide with the peak hour of the school.
4. Peak hour counted traffic volumes at all study intersections are shown graphically in Figure 3 (AM 7:30-8:30 Peak Hour) and Figure 4 (PM 2:30-3:30 Peak Hour).

## GROWTH RATES

No additional growth is anticipated in the area except for the proposed middle school. No increases in counted traffic volumes have been included in this study since the proposed middle school growth will be accounted for in the trip generation procedures described in the following section.

FIGURE 3: 2023 COUNTED VOLUMES - AM PEAK HOUR (7:30-8:30 AM)


FIGURE 4: 2022 COUNTED VOLUMES - PM PEAK HOUR (2:30-3:30 PM)


## TRIP GENERATION AND TRIP DISTRIBUTION

Full occupancy of the proposed middle school will accommodate 1,100 students. This study will assume the school is at full occupancy on opening day for the purpose of evaluating transportation impacts.

- 990 students (90-percent) will be transported via the district's bus services. The remaining 110 students (10-percent) will be transported via private passenger vehicles. Using an average of 55 students per bus, the 990 students will be transported using a total of 18 buses to and from the new Middle School site. It is assumed that the 18 buses will enter and exit the middle school site during the AM arrival period and during the PM dismissal period for a total of 36 bus trips during the AM arrival hour and 36 bus trips during the PM dismissal hour.
- 110 non-bussed students will be transported in private vehicles at a rate of 1 student per vehicle. Each of the 110 private vehicles will make both an entering trip and an exiting trip from the school campus during the arrival hour and during the dismissal hour for a total of 220 vehicle trips per period. (Note that entering and exiting percentages are based on hourly distributions published by ITE)
- Estimate 75 teachers, administrators, and staff at the proposed middle school. Each of the 75 employees will make both an entering trip and an exiting trip during the arrival hour and during the dismissal hour for a total of 150 trips per period. (Note that entering and exiting percentages are based on hourly distributions published by ITE.)

This information was used as the basis for estimating vehicle trips for the new Middle School campus, as shown in Table 1. The combination of 36 bus trips and 370 vehicle passenger vehicle trips results in 406 vehicle trips per period.

Forecasting vehicle trips for traffic studies is traditionally done using data and methodology contained in the Institute of Transportation Engineers document Trip Generation (10th Edition current). The ITE dataset contains trip generation rates for various land uses based on data collected as sites throughout the United States. The ITE trip generation document publishes rates for land use Middle School/Junior High School (Code 522) which is a comparable land use to the proposed Avon Middle School development. Trip generation estimates for 1,100 students using the ITE Middle School/Junior High School land use are summarized in Table 2. However, rates for the Middle School land use are based on a broad range of school sites that have a wide range of bus and car rider demographics.

- The ITE methodology estimates 814 vehicle trips in the AM arrival period compared to 406 vehicle trips using the site-specific parameters for Avon Middle School.
- The ITE methodology estimates 396 vehicle trips during the PM dismissal period compared to 406 vehicle trips using the site-specific parameters.

ITE trip generation is useful for estimating trip generation when site-specific information is not available but may be an over-estimate for sites that have a high percentage of students transported via bus services. Since specific transportation information is available for the Avon Middle School development, use of the site-specific trip generation estimates was used in this study.

## TABLE 1: AVON MIDDLE SCHOOL TRIP GENERATION



TABLE 2: ITE TRIP GENERATION FOR MIDDLE SCHOOL/JUNIOR HIGH SCHOOL (FOR COMPARISON)
$\left.\begin{array}{|ccccc|c|}\hline \text { Land Use } & \text { Students } & \begin{array}{c}\text { Time } \\ \text { Period }\end{array} & \begin{array}{c}\text { ITE } \\ \text { Formula }\end{array} & \begin{array}{c}\text { Total } \\ \text { Trips }\end{array} & \begin{array}{c}\text { Trips } \\ \text { Entering }\end{array} \\ \hline \text { Middle School/Junior High School (6-8) } & 1,100 & & & & \\ \text { Exiting }\end{array}\right\}$

New vehicle trips generated by the Middle School need to be distributed to the access points on CR450 and to the roadways and intersections in the study area. The following procedures were used to determine trip distribution.

## Step 1: Assignment of bus traffic to the proposed access driveways and intersections

The southern access drive will be the point of entry and exit for all bus traffic during arrival and dismissal periods. All new bus generated trips are assigned to the south access drive. The following bus routing information was provided by ACSC for use in this study:

- 3 buses will be assigned to/from the north on CR450 and east on CR100 (to Parks of Prestwich) - 17\% of buses assigned to/from east on CR100
- 0 buses will be assigned to the west on CR100 to avoid the railroad crossing on CR400 just south of US36-0\% buses assigned to/from west on CR100
- 1 bus will be assigned to/from the south on CR450 and west on CR200 - 6\% buses assigned to/from west on CR200
- 14 buses will be assigned to/from the south on CR450 and east on CR200-78\% of buses assigned to/from east on CR200

Buses distribution is shown graphically in Figure 5. New bus trips distributed to the study area roadway network are shown in Figure 6 (AM peak) and Figure 7 (PM peak).

## Step 2: Assignment of passenger car traffic to the proposed access driveways and intersections

The northern-most access drive will be the point of entry for all passenger vehicles during arrival and dismissal periods. Passenger vehicles will be permitted to exit from both the north and south access drive following drop off at the building. 100\% of entering passenger vehicle trips are assigned to the north access. $60 \%$ of exiting passenger vehicle trips are assigned to the south access drive with the remaining $40 \%$ of exiting trips assigned to the north access drive.

Passenger vehicle trips were assigned to CR450 and the adjacent study area intersections according to the following distributions calculated from existing traffic counts:

- To/From the west on CR100

19\%

- To/From the east on CR100

36\%

- To/From the west on CR200

21\%

- To/From the east on CR200

Passenger vehicle distribution is shown graphically in Figure 8. New passenger vehicle trips distributed to the study area roadway network are shown in Figure 9 (AM peak) and Figure 10 (PM peak).

## FIGURE 5: DISTRIBUTION OF BUS TRIPS



FIGURE 6: BUS TRIPS - AM PEAK HOUR


## FIGURE 7: BUS TRIPS - PM PEAK HOUR



## FIGURE 8: DISTRIBUTION OF PASSENGER VEHICLE TRIPS



## FIGURE 9: PASSENGER CAR TRIPS - AM PEAK HOUR



## FIGURE 10: PASSENGER CAR TRIPS - PM PEAK HOUR



## BUILD TRAFFIC VOLUMES

The 2023 counted volumes were combined with the new bus trips and new passenger vehicle trips expected to be generated by the proposed Middle School to arrive at the Opening Day Build volumes. Opening Day Build Volumes are shown graphically in Figures 11 (AM Peak) and 12 (PM Peak). These are the volumes that will be used for the detailed traffic analyses scoped for this traffic study. Detailed traffic volume calculations are attached.

FIGURE 11: OPENING DAY BUILD TRAFFIC - AM PEAK HOUR


## FIGURE 12: OPENING DAY BUILD TRAFFIC - PM PEAK HOUR

2025 Opening Day Build Volume
PM Peak Hour ( $2: 30-3: 30$ PM) Plate $\mathbf{G}$


## Avon Schools TIS

APPENDIX B: TRAFFIC DATA

US 36 and CR 400 E - TMC
Tue Jun 6, 2023
Full Length (7 AM-9 AM, 2 PM-6 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1078494, Location: 39.757598, -86.457258, Site Code: US 36 and
CR 400 E

| Leg <br> Direction | CR 400 E SB Southbound |  |  |  |  | US 36 WB Westbound |  |  |  |  | CR 400 E NB <br> Northbound |  |  |  | US 36 EB <br> Eastbound |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Time | R | T | L | U | App | R | T | L | U | App | R | T | L U | App | R | T | L U | App | Int |
| 2023-06-06 7:00AM | 2 | 1 | 5 | 0 | 8 | 1 | 70 | 0 | 1 | 72 | 2 | 5 | 50 | 12 | 1 | 185 | 50 | 191 | 283 |
| 7:15AM | 1 | 1 | 6 | 0 | 8 | 1 | 89 | 2 | 1 | 93 | 8 | 1 | 10 | 10 | 1 | 207 | 60 | 214 | 325 |
| 7:30AM | 4 | 4 | 7 | 1 | 16 | 3 | 134 | 1 | 1 | 139 | 8 | 2 | 20 | 12 | 3 | 212 | 30 | 218 | 385 |
| 7:45AM | 1 | 2 | 7 | 0 | 10 | 0 | 125 | 2 | 0 | 127 | 9 | 1 | 30 | 13 | 0 | 188 | 10 | 189 | 339 |
| Hourly Total | 8 | 8 | 25 | 1 | 42 | 5 | 418 | 5 | 3 | 431 | 27 | 9 | 110 | 47 | 5 | 792 | 150 | 812 | 1332 |
| 8:00AM | 2 | 2 | 7 | 0 | 11 | 4 | 127 | 1 | 0 | 132 | 4 | 3 | 10 | 8 | 2 | 145 | 50 | 152 | 303 |
| 8:15AM | 2 | 3 | 4 | 0 | 9 | 3 | 99 | 3 | 0 | 105 | 9 | 5 | 20 | 16 | 0 | 194 | 80 | 202 | 332 |
| 8:30AM | 3 | 4 | 7 | 0 | 14 | 4 | 109 | 0 | 0 | 113 | 4 | 1 | 30 | 8 | 0 | 164 | 10 | 165 | 300 |
| 8:45AM | 2 | 4 | 12 | 0 | 18 | 8 | 103 | 2 | 0 | 113 | 6 | 4 | 40 | 14 | 0 | 181 | $10 \quad 0$ | 191 | 336 |
| Hourly Total | 9 | 13 | 30 | 0 | 52 | 19 | 438 | 6 | 0 | 463 | 23 | 13 | $10 \quad 0$ | 46 | 2 | 684 | 240 | 710 | 1271 |
| 9:00AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hourly Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2:00PM | 4 | 1 | 7 | 0 | 12 | 0 | 156 | 2 | 0 | 158 | 4 | 0 | 10 | 5 | 5 | 131 | 30 | 139 | 314 |
| 2:15PM | 3 | 3 | 8 | 0 | 14 | 0 | 119 | 7 | 1 | 127 | 6 | 2 | 20 | 10 | 4 | 134 | 30 | 141 | 292 |
| 2:30PM | 3 | 6 | 5 | 0 | 14 | 1 | 173 | 5 | 2 | 181 | 3 | 5 | 40 | 12 | 6 | 151 | 50 | 162 | 369 |
| 2:45PM | 5 | 3 | 5 | 0 | 13 | 1 | 152 | 5 | 1 | 159 | 2 | 3 | 20 | 7 | 0 | 127 | 20 | 129 | 308 |
| Hourly Total | 15 | 13 | 25 | 0 | 53 | 2 | 600 | 19 | 4 | 625 | 15 | 10 | 90 | 34 | 15 | 543 | 130 | 571 | 1283 |
| 3:00PM | 5 | 3 | 10 | 0 | 18 | 0 | 174 | 2 | 1 | 177 | 1 | 3 | 40 | 8 | 4 | 144 | 30 | 151 | 354 |
| 3:15PM | 4 | 3 | 4 | 0 | 11 | 0 | 200 | 7 | 1 | 208 | 3 | 3 | 30 | 9 | 6 | 132 | 10 | 139 | 367 |
| 3:30PM | 8 | 2 | 8 | 0 | 18 | 0 | 146 | 4 | 0 | 150 | 3 | 2 | 50 | 10 | 2 | 150 | 50 | 157 | 335 |
| 3:45PM | 5 | 5 | 7 | 0 | 17 | 1 | 175 | 2 | 0 | 178 | 7 | 5 | 30 | 15 | 2 | 152 | 20 | 156 | 366 |
| Hourly Total | 22 | 13 | 29 | 0 | 64 | 1 | 695 | 15 | 2 | 713 | 14 | 13 | 150 | 42 | 14 | 578 | 110 | 603 | 1422 |
| 4:00PM | 4 | 9 | 6 | 0 | 19 | 0 | 174 | 9 | 1 | 184 | 13 | 1 | 20 | 16 | 1 | 156 | 20 | 159 | 378 |
| 4:15PM | 3 | 7 | 3 | 0 | 13 | 0 | 165 | 11 | 0 | 176 | 5 | 1 | 10 | 7 | 3 | 157 | 40 | 164 | 360 |
| 4:30PM | 5 | 5 | 8 | 0 | 18 | 1 | 166 | 5 | 0 | 172 | 7 | 3 | 30 | 13 | 2 | 171 | 10 | 174 | 377 |
| 4:45PM | 8 | 2 | 6 | 0 | 16 | 0 | 174 | 6 | 0 | 180 | 5 | 9 | 40 | 18 | 2 | 148 | 30 | 153 | 367 |
| Hourly Total | 20 | 23 | 23 | 0 | 66 | 1 | 679 | 31 | 1 | 712 | 30 | 14 | $10 \quad 0$ | 54 | 8 | 632 | 100 | 650 | 1482 |
| 5:00PM | 3 | 4 | 4 | 0 | 11 | 0 | 195 | 6 | 1 | 202 | 4 | 3 | 20 | 9 | 4 | 146 | 50 | 155 | 377 |
| 5:15PM | 2 | 11 | 3 | 0 | 16 | 0 | 187 | 7 | 0 | 194 | 0 | 3 | 10 | 4 | 3 | 155 | 30 | 161 | 375 |
| 5:30PM | 4 | 2 | 7 | 0 | 13 | 0 | 183 | 5 | 0 | 188 | 4 | 6 | 20 | 12 | 3 | 134 | 50 | 142 | 355 |
| 5:45PM | 5 | 7 | 9 | 0 | 21 | 0 | 149 | 9 | 0 | 158 | 4 | 4 | 50 | 13 | 8 | 132 | 30 | 143 | 335 |
| Hourly Total | 14 | 24 | 23 | 0 | 61 | 0 | 714 | 27 | 1 | 742 | 12 | 16 | 100 | 38 | 18 | 567 | 160 | 601 | 1442 |
| 6:00PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hourly Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 0 | 0 | 0 | 0 | 0 0 | 0 | 0 |
| Total | 88 | 94 | 155 | 1 | 338 | 28 | 3544 | 103 | 11 | 3686 | 121 | 75 | 650 | 261 | 62 | 3796 | 890 | 3947 | 8232 |
| \% Approach | 26.0\% | 27.8\% | 45.9\% 0 | 0.3\% | - | 0.8\% 9 | 96.1\% | 2.8\% | 0.3\% |  | 46.4\% | 28.7\% | 24.9\% 0\% | - | 1.6\% | 96.2\% | 2.3\% 0\% | - | - |
| \% Total | 1.1\% | 1.1\% | 1.9\% | 0\% | 4.1\% | 0.3\% | 43.1\% | 1.3\% | 0.1\% | 44.8\% | 1.5\% | 0.9\% | 0.8\% 0\% | 3.2\% | 0.8\% | 46.1\% | 1.1\% 0\% | 47.9\% | - |
| Lights | 79 | 94 | 152 | 0 | 325 | 28 | 3379 | 103 | 9 | 3519 | 115 | 75 | $64 \quad 0$ | 254 | 60 | 3560 | $84 \quad 0$ | 3704 | 7802 |
| \% Lights | 89.8\% | 100\% 9 | 98.1\% | 0\% | 96.2\% | 100\% | 95.3\% | 100\% 8 | 81.8\% 9 | 95.5\% | 95.0\% | 100\% | 98.5\% 0\% | 97.3\% | 96.8\% | 93.8\% | 94.4\% 0\% | 93.8\% | 94.8\% |
| Articulated Trucks | 8 | 0 | 0 | 1 | 9 | 0 | 52 | 0 | 2 | 54 | 0 | 0 | 10 | 1 | 0 | 76 | 10 | 77 | 141 |
| \% Articulated Trucks | 9.1\% | 0\% | 0\% 1 | 100\% | 2.7\% | 0\% | 1.5\% | 0\% | 18.2\% | 1.5\% | 0\% | 0\% | 1.5\% 0\% | 0.4\% | 0\% | 2.0\% | 1.1\% 0\% | 2.0\% | 1.7\% |
| Buses and Single-Unit Trucks | 1 | 0 | 3 | 0 | 4 | 0 | 113 | 0 | 0 | 113 | 6 | 0 | $0 \quad 0$ | 6 | 2 | 160 | 40 | 166 | 289 |
| \% Buses and Single-Unit Trucks | 1.1\% | 0\% | 1.9\% | 0\% | 1.2\% | 0\% | 3.2\% | 0\% | 0\% | 3.1\% | 5.0\% | 0\% | 0\% 0\% | 2.3\% | 3.2\% | 4.2\% | 4.5\% 0\% | 4.2\% | 3.5\% |

* L: Left, R: Right, T: Thru, U: U-Turn

US 36 and CR 400 E－TMC
Tue Jun 6， 2023
Full Length（7 AM－9 AM， 2 PM－6 PM）
All Classes（Lights，Articulated Trucks，Buses and Single－Unit Trucks） All Movements
ID：1078494，Location：39．757598，－86．457258，Site Code：US 36 and CR 400 E
［N］CR 400 E SB
Total： 531
In： 338 Out： 193
$\infty$ かった


Out： 259 In： 261
Total： 520
［S］CR 400 E NB

US 36 and CR 400 E - TMC
Tue Jun 6, 2023
AM Peak, Forced Peak (7:30 AM - 8:30 AM)
Provided by: Crawford Murphy \& Tilly Inc. (CMT) :

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1078494, Location: 39.757598, -86.457258, Site Code: US 36 and
CR 400 E

| Leg <br> Direction | CR 400 E SB Southbound |  |  |  |  | US 36 WB Westbound |  |  |  |  | CR 400 E NB <br> Northbound |  |  |  | US 36 EB <br> Eastbound |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Time | R | T | L | U | App | R | T | L | U | App | R | T | L U | App | R | T | L | U | App | Int |
| 2023-06-06 7:30AM | 4 | 4 | 7 | 1 | 16 | 3 | 134 | 1 | 1 | 139 | 8 | 2 | 20 | 12 | 3 | 212 | 3 | 0 | 218 | 385 |
| 7:45AM | 1 | 2 | 7 | 0 | 10 | 0 | 125 | 2 | 0 | 127 | 9 | 1 | 30 | 13 | 0 | 188 | 1 | 0 | 189 | 339 |
| 8:00AM | 2 | 2 | 7 | 0 | 11 | 4 | 127 | 1 | 0 | 132 | 4 | 3 | 10 | 8 | 2 | 145 | 5 | 0 | 152 | 303 |
| 8:15AM | 2 | 3 | 4 | 0 | 9 | 3 | 99 | 3 | 0 | 105 | 9 | 5 | 20 | 16 | 0 | 194 | 8 | 0 | 202 | 332 |
| Total | 9 | 11 | 25 | 1 | 46 | 10 | 485 | 7 | 1 | 503 | 30 | 11 | 80 | 49 | 5 | 739 | 17 | 0 | 761 | 1359 |
| \% Approach | 19.6\% | 23.9\% 5 | 4.3\% | 2.2\% | - | 2.0\% | 96.4\% | 1.4\% | 0.2\% | - | 61.2\% | 22.4\% | 16.3\% 0\% |  | 0.7\% | 97.1\% | 2.2\% 0 |  |  |  |
| \% Total | 0.7\% | 0.8\% | 1.8\% | 0.1\% | 3.4\% | 0.7\% | 35.7\% | 0.5\% | 0.1\% | 37.0\% | 2.2\% | 0.8\% | 0.6\% 0\% | 3.6\% | 0.4\% | 54.4\% | 1.3\% 0 | \% 5 | 6.0\% |  |
| PHF | 0.563 | 0.688 | 0.8930 | 0.250 | 0.719 | 0.625 | 0.905 | 0.583 | 0.250 | 0.905 | 0.833 | 0.550 | 0.667 | 0.766 | 0.417 | 0.871 | 0.531 |  | 0.873 | 0.882 |
| Lights | 8 | 11 | 24 | 0 | 43 | 10 | 454 | 7 | 1 | 472 | 28 | 11 | 70 | 46 | 5 | 682 | 17 | 0 | 704 | 1265 |
| \% Lights | 88.9\% | 100\% | 96.0\% | 0\% 9 | 93.5\% | 100\% | 93.6\% | 100\% | 100\% | 93.8\% | 93.3\% | 100\% 8 | 87.5\% 0\% | 93.9\% | 100\% | 92.3\% | 100\% 0 | \% 9 | 92.5\% | 93.1\% |
| Articulated Trucks | 1 | 0 | 0 | 1 | 2 | 0 | 13 | 0 | 0 | 13 | 0 | 0 | 10 | 1 | 0 | 16 | 0 | 0 | 16 | 32 |
| \% Articulated Trucks | 11.1\% | 0\% | 0\% 1 | 100\% | 4.3\% | 0\% | 2.7\% | 0\% | 0\% | 2.6\% | 0\% | 0\% | 12.5\% 0\% | 2.0\% | 0\% | 2.2\% | 0\% 0 | \% | 2.1\% | 2.4\% |
| Buses and Single-Unit Trucks | 0 | 0 | 1 | 0 | 1 | 0 | 18 | 0 | 0 | 18 | 2 | 0 | $0 \quad 0$ | 2 | 0 | 41 | 0 | 0 | 41 | 62 |
| \% Buses and Single-Unit Trucks | 0\% | 0\% | 4.0\% | 0\% | 2.2\% | 0\% | 3.7\% | 0\% | 0\% | 3.6\% | 6.7\% | 0\% | 0\% 0\% | 4.1\% | 0\% | 5.5\% | 0\% 0 |  | 5.4\% | 4.6\% |

[^1]US 36 and CR 400 E - TMC
Tue Jun 6, 2023
AM Peak, Forced Peak (7:30 AM - 8:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks) All Movements
ID: 1078494, Location: 39.757598, -86.457258, Site Code: US 36 and CR 400 E
[N] CR 400 E SB
Total: 85
In: 46 Out: 39


Out: 23 In: 49
Total: 72
[S] CR 400 E NB

Tue Jun 6, 2023
Forced Peak (2:30 PM - 3:30 PM)
8101 N. High Street, Columbus, OH, 43235, US
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1078494, Location: 39.757598, -86.457258, Site Code: US 36 and
CR 400 E

| Leg <br> Direction | CR 400 E SB <br> Southbound |  |  | US 36 WB Westbound |  |  |  |  | CR 400 E NB <br> Northbound |  |  |  | US 36 EB <br> Eastbound |  |  |  |  | Int |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Time | R | T | L U App | R | T | L | U | App | R | T | L U | App | R | T | L | U | App |  |
| 2023-06-06 2:30PM | 3 | 6 | $\begin{array}{lll}5 & 0 & \mathbf{1 4}\end{array}$ | 1 | 173 | 5 | 2 | 181 | 3 | 5 | 40 | 12 | 6 | 151 | 5 | 0 | 162 | 369 |
| 2:45PM | 5 | 3 | 5 | 1 | 152 | 5 | 1 | 159 | 2 | 3 | 20 | 7 | 0 | 127 | 2 | 0 | 129 | 308 |
| 3:00PM | 5 | 3 | $10 \quad 0 \quad 18$ | 0 | 174 | 2 | 1 | 177 | 1 | 3 | 40 | 8 | 4 | 144 | 3 | 0 | 151 | 354 |
| 3:15PM | 4 | 3 | $4 \quad 0 \quad 11$ | 0 | 200 | 7 | 1 | 208 | 3 | 3 | 30 | 9 | 6 | 132 | 1 | 0 | 139 | 367 |
| Total | 17 | 15 | $24 \quad 0 \quad 56$ | 2 | 699 | 19 | 5 | 725 | 9 | 14 | 130 | 36 | 16 | 554 | 11 | 0 | 581 | 1398 |
| \% Approach | 30.4\% | 26.8\% | 42.9\% 0\% | 0.3\% | 96.4\% | 2.6\% | 0.7\% | - | 25.0\% | 38.9\% | 36.1\% 0\% | - | 2.8\% | 95.4\% | 1.9\% 0 |  | - | - |
| \% Total | 1.2\% | 1.1\% | 1.7\% 0\% 4.0\% | 0.1\% | 50.0\% | 1.4\% | 0.4\% | 51.9\% | 0.6\% | 1.0\% | 0.9\% 0\% | 2.6\% | 1.1\% | 39.6\% | 0.8\% 0 | \% | 41.6\% | - |
| PHF | 0.850 | 0.625 | 0.600 -0.778 | 0.500 | 0.874 | 0.6790. | 0.625 | 0.871 | 0.750 | 0.700 | 0.813 | 0.750 | 0.667 | 0.917 | 0.550 | - | 0.897 | 0.947 |
| Lights | 17 | 15 | $24 \quad 0 \quad 56$ | 2 | 666 | 19 | 5 | 692 | 8 | 14 | 130 | 35 | 15 | 515 |  | 0 | 541 | 1324 |
| \% Lights | 100\% | 100\% | 100\% 0\% 100\% | 100\% | 95.3\% | 100\% | 100\% | 95.4\% | 88.9\% | 100\% | 100\% 0\% | 97.2\% | 93.8\% | 93.0\% | 100\% 0 | \% | 93.1\% | 94.7\% |
| Articulated Trucks | 0 | 0 | $0 \quad 0 \quad \mathbf{0}$ | 0 | 6 | 0 | 0 | 6 | 0 | 0 | $0 \quad 0$ | 0 | 0 | 11 | 0 | 0 | 11 | 17 |
| \% Articulated Trucks | 0\% | 0\% | 0\% 0\% $0 \%$ | 0\% | 0.9\% | 0\% | 0\% | 0.8\% | 0\% | 0\% | 0\% 0\% | 0\% | 0\% | 2.0\% | 0\% 0 | \% | 1.9\% | 1.2\% |
| Buses and Single-Unit Trucks | 0 | 0 | $\begin{array}{lll}0 & 0 & \mathbf{0}\end{array}$ | 0 | 27 | 0 | 0 | 27 | 1 | 0 | $0 \quad 0$ | 1 | 1 | 28 | 0 | 0 | 29 | 57 |
| \% Buses and Single-Unit Trucks | 0\% | 0\% | 0\% 0\% $\mathbf{0 \%}$ | 0\% | 3.9\% | 0\% | 0\% | 3.7\% | 11.1\% | 0\% | 0\% 0\% | 2.8\% | 6.3\% | 5.1\% | 0\% 0 |  | 5.0\% | 4.1\% |

* L: Left, R: Right, T: Thru, U: U-Turn

US 36 and CR 400 E - TMC
Tue Jun 6, 2023
Forced Peak (2:30 PM - 3:30 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks) All Movements
ID: 1078494, Location: 39.757598, -86.457258, Site Code: US 36 and CR 400 E
[N] CR 400 E SB
Total: 83
In: 56 Out: 27


Out: 50 In: 36
Total: 86
[S] CR 400 E NB

US 36 and CR 400 E - TMC
Tue Jun 6, 2023
PM Peak (4:30 PM - 5:30 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1078494, Location: 39.757598, -86.457258, Site Code: US 36 and
CR 400 E

| Leg <br> Direction | CR 400 E SB <br> Southbound |  |  |  |  | US 36 WB Westbound |  |  |  |  | CR 400 E NB Northbound |  |  |  |  | US 36 EB Eastbound |  |  |  |  | Int |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Time | R | T | L U | U | App | R | T | L | U | App | R | T | L | U | App | R | T | L | U | App |  |
| 2023-06-06 4:30PM | 5 | 5 | 8 | 0 | 18 | 1 | 166 | 5 | 0 | 172 | 7 | 3 | 3 | 0 | 13 | 2 | 171 | 1 | 0 | 174 | 377 |
| 4:45PM | 8 | 2 | 6 | 0 | 16 | 0 | 174 | 6 | 0 | 180 | 5 | 9 | 4 | 0 | 18 | 2 | 148 | 3 | 0 | 153 | 367 |
| 5:00PM | 3 | 4 | 4 | 0 | 11 | 0 | 195 | 6 | 1 | 202 | 4 | 3 | 2 | 0 | 9 | 4 | 146 | 5 | 0 | 155 | 377 |
| 5:15PM | 2 | 11 | 3 | 0 | 16 | 0 | 187 | 7 | 0 | 194 | 0 | 3 | 1 | 0 | 4 | 3 | 155 | 3 | 0 | 161 | 375 |
| Total | 18 | 22 | 21 | 0 | 61 | 1 | 722 | 24 | 1 | 748 | 16 | 18 | 10 | 0 | 44 | 11 | 620 | 12 | 0 | 643 | 1496 |
| \% Approach | 29.5\% | 36.1\% | 34.4\% 0\% |  | - | 0.1\% 9 | 96.5\% | 3.2\% | 0.1\% |  | 36.4\% | 40.9\% | 22.7\% 0\% |  | - | 1.7\% | 96.4\% | 1.9\% 0 |  |  |  |
| \% Total | 1.2\% | 1.5\% | 1.4\% 0\% | \% | 4.1\% | 0.1\% | 48.3\% | 1.6\% | 0.1\% 5 | 50.0\% | 1.1\% | 1.2\% | 0.7\% 0\% | \% | 2.9\% | 0.7\% | 41.4\% | 0.8\% 0 | \% | 43.0\% |  |
| PHF | 0.563 | 0.500 | 0.656 | 0 | 0.847 | 0.250 | 0.926 | 0.857 | 0.250 | 0.926 | 0.571 | 0.500 | 0.625 |  | 0.611 | 0.688 | 0.906 | 0.600 | - | 0.924 | 0.992 |
| Lights | 13 | 22 | 20 | 0 | 55 | 1 | 706 | 24 | 0 | 731 | 16 | 18 | 10 | 0 | 44 | 10 | 593 | 11 | 0 | 614 | 1444 |
| \% Lights | 72.2\% | 100\% | 95.2\% 0\% | \% 9 | 90.2\% | 100\% | 97.8\% | 100\% | 0\% | 97.7\% | 100\% | 100\% | 100\% 0\% | \% 1 | 100\% | 90.9\% | 95.6\% | 91.7\% 0 | \% | 95.5\% | 96.5\% |
| Articulated Trucks | 4 | 0 | 0 | 0 | 4 | 0 | 2 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 1 | 0 | 12 | 19 |
| \% Articulated Trucks | 22.2\% | 0\% | 0\% 0\% | \% | 6.6\% | 0\% | 0.3\% | 0\% | 100\% | 0.4\% | 0\% | 0\% | 0\% 0\% |  | 0\% | 0\% | 1.8\% | 8.3\% 0 | \% | 1.9\% | 1.3\% |
| Buses and Single-Unit Trucks | 1 | 0 | 1 | 0 | 2 | 0 | 14 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 1 | 16 | 0 | 0 | 17 | 33 |
| \% Buses and Single-Unit Trucks | 5.6\% | 0\% | 4.8\% 0\% |  | 3.3\% | 0\% | 1.9\% | 0\% | 0\% | 1.9\% | 0\% | 0\% | 0\% 0\% |  | 0\% | 9.1\% | 2.6\% | 0\% 0 |  | 2.6\% | 2.2\% |

* L: Left, R: Right, T: Thru, U: U-Turn

US 36 and CR 400 E - TMC
Tue Jun 6, 2023
PM Peak (4:30 PM - 5:30 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks) All Movements
ID: 1078494, Location: 39.757598, -86.457258, Site Code: US 36 and CR 400 E
[N] CR 400 E SB
Total: 92
In: 61 Out: 31
$\underset{\sim}{\infty} \underset{\sim}{N}$


Out: 57 In: 44
Total: 101
[S] CR 400 E NB

CR 100 S and CR 450 E - TMC
Tue Jun 6, 2023
Full Length (7 AM-9 AM, 2 PM-6 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 1078493, Location: 39.747423, -86.447852, Site Code: CR 100 S and CR
450 E

| Leg Direction | CR 100 S WB Westbound |  |  |  |  | CR 450 E NB <br> Northbound |  |  |  |  | CR 100 S EB <br> Eastbound |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Time | T | L |  | App | Ped* | R | L | U | App | Ped* | R | T | U | App | Ped* | Int |
| 2023-06-06 7:00AM | 1 | 1 | 0 | 2 | 0 | 3 | 1 | 0 | 4 | 0 | 1 | 0 | 0 | 1 | 0 | 7 |
| 7:15AM | 1 | 3 |  | 4 | 0 | 2 | 3 | 0 | 5 | 0 | 2 | 0 | 0 | 2 | 0 | 11 |
| 7:30AM | 1 | 4 |  | 5 | 0 | 3 | 2 | 0 | 5 | 0 | 2 | 3 | 0 | 5 | 0 | 15 |
| 7:45AM | 0 | 2 | 0 | 2 | 0 | 1 | 1 | 0 | 2 | 0 | 1 | 2 | 0 | 3 | 0 | 7 |
| Hourly Total | 3 | 10 | 0 | 13 | 0 | 9 | 7 | 0 | 16 | 0 | 6 | 5 | 0 | 11 | 0 | 40 |
| 8:00AM | 1 | 5 |  | 6 | 0 | 2 | 2 | 0 | 4 | 0 | 0 | 1 | 0 | 1 | 0 | 11 |
| 8:15AM | 0 | 1 |  | 1 | 2 | 2 | 0 | 0 | 2 | 0 | 2 | 2 | 0 | 4 | 0 | 7 |
| 8:30AM | 3 | 2 |  | 5 | 0 | 2 | 4 | 0 | 6 | 0 | 6 | 1 | 0 | 7 | 0 | 18 |
| 8:45AM | 2 | 2 | 0 | 4 | 0 | 2 | 1 | 0 | 3 | 0 | 2 | 3 | 0 | 5 | 0 | 12 |
| Hourly Total | 6 | 10 |  | 16 | 2 | 8 | 7 | 0 | 15 | 0 | 10 | 7 | 0 | 17 | 0 | 48 |
| 9:00AM | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hourly Total | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2:00PM | 2 | 2 | 0 | 4 | 0 | 2 | 0 | 0 | 2 | 0 | 1 | 1 | 0 | 2 | 0 | 8 |
| 2:15PM | 2 | 1 |  | 3 | 0 | 3 | 0 | 0 | 3 | 0 | 2 | 1 | 0 | 3 | 0 | 9 |
| 2:30PM | 6 | 7 |  | 13 | 0 | 2 | 2 | 0 | 4 | 0 | 1 | 5 | 0 | 6 | 0 | 23 |
| 2:45PM | 1 | 3 | 0 | 4 | 0 | 3 | 3 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 10 |
| Hourly Total | 11 | 13 | 0 | 24 | 0 | 10 | 5 | 0 | 15 | 0 | 4 | 7 | 0 | 11 | 0 | 50 |
| 3:00PM | 1 | 2 |  | 3 | 0 | 5 | 1 | 0 | 6 | 0 | 4 | 1 | 0 | 5 | 0 | 14 |
| 3:15PM | 2 | 3 |  | 5 | 0 | 4 | 3 | 0 | 7 | 0 | 2 | 2 | 1 | 5 | 0 | 17 |
| 3:30PM | 0 | 7 |  | 7 | 0 | 2 | 3 | 0 | 5 | 0 | 1 | 1 | 0 | 2 | 0 | 14 |
| 3:45PM | 4 | 1 | 0 | 5 | 0 | 4 | 2 | 0 | 6 | 0 | 2 | 1 | 0 | 3 | 0 | 14 |
| Hourly Total | 7 | 13 | 0 | 20 | 0 | 15 | 9 | 0 | 24 | 0 | 9 | 5 | 1 | 15 | 0 | 59 |
| 4:00PM | 3 | 4 |  | 7 | 0 | 5 | 4 | 0 | 9 | 0 | 0 | 4 | 0 | 4 | 0 | 20 |
| 4:15PM | 0 | 3 | 0 | 3 | 0 | 4 | 2 | 0 | 6 | 0 | 3 | 4 | 0 | 7 | 0 | 16 |
| 4:30PM | 1 | 2 | 0 | 3 | 0 | 7 | 2 | 1 | 10 | 0 | 2 | 1 | 0 | 3 | 0 | 16 |
| 4:45PM | 3 | 2 | 0 | 5 | 0 | 6 | 2 | 0 | 8 | 0 | 0 | 1 | 0 | 1 | 0 | 14 |
| Hourly Total | 7 | 11 |  | 18 | 0 | 22 | 10 | 1 | 33 | 0 | 5 | 10 | 0 | 15 | 0 | 66 |
| 5:00PM | 0 | 1 | 0 | 1 | 0 | 4 | 1 | 0 | 5 | 0 | 4 | 0 | 0 | 4 | 0 | 10 |
| 5:15PM | 3 | 2 | 0 | 5 | 0 | 7 | 2 | 0 | 9 | 0 | 4 | 2 | 0 | 6 | 0 | 20 |
| 5:30PM | 0 | 5 | 0 | 5 | 0 | 6 | 5 | 0 | 11 | 0 | 2 | 3 | 0 | 5 | 0 | 21 |
| 5:45PM | 3 | 1 | 0 | 4 | 0 | 7 | 2 | 0 | 9 | 0 | 3 | 4 | 0 | 7 | 0 | 20 |
| Hourly Total | 6 | 9 | 0 | 15 | 0 | 24 | 10 | 0 | 34 | 0 | 13 | 9 | 0 | 22 | 0 | 71 |
| 6:00PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hourly Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 40 | 66 | 0 | 106 | 2 | 88 | 48 | 1 | 137 | 0 | 47 | 43 | 1 | 91 | 0 | 334 |
| \% Approach | 37.7\% | 62.3\% | 0\% | - |  | 64.2\% | 35.0\% | 0.7\% | - |  | 51.6\% | 47.3\% | 1.1\% | - | - | - |
| \% Total | 12.0\% | 19.8\% | 0\% | 31.7\% |  | 26.3\% | 14.4\% | 0.3\% | 41.0\% |  | 14.1\% | 12.9\% | 0.3\% | 27.2\% | - | - |
| Lights | 39 | 65 | 0 | 104 |  | 87 | 48 | 1 | 136 |  | 47 | 43 | 1 | 91 |  | 331 |
| \% Lights | 97.5\% | 98.5\% | 0\% | 98.1\% |  | 98.9\% | 100\% | 100\% | 99.3\% |  | 100\% | 100\% | 100\% | 100\% | - | 99.1\% |
| Articulated Trucks | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | - | 0 |
| \% Articulated Trucks | 0\% | 0\% | 0\% | 0\% | - | 0\% | 0\% | 0\% | 0\% | - | 0\% | 0\% | 0\% | 0\% | - | 0\% |
| Buses and Single-Unit Trucks | 1 | 1 | 0 | 2 |  | 1 | 0 | 0 | 1 | - | 0 | 0 | 0 | 0 | - | 3 |
| \% Buses and Single-Unit Trucks | 2.5\% | 1.5\% | 0\% | 1.9\% |  | 1.1\% | 0\% | 0\% | 0.7\% | - | 0\% | 0\% | 0\% | 0\% | - | 0.9\% |
| Pedestrians | - | - |  | - | 2 | - | - | - | - | 0 | - | - | - | - | 0 |  |
| \% Pedestrians | - | - | - | - | 100\% | - | - | - | - | - | - | - | - | - | - |  |
| Bicycles on Crosswalk | - | - |  |  | 0 | - | - | - | - | 0 | - | - | - | - | 0 |  |
| \% Bicycles on Crosswalk | - |  |  | - |  | - | - | - | - |  | - | - | - | - |  |  |

[^2]Provided by: Crawford Murphy \& Tilly Inc.
(CMT) : Columbus OH
8101 N. High Street, Columbus, OH, 43235, US
-

CR 100 S and CR 450 E - TMC
Tue Jun 6, 2023
Full Length (7 AM-9 AM, 2 PM-6 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 1078493, Location: 39.747423, -86.447852, Site Code: CR 100 S and CR 450 E


Out: 114 In: 137
Total: 251
[S] CR 450 E NB

Tue Jun 6, 2023
Forced Peak (7:30 AM - 8:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks,
Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 1078493, Location: 39.747423, -86.447852, Site Code: CR 100 S and CR
450 E

| Leg <br> Direction | CR 100 S WB Westbound |  |  |  |  | CR 450 E NB <br> Northbound |  |  |  |  | CR 100 S EB <br> Eastbound |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Time | T | L |  | App | Ped* | R | L | U | App | Ped* | R | T | U | App | Ped* | Int |
| 2023-06-06 7:30AM | 1 | 4 |  | 5 | 0 | 3 | 2 | 0 | 5 | 0 | 2 | 3 | 0 | 5 | 0 | 15 |
| 7:45AM | 0 | 2 | 0 | 2 | 0 | 1 | 1 | 0 | 2 | 0 | 1 | 2 | 0 | 3 | 0 | 7 |
| 8:00AM | 1 | 5 | 0 | 6 | 0 | 2 | 2 | 0 | 4 | 0 | 0 | 1 | 0 | 1 | 0 | 11 |
| 8:15AM | 0 | 1 | 0 | 1 | 2 | 2 | 0 | 0 | 2 | 0 | 2 | 2 | 0 | 4 | 0 | 7 |
| Total | 2 | 12 | 0 | 14 | 2 | 8 | 5 | 0 | 13 | 0 | 5 | 8 | 0 | 13 | 0 | 40 |
| \% Approach | 14.3\% | 85.7\% | 0\% | - | - | 61.5\% | 38.5\% | 0\% | - | - | 38.5\% | 61.5\% | 0\% | - | - | - |
| \% Total | 5.0\% | 30.0\% | 0\% | 35.0\% | - | 20.0\% | 12.5\% | 0\% | 32.5\% | - | 12.5\% | 20.0\% | 0\% | 32.5\% | - | - |
| PHF | 0.500 | 0.600 | - | 0.583 | - | 0.667 | 0.625 | - | 0.650 | - | 0.625 | 0.667 | - | 0.650 | - | 0.667 |
| Lights | 2 | 12 | 0 | 14 | - | 7 | 5 | 0 | 12 | - | 5 | 8 | 0 | 13 | - | 39 |
| \% Lights | 100\% | 100\% | 0\% | 100\% | - | 87.5\% | 100\% | 0\% | 92.3\% | - | 100\% | 100\% | 0\% | 100\% | - | 97.5\% |
| Articulated Trucks | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | - | 0 |
| \% Articulated Trucks | 0\% | 0\% | 0\% | 0\% | - | 0\% | 0\% | 0\% | 0\% | - | 0\% | 0\% | 0\% | 0\% | - | 0\% |
| Buses and Single-Unit Trucks | 0 | 0 | 0 | 0 | - | 1 | 0 | 0 | 1 | - | 0 | 0 | 0 | 0 | - | 1 |
| \% Buses and Single-Unit Trucks | 0\% | 0\% | 0\% | 0\% | - | 12.5\% | 0\% | 0\% | 7.7\% | - | 0\% | 0\% | 0\% | 0\% | - | 2.5\% |
| Pedestrians | - | - | - | - | 2 | - | - | - | - | 0 | - | - | - | - | 0 |  |
| \% Pedestrians | - | - | - | - | 100\% | - | - | - | - | - | - | - | - | - | - | - |
| Bicycles on Crosswalk | - | - | - | - | 0 | - | - | - | - | 0 | - | - | - | - | 0 |  |
| \% Bicycles on Crosswalk | - | - | - | - | 0\% | - | - | - | - | - | - | - | - | - | - | - |

[^3]CR 100 S and CR 450 E - TMC
Tue Jun 6, 2023
Forced Peak (7:30 AM - 8:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 1078493, Location: 39.747423, -86.447852, Site Code: CR 100 S and CR 450 E


Out: 17 In: 13
Total: 30
[S] CR 450 E NB

CR 100 S and CR 450 E - TMC
Tue Jun 6, 2023
AM Peak (8 AM - 9 AM)

Provided by: Crawford Murphy \& Tilly Inc.
(CMT) : Columbus OH
8101 N. High Street, Columbus, OH, 43235, US

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks,
Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 1078493, Location: 39.747423, -86.447852, Site Code: CR 100 S and CR
450 E

| Leg <br> Direction | CR 100 S WB Westbound |  |  |  |  | CR 450 E NB <br> Northbound |  |  |  |  | CR 100 S EB <br> Eastbound |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Time | T | L |  | App | Ped* | R | L | U | App | Ped* | R | T | U | App | Ped* | Int |
| 2023-06-06 8:00AM | 1 | 5 |  | 6 | 0 | 2 | 2 | 0 | 4 | 0 | 0 | 1 | 0 | 1 | 0 | 11 |
| 8:15AM | 0 | 1 |  | 1 | 2 | 2 | 0 | 0 | 2 | 0 | 2 | 2 | 0 | 4 | 0 | 7 |
| 8:30AM | 3 | 2 | 0 | 5 | 0 | 2 | 4 | 0 | 6 | 0 | 6 | 1 | 0 | 7 | 0 | 18 |
| 8:45AM | 2 | 2 | 0 | 4 | 0 | 2 | 1 | 0 | 3 | 0 | 2 | 3 | 0 | 5 | 0 | 12 |
| Total | 6 | 10 | 0 | 16 | 2 | 8 | 7 | 0 | 15 | 0 | 10 | 7 | 0 | 17 | 0 | 48 |
| \% Approach | 37.5\% | 62.5\% | 0\% | - | - | 53.3\% | 46.7\% | 0\% | - | - | 58.8\% | 41.2\% | 0\% | - | - | - |
| \% Total | 12.5\% | 20.8\% | 0\% | 33.3\% | - | 16.7\% | 14.6\% | 0\% | 31.3\% | - | 20.8\% | 14.6\% | 0\% | 35.4\% | - | - |
| PHF | 0.500 | 0.500 | - | 0.667 | - | 1.000 | 0.438 | - | 0.625 | - | 0.417 | 0.583 | - | 0.607 | - | 0.667 |
| Lights | 6 | 10 | 0 | 16 | - | 7 | 7 | 0 | 14 | - | 10 | 7 | 0 | 17 | - | 47 |
| \% Lights | 100\% | 100\% | 0\% | 100\% | - | 87.5\% | 100\% | 0\% | 93.3\% | - | 100\% | 100\% | 0\% | 100\% | - | 97.9\% |
| Articulated Trucks | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | - | 0 |
| \% Articulated Trucks | 0\% | 0\% | 0\% | 0\% | - | 0\% | 0\% | 0\% | 0\% | - | 0\% | 0\% | 0\% | 0\% | - | 0\% |
| Buses and Single-Unit Trucks | 0 | 0 | 0 | 0 | - | 1 | 0 | 0 | 1 | - | 0 | 0 | 0 | 0 | - | 1 |
| \% Buses and Single-Unit Trucks | 0\% | 0\% | 0\% | 0\% | - | 12.5\% | 0\% | 0\% | 6.7\% | - | 0\% | 0\% | 0\% | 0\% | - | 2.1\% |
| Pedestrians | - | - | - | - | 2 | - | - | - | - | 0 | - | - | - | - | 0 |  |
| \% Pedestrians | - | - | - | - | 100\% | - | - | - | - | - | - | - | - | - | - | - |
| Bicycles on Crosswalk | - | - | - | - | 0 | - | - | - | - | 0 | - | - | - | - | 0 |  |
| \% Bicycles on Crosswalk | - | - | - | - | 0\% | - | - | - | - | - | - | - | - | - | - | - |

[^4]CR 100 S and CR 450 E - TMC
Tue Jun 6, 2023
AM Peak (8 AM - 9 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 1078493, Location: 39.747423, -86.447852, Site Code: CR 100 S and CR 450 E

Out: $20 \quad$ In: 15
Total: 35
[S] CR 450 E NB

CR 100 S and CR 450 E - TMC
Tue Jun 6, 2023
Forced Peak (2:30 PM - 3:30 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks,
Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 1078493, Location: 39.747423, -86.447852, Site Code: CR 100 S and CR
450 E

| Leg <br> Direction | CR 100 S WB <br> Westbound |  |  |  |  | CR 450 E NB <br> Northbound |  |  |  |  | CR 100 S EB <br> Eastbound |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Time | T | L | U | App | Ped* | R | L |  | App | Ped* | R | T | U | App | Ped* | Int |
| 2023-06-06 2:30PM | 6 | 7 | 0 | 13 | 0 | 2 | 2 | 0 | 4 | 0 | 1 | 5 | 0 | 6 | 0 | 23 |
| 2:45PM | 1 | 3 | 0 | 4 | 0 | 3 | 3 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 10 |
| 3:00PM | 1 | 2 | 0 | 3 | 0 | 5 | 1 | 0 | 6 | 0 | 4 | 1 | 0 | 5 | 0 | 14 |
| 3:15PM | 2 | 3 | 0 | 5 | 0 | 4 | 3 | 0 | 7 | 0 | 2 | 2 | 1 | 5 | 0 | 17 |
| Total | 10 | 15 | 0 | 25 | 0 | 14 | 9 | 0 | 23 | 0 | 7 | 8 | 1 | 16 | 0 | 64 |
| \% Approach | 40.0\% | 60.0\% | 0\% | - | - | 60.9\% | 39.1\% | 0\% | - | - | 43.8\% | 50.0\% | 6.3\% | - | - | - |
| \% Total | 15.6\% | 23.4\% | 0\% | 39.1\% | - | 21.9\% | 14.1\% | 0\% | 35.9\% | - | 10.9\% | 12.5\% | 1.6\% | 25.0\% | - | - |
| PHF | 0.417 | 0.536 | - | 0.481 | - | 0.700 | 0.750 | - | 0.821 | - | 0.438 | 0.400 | 0.250 | 0.667 | - | 0.696 |
| Lights | 10 | 14 | 0 | 24 | - | 14 | 9 | 0 | 23 | - | 7 | 8 | 1 | 16 | - | 63 |
| \% Lights | 100\% | 93.3\% | 0\% | 96.0\% | - | 100\% | 100\% | 0\% | 100\% | - | 100\% | 100\% | 100\% | 100\% | - | 98.4\% |
| Articulated Trucks | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | - | 0 |
| \% Articulated Trucks | 0\% | 0\% | 0\% | 0\% | - | 0\% | 0\% | 0\% | 0\% | - | 0\% | 0\% | 0\% | 0\% | - | 0\% |
| Buses and Single-Unit Trucks | 0 | 1 | 0 | 1 | - | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | - | 1 |
| \% Buses and Single-Unit Trucks | 0\% | 6.7\% | 0\% | 4.0\% | - | 0\% | 0\% | 0\% | 0\% | - | 0\% | 0\% | 0\% | 0\% | - | 1.6\% |
| Pedestrians | - | - | - | - | 0 | - | - | - | - | 0 | - | - | - | - | 0 |  |
| \% Pedestrians | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Bicycles on Crosswalk | - | - | - | - | 0 | - | - | - | - | 0 | - | - | - | - | 0 |  |
| \% Bicycles on Crosswalk | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

CR 100 S and CR 450 E - TMC
Tue Jun 6, 2023
Forced Peak (2:30 PM - 3:30 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 1078493, Location: 39.747423, -86.447852, Site Code: CR 100 S and CR 450 E

Provided by: Crawford Murphy \& Tilly Inc. (CMT)
: Columbus OH
8101 N. High Street, Columbus, OH, 43235, US


Out: 22 In: 23
Total: 45
[S] CR 450 E NB

CR 100 S and CR 450 E - TMC
Tue Jun 6, 2023
PM Peak (5 PM - 6 PM) - Overall Peak Hour

Provided by: Crawford Murphy \& Tilly Inc.
(CMT) : Columbus OH
8101 N. High Street, Columbus, OH, 43235, US

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks,
Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 1078493, Location: 39.747423, -86.447852, Site Code: CR 100 S and CR
450 E

| Leg <br> Direction | CR 100 S WB <br> Westbound |  |  |  |  | CR 450 E NB <br> Northbound |  |  |  |  | CR 100 S EB Eastbound |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Time | T | L | U | App | Ped* | R | L |  | App | Ped* | R | T | U | App | Ped* | Int |
| 2023-06-06 5:00PM | 0 | 1 | 0 | 1 | 0 | 4 | 1 | 0 | 5 | 0 | 4 | 0 | 0 | 4 | 0 | 10 |
| 5:15PM | 3 | 2 | 0 | 5 | 0 | 7 | 2 | 0 | 9 | 0 | 4 | 2 | 0 | 6 | 0 | 20 |
| 5:30PM | 0 | 5 | 0 | 5 | 0 | 6 | 5 | 0 | 11 | 0 | 2 | 3 | 0 | 5 | 0 | 21 |
| 5:45PM | 3 | 1 | 0 | 4 | 0 | 7 | 2 | 0 | 9 | 0 | 3 | 4 | 0 | 7 | 0 | 20 |
| Total | 6 | 9 | 0 | 15 | 0 | 24 | 10 | 0 | 34 | 0 | 13 | 9 | 0 | 22 | 0 | 71 |
| \% Approach | 40.0\% | 60.0\% | 0\% | - | - | 70.6\% | 29.4\% | 0\% | - | - | 59.1\% | 40.9\% | 0\% | - |  | - |
| \% Total | 8.5\% | 12.7\% | 0\% | 21.1\% | - | 33.8\% | 14.1\% | 0\% | 47.9\% | - | 18.3\% | 12.7\% | 0\% | 31.0\% | - | - |
| PHF | 0.500 | 0.450 | - | 0.750 | - | 0.857 | 0.500 | - | 0.773 | - | 0.813 | 0.563 | - | 0.786 | - | 0.845 |
| Lights | 6 | 9 | 0 | 15 | - | 24 | 10 | 0 | 34 | - | 13 | 9 | 0 | 22 |  | 71 |
| \% Lights | 100\% | 100\% | 0\% | 100\% | - | 100\% | 100\% | 0\% | 100\% | - | 100\% | 100\% | 0\% | 100\% | - | 100\% |
| Articulated Trucks | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | - | 0 |
| \% Articulated Trucks | 0\% | 0\% | 0\% | 0\% | - | 0\% | 0\% | 0\% | 0\% | - | 0\% | 0\% | 0\% | 0\% | - | 0\% |
| Buses and Single-Unit Trucks | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | - | 0 |
| \% Buses and Single-Unit Trucks | 0\% | 0\% | 0\% | 0\% | - | 0\% | 0\% | 0\% | 0\% | - | 0\% | 0\% | 0\% | 0\% |  | 0\% |
| Pedestrians | - | - | - | - | 0 | - | - | - | - | 0 | - | - | - | - | 0 |  |
| \% Pedestrians | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Bicycles on Crosswalk | - | - | - | - | 0 | - | - | - | - | 0 | - | - | - | - | 0 |  |
| \% Bicycles on Crosswalk | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

[^5]CR 100 S and CR 450 E - TMC
Tue Jun 6, 2023
PM Peak (5 PM - 6 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 1078493, Location: 39.747423, -86.447852, Site Code: CR 100 S and CR 450 E

8101 N. High Street, Columbus, OH, 43235, US


Out: 22
In: 34
Total: 56
[S] CR 450 E NB

| Location: | Foxboro Dr and CR 100 S |
| ---: | :--- |
| Start Date: | $6 / 6 / 2023$ |
| Start Time: | $7: 00: 00 \mathrm{AM}$ |
| Coordinates: | $39^{\circ} 45^{\prime} 0.29 " \mathrm{~N} \quad 86^{\circ} 26{ }^{\prime} 39.38$ "W |
| Comment 1: | $8: 45$ values estimated from data trend |
| Comment 2: | No trucks were observed in the counted hours |
| Comment 3: | Nearly all vehicles making a NB RT failed to stop and instead yielded or <br> did not slow down at all |
| Comment 4: | About half of vehicles from the WB approach failed to stop and instead <br> yielded or did not slow down at all |
| Comment 5: | When multiple vehicles stopped on the WB approach, the wide width of <br> the lane was used as two lanes (a thru and left turn lane) |


| Start Time | CR 100 S <br> Westbound |  |  | CR 100 S <br> Northbound |  |  | $\begin{gathered} \text { FOXBORO DR } \\ \text { Eastbound } \\ \hline \end{gathered}$ |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Thru | Left | Peds | Right | Left | Peds | Right | Thru | Peds |
| 7:00:00 AM | 1 | 0 | 0 | 10 | 0 | 0 | 1 | 11 | 0 |
| 7:15:00 AM | 2 | 1 | 0 | 6 | 1 | 0 | 0 | 5 | 0 |
| 7:30:00 AM | 2 | 3 | 0 | 14 | 0 | 1 | 1 | 12 | 0 |
| 7:45:00 AM | 3 | 1 | 0 | 8 | 0 | 2 | 0 | 11 | 0 |
| 8:00:00 AM | 4 | 2 | 0 | 3 | 0 | 0 | 0 | 8 | 1 |
| 8:15:00 AM | 4 | 6 | 0 | 15 | 2 | 0 | 0 | 13 | 0 |
| 8:30:00 AM | 3 | 4 | 0 | 11 | 1 | 0 | 2 | 9 | 0 |
| 8:45:00 AM | 3 | 3 | 0 | 9 | 0 | 0 | 0 | 8 | 0 |
|  |  |  |  |  |  |  |  |  |  |
| 2:00:00 PM | 8 | 4 | 0 | 8 | 0 | 0 | 0 | 6 | 0 |
| 2:15:00 PM | 7 | 7 | 0 | 5 | 1 | 0 | 0 | 6 | 0 |
| 2:30:00 PM | 4 | 11 | 0 | 8 | 0 | 0 | 0 | 5 | 0 |
| 2:45:00 PM | 9 | 8 | 0 | 4 | 1 | 1 | 1 | 5 | 1 |
| 3:00:00 PM | 10 | 9 | 0 | 7 | 0 | 0 | 2 | 7 | 0 |
| 3:15:00 PM | 8 | 9 | 0 | 11 | 0 | 3 | 1 | 7 | 0 |
| 3:30:00 PM | 5 | 6 | 0 | 6 | 1 | 1 | 2 | 2 | 0 |
| 3:45:00 PM | 8 | 4 | 0 | 4 | 1 | 3 | 2 | 6 | 1 |
| 4:00:00 PM | 6 | 9 | 0 | 7 | 0 | 1 | 0 | 10 | 0 |
| 4:15:00 PM | 8 | 8 | 0 | 6 | 1 | 0 | 0 | 1 | 0 |
| 4:30:00 PM | 9 | 6 | 1 | 4 | 2 | 2 | 0 | 9 | 0 |
| 4:45:00 PM | 14 | 8 | 0 | 9 | 1 | 1 | 2 | 3 | 0 |
| 5:00:00 PM | 6 | 15 | 0 | 11 | 0 | 0 | 1 | 8 | 0 |
| 5:15:00 PM | 15 | 12 | 0 | 9 | 1 | 0 | 1 | 11 | 0 |
| 5:30:00 PM | 10 | 11 | 0 | 11 | 1 | 0 | 2 | 8 | 0 |
| 5:45:00 PM | 19 | 7 | 0 | 11 | 1 | 0 | 1 | 11 | 0 |
|  |  |  |  |  |  |  |  |  |  |
| 7:30-8:30 Peak | 13 | 12 | 0 | 40 | 2 | 3 | 1 | 44 | 1 |
| 2:30-3:30 Peak | 31 | 37 | 0 | 30 | 1 | 4 | 4 | 24 | 1 |


|  |  | Foxboro Dr and CR 100 S |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Date: |  | 6/6/2023 |  |  |  |  |  |  |  |
| Start Time: |  | 7:00:00 AM |  |  |  |  |  |  |  |
| Coordinates: |  | $39^{\circ} 45^{\prime} 0.29$ "N ${ }^{\text {a }}$ ²6'39.38"W |  |  |  |  |  |  |  |
| Comment 1: |  | 8:45 values estimated from data trend |  |  |  |  |  |  |  |
| Comment 2: |  | No trucks were observed in the counted hours |  |  |  |  |  |  |  |
| Comment 3: |  | Nearly all vehicles making a NB RT failed to stop and instead yielded or did not slow down at all |  |  |  |  |  |  |  |
| Comment 4: |  | About half of vehicles from the WB approach failed to stop and instead yielded or did not slow down at all |  |  |  |  |  |  |  |
| Comment 5: |  | When multiple vehicles stopped on the WB approach, the wide width of the lane was used as two lanes (a thru and left turn lane) |  |  |  |  |  |  |  |
| Start Time |  | CR 100 S Westbound |  | CR 100 S Northbound |  |  | FOXBORO DR Eastbound |  |  |
|  | Thru | Left | Peds | Right |  | Peds | Right | Thru | Peds |
| 7:00:00 AM | 1 | 0 | 0 | 10 | 0 | 0 | 1 | 11 | 0 |
| 7:15:00 AM | 2 | 1 | 0 | 6 | 1 | 0 | 0 | 5 | 0 |
| 7:30:00 AM | 2 | 3 | 0 | 14 | 0 | 1 | 1 | 12 | 0 |
| 7:45:00 AM | 3 | 1 | 0 | 8 | 0 | 2 | 0 | 11 | 0 |
| 8:00:00 AM | 4 | 2 | 0 | 3 | 0 | 0 | 0 | 8 | 1 |
| 8:15:00 AM | 4 | 6 | 0 | 15 | 2 | 0 | 0 | 13 | 0 |
| 8:30:00 AM | 3 | 4 | 0 | 11 | 1 | 0 | 2 | 9 | 0 |
| 8:45:00 AM | 3 | 3 | 0 | 9 | 0 | 0 | 0 | 8 | 0 |
|  |  |  |  |  |  |  |  |  |  |
| 2:00:00 PM | 8 | 4 | 0 | 8 | 0 | 0 | 0 | 6 | 0 |
| 2:15:00 PM | 6 | 7 | 0 | 5 | 1 | 0 | 0 | 6 | 0 |
| 2:30:00 PM | 4 | 11 | 0 | 8 | 0 | 0 | 0 | 5 | 0 |
| 2:45:00 PM | 9 | 8 | 0 | 4 | 1 | 1 | 1 | 5 | 1 |
| 3:00:00 PM | 9 | 9 | 0 | 7 | 0 | 0 | 2 | 6 | 0 |
| 3:15:00 PM | 8 | 9 | 0 | 11 | 0 | 3 | 1 | 7 | 0 |
| 3:30:00 PM | 5 | 6 | 0 | 6 | 1 | 1 | 2 | 2 | 0 |
| 3:45:00 PM | 8 | 4 | 0 | 4 | 1 | 3 | 2 | 6 | 1 |
| 4:00:00 PM | 6 | 8 | 0 | 7 | 0 | 1 | 0 | 10 | 0 |
| 4:15:00 PM | 8 | 8 | 0 | 6 | 1 | 0 | 0 | 1 | 0 |
| 4:30:00 PM | 8 | 6 | 1 | 4 | 2 | 2 | 0 | 9 | 0 |
| 4:45:00 PM | 14 | 8 | 0 | 9 | 1 | 1 | 2 | 3 | 0 |
| 5:00:00 PM | 6 | 15 | 0 | 11 | 0 | 0 | 1 | 8 | 0 |
| 5:15:00 PM | 15 | 12 | 0 | 8 | 1 | 0 | 1 | 11 | 0 |
| 5:30:00 PM | 10 | 11 | 0 | 11 | 1 | 0 | 2 | 8 | 0 |
| 5:45:00 PM | 19 | 7 | 0 | 11 | 1 | 0 | 1 | 11 | 0 |


| Location: | Foxboro Dr and CR 100 S |
| ---: | :--- |
| Start Date: | $6 / 6 / 2023$ |
| Start Time: | $7: 00000 \mathrm{AM}$ |
| Coordinates: | $39^{\circ} 45^{\prime} 0.29^{\prime \prime N} \quad 86^{\circ} 26^{\prime} 39.38^{\prime \prime} \mathrm{W}$ |
| Comment 1: | $8: 45$ values estimated from data trend |
| Comment 2: | No trucks were observed in the counted hours |
| Comment 3: | Nearly all vehicles making a NB RT failed to stop and instead yielded or <br> did not slow down at all |
| Comment 4: | About half of vehicles from the WB approach failed to stop and instead <br> yielded or did not slow down at all |
| Comment 5: | When multiple vehicles stopped on the WB approach, the wide width of <br> the was used as two lanes (a thru and left turn lane) |


| Start Time | CR 100 S Westbound |  |  | CR 100 S Northbound |  |  | FOXBORO DR Eastbound |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Thru | Left | Peds | Right | Left | Peds | Right | Thru | Peds |
| 7:00:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  |  |  |  |  |  |  |  |  |  |
| 2:00:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2:15:00 PM | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2:30:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2:45:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3:00:00 PM | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 3:15:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3:30:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3:45:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:00:00 PM | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:15:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:30:00 PM | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15:00 PM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 5:30:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

CR 100 S and CR 525 E - TMC
Wed Jun 7, 2023
Full Length (7 AM-9 AM, 2 PM-6 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians,
Bicycles on Crosswalk)
All Movements
ID: 1078496, Location: 39.74762, -86.433327, Site Code: CR 100 S and CR 525 E

| Leg <br> Direction | CR 525 E SB Southbound |  |  |  |  | CR 100 S WB <br> Westbound |  |  |  |  |  | CR 525 E NB <br> Northbound |  |  |  |  |  | $\begin{aligned} & \text { CR } 100 \text { S EB } \\ & \text { Eastbound } \end{aligned}$ |  |  |  |  |  | Int |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Time | R | T | L U | U App | Ped* | R | T | L U | U | App | Ped* | R | T | L U |  | App | ed* | R | T | L U |  |  | Ped* |  |
| 2023-06-07 7:00AM | 5 | 3 | $20 \quad 0$ | 028 | 0 | 7 | 1 | 0 | 0 | 8 | 0 | 5 | 16 | 0 0 |  | 21 | 0 | 3 | 19 | 60 | 0 | 28 | 0 | 85 |
| 7:15AM | 1 | 9 | 190 | 029 | 0 | 21 | 2 | 1 | 0 | 24 | 0 | 6 | 14 | 0 0 |  | 20 | 0 | 0 | 10 | 40 | 0 | 14 | 0 | 87 |
| 7:30AM | 3 | 14 | 180 | 035 | 0 | 17 | 3 | 1 | 0 | 21 | 0 | 7 | 19 | 10 |  | 27 | 0 | 4 | 16 | 60 | 0 | 26 | 0 | 109 |
| 7:45AM | 3 | 17 | 160 | 036 | 0 | 24 | 5 | 4 | 0 | 33 | 0 | 6 | 18 | 0 0 | 0 | 24 | 0 | 2 | 21 | 50 | 0 | 28 | 0 | 121 |
| Hourly Total | 12 | 43 | 730 | 0128 | 0 | 69 | 11 | 6 | 0 | 86 | 0 | 24 | 67 | 10 |  | 92 | 0 | 9 | 66 | 210 | 0 | 96 | 0 | 402 |
| 8:00AM | 1 | 8 | 160 | 025 | 0 | 18 | 1 | 1 | 0 | 20 | 0 | 4 | 14 | 10 | 0 | 19 | 0 | 2 | 16 | 80 | 0 | 26 | 0 | 90 |
| 8:15AM | 6 | 10 | 130 | 029 | 0 | 24 | 5 | 1 | 0 | 30 | 0 | 8 | 27 | 20 |  | 37 | 0 | 1 | 14 | 10 | 0 | 25 | 0 | 121 |
| 8:30AM | 4 | 16 | 250 | 045 | 0 | 18 | 3 | 3 | 0 | 24 | 0 | 6 | 18 | 0 0 | 0 | 24 | 0 | 0 | 24 | 60 | 0 | 30 | 0 | 123 |
| 8:45AM | 6 | 16 | 18 0 | $0 \quad 40$ | 0 | 26 | 5 | 1 | 0 | 32 | 0 | 7 | 17 | 0 0 | 0 | 24 | 0 | 2 | 12 | 120 | 0 | 26 | 0 | 122 |
| Hourly Total | 17 | 50 | 720 | 0139 | 0 | 86 | 14 | 6 | 0 | 106 | 0 | 25 | 76 | 30 | 0 | 104 | 0 | 5 | 66 | 360 | 0 | 107 | 0 | 456 |
| 9:00AM | 0 | 0 | $0 \quad 0$ | 0 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hourly Total | 0 | 0 | 0 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2:00PM | 7 | 13 | 140 | 034 | 0 | 14 | 5 | 5 | 0 | 24 | 0 | 3 | 11 | 0 0 |  | 14 | 0 | 0 | 11 | 50 | 0 | 16 | 0 | 88 |
| 2:15PM | 8 | 17 | 260 | 051 | 0 | 26 | 11 | 3 | 0 | 40 | 0 | 4 | 9 | 10 | 0 | 14 | 0 | 0 | 11 | 40 | 0 | 15 | 0 | 120 |
| 2:30PM | 13 | 12 | 17 0 | 042 | 0 | 32 | 8 | 6 | 0 | 46 | 0 | 4 | 7 | 20 |  | 13 | 0 | 2 | 7 | 70 | 0 | 16 | 0 | 117 |
| 2:45PM | 8 | 17 | 150 | 040 | 0 | 41 | 12 | 5 | 0 | 58 | 0 | 2 | 29 | 0 0 | 0 | 31 | 0 | 0 | 10 | 60 | 0 | 16 | 0 | 145 |
| Hourly Total | 36 | 59 | 720 | $0 \quad 167$ | 0 | 113 | 36 | 19 | 0 | 168 | 0 | 13 | 56 | 30 |  | 72 | 0 | 2 | 39 | 220 | 0 | 63 | 0 | 470 |
| 3:00PM | 8 | 15 | 160 | 039 | 0 | 36 | 10 | 4 | 0 | 50 | 0 | 3 | 20 | 0 0 |  | 23 | 0 | 0 | 4 | 30 | 0 | 7 | 0 | 119 |
| 3:15PM | 8 | 24 | 220 | 054 | 0 | 44 | 19 | 6 | 0 | 69 | 0 | 3 | 21 | 0 0 | 0 | 24 | 0 | 0 | 10 | 50 | 0 | 15 | 0 | 162 |
| 3:30PM | 8 | 24 | 30 0 | 062 | 0 | 34 | 11 | 7 | 0 | 52 | 0 | 3 | 18 | 10 | 0 | 22 | 0 | 1 | 10 | 20 | 0 | 13 | 0 | 149 |
| 3:45PM | 8 | 18 | 220 | 048 | 0 | 42 | 12 | 3 | 0 | 57 | 0 | 9 | 27 | 10 | 0 | 37 | 0 | 0 | 5 | 70 | 0 | 12 | 2 | 154 |
| Hourly Total | 32 | 81 | $90 \quad 0$ | 0203 | 0 | 156 | 52 | 20 | 0 | 228 | 0 | 18 | 86 | 20 | 0 | 106 | 0 | 1 | 29 | 170 | 0 | 47 | 2 | 584 |
| 4:00PM | 10 | 18 | 250 | 053 | 0 | 38 | 9 | 9 | 0 | 56 | 0 | 4 | 14 | 20 | 0 | 20 | 0 | 1 | 12 | 10 | 0 | 23 | 2 | 152 |
| 4:15PM | 11 | 19 | 350 | 065 | 0 | 40 | 11 | 5 | 0 | 56 | 0 | 4 | 25 | 0 0 | 0 | 29 | 0 | 1 | 13 | 50 | 0 | 19 | 0 | 169 |
| 4:30PM | 9 | 31 | 330 | 073 | 0 | 42 | 10 |  | 0 | 58 | 0 | 0 | 20 | 20 | 0 | 22 | 0 | 2 | 8 | 20 | 0 | 12 | 0 | 165 |
| 4:45PM | 11 | 27 | 34 0 | 072 | 0 | 35 | 15 | 7 | 0 | 57 | 0 | 3 | 18 | 10 | 0 | 22 | 0 | 0 | 11 | 60 | 0 | 17 | 0 | 168 |
| Hourly Total | 41 | 95 | 1270 | 0263 | 0 | 155 | 45 | 27 | 0 | 227 | 0 | 11 | 77 | 50 | 0 | 93 | 0 | 4 | 44 | 230 | 0 | 71 | 2 | 654 |
| 5:00PM | 13 | 24 | 330 | 070 | 0 | 42 | 14 | 3 | 0 | 59 | 0 | 9 | 23 | 0 0 | 0 | 32 | 0 | 1 | 7 | 80 | 0 | 16 | 0 | 177 |
| 5:15PM | 14 | 20 | 450 | 079 | 0 | 41 | 13 | 6 | 0 | 60 | 0 | 2 | 23 | 30 |  | 28 | 0 | 2 | 16 | 70 | 0 | 25 | 2 | 192 |
| 5:30PM | 15 | 27 | 390 | 081 | 0 | 47 | 16 | 6 | 0 | 69 | 0 | 1 | 21 | 20 | 0 | 24 | 0 | 1 | 18 | 70 | 0 | 26 | 0 | 200 |
| 5:45PM | 8 | 21 | 290 | 058 | 0 | 48 | 17 | 8 | 0 | 73 | 0 | 7 | 26 | 10 |  | 34 | 0 | 2 | 15 | 70 | 0 | 24 | 2 | 189 |
| Hourly Total | 50 | 92 | 1460 | 0288 | 0 | 178 | 60 | 23 | 0 | 261 | 0 | 19 | 93 | 60 |  | 118 | 0 | 6 | 56 | 290 | 0 | 91 | 4 | 758 |
| 6:00PM | 0 | 0 | 0 | 0 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hourly Total | 0 | 0 | $0 \quad 0$ | 0 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 0 |  | 0 | 0 | 0 | 0 | 00 | 0 | 0 | 0 | 0 |
| Total | 188 | 420 | $580 \quad 0$ | 01188 | 0 | 757 | 218 | 101 | 0 | 1076 | 0 | 110 | 455 | $20 \quad 0$ | 0 | 585 | 0 | 27 | 300 | 1480 | 0 | 475 | 8 | 3324 |
| \% Approach | 15.8\% | 35.4\% | 48.8\% 0\% | \% |  | 70.4\% | 20.3\% | 9.4\% 0\% |  | - |  | 18.8\% 7 | 77.8\% | 3.4\% 0\% |  | - |  | 5.7\% | 63.2\% | 31.2\% 0\% |  | - |  | - |
| \% Total | 5.7\% | 12.6\% | 17.4\% 0\% | \% 35.7\% |  | 22.8\% | 6.6\% | 3.0\% 0\% | \% 3 | 32.4\% |  | 3.3\% | 13.7\% | 0.6\% 0\% | \% 17 | 7.6\% |  | 0.8\% | 9.0\% | 4.5\% 0\% | \% 1 | 4.3\% |  | - |
| Lights | 188 | 417 | 5680 | 01173 |  | 751 | 215 | 99 | 0 | 1065 |  | 109 | 442 | $20 \quad 0$ | 0 | 571 |  | 27 | 296 | $147 \quad 0$ | 0 | 470 |  | 3279 |
| \% Lights | 100\% | 99.3\% | 97.9\% 0\% | 98.7\% |  | 99.2\% | 98.6\% | 98.0\% 0\% | \% 99 | 99.0\% |  | 99.1\% 9 | 97.1\% | 100\% 0\% | 97 | 97.6\% |  | 100\% | 98.7\% | 99.3\% 0\% | \% 98 | 8.9\% |  | 98.6\% |
| Articulated Trucks | 0 | 0 | $0 \quad 0$ | 0 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | $0 \quad 0$ |  | 0 |  | 0 | 0 | $0 \quad 0$ | 0 | 0 | - | 0 |
| \% Articulated Trucks | 0\% | 0\% | 0\% 0\% | 0\% |  | 0\% | 0\% | 0\% 0\% |  | 0\% |  | 0\% | 0\% | 0\% 0\% |  | 0\% |  | 0\% | 0\% | 0\% 0\% |  | 0\% |  | 0\% |
| Buses and Single-Unit Trucks | 0 | 3 | 120 | 015 |  | 6 | 3 | 2 | 0 | 11 |  | 1 | 13 | $0 \quad 0$ |  | 14 |  | 0 | 4 | 10 |  | 5 | - | 45 |
| \% Buses and Single-Unit <br> Trucks | 0\% | 0.7\% | 2.1\% 0\% | \% 1.3\% |  | 0.8\% | 1.4\% | 2.0\% 0\% |  | 1.0\% |  | 0.9\% | 2.9\% | 0\% 0\% |  | 2.4\% |  | 0\% | 1.3\% | 0.7\% 0\% |  | 1.1\% |  | 1.4\% |
| Pedestrians | - | - | - - | - | 0 | - - | - | - | - | - | 0 | 0 | - | - - | - | - | 0 | - | - | - - | - | - | 7 |  |
| \% Pedestrians | - | - | - - |  |  | - | - | - | - | - |  | - - | - | - |  | - |  | - - | - | - - | - |  | 87.5\% |  |
| Bicycles on Crosswalk | - | - | - - | - - |  | - | - | - | - | - | 0 |  | - | - - | - | - | 0 | - | - | - - | - | - | 1 |  |
| \% Bicycles on Crosswalk | - | - | - - |  |  | - - | - | - |  | - |  | - - | - | - - |  | - |  | - - | - | - - | - |  | 12.5\% | - |

[^6]CR 100 S and CR 525 E - TMC
Wed Jun 7, 2023
Full Length (7 AM-9 AM, 2 PM-6 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 1078496, Location: 39.74762, -86.433327, Site Code: CR 100 S and CR 525 E
[N] CR 525 E SB
Total: 2548
In: $1188 \quad$ Out: 1360


Out: 548 In: 585
Total: 1133
[S] CR 525 E NB

Wed Jun 7, 2023
Forced Peak (7:30 AM - 8:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 1078496, Location: 39.74762, -86.433327, Site Code: CR 100 S and CR 525 E

| Leg <br> Direction | CR 525 E SB <br> Southbound |  |  |  |  |  | CR 100 S WB Westbound |  |  |  |  |  | CR 525 E NB <br> Northbound |  |  |  |  |  | CR 100 S EB <br> Eastbound |  |  |  |  |  | Int |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Time | R | T | L U |  | App |  | R | T | L | U | App |  | R | T | L U | U | App |  | R | T | L | U | App |  |  |
| 2023-06-07 7:30AM | 3 | 14 | 18 | 0 | 35 | 0 | 17 | 3 | 1 | 0 | 21 | 0 | 7 | 19 | 1 | 0 | 27 | 0 | 4 | 16 | 6 | 0 | 26 | 0 | 109 |
| 7:45AM | 3 | 17 | 16 | 0 | 36 | 0 | 24 | 5 | 4 | 0 | 33 | 0 | 6 | 18 | 0 | 0 | 24 | 0 | 2 | 21 | 5 | 0 | 28 | 0 | 121 |
| 8:00AM | 1 | 8 | 16 | 0 | 25 | 0 | 18 | 1 | 1 | 0 | 20 | 0 | 4 | 14 | 1 | 0 | 19 | 0 | 2 | 16 | 8 | 0 | 26 | 0 | 90 |
| 8:15AM | 6 | 10 | 13 | 0 | 29 | 0 | 24 | 5 | 1 | 0 | 30 | 0 | 8 | 27 | 2 | 0 | 37 | 0 | 1 | 14 | 10 | 0 | 25 | 0 | 121 |
| Total | 13 | 49 | 63 | 0 | 125 | 0 | 83 | 14 | 7 | 0 | 104 | 0 | 25 | 78 | 4 | 0 | 107 | 0 | 9 | 67 | 29 | 0 | 105 | 0 | 441 |
| \% Approach | 10.4\% 3 | 39.2\% | 50.4\% 0\% |  | - |  | 79.8\% | 13.5\% | 6.7\% 0\% |  | - |  | 23.4\% | 72.9\% | 3.7\% 0\% |  | - |  | 8.6\% 6 | 63.8\% | 27.6\% 0\% |  | - |  |  |
| \% Total | 2.9\% | 11.1\% | 14.3\% 0\% | \% 28 | 28.3\% |  | 18.8\% | 3.2\% | 1.6\% 0\% | \% 2 | 23.6\% |  | 5.7\% | 17.7\% | 0.9\% 0\% | \% | 4.3\% |  | 2.0\% 1 | 15.2\% | 6.6\% 0\% | \% | 3.8\% |  |  |
| PHF | 0.542 | 0.721 | 0.875 |  | 0.868 |  | 0.865 | 0.700 | 0.438 |  | 0.788 |  | 0.781 | 0.7220 | 0.500 | - | 0.723 |  | 0.563 | 0.798 | 0.725 | - | 0.938 | - | 0.911 |
| Lights | 13 | 49 | 61 | 0 | 123 | - | 81 | 13 | 7 | 0 | 101 |  | 25 | 78 | 4 | 0 | 107 |  | 9 | 66 | 29 | 0 | 104 | - | 435 |
| \% Lights | 100\% | 100\% | 96.8\% 0\% | \% 98 | 98.4\% |  | 97.6\% | 92.9\% | 100\% 0\% | \% 9 | 97.1\% |  | 100\% | 100\% | 100\% 0\% |  | 100\% |  | 100\% 9 | 98.5\% | 100\% 0\% | \% 9 | 99.0\% |  | 98.6\% |
| Articulated Trucks | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | - | 0 |
| \% Articulated Trucks | 0\% | 0\% | 0\% 0\% |  | 0\% |  | 0\% | 0\% | 0\% 0\% |  | 0\% |  | 0\% | 0\% | 0\% 0\% |  | 0\% |  | 0\% | 0\% | 0\% 0\% |  | 0\% | - | 0\% |
| Buses and Single-Unit Trucks | 0 | 0 | 2 | 0 | 2 | - | 2 | 1 | 0 | 0 | 3 | - | 0 | 0 | 0 | 0 | 0 | - | 0 | 1 | 0 | 0 | 1 | - | 6 |
| \% Buses and Single-Unit | 0\% | 0\% | 3.2\% 0\% |  | 1.6\% | - | 2.4\% | 7.1\% | 0\% 0\% |  | 2.9\% | - | 0\% | 0\% | 0\% 0\% |  | 0\% |  | 0\% | 1.5\% | 0\% 0\% |  | 1.0\% |  | 1.4\% |
| Pedestrians | - | - | - | - | - | 0 | - | - | - | - | - | 0 | - | - | - | - | - | 0 | - | - | - | - | - | 0 |  |
| \% Pedestrians | - | - | - | - | - |  | - | - | - | - | - |  | - | - | - | - | - |  | - | - | - | - | - |  |  |
| Bicycles on Crosswalk | - | - | - | - | - | 0 | - | - | - | - | - | 0 | - | - |  | - | - | 0 | - | - | - | - | - | 0 |  |
| \% Bicycles on Crosswalk | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |  | - | - | - | - | - | - |  |

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Wed Jun 7, 2023
Forced Peak (7:30 AM - 8:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 1078496, Location: 39.74762, -86.433327, Site Code: CR 100 S and CR 525 E
[N] CR 525 E SB
Total: 315
In: $125 \quad$ Out: 190


Out: 65 In: 107
Total: 172
[S] CR 525 E NB

AM Peak (8 AM - 9 AM)
Columbus OH
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 1078496, Location: 39.74762, -86.433327, Site Code: CR 100 S and CR 525 E

| Leg <br> Direction | CR 525 E SB <br> Southbound |  |  |  |  |  | CR 100 S WB Westbound |  |  |  |  |  | CR 525 E NB <br> Northbound |  |  |  |  |  | CR 100 S EB <br> Eastbound |  |  |  |  |  | Int |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Time | R | T | L U | U | App |  | R | T | L | U | App |  | R | T | L | U | App |  | R | T | L | U | App |  |  |
| 2023-06-07 8:00AM | 1 | 8 | 16 | 0 | 25 | 0 | 18 | 1 | 1 | 0 | 20 | 0 | 4 | 14 | 1 | 0 | 19 | 0 | 2 | 16 | 8 | 0 | 26 | 0 | 90 |
| 8:15AM | 6 | 10 | 13 | 0 | 29 | 0 | 24 | 5 | 1 | 0 | 30 | 0 | 8 | 27 | 2 | 0 | 37 | 0 | 1 | 14 |  | 0 | 25 | 0 | 121 |
| 8:30AM | 4 | 16 | 25 | 0 | 45 | 0 | 18 | 3 | 3 | 0 | 24 | 0 | 6 | 18 | 0 | 0 | 24 | 0 | 0 | 24 | 6 | 0 | 30 | 0 | 123 |
| 8:45AM | 6 | 16 | 18 | 0 | 40 | 0 | 26 | 5 | 1 | 0 | 32 | 0 | 7 | 17 | 0 | 0 | 24 | 0 | 2 | 12 |  | 0 | 26 | 0 | 122 |
| Total | 17 | 50 | 72 | 0 | 139 | 0 | 86 | 14 | 6 | 0 | 106 | 0 | 25 | 76 | 3 | 0 | 104 | 0 | 5 | 66 | 36 | 0 | 107 | 0 | 456 |
| \% Approach | 12.2\% | 36.0\% | 51.8\% 0\% |  | - | - | 81.1\% | 13.2\% | 5.7\% 0 |  | - |  | 24.0\% | 73.1\% | 2.9\% 0 |  | - |  | 4.7\% | 61.7\% | 33.6\% 0\% |  |  |  |  |
| \% Total | 3.7\% | 11.0\% | 15.8\% 0\% | \% 30 | 30.5\% | - | 18.9\% | 3.1\% | 1.3\% 0 | \% 23 | 23.2\% |  | 5.5\% | 16.7\% | 0.7\% 0 | \% 2 | 22.8\% |  | 1.1\% | 14.5\% | 7.9\% 0\% | \% 2 | 23.5\% |  |  |
| PHF | 0.708 | 0.781 | 0.720 | 0 | 0.772 | - | 0.827 | 0.7000 | 0.500 |  | 0.828 | - | 0.781 | 0.7040 | 0.375 | - 0 | 0.703 |  | 0.625 | 0.688 | 0.750 | - 0 | 0.892 |  | 0.927 |
| Lights | 17 | 50 | 71 | 0 | 138 | - | 85 | 14 | 6 | 0 | 105 | - | 25 | 76 | 3 | 0 | 104 |  | 5 | 65 | 36 | 0 | 106 |  | 453 |
| \% Lights | 100\% | 100\% | 98.6\% 0\% | \% 99 | 99.3\% | - | 98.8\% | 100\% | 100\% 0 | \% 9 | 99.1\% | - | 100\% | 100\% | 100\% 0 | \% | 100\% | - | 100\% | 98.5\% | 100\% 0\% | \% 9 | 99.1\% |  | 99.3\% |
| Articulated Trucks | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 |
| \% Articulated Trucks | 0\% | 0\% | 0\% 0\% |  | 0\% | - | 0\% | 0\% | 0\% 0 |  | 0\% | - | 0\% | 0\% | 0\% 0 |  | 0\% | - | 0\% | 0\% | 0\% 0\% |  | 0\% | - | 0\% |
| Buses and Single-Unit Trucks | 0 | 0 | 1 | 0 | 1 | - | 1 | 0 | 0 | 0 | 1 | - | 0 | 0 | 0 | 0 | 0 | - | 0 | 1 | 0 | 0 | 1 | - | 3 |
| \% Buses and Single-Unit Trucks | 0\% | 0\% | 1.4\% 0\% | \% | 0.7\% | - | 1.2\% | 0\% | 0\% 0 | \% | 0.9\% | - | 0\% | 0\% | 0\% 0 |  | 0\% | - | 0\% | 1.5\% | 0\% 0\% |  | 0.9\% |  | 0.7\% |
| Pedestrians | - | - | - | - | - | 0 | - | - | - | - | - | 0 | - | - | - | - | - | 0 | - | - | - | - | - | 0 |  |
| \% Pedestrians | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Bicycles on Crosswalk | - | - | - | - | - | 0 | - | - | - | - | - | 0 | - | - | - | - | - | 0 | - | - | - | - | - | 0 |  |
| \% Bicycles on Crosswalk | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

[^7]CR 100 S and CR 525 E - TMC
Wed Jun 7, 2023
AM Peak (8 AM - 9 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 1078496, Location: 39.74762, -86.433327, Site Code: CR 100 S and CR 525 E
[N] CR 525 E SB
Total: 337
In: $139 \quad$ Out: 198


Out: 61 In: 104
Total: 165
[S] CR 525 E NB

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 1078496, Location: 39.74762, -86.433327, Site Code: CR 100 S and CR 525 E

| Leg <br> Direction | CR 525 E SB <br> Southbound |  |  |  |  |  | CR 100 S WB Westbound |  |  |  |  |  | CR 525 E NB <br> Northbound |  |  |  |  |  | CR 100 S EB Eastbound |  |  |  |  |  | Int |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Time | R | T | L | U | App |  | R | T | L | U | App |  | R | T | L | U | App |  | R | T | L | U |  |  |  |
| 2023-06-07 2:30PM | 13 | 12 | 17 | 0 | 42 | 0 | 32 | 8 | 6 | 0 | 46 | 0 | 4 | 7 | 2 | 0 | 13 | 0 | 2 | 7 | 7 | 0 | 16 | 0 | 117 |
| 2:45PM | 8 | 17 | 15 | 0 | 40 | 0 | 41 | 12 | 5 | 0 | 58 | 0 | 2 | 29 | 0 | 0 | 31 | 0 | 0 | 10 | 6 | 0 | 16 | 0 | 145 |
| 3:00PM | 8 | 15 | 16 | 0 | 39 | 0 | 36 | 10 | 4 | 0 | 50 | 0 | 3 | 20 | 0 | 0 | 23 | 0 | 0 | 4 | 3 | 0 | 7 | 0 | 119 |
| 3:15PM | 8 | 24 | 22 | 0 | 54 | 0 | 44 | 19 | 6 | 0 | 69 | 0 | 3 | 21 | 0 | 0 | 24 | 0 | 0 | 10 | 5 | 0 | 15 | 0 | 162 |
| Total | 37 | 68 | 70 | 0 | 175 | 0 | 153 | 49 | 21 | 0 | 223 | 0 | 12 | 77 | 2 | 0 | 91 | 0 | 2 | 31 | 21 | 0 | 54 | 0 | 543 |
| \% Approach | 21.1\% | 38.9\% | 40.0\% 0 |  | - |  | 68.6\% | 22.0\% | 9.4\% 0 |  | - |  | 13.2\% | 84.6\% | 2.2\% 0 |  | - |  | 3.7\% 5 | 57.4\% | 38.9\% 0\% |  | - |  |  |
| \% Total | 6.8\% | 12.5\% | 12.9\% 0 | \% | 32.2\% |  | 28.2\% | 9.0\% | 3.9\% 0 | \% | 41.1\% |  | 2.2\% | 14.2\% | 0.4\% 0 | \% | 16.8\% |  | 0.4\% | 5.7\% | 3.9\% 0\% |  | 9.9\% | - |  |
| PHF | 0.712 | 0.708 | 0.795 |  | 0.810 | - | 0.869 | 0.645 | 0.875 |  | 0.808 |  | 0.750 | 0.664 | 0.250 | - | 0.734 |  | 0.250 | 0.775 | 0.750 | - | 0.844 | - | 0.838 |
| Lights | 37 | 68 | 68 | 0 | 173 | - | 151 | 48 | 19 | 0 | 218 | - | 12 | 72 | 2 | 0 | 86 |  | 2 | 30 | 21 | 0 | 53 |  | 530 |
| \% Lights | 100\% | 100\% | 97.1\% 0 | 0\% 9 | 98.9\% |  | 98.7\% | 98.0\% | 90.5\% 0 | \% | 97.8\% | - | 100\% | 93.5\% | 100\% 0 | \% | 94.5\% |  | 100\% 9 | 96.8\% | 100\% 0\% | \% | 8.1\% |  | 97.6\% |
| Articulated Trucks | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 |  | 0 |
| \% Articulated Trucks | 0\% | 0\% | 0\% 0 | \% | 0\% |  | 0\% | 0\% | 0\% 0\% |  | 0\% |  | 0\% | 0\% | 0\% 0 |  | 0\% | - | 0\% | 0\% | 0\% 0\% |  | 0\% | - | 0\% |
| Buses and Single-Unit Trucks | 0 | 0 | 2 | 0 | 2 | - | 2 | 1 | 2 | 0 | 5 | - | 0 | 5 | 0 | 0 | 5 | - | 0 | 1 | 0 | 0 | 1 | - | 13 |
| \% Buses and Single-Unit Trucks | 0\% | 0\% | 2.9\% 0 | \% | 1.1\% | - | 1.3\% | 2.0\% | 9.5\% 0 |  | 2.2\% | - | 0\% | 6.5\% | 0\% 0 |  | 5.5\% | - | 0\% | 3.2\% | 0\% 0\% |  | 1.9\% | - | 2.4\% |
| Pedestrians | - | - | - | - | - | 0 | - | - | - | - | - | 0 | - | - | - | - | - | 0 | - | - | - | - | - | 0 |  |
| \% Pedestrians | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |  |
| Bicycles on Crosswalk | - | - | - | - | - | 0 | - | - | - | - | - | 0 | - | - | - | - | - | 0 | - | - | - | - | - | 0 |  |
| \% Bicycles on Crosswalk | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |  |

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Wed Jun 7, 2023
Forced Peak (2:30 PM - 3:30 PM)
8101 N. High Street, Columbus, OH, 43235, US
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 1078496, Location: 39.74762, -86.433327, Site Code: CR 100 S and CR 525 E
[N] CR 525 E SB
Total: 426
In: $175 \quad$ Out: 251


Out: 91 In: 91
Total: 182
[S] CR 525 E NB

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians,
Bicycles on Crosswalk)
All Movements
ID: 1078496, Location: 39.74762, -86.433327, Site Code: CR 100 S and CR 525 E

| Leg <br> Direction | CR 525 E SB <br> Southbound |  |  |  |  |  | CR 100 S WB Westbound |  |  |  |  |  | CR 525 E NB Northbound |  |  |  |  |  | CR 100 S EB Eastbound |  |  |  |  |  | Int |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Time | R | T | L |  | App |  | R | T | L | U | App |  | R | T | L | U | App |  | R | T | L | U | App |  |  |
| 2023-06-07 5:00PM | 13 | 24 | 33 | 0 | 70 | 0 | 42 | 14 | 3 | 0 | 59 | 0 | 9 | 23 | 0 | 0 | 32 | 0 | 1 | 7 | 8 | 0 | 16 | 0 | 177 |
| 5:15PM | 14 | 20 | 45 | 0 | 79 | 0 | 41 | 13 | 6 | 0 | 60 | 0 | 2 | 23 | 3 | 0 | 28 | 0 | 2 | 16 | 7 | 0 | 25 | 2 | 192 |
| 5:30PM | 15 | 27 | 39 | 0 | 81 | 0 | 47 | 16 | 6 | 0 | 69 | 0 | 1 | 21 | 2 | 0 | 24 | 0 | 1 | 18 | 7 | 0 | 26 | 0 | 200 |
| 5:45PM | 8 | 21 | 29 | 0 | 58 | 0 | 48 | 17 | 8 | 0 | 73 | 0 | 7 | 26 | 1 | 0 | 34 | 0 | 2 | 15 | 7 | 0 | 24 | 2 | 189 |
| Total | 50 | 92 | 146 | 0 | 288 | 0 | 178 | 60 | 23 | 0 | 261 | 0 | 19 | 93 | 6 | 0 | 118 | 0 | 6 | 56 | 29 | 0 | 91 | 4 | 758 |
| \% Approach | 17.4\% | 31.9\% 5 | 50.7\% 0 |  | - |  | 68.2\% | 23.0\% | 8.8\% 0 |  | - |  | 16.1\% | 78.8\% | 5.1\% 0\% | \% | - |  | 6.6\% | 61.5\% | 31.9\% 0\% |  | - |  |  |
| \% Total | 6.6\% | 12.1\% | 19.3\% 0 | 0\% 3 | 38.0\% |  | 23.5\% | 7.9\% | 3.0\% 0 | 0\% 3 | 34.4\% |  | 2.5\% | 12.3\% | 0.8\% 0\% | \% 15 | 15.6\% | - | 0.8\% | 7.4\% | 3.8\% 0\% | \% 1 | 2.0\% |  |  |
| PHF | 0.833 | 0.852 | 0.811 |  | 0.889 | - | 0.927 | 0.8820 | 0.719 | - 0 | 0.894 |  | 0.528 | 0.8940. | 0.500 | 0 | 0.868 | - | 0.750 | 0.778 | 0.906 | - | 0.875 | - | 0.948 |
| Lights | 50 | 91 | 144 | 0 | 285 | - | 178 | 60 | 23 | 0 | 261 | - | 18 | 91 | 6 | 0 | 115 | - | 6 | 55 | 29 | 0 | 90 |  | 751 |
| \% Lights | 100\% | 98.9\% | 98.6\% 0 | 0\% 9 | 99.0\% | - | 100\% | 100\% 1 | 100\% 0 | 0\% | 100\% |  | 94.7\% 9 | 97.8\% | 100\% 0\% | \% 97 | 97.5\% |  | 100\% | 98.2\% | 100\% 0\% | \% 9 | 98.9\% |  | 99.1\% |
| Articulated Trucks | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | 0 |
| \% Articulated Trucks | 0\% | 0\% | 0\% 0\% | 0\% | 0\% | - | 0\% | 0\% | 0\% 0 |  | 0\% | - | 0\% | 0\% | 0\% 0\% | \% | 0\% | - | 0\% | 0\% | 0\% 0\% |  | 0\% | - | 0\% |
| Buses and Single-Unit Trucks | 0 | 1 | 2 | 0 | 3 | - | 0 | 0 | 0 | 0 | 0 | - | 1 | 2 | 0 | 0 | 3 | - | 0 | 1 | 0 | 0 | 1 | - | 7 |
| \% Buses and Single-Unit Trucks | 0\% | 1.1\% | 1.4\% 0 | \%\% | 1.0\% | - | 0\% | 0\% | 0\% 0 |  | 0\% | - | 5.3\% | 2.2\% | 0\% 0\% |  | 2.5\% | - | 0\% | 1.8\% | 0\% 0\% |  | 1.1\% | - | 0.9\% |
| Pedestrians | - | - | - | - | - | 0 | - | - | - | - | - | 0 | - | - | - | - | - | 0 | - | - | - | - | - | 4 |  |
| \% Pedestrians | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |  | 100\% |  |
| Bicycles on Crosswalk | - | - | - | - | - | 0 | - | - | - | - | - | 0 | - | - | - | - | - | 0 | - | - | - | - | - | 0 |  |
| \% Bicycles on Crosswalk | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 0\% | - |

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

CR 100 S and CR 525 E-TMC
Wed Jun 7, 2023
PM Peak (5 PM - 6 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 1078496, Location: 39.74762, -86.433327, Site Code: CR 100 S and CR 525 E
[N] CR 525 E SB
Total: 588
In: 288
Out: 300
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Out: 121 In: 118
Total: 239
[S] CR 525 E NB

CR 200 S and CR 450 E - TMC
Wed Jun 7, 2023
Full Length (7 AM-9 AM, 2 PM-6 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1078498, Location: 39.732755, -86.447573, Site Code: CR 200 S
and CR 450 E

| Leg <br> Direction |  | CR 450 E SB <br> Southbound |  |  |  | CR 200 S WB Westbound |  |  |  | CR 200 S EB <br> Eastbound |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Time |  | R | L | U | App | R | T | U | App | T | L | U | App | Int |
|  | 2023-06-07 7:00AM | 3 | 2 | 0 | 5 | 0 | 2 | 0 | 2 | 11 | 0 | 0 | 11 | 18 |
|  | 7:15AM | 1 | 6 | 0 | 7 | 1 | 5 | 0 | 6 | 14 | 1 | 0 | 15 | 28 |
|  | 7:30AM | 2 | 1 | 0 | 3 | 1 | 8 | 0 | 9 | 8 | 2 | 0 | 10 | 22 |
|  | 7:45AM | 1 | 2 | 0 | 3 | 1 | 6 | 0 | 7 | 11 | 0 | 0 | 11 | 21 |
|  | Hourly Total | 7 | 11 | 0 | 18 | 3 | 21 | 0 | 24 | 44 | 3 | 0 | 47 | 89 |
|  | 8:00AM | 2 | 2 | 0 | 4 | 2 | 7 | 0 | 9 | 12 | 2 | 0 | 14 | 27 |
|  | 8:15AM | 0 | 2 | 0 | 2 | 1 | 2 | 0 | 3 | 9 | 2 | 0 | 11 | 16 |
|  | 8:30AM | 0 | 2 | 0 | 2 | 0 | 5 | 0 | 5 | 5 | 3 | 0 | 8 | 15 |
|  | 8:45AM | 1 | 2 | 0 | 3 | 1 | 2 | 0 | 3 | 11 | 1 | 0 | 12 | 18 |
|  | Hourly Total | 3 | 8 | 0 | 11 | 4 | 16 | 0 | 20 | 37 | 8 | 0 | 45 | 76 |
|  | 2:00PM | 0 | 0 | 0 | 0 | 1 | 14 | 0 | 15 | 8 | 1 | 0 | 9 | 24 |
|  | 2:15PM | 4 | 3 | 0 | 7 | 3 | 14 | 0 | 17 | 7 | 4 | 0 | 11 | 35 |
|  | 2:30PM | 2 | 3 | 0 | 5 | 2 | 16 | 0 | 18 | 5 | 3 | 0 | 8 | 31 |
|  | 2:45PM | 2 | 1 | 0 | 3 | 4 | 8 | 0 | 12 | 6 | 0 | 0 | 6 | 21 |
|  | Hourly Total | 8 | 7 | 0 | 15 | 10 | 52 | 0 | 62 | 26 | 8 | 0 | 34 | 111 |
|  | 3:00PM | 4 | 1 | 0 | 5 | 2 | 17 | 0 | 19 | 10 | 2 | 0 | 12 | 36 |
|  | 3:15PM | 1 | 3 | 0 | 4 | 4 | 18 | 0 | 22 | 6 | 4 | 0 | 10 | 36 |
|  | 3:30PM | 6 | 1 | 0 | 7 | 4 | 17 | 0 | 21 | 8 | 3 | 0 | 11 | 39 |
|  | 3:45PM | 3 | 2 | 0 | 5 | 2 | 14 | 0 | 16 | 9 | 2 | 0 | 11 | 32 |
|  | Hourly Total | 14 | 7 | 0 | 21 | 12 | 66 | 0 | 78 | 33 | 11 | 0 | 44 | 143 |
|  | 4:00PM | 1 | 1 | 0 | 2 | 2 | 13 | 0 | 15 | 8 | 2 | 0 | 10 | 27 |
|  | 4:15PM | 2 | 2 | 0 | 4 | 3 | 10 | 0 | 13 | 11 | 5 | 0 | 16 | 33 |
|  | 4:30PM | 3 | 3 | 0 | 6 | 5 | 13 | 0 | 18 | 10 | 2 | 0 | 12 | 36 |
|  | 4:45PM | 3 | 3 | 0 | 6 | 4 | 24 | 0 | 28 | 9 | 3 | 0 | 12 | 46 |
|  | Hourly Total | 9 | 9 | 0 | 18 | 14 | 60 | 0 | 74 | 38 | 12 | 0 | 50 | 142 |
|  | 5:00PM | 4 | 4 | 0 | 8 | 3 | 14 | 0 | 17 | 13 | 3 | 0 | 16 | 41 |
|  | 5:15PM | 2 | 2 | 0 | 4 | 8 | 24 | 0 | 32 | 8 | 5 | 0 | 13 | 49 |
|  | 5:30PM | 3 | 3 | 0 | 6 | 2 | 16 | 0 | 18 | 7 | 3 | 0 | 10 | 34 |
|  | 5:45PM | 2 | 5 | 0 | 7 | 5 | 10 | 0 | 15 | 13 | 0 | 0 | 13 | 35 |
|  | Hourly Total | 11 | 14 | 0 | 25 | 18 | 64 | 0 | 82 | 41 | 11 | 0 | 52 | 159 |
|  | 6:00PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | Hourly Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | Total | 52 | 56 | 0 | 108 | 61 | 279 | 0 | 340 | 219 | 53 | 0 | 272 | 720 |
|  | \% Approach | 48.1\% | 51.9\% | 0\% | - | 17.9\% | 82.1\% | 0\% | - | 80.5\% | 19.5\% | 0\% | - | - |
|  | \% Total | 7.2\% | 7.8\% | 0\% | 15.0\% | 8.5\% | 38.8\% | 0\% | 47.2\% | 30.4\% | 7.4\% | 0\% | 37.8\% | - |
|  | Lights | 52 | 54 | 0 | 106 | 61 | 273 | 0 | 334 | 214 | 51 | 0 | 265 | 705 |
|  | \% Lights | 100\% | 96.4\% | 0\% | 98.1\% | 100\% | 97.8\% | 0\% | 98.2\% | 97.7\% | 96.2\% | 0\% | 97.4\% | 97.9\% |
|  | Articulated Trucks | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 4 |
|  | \% Articulated Trucks | 0\% | 1.8\% | 0\% | 0.9\% | 0\% | 0\% | 0\% | 0\% | 1.4\% | 0\% | 0\% | 1.1\% | 0.6\% |
|  | Buses and Single-Unit Trucks | 0 | 1 | 0 | 1 | 0 | 6 | 0 | 6 | 2 | 2 | 0 | 4 | 11 |
|  | \% Buses and Single-Unit Trucks | 0\% | 1.8\% | 0\% | 0.9\% | 0\% | 2.2\% | 0\% | 1.8\% | 0.9\% | 3.8\% | 0\% | 1.5\% | 1.5\% |

* L: Left, R: Right, T: Thru, U: U-Turn

CR 200 S and CR 450 E - TMC
Wed Jun 7, 2023
Full Length (7 AM-9 AM, 2 PM-6 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1078498, Location: 39.732755, -86.447573, Site Code: CR 200 S and CR 450 E
[ N ] CR 450 E SB
Total: 222
In: 108 Out: 114
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All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1078498, Location: 39.732755, -86.447573, Site Code: CR 200 S
and CR 450 E

| Leg <br> Direction |  | CR 450 E SB <br> Southbound |  |  |  | CR 200 S WB Westbound |  |  |  | CR 200 S EB <br> Eastbound |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Time |  | R | L | U | App | R | T | U | App | T | L | U | App | Int |
|  | 2023-06-07 7:15AM | 1 | 6 | 0 | 7 | 1 | 5 | 0 | 6 | 14 | 1 | 0 | 15 | 28 |
|  | 7:30AM | 2 | 1 | 0 | 3 | 1 | 8 | 0 | 9 | 8 | 2 | 0 | 10 | 22 |
|  | 7:45AM | 1 | 2 | 0 | 3 | 1 | 6 | 0 | 7 | 11 | 0 | 0 | 11 | 21 |
|  | 8:00AM | 2 | 2 | 0 | 4 | 2 | 7 | 0 | 9 | 12 | 2 | 0 | 14 | 27 |
|  | Total | 6 | 11 | 0 | 17 | 5 | 26 | 0 | 31 | 45 | 5 | 0 | 50 | 98 |
|  | \% Approach | 35.3\% | 64.7\% | 0\% | - | 16.1\% | 83.9\% | 0\% | - | 90.0\% | 10.0\% | 0\% | - | - |
|  | \% Total | 6.1\% | 11.2\% | 0\% | 17.3\% | 5.1\% | 26.5\% | 0\% | 31.6\% | 45.9\% | 5.1\% | 0\% | 51.0\% | - |
|  | PHF | 0.750 | 0.458 | - | 0.607 | 0.625 | 0.813 | - | 0.861 | 0.804 | 0.625 | - | 0.833 | 0.875 |
|  | Lights | 6 | 11 | 0 | 17 | 5 | 26 | 0 | 31 | 44 | 5 | 0 | 49 | 97 |
|  | \% Lights | 100\% | 100\% | 0\% | 100\% | 100\% | 100\% | 0\% | 100\% | 97.8\% | 100\% | 0\% | 98.0\% | 99.0\% |
|  | Articulated Trucks | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | \% Articulated Trucks | 0\% | 0\% | 0\% | 0\% | 0\% | 0\% | 0\% | 0\% | 0\% | 0\% | 0\% | 0\% | 0\% |
|  | Buses and Single-Unit Trucks | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 |
|  | \% Buses and Single-Unit Trucks | 0\% | 0\% | 0\% | 0\% | 0\% | 0\% | 0\% | 0\% | 2.2\% | 0\% | 0\% | 2.0\% | 1.0\% |

* L: Left, R: Right, T: Thru, U: U-Turn

CR 200 S and CR 450 E - TMC
Wed Jun 7, 2023
AM Peak (7:15 AM - 8:15 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1078498, Location: 39.732755, -86.447573, Site Code: CR 200 S and CR 450 E
[N] CR 450 E SB
Total: 27
In: 17 Out: 10
-


Wed Jun 7, 2023
Forced Peak (7:30 AM - 8:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1078498, Location: 39.732755, -86.447573, Site Code: CR 200 S
and CR 450 E

| Leg <br> Direction |  | CR 450 E SB <br> Southbound |  |  |  | CR 200 S WB Westbound |  |  |  | CR 200 S EB <br> Eastbound |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Time |  | R | L | U | App | R | T | U | App | T | L | U | App | Int |
|  | 2023-06-07 7:30AM | 2 | 1 | 0 | 3 | 1 | 8 | 0 | 9 | 8 | 2 | 0 | 10 | 22 |
|  | 7:45AM | 1 | 2 | 0 | 3 | 1 | 6 | 0 | 7 | 11 | 0 | 0 | 11 | 21 |
|  | 8:00AM | 2 | 2 | 0 | 4 | 2 | 7 | 0 | 9 | 12 | 2 | 0 | 14 | 27 |
|  | 8:15AM | 0 | 2 | 0 | 2 | 1 | 2 | 0 | 3 | 9 | 2 | 0 | 11 | 16 |
|  | Total | 5 | 7 | 0 | 12 | 5 | 23 | 0 | 28 | 40 | 6 | 0 | 46 | 86 |
|  | \% Approach | 41.7\% | 58.3\% | 0\% | - | 17.9\% | 82.1\% | 0\% | - | 87.0\% | 13.0\% | 0\% | - | - |
|  | \% Total | 5.8\% | 8.1\% | 0\% | 14.0\% | 5.8\% | 26.7\% | 0\% | 32.6\% | 46.5\% | 7.0\% | 0\% | 53.5\% | - |
|  | PHF | 0.625 | 0.875 | - | 0.750 | 0.625 | 0.719 | - | 0.778 | 0.833 | 0.750 | - | 0.821 | 0.796 |
|  | Lights | 5 | 7 | 0 | 12 | 5 | 23 | 0 | 28 | 39 | 6 | 0 | 45 | 85 |
|  | \% Lights | 100\% | 100\% | 0\% | 100\% | 100\% | 100\% | 0\% | 100\% | 97.5\% | 100\% | 0\% | 97.8\% | 98.8\% |
|  | Articulated Trucks | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | \% Articulated Trucks | 0\% | 0\% | 0\% | 0\% | 0\% | 0\% | 0\% | 0\% | 0\% | 0\% | 0\% | 0\% | 0\% |
|  | Buses and Single-Unit Trucks | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 |
|  | \% Buses and Single-Unit Trucks | 0\% | 0\% | 0\% | 0\% | 0\% | 0\% | 0\% | 0\% | 2.5\% | 0\% | 0\% | 2.2\% | 1.2\% |

*L: Left, R: Right, T: Thru, U: U-Turn

CR 200 S and CR 450 E - TMC
Wed Jun 7, 2023
Forced Peak (7:30 AM - 8:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1078498, Location: 39.732755, -86.447573, Site Code: CR 200 S and CR 450 E
[ N$]$ CR 450 E SB
Total: 23
In: 12 Out: 11

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Wed Jun 7, 2023
Forced Peak (2:30 PM - 3:30 PM)
8101 N. High Street, Columbus, OH, 43235, US
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1078498, Location: 39.732755, -86.447573, Site Code: CR 200 S
and CR 450 E

| Leg <br> Direction |  | CR 450 E SB <br> Southbound |  |  |  | CR 200 S WB Westbound |  |  |  | $\begin{array}{\|l\|} \hline \text { CR } 200 \text { S EB } \\ \text { Eastbound } \\ \hline \end{array}$ |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Time |  | R | L | U | App | R | T | U | App | T | L | U | App | Int |
|  | 2023-06-07 2:30PM | 2 | 3 | 0 | 5 | 2 | 16 | 0 | 18 | 5 | 3 | 0 | 8 | 31 |
|  | 2:45PM | 2 | 1 | 0 | 3 | 4 | 8 | 0 | 12 | 6 | 0 | 0 | 6 | 21 |
|  | 3:00PM | 4 | 1 | 0 | 5 | 2 | 17 | 0 | 19 | 10 | 2 | 0 | 12 | 36 |
|  | 3:15PM | 1 | 3 | 0 | 4 | 4 | 18 | 0 | 22 | 6 | 4 | 0 | 10 | 36 |
|  | Total | 9 | 8 | 0 | 17 | 12 | 59 | 0 | 71 | 27 | 9 | 0 | 36 | 124 |
|  | \% Approach | 52.9\% | 47.1\% | 0\% | - | 16.9\% | 83.1\% | 0\% | - | 75.0\% | 25.0\% | 0\% | - | - |
|  | \% Total | 7.3\% | 6.5\% | 0\% | 13.7\% | 9.7\% | 47.6\% | 0\% | 57.3\% | 21.8\% | 7.3\% | 0\% | 29.0\% | - |
|  | PHF | 0.563 | 0.667 | - | 0.850 | 0.750 | 0.819 | - | 0.807 | 0.675 | 0.563 | - | 0.750 | 0.861 |
|  | Lights | 9 | 7 | 0 | 16 | 12 | 58 | 0 | 70 | 27 | 9 | 0 | 36 | 122 |
|  | \% Lights | 100\% | 87.5\% | 0\% | 94.1\% | 100\% | 98.3\% | 0\% | 98.6\% | 100\% | 100\% | 0\% | 100\% | 98.4\% |
|  | Articulated Trucks | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
|  | \% Articulated Trucks | 0\% | 12.5\% | 0\% | 5.9\% | 0\% | 0\% | 0\% | 0\% | 0\% | 0\% | 0\% | 0\% | 0.8\% |
|  | Buses and Single-Unit Trucks | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
|  | \% Buses and Single-Unit Trucks | 0\% | 0\% | 0\% | 0\% | 0\% | 1.7\% | 0\% | 1.4\% | 0\% | 0\% | 0\% | 0\% | 0.8\% |

* L: Left, R: Right, T: Thru, U: U-Turn

CR 200 S and CR 450 E - TMC
Wed Jun 7, 2023
Forced Peak (2:30 PM - 3:30 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1078498, Location: 39.732755, -86.447573, Site Code: CR 200 S and CR 450 E
[N] CR 450 E SB
Total: 38
In: 17 Out: 21
の $\infty$


Wed Jun 7, 2023
PM Peak (4:30 PM - 5:30 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1078498, Location: 39.732755, -86.447573, Site Code: CR 200 S
and CR 450 E

| Leg <br> Direction |  | CR 450 E SB <br> Southbound |  |  |  | CR 200 S WB <br> Westbound |  |  |  | CR 200 S EB <br> Eastbound |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Time |  | R | L | U | App | R | T | U | App | T | L | U | App | Int |
|  | 2023-06-07 4:30PM | 3 | 3 | 0 | 6 | 5 | 13 | 0 | 18 | 10 | 2 | 0 | 12 | 36 |
|  | 4:45PM | 3 | 3 | 0 | 6 | 4 | 24 | 0 | 28 | 9 | 3 | 0 | 12 | 46 |
|  | 5:00PM | 4 | 4 | 0 | 8 | 3 | 14 | 0 | 17 | 13 | 3 | 0 | 16 | 41 |
|  | 5:15PM | 2 | 2 | 0 | 4 | 8 | 24 | 0 | 32 | 8 | 5 | 0 | 13 | 49 |
|  | Total | 12 | 12 | 0 | 24 | 20 | 75 | 0 | 95 | 40 | 13 | 0 | 53 | 172 |
|  | \% Approach | 50.0\% | 50.0\% | 0\% | - | 21.1\% | 78.9\% | 0\% | - | 75.5\% | 24.5\% | 0\% | - | - |
|  | \% Total | 7.0\% | 7.0\% | 0\% | 14.0\% | 11.6\% | 43.6\% | 0\% | 55.2\% | 23.3\% | 7.6\% | 0\% | 30.8\% | - |
|  | PHF | 0.750 | 0.750 | - | 0.750 | 0.625 | 0.781 | - | 0.742 | 0.769 | 0.650 | - | 0.828 | 0.878 |
|  | Lights | 12 | 12 | 0 | 24 | 20 | 74 | 0 | 94 | 39 | 12 | 0 | 51 | 169 |
|  | \% Lights | 100\% | 100\% | 0\% | 100\% | 100\% | 98.7\% | 0\% | 98.9\% | 97.5\% | 92.3\% | 0\% | 96.2\% | 98.3\% |
|  | Articulated Trucks | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 |
|  | \% Articulated Trucks | 0\% | 0\% | 0\% | 0\% | 0\% | 0\% | 0\% | 0\% | 2.5\% | 0\% | 0\% | 1.9\% | 0.6\% |
|  | Buses and Single-Unit Trucks | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 2 |
|  | \% Buses and Single-Unit Trucks | 0\% | 0\% | 0\% | 0\% | 0\% | 1.3\% | 0\% | 1.1\% | 0\% | 7.7\% | 0\% | 1.9\% | 1.2\% |

* L: Left, R: Right, T: Thru, U: U-Turn

CR 200 S and CR 450 E - TMC
Wed Jun 7, 2023
PM Peak (4:30 PM - 5:30 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1078498, Location: 39.732755, -86.447573, Site Code: CR 200 S and CR 450 E
[N] CR 450 E SB
Total: 57
In: 24 Out: 33
$\underset{\sim}{\sim}$


## Avon Schools TIS

APPENDIX C: TRAFFIC VOLUME CALCULATIONS

## Avon Community School Corporation Traffic Impact Study

Trip Generation Comparisons for the Proposed Middle SchoolCampus
Southeast quadrant of CR100S and CR450E

Applying ITE Trip Generation Rates for Middle School (1,100 students)

| Land Use | Students | Time <br> Period | ITE <br> Formula | Total <br> Trips | Trips <br> Entering | Trips <br> Exiting |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Middle School/Junior High School (6-8) | 1,100 |  |  |  |  |  |
| ITE LUC 522 | Students | AM Peak - Generator | Average Rate $=0.74$ | 814 | 448 | 366 |
|  |  | PM Peak - Generator | Average Rate $=0.36$ | 396 | 182 | 214 |

Applying site specific rates based on District busing and car rider estimates

| Land Use | Student | Time <br> Period | Formula | Vehicle Trips |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | Total | Entering | Exiting |
| Middle School Car Trips <br> (assume 2 trips per student per time period) | 185 <br> Students faculty staff | AM Peak - Generator <br> PM Peak - Generator | Average Rate $=2.0$ <br> Average Rate $=2.0$ | $\begin{aligned} & 370 \\ & 370 \end{aligned}$ | $\begin{aligned} & 204 \\ & 170 \end{aligned}$ | $\begin{aligned} & 167 \\ & 200 \end{aligned}$ |
| Middle School Bus Trips <br> (18 buses to transport 990 students) | $\begin{gathered} 18 \\ \text { Buses } \end{gathered}$ | AM Peak - Generator <br> PM Peak - Generator | Average Rate $=2.0$ <br> Average Rate $=2.0$ | $\begin{aligned} & 36 \\ & 36 \end{aligned}$ | $\begin{aligned} & 18 \\ & 18 \end{aligned}$ | $\begin{aligned} & 18 \\ & 18 \end{aligned}$ |
| Middle School Total Trips |  | AM Peak - Generator <br> PM Peak - Generator |  | $\begin{aligned} & 406 \\ & 406 \end{aligned}$ | $\begin{aligned} & 222 \\ & 188 \end{aligned}$ | $\begin{aligned} & 185 \\ & 218 \end{aligned}$ |




Trip Generation - AM Peak
Bus Trips
Plate C



## Passenger Car Trip

late






Trip Generation - PM Peak
Bus Trips
Plate C






## Avon Schools TIS

APPENDIX D: CAPACITY ANALYSES

## CAPACITY ANALYSIS REPORTS

EXISTING CONDITIONS - AM PEAK HOUR




| Intersection |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: |
| Intersection Delay, s/veh | 4.7 |  |  |  |  |
| Intersection LOS | A |  | WB | SB |  |
| Approach | EB | 1 | 1 | 1 |  |
| Entry Lanes | 1 | 1 | 1 | 1 |  |
| Conflicting Circle Lanes | 1 | 113 | 116 | 135 |  |
| Adj Approach Flow, veh/h | 115 | 115 | 119 | 137 |  |
| Demand Flow Rate, veh/h | 117 | 124 | 176 | 27 |  |
| Vehicles Circulating, veh/h | 131 | 171 | 72 | 212 |  |
| Vehicles Exiting, veh/h | 33 | 3.186 | 3.186 |  |  |
| Follow Up Headway, s | 3.186 | 0 | 0 | 0 |  |
| Ped Vol Crossing Leg, \#h | 0 | 1.000 | 1.000 |  |  |
| Ped Cap Adj | 1.000 | 4.7 | 1.000 | 4.4 |  |
| Approach Delay, slveh | 4.8 | A | 5.1 | A |  |
| Approach LOS | A |  | A |  |  |


| Lane | Left | Left | Left | Left |
| :--- | :---: | :---: | :---: | :---: |
| Designated Moves | LTR | LTR | LTR | LTR |
| Assumed Moves | LTR | LTR | LTR | LTR |
| RT Channelized | 1.000 | 1.000 | 1.000 | 1.000 |
| Lane Util | 5.193 | 5.193 | 5.193 |  |
| Critical Headway, s | 5.193 | 115 | 119 | 137 |
| Entry Flow, veh/h | 117 | 998 | 948 | 1100 |
| Cap Entry Lane, veh/h | 991 | 0.980 | 0.977 | 0.985 |
| Entry HV Adj Factor | 0.979 | 113 | 116 | 135 |
| Flow Entry, veh/h | 115 | 978 | 926 | 1083 |
| Cap Entry, veh/h | 970 | 0.115 | 0.126 | 0.125 |
| V/C Ratio | 0.118 | 4.7 | 5.1 | 4.4 |
| Control Delay, s/veh | 4.8 | A | A | A |
| LOS | 0 | 0 | 0 |  |



## CAPACITY ANALYSIS REPORTS

EXISTING CONDITIONS - PM PEAK HOUR

|  | 4 | $\rightarrow$ | 7 | 7 |  | 4 | 4 | $\dagger$ | $p$ | * | $\downarrow$ | 4 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ${ }^{7}$ | 中 ${ }^{\text {F }}$ |  | ${ }^{7}$ | 中 ${ }^{\text {a }}$ |  |  | $\pm$ |  |  | \& |  |
| Traffic Volume (veh/h) | 11 | 554 | 16 | 19 | 699 | 2 | 13 | 14 | 9 | 24 | 15 | 17 |
| Future Volume (Veh/h) | 11 | 554 | 16 | 19 | 699 | 2 | 13 | 14 | 9 | 24 | 15 | 17 |
| Sign Control |  | Free |  |  | Free |  |  | Stop |  |  | Stop |  |
| Grade |  | 0\% |  |  | 0\% |  |  | 0\% |  |  | 0\% |  |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 12 | 602 | 17 | 21 | 760 | 2 | 14 | 15 | 10 | 26 | 16 | 18 |
| Pedestrians |  |  |  |  |  |  |  |  |  |  |  |  |
| Lane Width (ft) |  |  |  |  |  |  |  |  |  |  |  |  |
| Walking Speed (ft/s) |  |  |  |  |  |  |  |  |  |  |  |  |
| Percent Blockage |  |  |  |  |  |  |  |  |  |  |  |  |
| Right turn flare (veh) |  |  |  |  |  |  |  |  |  |  |  |  |
| Median type |  | Raised |  |  | Raised |  |  |  |  |  |  |  |
| Median storage veh) |  | 1 |  |  | 1 |  |  |  |  |  |  |  |
| Upstream signal (ft) |  |  |  |  |  |  |  |  |  |  |  |  |
| pX, platoon unblocked |  |  |  |  |  |  |  |  |  |  |  |  |
| vC , conflicting volume | 762 |  |  | 619 |  |  | 1082 | 1438 | 310 | 1146 | 1446 | 381 |
| $\mathrm{vC1}$, stage 1 conf vol |  |  |  |  |  |  | 634 | 634 |  | 803 | 803 |  |
| vC 2 , stage 2 conf vol |  |  |  |  |  |  | 448 | 804 |  | 342 | 643 |  |
| vCu , unblocked vol | 762 |  |  | 619 |  |  | 1082 | 1438 | 310 | 1146 | 1446 | 381 |
| tC, single (s) | 4.1 |  |  | 4.1 |  |  | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 |
| tC, 2 stage (s) |  |  |  |  |  |  | 6.5 | 5.5 |  | 6.5 | 5.5 |  |
| tF (s) | 2.2 |  |  | 2.2 |  |  | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free \% | 99 |  |  | 98 |  |  | 95 | 94 | 99 | 90 | 93 | 97 |
| cM capacity (veh/h) | 846 |  |  | 957 |  |  | 280 | 246 | 686 | 252 | 244 | 617 |
| Direction, Lane \# | EB 1 | EB 2 | EB 3 | WB 1 | WB 2 | WB 3 | NB 1 | SB 1 |  |  |  |  |
| Volume Total | 12 | 401 | 218 | 21 | 507 | 255 | 39 | 60 |  |  |  |  |
| Volume Left | 12 | 0 | 0 | 21 | 0 | 0 | 14 | 26 |  |  |  |  |
| Volume Right | 0 | 0 | 17 | 0 | 0 | 2 | 10 | 18 |  |  |  |  |
| cSH | 846 | 1700 | 1700 | 957 | 1700 | 1700 | 310 | 304 |  |  |  |  |
| Volume to Capacity | 0.01 | 0.24 | 0.13 | 0.02 | 0.30 | 0.15 | 0.13 | 0.20 |  |  |  |  |
| Queue Length 95th (ft) | 1 | 0 | 0 | 2 | 0 | 0 | 11 | 18 |  |  |  |  |
| Control Delay (s) | 9.3 | 0.0 | 0.0 | 8.8 | 0.0 | 0.0 | 18.3 | 19.8 |  |  |  |  |
| Lane LOS | A |  |  | A |  |  | C | C |  |  |  |  |
| Approach Delay (s) | 0.2 |  |  | 0.2 |  |  | 18.3 | 19.8 |  |  |  |  |
| Approach LOS |  |  |  |  |  |  | C | C |  |  |  |  |
| Intersection Summary |  |  |  |  |  |  |  |  |  |  |  |  |
| Average Delay |  |  | 1.5 |  |  |  |  |  |  |  |  |  |
| Intersection Capacity Utilization |  |  | 30.5\% |  | CU Level | Service |  |  | A |  |  |  |
| Analysis Period (min) |  |  | 15 |  |  |  |  |  |  |  |  |  |




| Intersection |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Intersection Delay, s/veh | 5.4 |  |  |  |
| Intersection LOS | A |  |  |  |
| Approach | EB | WB | NB | SB |
| Entry Lanes | 1 | 1 | 1 | 1 |
| Conflicting Circle Lanes | 1 | 1 | 1 | 1 |
| Adj Approach Flow, veh/h | 59 | 242 | 99 | 190 |
| Demand Flow Rate, veh/h | 60 | 246 | 101 | 194 |
| Vehicles Circulating, veh/h | 176 | 111 | 136 | 79 |
| Vehicles Exiting, veh/h | 97 | 126 | 100 | 278 |
| Follow-Up Headway, s | 3.186 | 3.186 | 3.186 | 3.186 |
| Ped Vol Crossing Leg, \#/h | 0 | 0 | 0 | 0 |
| Ped Cap Adj | 1.000 | 1.000 | 1.000 | 1.000 |
| Approach Delay, s/veh | 4.4 | 6.0 | 4.6 | 5.3 |
| Approach LOS | A | A | A | A |


| Lane | Left | Left | Left | Left |
| :---: | :---: | :---: | :---: | :---: |
| Designated Moves | LTR | LTR | LTR | LTR |
| Assumed Moves | LTR | LTR | LTR | LTR |
| RT Channelized |  |  |  |  |
| Lane Util | 1.000 | 1.000 | 1.000 | 1.000 |
| Critical Headway, s | 5.193 | 5.193 | 5.193 | 5.193 |
| Entry Flow, veh/h | 60 | 246 | 101 | 194 |
| Cap Entry Lane, veh/h | 948 | 1011 | 986 | 1044 |
| Entry HV Adj Factor | 0.989 | 0.984 | 0.983 | 0.977 |
| Flow Entry, veh/h | 59 | 242 | 99 | 190 |
| Cap Entry, veh/h | 937 | 995 | 970 | 1020 |
| VIC Ratio | 0.063 | 0.243 | 0.102 | 0.186 |
| Control Delay, s/veh | 4.4 | 6.0 | 4.6 | 5.3 |
| LOS | A | A | A | A |
| 95th \%tile Queue, veh | 0 | 1 | 0 | 1 |



# CAPACITY ANALYSIS REPORTS 

2025 BUILD - AM PEAK HOUR




| Intersection |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Intersection Delay, s/veh | 8.2 |  |  |  |
| Intersection LOS | A |  |  |  |
| Approach | EB | WB | NB | SB |
| Entry Lanes | 1 | 1 | 1 | 1 |
| Conflicting Circle Lanes | 1 | 1 | 1 | 1 |
| Adj Approach Flow, veh/h | 330 | 310 | 214 | 294 |
| Demand Flow Rate, veh/h | 336 | 316 | 218 | 300 |
| Vehicles Circulating, veh/h | 243 | 263 | 447 | 155 |
| Vehicles Exiting, veh/h | 212 | 402 | 132 | 424 |
| Follow-Up Headway, s | 3.186 | 3.186 | 3.186 | 3.186 |
| Ped Vol Crossing Leg, \#/h | 0 | 0 | 0 | 0 |
| Ped Cap Adj | 1.000 | 1.000 | 1.000 | 1.000 |
| Approach Delay, s/veh | 8.5 | 8.4 | 8.8 | 7.0 |
| Approach LOS | A | A | A | A |


| Lane | Left | Left | Left | Left |
| :--- | ---: | ---: | ---: | ---: |
| Designated Moves | LTR | LTR | LTR | LTR |
| Assumed Moves | LTR | LTR | LTR | LTR |
| RT Channelized | 1.000 | 1.000 | 1.000 | 1.000 |
| Lane Util | 5.193 | 5.193 | 5.193 |  |
| Critical Headway, s | 5.193 | 316 | 218 | 300 |
| Entry Flow, veh/h | 336 | 869 | 723 | 968 |
| Cap Entry Lane, veh/h | 886 | 0.982 | 0.981 | 0.980 |
| Entry HV Adj Factor | 0.981 | 310 | 214 | 294 |
| Flow Entry, veh/h | 330 | 853 | 709 | 948 |
| Cap Entry, veh/h | 869 | 0.364 | 0.302 | 0.310 |
| V/C Ratio | 0.379 | 8.4 | 8.8 | 7.0 |
| Control Delay, s/veh | 8.5 | A | A | A |
| LOS | A |  | 1 | 1 |





# CAPACITY ANALYSIS REPORTS 

2025 BUILD - PM PEAK HOUR

|  | 4 | $\rightarrow$ | 7 | 7 |  | 4 | 4 | $\dagger$ | $p$ | * | $\frac{1}{1}$ | 4 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ${ }^{7}$ | 中 ${ }^{\text {F }}$ |  | ${ }^{7}$ | 中 ${ }^{\text {a }}$ |  |  | \& |  |  | ¢ |  |
| Traffic Volume (veh/h) | 11 | 554 | 28 | 30 | 699 | 2 | 27 | 27 | 21 | 24 | 26 | 17 |
| Future Volume (Veh/h) | 11 | 554 | 28 | 30 | 699 | 2 | 27 | 27 | 21 | 24 | 26 | 17 |
| Sign Control |  | Free |  |  | Free |  |  | Stop |  |  | Stop |  |
| Grade |  | 0\% |  |  | 0\% |  |  | 0\% |  |  | 0\% |  |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 12 | 602 | 30 | 33 | 760 | 2 | 29 | 29 | 23 | 26 | 28 | 18 |
| Pedestrians |  |  |  |  |  |  |  |  |  |  |  |  |
| Lane Width (ft) |  |  |  |  |  |  |  |  |  |  |  |  |
| Walking Speed (ft/s) |  |  |  |  |  |  |  |  |  |  |  |  |
| Percent Blockage |  |  |  |  |  |  |  |  |  |  |  |  |
| Right turn flare (veh) |  |  |  |  |  |  |  |  |  |  |  |  |
| Median type |  | Raised |  |  | Raised |  |  |  |  |  |  |  |
| Median storage veh) |  | 1 |  |  | 1 |  |  |  |  |  |  |  |
| Upstream signal (ft) |  |  |  |  |  |  |  |  |  |  |  |  |
| pX, platoon unblocked |  |  |  |  |  |  |  |  |  |  |  |  |
| vC , conflicting volume | 762 |  |  | 632 |  |  | 1119 | 1469 | 316 | 1190 | 1483 | 381 |
| $\mathrm{vC1}$, stage 1 conf vol |  |  |  |  |  |  | 641 | 641 |  | 827 | 827 |  |
| vC 2 , stage 2 conf vol |  |  |  |  |  |  | 478 | 828 |  | 362 | 656 |  |
| vCu , unblocked vol | 762 |  |  | 632 |  |  | 1119 | 1469 | 316 | 1190 | 1483 | 381 |
| tC, single (s) | 4.1 |  |  | 4.1 |  |  | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 |
| tC, 2 stage (s) |  |  |  |  |  |  | 6.5 | 5.5 |  | 6.5 | 5.5 |  |
| tF (s) | 2.2 |  |  | 2.2 |  |  | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free \% | 99 |  |  | 97 |  |  | 89 | 88 | 97 | 89 | 88 | 97 |
| cM capacity (veh/h) | 846 |  |  | 947 |  |  | 262 | 238 | 680 | 233 | 233 | 617 |
| Direction, Lane \# | EB 1 | EB 2 | EB 3 | WB 1 | WB 2 | WB 3 | NB 1 | SB 1 |  |  |  |  |
| Volume Total | 12 | 401 | 231 | 33 | 507 | 255 | 81 | 72 |  |  |  |  |
| Volume Left | 12 | 0 | 0 | 33 | 0 | 0 | 29 | 26 |  |  |  |  |
| Volume Right | 0 | 0 | 30 | 0 | 0 | 2 | 23 | 18 |  |  |  |  |
| cSH | 846 | 1700 | 1700 | 947 | 1700 | 1700 | 304 | 276 |  |  |  |  |
| Volume to Capacity | 0.01 | 0.24 | 0.14 | 0.03 | 0.30 | 0.15 | 0.27 | 0.26 |  |  |  |  |
| Queue Length 95th (ft) | 1 | 0 | 0 | 3 | 0 | 0 | 26 | 25 |  |  |  |  |
| Control Delay (s) | 9.3 | 0.0 | 0.0 | 8.9 | 0.0 | 0.0 | 21.1 | 22.6 |  |  |  |  |
| Lane LOS | A |  |  | A |  |  | C | C |  |  |  |  |
| Approach Delay (s) | 0.2 |  |  | 0.4 |  |  | 21.1 | 22.6 |  |  |  |  |
| Approach LOS |  |  |  |  |  |  | C | C |  |  |  |  |
| Intersection Summary |  |  |  |  |  |  |  |  |  |  |  |  |
| Average Delay |  |  | 2.3 |  |  |  |  |  |  |  |  |  |
| Intersection Capacity Utilization |  |  | 37.1\% |  | CU Level | Service |  |  | A |  |  |  |
| Analysis Period (min) |  |  | 15 |  |  |  |  |  |  |  |  |  |




| Intersection |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Intersection Delay, s/veh | 10.0 |  |  |  |
| Intersection LOS | A |  |  |  |
| Approach | EB | WB | NB | SB |
| Entry Lanes | 1 | 1 | 1 | 1 |
| Conflicting Circle Lanes | 1 | 1 | 1 | 1 |
| Adj Approach Flow, veh/h | 250 | 532 | 182 | 252 |
| Demand Flow Rate, veh/h | 255 | 543 | 185 | 257 |
| Vehicles Circulating, veh/h | 188 | 247 | 394 | 235 |
| Vehicles Exiting, veh/h | 304 | 332 | 49 | 555 |
| Follow-Up Headway, s | 3.186 | 3.186 | 3.186 | 3.186 |
| Ped Vol Crossing Leg, \#/h | 0 | 0 | 0 | 0 |
| Ped Cap Adj | 1.000 | 1.000 | 1.000 | 1.000 |
| Approach Delay, s/veh | 6.8 | 13.7 | 7.6 | 7.2 |
| Approach LOS | A | B | A | A |


| Lane | Left | Left | Left | Left |
| :---: | :---: | :---: | :---: | :---: |
| Designated Moves | LTR | LTR | LTR | LTR |
| Assumed Moves | LTR | LTR | LTR | LTR |
| RT Channelized |  |  |  |  |
| Lane Util | 1.000 | 1.000 | 1.000 | 1.000 |
| Critical Headway, s | 5.193 | 5.193 | 5.193 | 5.193 |
| Entry Flow, veh/h | 255 | 543 | 185 | 257 |
| Cap Entry Lane, veh/h | 936 | 883 | 762 | 893 |
| Entry HV Adj Factor | 0.979 | 0.980 | 0.983 | 0.980 |
| Flow Entry, veh/h | 250 | 532 | 182 | 252 |
| Cap Entry, veh/h | 917 | 865 | 749 | 876 |
| VIC Ratio | 0.272 | 0.615 | 0.243 | 0.288 |
| Control Delay, s/veh | 6.8 | 13.7 | 7.6 | 7.2 |
| LOS | A | B | A | A |
| 95th \%tile Queue, veh | 1 | 4 | 1 | 1 |





## AvON SchOOLS TIS

APPENDIX E: SIGNAL WARRANTS







## Avon Schools TIS

APPENDIX F: TURN LANE WARRANTS


GUIDELINES FOR RIGHT-TURN LANES AT UNSIGNALIZED INTERSECTIONS ON 2-LANE HIGHWAYS

Figure 46-4A

Avon Middle School - CR-100 \& CER-450


Figure 46-4C


Avon Middle School - Proposed North Access \& 450

| Operating Speed (mph) | Opposing Volume (veh/h) | Advancing Volume (veh/h) |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | $\begin{gathered} 5 \% \\ \text { Left Turns } \end{gathered}$ | $\begin{gathered} 10 \% \\ \text { Left Tums } \end{gathered}$ | $\begin{gathered} 20 \% \\ \text { Left Turns } \end{gathered}$ | $\begin{gathered} 30 \% \\ \text { Left Turns } \end{gathered}$ |
| 40 | 800 | 330 | 240 | 180 | 160 |
|  | 600 | 410 | 305 | 225 | 200 |
|  | 400 | 510 | 380 | 275 | 245 |
|  | 200 | 640 | 470 | 350 | 305 |
|  | 100 | 720 | 515 | 390 | 340 |
| 50 | 800 | 280 | 210 | 165 | 135 |
|  | 600 | 350 | 260 | 195 | 170 |
|  | 400 | 430 | 320 | 240 | 210 |
|  | 200 | 550 | 400 | 300 | 270 |
|  | 100 | 615 | 445 | 335 | 295 |
| 60 | 800 | 230 | 170 | 125 | 115 |
|  | 600 | 290 | 210 | 160 | 140 |
|  | 400 | 365 | 270 | 200 | 175 |
|  | 200 | 450 | 330 | 250 | 215 |
|  | 100 | 505 | 370 | 275 | 240 |
| 40 MPH on CR-450 |  |  |  |  |  |
| VOLUME GUIDELINES FOR LEFT-TURN LANE ON TWO-LANE HIGHWAY |  |  |  |  |  |

Figure 46-4C

## NBLT AM Peak:

91 Left Turns - Percentage of Left Turns $=91 / 140=65 \%$
Advancing Volume $=91+49=140$
Opposing Volume $=112+17=129$

## NBLT PM Peak:

76 Left Turns - Percentage of Left Turns $=76 / 142=54 \%$
Advancing Volume $=76+66=142$
Opposing Volume $=94+22=116$


Figure 46-4A

Avon Middle School - Proposed South Access \& 450

| Operating Speed (mph) | Opposing Volume (veh/h) | Advancing Volume (veh/h) |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | $\begin{gathered} 5 \% \\ \text { Left Turns } \end{gathered}$ | $\begin{gathered} 10 \% \\ \text { Left Tums } \end{gathered}$ | $\begin{gathered} 20 \% \\ \text { Left Turns } \end{gathered}$ | $\begin{gathered} 30 \% \\ \text { Left Turns } \end{gathered}$ |
| 40 | 800 | 330 | 240 | 180 | 160 |
|  | 600 | 410 | 305 | 225 | 200 |
|  | 400 | 510 | 380 | 275 | 245 |
|  | 200 | 640 | 470 | 350 | 305 |
|  | 100 | 720 | 515 | 390 | 340 |
| 50 | 800 | 280 | 210 | 165 | 135 |
|  | 600 | 350 | 260 | 195 | 170 |
|  | 400 | 430 | 320 | 240 | 210 |
|  | 200 | 550 | 400 | 300 | 270 |
|  | 100 | 615 | 445 | 335 | 295 |
| 60 | 800 | 230 | 170 | 125 | 115 |
|  | 600 | 290 | 210 | 160 | 140 |
|  | 400 | 365 | 270 | 200 | 175 |
|  | 200 | 450 | 330 | 250 | 215 |
|  | 100 | 505 | 370 | 275 | 240 |
| 40 MPH on CR-450 |  |  |  |  |  |
| VOLUME GUIDELINES FOR LEFT-TURN LANE ON TWO-LANE HIGHWAY |  |  |  |  |  |

Figure 46-4C

## NBLT AM Peak:

15 Left Turns - Percentage of Left Turns $=15 / 119=13 \%$
Advancing Volume $=104+15=119$
Opposing Volume $=3+25=28$

## NBLT PM Peak:

15 Left Turns - Percentage of Left Turns = 15/114 = 13\%
Advancing Volume $=15+199=114$
Opposing Volume $=32+3=35$


## GUIDELINES FOR RIGHT-TURN LANES AT UNSIGNALIZED INTERSECTIONS ON 2-LANE HIGHWAYS

Figure 46-4A

## Avon Schools TIS

APPENDIX G: REVIEW COMMENTS

August 28, 2023

Ian Loera Senior Planner Town of Avon
6570 East US Highway 36
Avon, In 46123

Re: Avon Middle School Traffic Impact Study

Dear Mr. Loera,

Please see the design team's response to comments from your review in conjunction with John Ayers (Hendricks County Highway Department) and Steve Moore ( Avon Public Works Director) regarding Proposed Middle School Traffic Impact Study prepared by Crawford, Murphy \& Tilly, Inc. and dated July 5, 2023.

1. The Impact Study assumed no background traffic growth. The study should be modified and the analyses rerun to include background growth.
Response: The assumption of no background traffic growth was discussed in a 05/08/23 coordination meeting, documented in a revised MOU on 05/30/23, and included in a traffic volume submittal on 06/22/23. The assumption of No Background growth was proposed due to limited development within the study area and the ability to document the impacts of school specific traffic.

The study can be amended following agreement on background growth parameters. Note that the very good levels of service (LOS A) would not expect to degrade to unacceptable levels (LOS E or worst) even with high volume estimates for future traffic. If levels of service did degrade to LOS E or worse due to background traffic, then the other future developments should be expected to mitigate the impacts of the specific development.

2 As noted in the review letter, the Impact Study's trip generation estimate for the A.M. peak hour was significantly less than what the ITE Trip Generation Manual recommends (406 and 814, respectively.) The Study needs to justify this difference
Response: The traffic study explains the rationale for using Avon school specific volumes instead of the generic dataset contained in the ITE Trip Generation Manual. This rationale was documented in a traffic volume submittal on 06/22/23. The Town concurred with the trip generation assumptions on 06/28/23.
3. As noted in the review letter, the westbound left turn movements from CR 100 S to CR 450 E appear to be tabulated incorrectly and should be corrected and the capacity analysis for that intersection updated.
Response: The traffic study volumes have been revised. The WB left turn volume changed from 58 to 88 vehicles in the AM peak and from 61 to 79 vehicles in the PM peak. The level of service (LOS) with the revised volumes remains unchanged (LOS A).
4. Hendricks County supports requiring turn lanes at 450 E and 100 S , and at 450 E and 200 S .

Response: The through volumes at the CR100/ CR450 intersection are low (10 or less) in the peak hours. The need for a dedicated left turn lane to reduce delays of through traffic on CR100 should consider actual volumes when determining the need for infrastructure improvements at the CR100/ CR450 intersection. Additional infrastructure at an intersection having an LOS A in the peak hour may encourage higher operating speeds. Avon Schools will participate in determining and contributing to improvements at this intersection attributed to this project.

The request for additional turn lanes at the CR450/CR200 are not required based on the conclusions of the traffic study. Avon Schools will participate in determining and contributing to improvements at this intersection attributed to this project.
5. Hendricks County also supports requiring turn lanes at both school entrances on 450 E . Response: Left and right turn lanes will be provided to meet ordinances.
6. The County is very concerned about added traffic through the Parks at Prestwick development. The Study assumes the majority of passenger car traffic will not be going that direction due to the distribution of the student population. However, as noted in the review letter, the bulk of the Avon School District is located north and east of this location which indicates the estimated traffic flow through Parks at Prestwick may be much higher than the Study assumes. The Study should reconsider and verify the trip distributions used.
Response: Concurrence was obtained from the Town on 06/28/23 regarding trip distribution based on a traffic volume submittal on $06 / 22 / 23$. Changes to the trip distribution is not expected to degrade the study area intersections to unacceptable levels of service (LOS E or worse) due to the very good levels of service (LOS A) documented in the draft traffic study. The trip distribution assumptions can be adjusted. Revised values will need to be provided by Hendricks County and/or the Town of Avon.
7. Regardless of the final number, it's safe to assume that the traffic on CR 100 S through Parks at Prestwick will increase by a significant amount as will average speeds. Hendricks County requests that the school be required to place funds in escrow to construct traffic calming measures on County streets within the development. The type, placement, and estimated costs of said measures will be determined by the County Engineer.
Response: Avon Schools will participate in determining and contributing to appropriate traffic calming measures attributed to this project.

If you have any further questions or comments, please feel free to contact me and I will be glad to provide any further clarity as needed.

Sincerely,
Jennifer Lasch, PE, LEED AP BD+C
Gonzalo Castro Diaz, P.E.
Cc: file
Client
Ryan Cannon, Town Manager

August 28, 2023
Ian Loera Senior Planner Town of Avon 6570 East US Highway 36
Avon, IN 46123
Re: Traffic Impact Study Review
Avon Middle School

## Dear Mr. Loera,

Please see the design team's response to comments from your review in conjunction with Etica Group regarding Proposed Middle School Traffic Impact Study prepared by Crawford, Murphy \& Tilly, Inc. and dated July 5, 2023.

1. Etica Group concurs with the analyzed AM and PM peak hours that coincide with anticipated school arrival (7:30-8:30 AM) and dismissal (2:30-3:30 PM) time periods.
Response: Noted.
2 It should be noted that the Traffic Impact Study assumed no additional background traffic will be added to the street network due to future off-site development within the study area. Therefore, the analysis included year existing traffic volumes plus estimated traffic for the proposed Middle School at full occupancy ( 1,100 students and 75 faculty). If any developments in addition to the Middle School are currently planned for the area, the analysis should account for added background traffic as necessary.
Response: The assumption that no additional background traffic was discussed in a coordination meeting with the Town/ County on 05/08/23 and included as part of a revised MOU on 05/30/23. The assumption of No Background growth was proposed due to limited development within the study area and the ability to document the impacts of school specific traffic.Concurrence was obtained from the Town on 06/28/23 regarding trip generation and trip distribution for the study..
2. The trip generation was based on $90 \%$ of the 1,100 students being transported to school by bus (990 students) and the remaining $10 \%$ ( 110 students) by private passenger vehicles. Per the study, this breakdown reflects available site-specific transportation information for the Middle School. For the PM peak hour this method resulted in 406 total site trips, which was conservative compared to the Institute of Transportation Engineers (ITE) Trip Generation Manual estimated 396 trips. However, the ITE Trip Generation Manual estimated 814 total trips during the AM peak hour compared to 406 trips based on the site-specific information (essentially the ITE Trip Generation Manual accounts for a higher percentage of car riders during the AM arrival period resulting in a more conservative (higher) volume of added site trips. As such, the confidence level of the site-specific trip parameters applied to the trip generation is important to ensuring the AM peak hour school trips do not have a larger impact on the road network than what the traffic analysis accounted for.

Response: Concurrence was obtained from the Town on 06/28/23 regarding trip generation based on a traffic volume submittal on 06/22/23.
4. Two entrances to the Middle School are proposed along CR 450 East. The trip distribution for estimated school traffic accounted for passenger car use only at the northern entrance. The southern entrance accommodates all arriving and departing buses, as well as a portion of the passenger vehicles exiting the site. Bus trips were assigned to the road network based on routes provided by ACSC. No buses were assumed to arrive from or depart to CR 400 East to the north of the Middle School in order to avoid conflicts with the at-grade railroad crossing just south of US 36. Etica Group concurs with this assumption.

## Response: Noted.

5. Passenger vehicle trips were assigned to the road network based on existing traffic volumes per the study. This resulted in $21 \%$ of passenger vehicles arriving from/departing to CR 200 South (west of CR 450 East). The proposed Middle School site is located in the southwestern corner of the ACSC District Map and a higher density of residences that would contribute to the school's transportation shed are located to the east/northeast. This may reduce the traffic accessing the school from the west on CR 200 South (as shown in the study) and increase projected volumes utilizing CR 100 South and CR 200 South from the east.
Response: Concurrence was obtained from the Town on 06/28/23 regarding trip distribution based on a traffic volume submittal on 06/22/23.
6. It appears the AM and PM peak hour passenger car trips for westbound left-turn movements from CR 100 South to CR 450 East on pages 14 and 15 of the study are tabulated incorrectly based on the projected turning movements shown at the intersection of CR 100 South and Foxboro Drive. This should be checked and the capacity analysis for the intersection of CR 100 South at CR 450 East updated as necessary.
Response: The traffic study volumes have been revised. The WB left turn volume changed from 58 to 88 vehicles in the AM peak and from 61 to 79 vehicles in the PM peak. The level of service (LOS) with the revised volumes remain unchanged (LOS A).
7. The layout of the existing road network within the area of the proposed school site makes it advantageous for a larger portion of the new site trips to utilize CR 100 South through The Parks at Prestwick to access the Middle School from the east. The study indicated just over a third of the projected site trips will use this route, which substantially increases the traffic on CR 100 South through the neighborhood. The added cut-through traffic may increase the potential for speeding as this section of CR 100 South is posted at 25 mph .
Response: The traffic study estimates AM traffic volumes to equal 169 vehicles (2-way traffic) in the AM peak and 186 vehicles in the PM peak. Capacity of a 2-lane roadway can vary from 2,800 veh/hour (HCM) to 1,000 veh/hr which represents less than $20 \%$ (worst case) of the roadway capacity of CR100.
We are not aware of metrics that can estimate the average operating speed on a roadway based only on volume. However, higher speeds are also more probable when fewer vehicles are present and delay is low. Actual speeds on any roadway are a function of the posted speed limit, roadway environment (wider roads $=$ higher speeds) and enforcement.
8. The study indicates that a dedicated left-turn lane is warranted for westbound CR 100 South at CR 450 East, but recommended a passing blister be installed. Based on the existing intersection geometrics and the horizontal curvature of the east approach of CR 100 South, a dedicated westbound left-turn lane may be more easily achieved and operate more safely than a passing blister at this intersection.
Response: The through volumes at the CR100/ CR450 intersection are low (10 or less) in the peak hours. The need for a dedicated left turn lane to reduce delays of through traffic on CR100 should consider actual volumes when determining the need for infrastructure improvements at the CR100/ CR450 intersection. Additional infrastructure at an intersection having an LOS A in the peak hour may encourage higher operating speeds.
9. The northbound left-turn movement from CR 450 East at the school's proposed northern entrance also meets warrants for a dedicated left-turn lane. The recommendation was to install a passing blister based on acceptable levels of service with full build-out of the school. Additionally, the southbound right-turn lane is warranted based on projected volumes, but not recommended due to satisfactory level of service being achieved as well. Per the Town of Avon Construction Standards, the minimum commercial entrance requirements include providing a dedicated left and right-turn lane with a minimum 150' storage and taper length of $100^{\prime}$.
Response: Left and right turn lanes will be provided to meet ordinances. The north bound left turn lane will exceed the 150 ' minimum dimension and will maximize stacking between entrances.
10. No warrants for left or right-turn lanes were satisfied for the Middle School's south entrance where all buses will enter and exit the site. As previously noted, per Town of Avon Construction Standards, the minimum commercial entrance requirements include providing a dedicated left and right-turn lane with a minimum 150 ' storage and taper length of $100^{\prime}$. Providing these turn lanes would also enhance safety for bus turn movements in the future as volumes on CR 450 East continue to increase.
Response: Left and right turn lanes will be provided to meet ordinances versus need. Note that additional infrastructure will enable higher operating speeds on CR450 especially at intersections with good levels of service in the peak hour (LOS A).
11. Although the analysis shows the two proposed entrances operate satisfactorily during the AM and PM peak hour with one exiting lane, providing two-exiting lanes at each location would better accommodate traffic leaving the site during events and as CR 450 East volumes increase in the future.
Response: Two exiting lanes will be provided at each entrance. Note that vehicles leaving the site can be expected to occlude each other with a 2-lane configuration on an approach having a stop condition.

12 Etica Group concurs that a traffic signal is not warranted at the intersection of CR 450 East and CR 100 South based on projected volumes at full occupancy of the school.
Response: Noted.
13. A Statement of Certification in accordance with INDOT's Applicant's Guide to Traffic Impact Analysis with signature/stamp by a registered professional engineer should be included as part of the Traffic Impact Study.
Response: Included in updated study.

If you have any further questions or comments, please feel free to contact me and I will be glad to provide any further clarity as needed.

Sincerely,
Veridus Group, Inc.
Jennifer M Lasch, PE, LEED AP BD+C
Gonzalo Castro Diaz, P.E.

Cc: file
Client
Ryan Cannon, Town Maager


[^0]:    Letter／Number $=$ Level of Service／Average Delay Per Vehicle

[^1]:    * L: Left, R: Right, T: Thru, U: U-Turn

[^2]:    *Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

[^3]:    *Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

[^4]:    *Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

[^5]:    *Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

[^6]:    *Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

[^7]:    *Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

