# TRAFFIC IMPACT STUDY
# SPEEDWAY FUEL CENTER
## ROCHESTER HILLS, MICHIGAN


AUGUST 2019

PREPARED FOR:
SPEEDWAY ENGINEERING
AND CONSTRUCTION DEPT.
ENON, OH 45323
SSOE GROUP #019-00165-00

Mannik Smith GROUP

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PREPARED BY: _____

DANIEL HELOU, PE

Mannik Smith GROUP

# EXECUTIVE SUMMARY

Speedway is proposing to replace its existing Fuel Center with a larger modern Speedway Fuel Station facility in Rochester Hills, Michigan. Based on discussion with the site plan developer , SSOE Group, and Speedway Fuel Station the development is expected to consist of 14 fueling positions (10 positions existing) and a 4,600 square feet convenience/market center (approximately 1,800 square feet existing). As of the completion of this study, the latest site plan is proposing to consolidate the four (4) existing site driveway, two (2) along W Avon Road and two (2) along M-150 (Rochester Road), to two (2) driveways. One (1) Right-In and Right-Out (RI/RO) driveway along W Avon Road and one (1) 3/4$^{th}$ access driveway (entering right- and left- turns, and exiting left-turn movements only) and along M-150 (Rochester Road). The purpose of this study is to evaluate effects of the additional trips generated by the development on the adjacent intersections during the typical weekday AM and PM peak hours in the Opening Year (2020).

The study area included the following intersections

- W Avon Road & M-150 (Rochester Road) (Signalized);
- Speedway Drive #1 & W Avon Road (One Way Stop Controlled);
- Speedway Drive #2 & W Avon Road (One Way Stop Controlled);
- Speedway Drive #3 & M-150 (Rochester Road) (One Way Stop Controlled);
- Speedway Drive #4 & M-150 (Rochester Road) (One Way Stop Controlled).

Based on historical traffic growth and community data obtained from SEMCOG, a 0.5% year growth rate was applied to the existing volumes to develop the opening year No Build (2021) traffic volumes. An analysis of the existing and future No Build (background) AM and PM peak hour intersection operations indicates that although most study intersections are operating at acceptable overall Levels of Service (LOS D or better); several lane group movements along the minor driveway/roadway approaches operating at LOS E or worse. No roadway or intersection improvements expected to mitigate the existing background conditions.

The proposed Speedway Fuel Center is expected to add 69 new trips during the AM peak hour (35 inbound, 34 outbound) and 108 new trips during the PM peak hour (56 inbound, 52 outbound). AM and PM peak hour site traffic was added to the weekday No Build (2021) traffic volumes to develop the opening year conditions traffic volumes.

This study finds that under the Build (2021) conditions, all the study intersections expected to operate at similar Levels of Service when compared to the Existing (2019) and No Build (2021) conditions; however, it should be noted that several lane group movements and approaches are expected to operate at LOS E or worse under Existing and No Build conditions. Furthermore, under the Build (2021) conditions (with the proposed new Speedway Fuel Center), the project is expected to have minimal impact on LOS and delay at each of the five (5) study intersections. It may be noted that traffic operations at the several lane groups and approaches at the M-150 (Rochester Road) and W Avon Road intersection is expected to continue operate at a LOS E or worse (similar to No Build conditions). The only noted change in LOS was the eastbound left turn movement at the M-150 (Rochester Road) & W Avon Road intersection; the change in LOS was a borderline condition with an increase of only 6.7 seconds of additional delay resulting from the project. Furthermore, as LOS values for the Build condition were largely unchanged from the No Build condition, no mitigation improvements for traffic related to the proposed development are recommended.

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## 1.0 INTRODUCTION

At the request of SSOE Group, on behalf of Speedway, The Mannik & Smith Group (MSG) has conducted a Traffic Impact Study (TIS), utilizing the processes and guidelines set forth in MDOT's Geometric Design Guidance and Electric Traffic Control Guidelines manuals. This TIS was completed to evaluate potential traffic impacts of the proposed replacement Speedway Fuel Station located at the southwest quadrant of the W Avon Road & M-150 (Rochester Road) intersection in Rochester Hills, Michigan.

There are two (2) components to the project which were evaluated in this study:

1. The existing Speedway Fuel Center is expected to be razzed and replaced with a larger modern Speedway Fuel Station facility within the existing property limits;
2. Consolidate the existing four (4) site driveway, two (2) along W Avon Road and two (2) along M-150 (Rochester Road), to two (2) driveways. One (1) Right-In and Right-Out (RI/RO) driveway along W Avon Road and one (1) 3/4$^{th}$ access driveway along M-150 (Rochester Road). The proposed driveways are planned to be constructed to the furthest possible distance from the W Avon Road & M-150 (Rochester Road) intersection feasibility within the existing parcel boundary limits.

The objectives of this traffic impact study were to determine what impacts, if any, the proposed new Speedway Fuel Station development will have on adjacent roadway traffic operations, and to develop recommendations for mitigating any impacts.

The following sections of this report include:

- Detailed descriptions of the study area roadways and intersections;
- Existing (2019) weekday AM and PM peak hour traffic analysis;
- Future "No Build" conditions analysis for the Opening Year (2021);
- Descriptions of the proposed facilities and desired access schemes;
- Trip generation and distribution for the project;
- Development and evaluation of improvements necessary to mitigate project impacts, if needed.

Figure 1.1 Study Area

## 2.0 STUDY AREA CHARACTERISTICS

### 2.1 Intersection Characteristics

Based on the characteristics of the proposed development and the likely area of influence for related traffic, this study includes analyses at the following intersections:

1. W Avon Road & M-150 (Rochester Road) (Signalized);
2. Speedway Drive #1 & W Avon Road (One Way Stop Controlled);
   a. Existing western most site driveway along W Avon Road
3. Speedway Drive #2 & W Avon Road (One Way Stop Controlled);
   a. Existing eastern most site driveway along W Avon Road
4. Speedway Drive #3 & M-150 (Rochester Road) (One Way Stop Controlled);
   a. Existing northern most site driveway along W Avon Road
5. Speedway Drive #4 & M-150 (Rochester Road) (One Way Stop Controlled);
   a. Existing southern most site driveway along W Avon Road

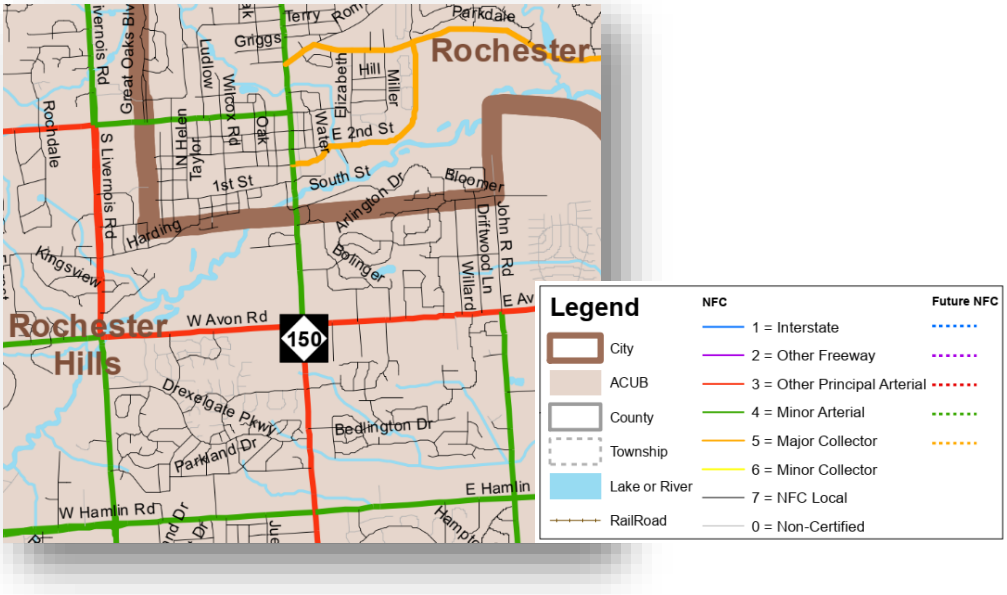
Traffic signal timings were provided by Road Commission Oakland County (RCOC). The traffic signals along M-150 (Rochester Road) and W Avon Road are coordinated signals maintained under RCOC's SCATS system. The RCOC supplied signal timings are provided in Appendix A.

### 2.2 Roadway Characteristics

The existing lane configuration and intersection controls throughout the study area are shown in Figure 2.2. Characteristics of the study area roadways are described below:

- M-150 (Rochester Road) is classified as a principal arterial roadway and a minor arterial south and north of W Avon Road, respectively. M-150 (Rochester Road) is oriented in the north and south directions with six (6), 12-foot travel lanes (two lanes in each direction separated by a two way left turn lane, and a southbound and northbound right turn lanes at W Avon Road). This roadway is under MDOT jurisdiction, has a posted speed limit of 50 miles per hour and services approximately 19,900 vehicles per day.
- W Avon Road is a principal arterial roadway that provides for travel in the east and west directions with five (5) 12-foot lanes and four (4) 12-foot lanes west and east of M-150 (Rochester Road), respectively. This roadway under RCOC jurisdiction, has a posted speed limit of 45 miles per hour, and services approximately 45,550 vehicles per day.

Figure 2.1 MDOT National Functional Classification Map



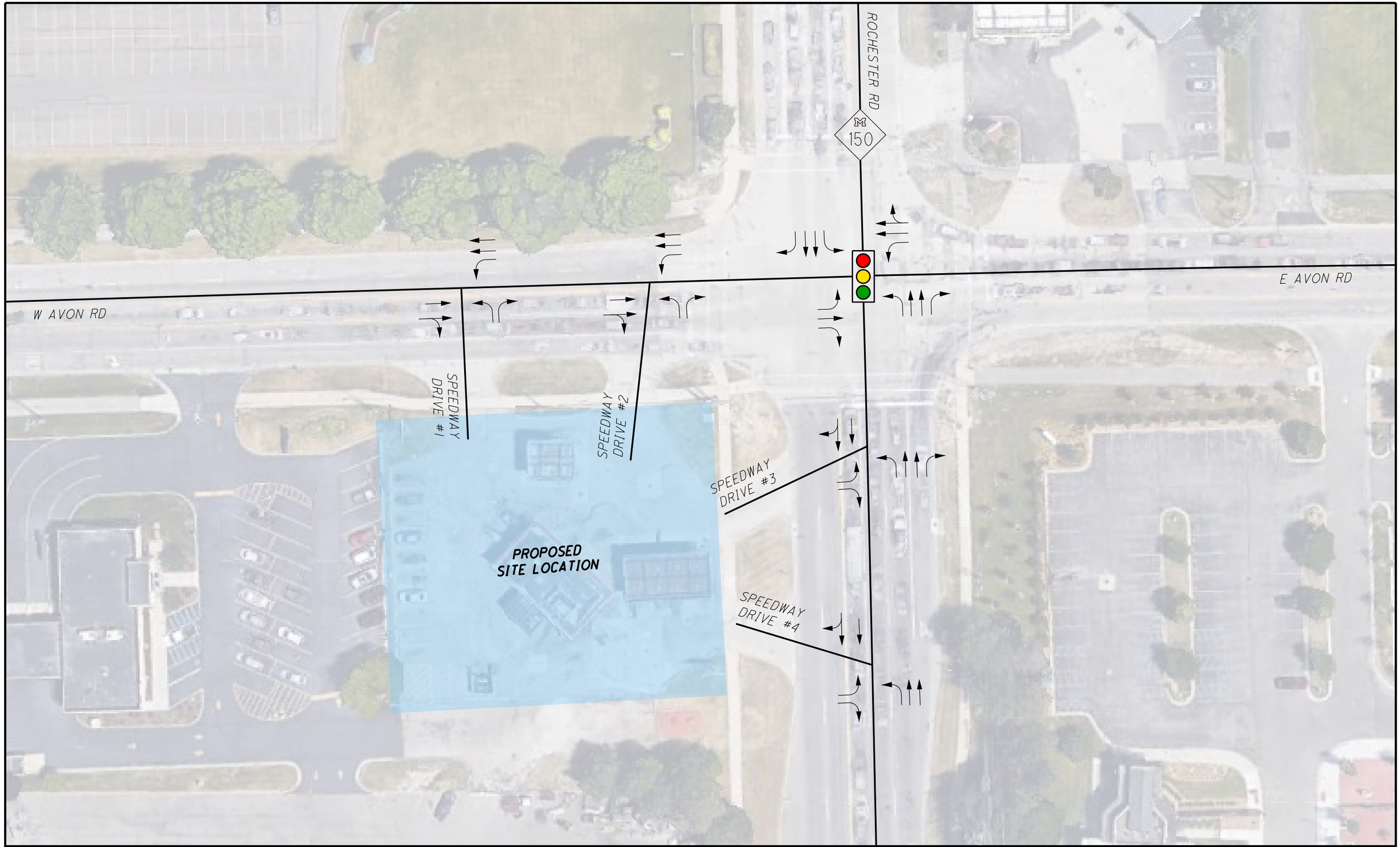



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**FIGURE 2.2**

**EXISTING LANE CONFIGURATIONS AND INTERSECTION CONTROL**

**LEGEND**

= LANE DIRECTION

= TRAFFIC SIGNAL

## 2.3 Non-Motorized Characteristics

Sidewalks are present along M-150 (Rochester Road) and W Avon Road within the immediate study area. Accessible Pedestrian Signals (APS) are present at the pedestrian crossing locations at the M-150 (Rochester Road) & W Avon Road intersection.

## 2.4 Existing Traffic Patterns

To determine the state of existing and proposed traffic operations, intersection turning movement counts were conducted at the study area intersections during a typical weekday AM peak period (7:00 AM to 9:00 AM) and a typical weekday PM peak period (4:00 PM to 6:00 PM). The intersection counts were conducted on Wednesday, July 31, 2019 in 15-minute intervals and included classification for heavy vehicles. Figure 2.5 shows the Existing (2019) AM and PM peak hour traffic volumes at the study intersections. Detailed pedestrian and intersection turning movement count information is provided in Appendix A for reference.

Traffic counts indicated that the common AM and PM peak hours at study area intersections occurred between 7:45-8:45 AM and 4:45-5:45 PM. To be conservative, the individual intersection peak hour volumes were used for the analysis. Volume balancing was applied where appropriate, such as segments with no intermediate driveways or intersections between counted intersections. See Appendix A for the raw count data.

Additionally, MioVision Automatic Traffic Recorders (ATR's) were used to collect 24-hour traffic volumes travelling on W Avon Road, west of M-150 (Rochester Road), and M-150 (Rochester Road), south of W Avon Road. 24-hour traffic profiles are shown in Figure 2.3 and Figure 2.4. See Appendix A for the raw count data.

Figure 2.3 24-Hour Traffic Profile – W Avon Road

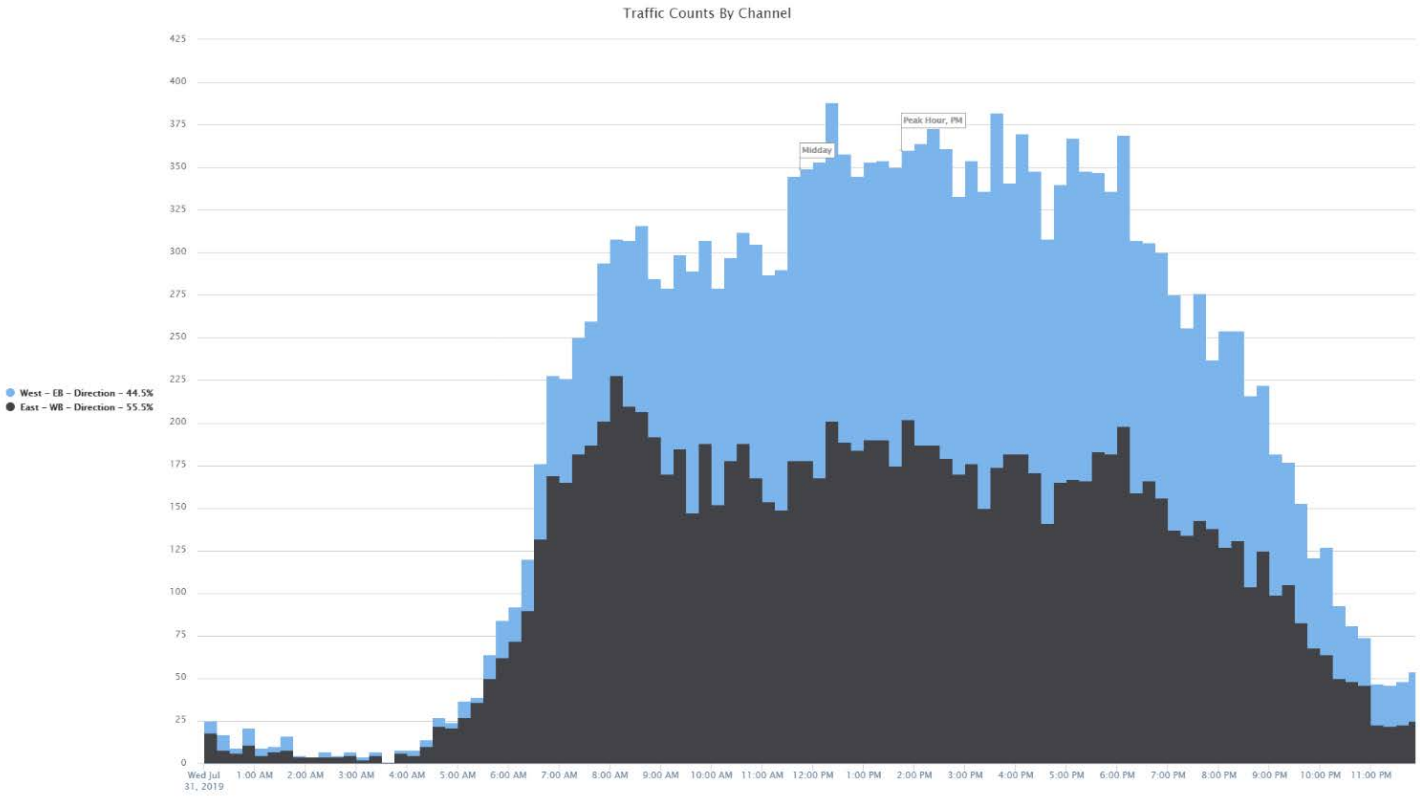
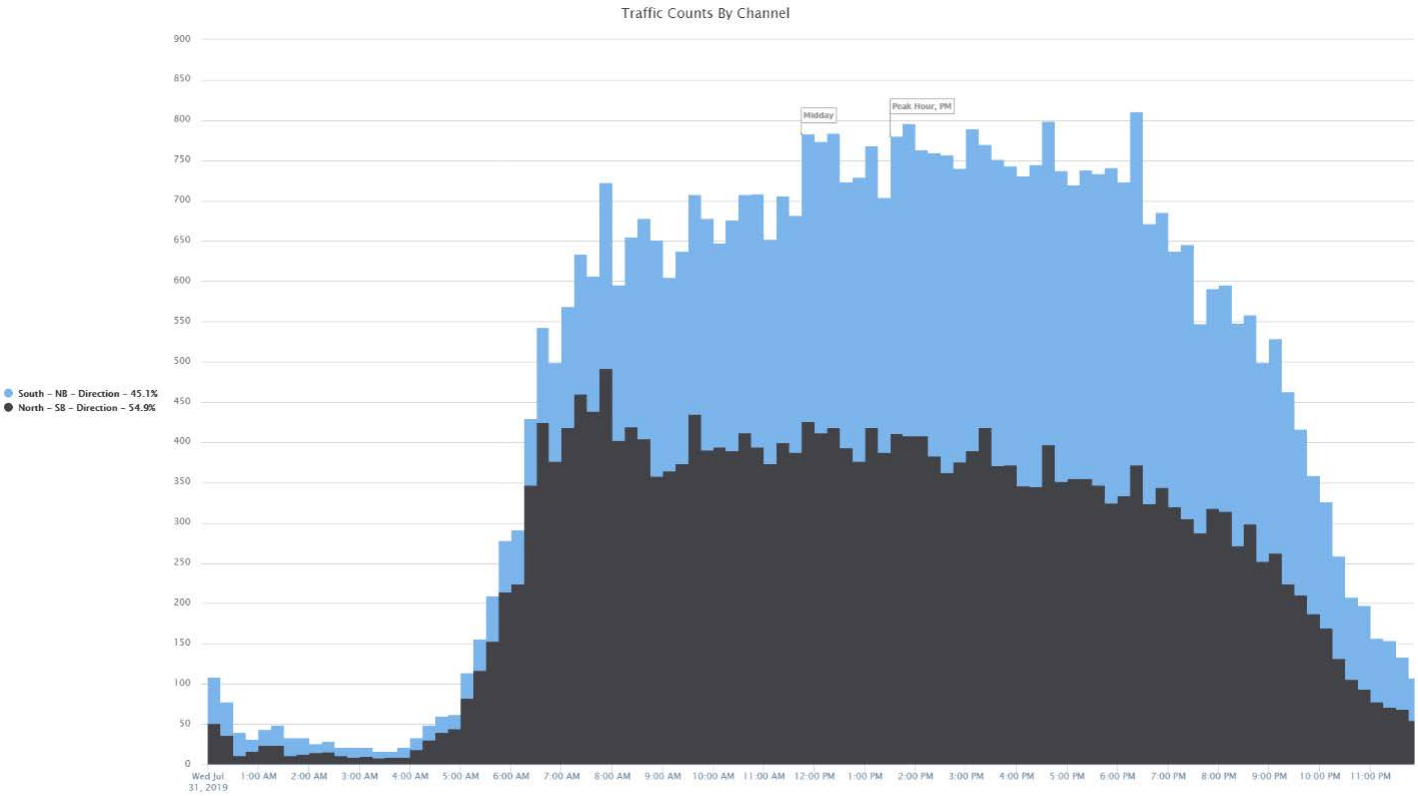


Figure 2.4 24-Hour Traffic Profile – M-150 (Rochester Road)



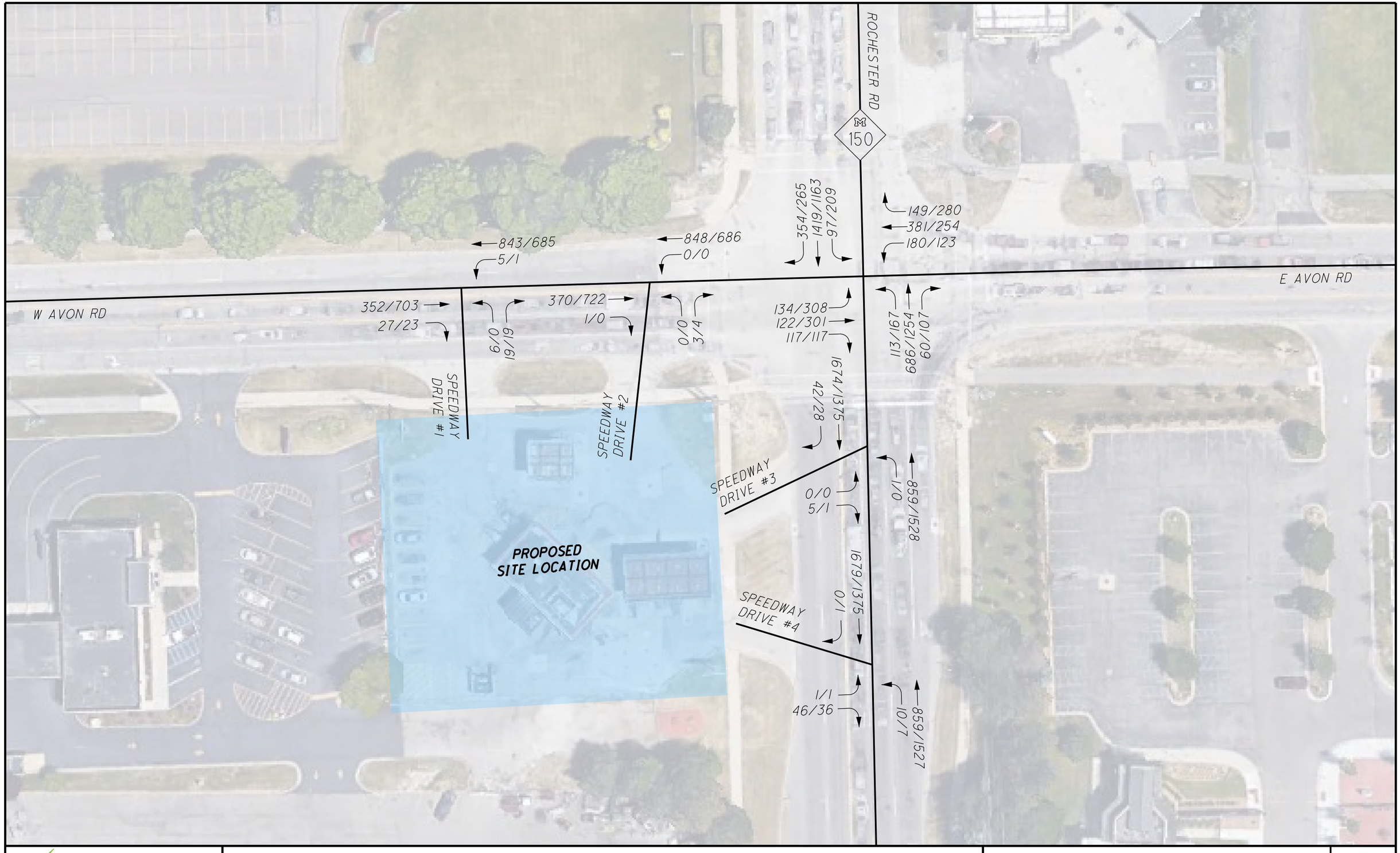



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**FIGURE 2.5**

**EXISTING (2019) PEAK HOUR TRAFFIC VOLUMES**

**LEGEND**

123/X = AM/PM TURN COUNTS

## 3.0 EXISTING AND BACKGROUND CONDITIONS TRAFFIC ANALYSIS

### 3.1 Traffic Operations Analysis Methodology

The study area offers a traffic operations modelling challenge given the existing driveway spacing of the existing site driveways between each other and the M-150 (Rochester Road) & W Avon Road signalized intersection. To appropriately analyze each intersection two software packages were utilized for the Existing (2019) and No Build (2021) traffic analysis. Trafficware's Synchro 10 was used to evaluate intersection capacity analysis and evaluate Levels-of-Service (LOS) for the M-150 (Rochester Road) & W Avon Road intersection and McTrans HCS7 software package was used for the existing site driveways. The results of the analysis are based on the results and methodology from the Highway Capacity Manual, 6th Edition (HCM) reports provided from the Synchro 10 and HCS7 models. LOS is measured by a letter grade that describes traffic operations based on the amount of delay experienced by vehicles at an intersection, along an intersection approach (e.g., eastbound, westbound), or in a specific lane group (e.g., eastbound right turn, eastbound through-left). In this study, LOS for the stop controlled intersections was reported by approach.

LOS can range from A-F with A representing the conditions in which vehicles experience the least amount of delay, and F representing the conditions in which vehicles experience the most delay. Typically, when LOS is in the range from A to D this is an indication that the traffic network is performing satisfactorily and no changes need to be made to improve conditions. The LOS D is typically used as a threshold for "acceptable" operations. When LOS is in the range from E to F, this is an indication that the traffic network is not performing satisfactorily and that changes need to be made to improve conditions. These operations are typically referred to as "unacceptable". Table 3.1 provides information regarding the delay thresholds for LOS. It may be noted that in tables throughout this report, when intersections, approaches, and lane groups have LOS D, it will be shown in yellow, when they have LOS E, it will be shown in orange, and when they have LOS F, it will be shown in red.

Table 3.1 Level-of-Service Definitions and Criteria

| Level-of-Service (LOS) | Signalized Intersections Delay (seconds) | Un-Signalized Intersections Delay (seconds) |
|---|---|---|
| A | < 10.0 | < 10.0 |
| B | 10.1 – 20.0 | 10.1 – 15.0 |
| C | 20.1 – 35.0 | 15.1 – 25.0 |
| D | 35.1 – 55.0 | 25.1 – 35.0 |
| E | 55.1 – 80.0 | 35.1 – 50.0 |
| F | > 80.0 | > 50.0 |

*From Highway Capacity Manual 6th Edition

### 3.2 Background Traffic Growth

Growth rates for background traffic within the study area were developed based on historical SEMCOG counts within the study area. It may be noted that SEMCOG projects a growth rate of 8.5% between 2010 and 2045 (~0.28% annually) for the Rochester Hills area. An annual growth rate of 0.5% was selected for a conservative analysis. The background growth rate of 0.5% per year was applied linearly to the existing peak hour volumes with two years of growth to obtain the No Build (2021) background traffic volumes. Figure 3.1 shows the peak hour traffic volumes for the No Build (2021) condition.

### 3.3 Existing (2019) and No Build (2021) Conditions Traffic Analysis

Synchro models for the existing network were built based on research of aerial photography and field visits. Signal timing and phasing for the study area intersections were obtained from MDOT and the Road Commission for Oakland County (RCOC). The resulting overall LOS and delay by intersection for the Existing (2019) and No Build (2021 conditions are shown in Table 3.2. See Appendix B for the Existing (2019) conditions and No Build (2021) conditions intersection LOS reports.

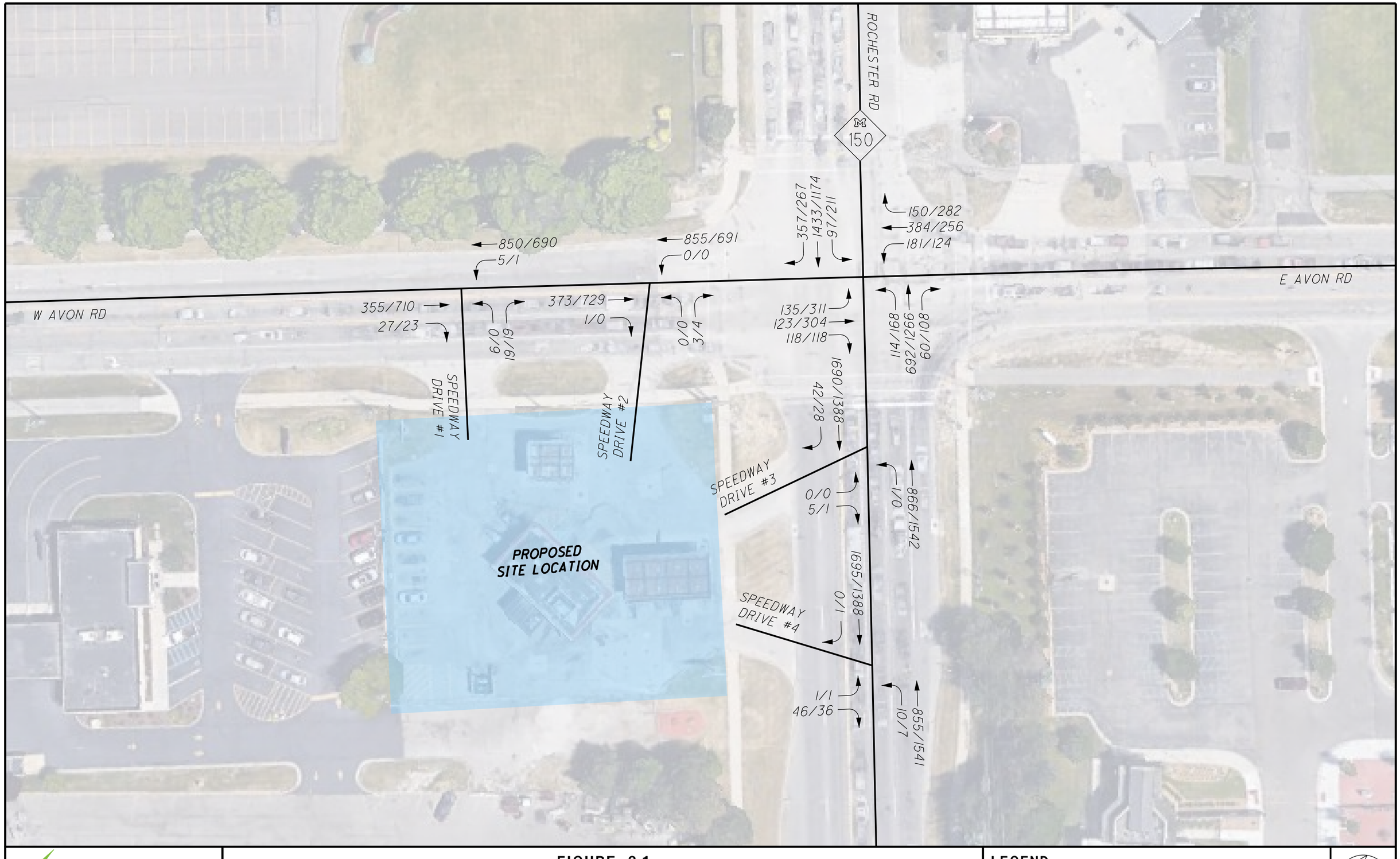


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**FIGURE 3.1**

**NO BUILD (2021) PEAK HOUR TRAFFIC VOLUMES**

**LEGEND**

123/X = AM/PM TURN COUNTS

| Table 3.2 Intersection LOS Analysis Summary – Existing (2019) & No Build (2021) | | | | | |
|---|---|---|---|---|---|
| Approach | Movement | Existing Conditions | | 2021 No Build Conditions | |
| | | AM Peak LOS (Delay) | PM Peak LOS (Delay) | AM Peak LOS (Delay) | PM Peak LOS (Delay) |
| M-150 (Rochester Road) & W Avon Road (Signalized) | | | | | |
| Eastbound | Left | E (60.3) | E (73.2) | E (61.5) | E (74.0) |
| | Thru | D (53.2) | D (49.5) | D (53.4) | D (49.5) |
| | Right | D (54.2) | D (42.5) | D (54.4) | D (42.4) |
| | Approach | E (56.1) | E (58.4) | E (56.6) | E (58.7) |
| Westbound | Left | D (48.1) | D (48.8) | D (48.1) | D (49.0) |
| | Thru | F (87.1) | F (99.0) | F (88.5) | F (100.8) |
| | Thru-Right | F (93.2) | F (182.0) | F (94.7) | F (185.1) |
| | Approach | E (79.4) | F (125.0) | F (80.5) | F (127.0) |
| Northbound | Left | D (43.6) | D (40.5) | D (45.2) | D (40.9) |
| | Thru | C (22.0) | D (45.0) | C (22.2) | D (47.1) |
| | Right | B (17.9) | C (27.4) | B (18.0) | C (27.9) |
| | Approach | C (24.5) | D (43.3) | C (25.0) | D (45.0) |
| Northbound | Left | B (17.2) | E (61.4) | B (17.2) | E (62.5) |
| | Thru | D (35.7) | D (39.0) | D (36.3) | D (39.7) |
| | Right | C (25.2) | C (30.0) | C (25.4) | C (30.3) |
| | Approach | C (32.8) | D (40.4) | C (33.2) | D (41.3) |
| Intersection Overall | | D (42.2) | E (56.6) | D (42.7) | E (57.7) |
| Speedway Drive #1 & W Avon Road (One Way Stop Controlled) | | | | | |
| Eastbound | Approach | A (0.0) | A (0.0) | A (0.0) | A (0.0) |
| Westbound | Approach | A (8.1) | A (9.2) | A (8.2) | A (9.2) |
| Northbound | Approach | B (12.3) | B (11.9) | B (12.3) | B (11.9) |
| Intersection Overall | | B (12.3) | B (11.9) | B (12.3) | B (11.9) |
| Speedway Drive #2 & W Avon Road (One Way Stop Controlled) | | | | | |
| Eastbound | Approach | A (0.0) | A (0.0) | A (0.0) | A (0.0) |
| Westbound | Approach | A (8.1) | A (9.2) | A (8.1) | A (9.2) |
| Northbound | Approach | B (11.6) | B (11.7) | B (11.6) | B (11.7) |
| Intersection Overall | | B (11.6) | B (11.7) | B (11.6) | B (11.7) |
| Speedway Drive #3 & M-150 (Rochester Road) (One Way Stop Controlled) | | | | | |
| Eastbound | Approach | C (19.0) | B (14.9) | C (19.2) | B (15.0) |
| Northbound | Approach | B (14.0) | B (13.8) | B (14.0) | B (13.8) |
| Southbound | Approach | A (0.0) | A (0.0) | A (0.0) | A (0.0) |
| Intersection Overall | | C (19.0) | B (14.9) | C (19.2) | B (15.0) |
| Speedway Drive #4 & M-150 (Rochester Road) (One Way Stop Controlled) | | | | | |
| Eastbound | Approach | C (23.7) | C (16.7) | C (24.1) | C (16.8) |
| Northbound | Approach | B (13.3) | B (14.0) | B (13.6) | B (14.0) |
| Southbound | Approach | A (0.0) | A (0.0) | A (0.0) | A (0.0) |
| Intersection Overall | | C (23.7) | C (16.7) | C (24.1) | C (16.8) |

As shown in Table 3.2, under the 2019 existing conditions the M-150 (Rochester Road) & W Avon Road intersection is operating at an overall acceptable LOS D with several lane groups and approaches operating at LOS E and F during the AM peak hour. During the PM peak hour, this intersection is currently operating at an overall LOS E with several lane groups and approaches operating at LOS E and F.

The 2019 existing conditions traffic analyses at the existing Speedway Fuel Center driveways shows that these intersections are currently operating at acceptable LOS with an overall LOS C or better.

At each of each of the five (5) study intersections, no changes in LOS for intersection lane groups, approaches, and overall intersection are expected during the No Build (2021) conditions.

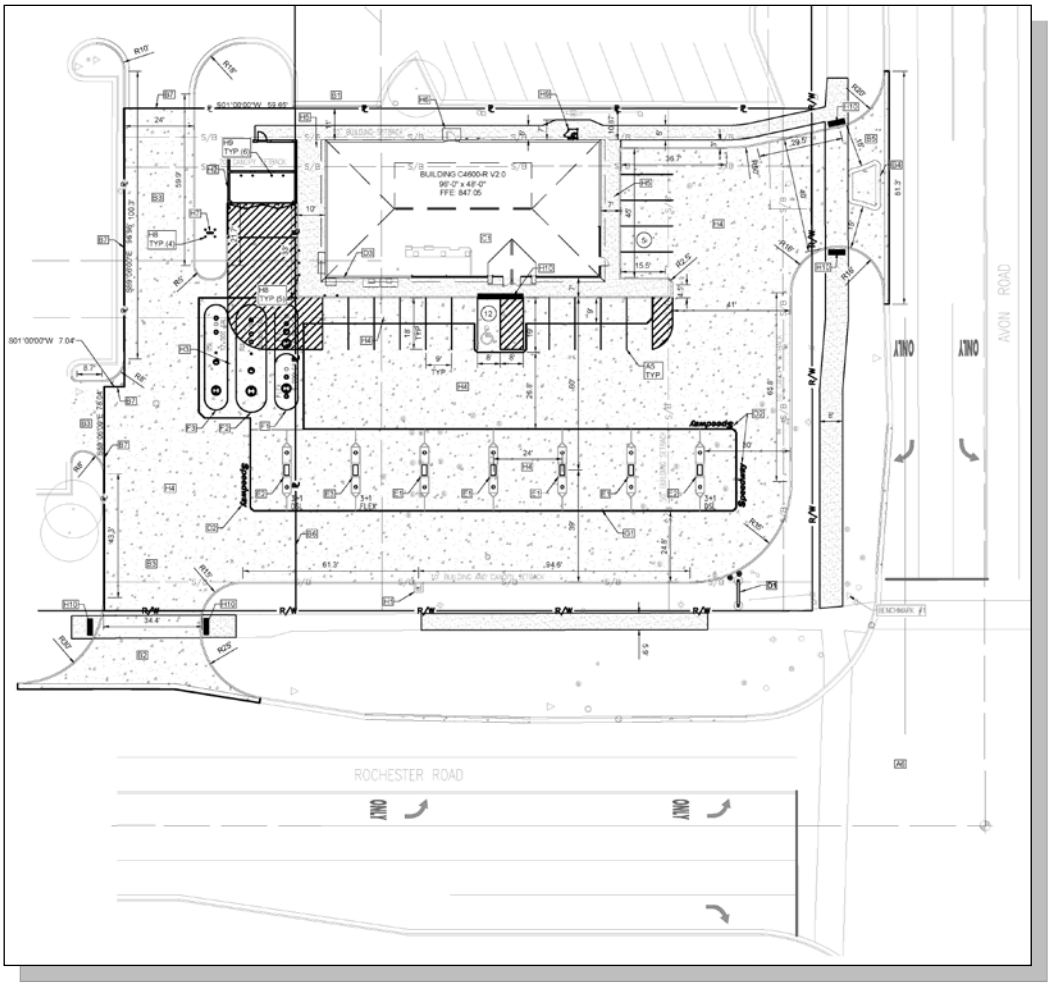
## 4.0 SITE TRAFFIC CHARACTERISTICS

This section presents information regarding the traffic volumes and traffic pattern changes associated with the proposed development. The amount of traffic generated by the project, the directional distribution of traffic, and the assignment of site trip volumes to the adjacent roadways are presented in this section.

### 4.1 Project Description and Proposed Driveway Location

The proposed development site plan, provided by SSOE Group, is shown in Figure 4.1. The project is expected to consist of the following components:

Figure 4.1 Site Plan




- The existing 1,800 Sq. Ft.,10 fueling positions Speedway Fuel Center is expected to be razzed and replaced with a 4,608 Sq. Ft., 14 fueling positions Speedway Fuel Station facility within the existing property limits;
- Consolidate the existing four (4) site driveway, two (2) along W Avon Road and two (2) along M-150 (Rochester Road), to two (2) driveways.
    a. One (1) Right-In and Right-Out (RI/RO) driveway along W Avon Road;
        i. Approximately 225 feet from center of Driveway to center of the M-150 (Rochester Road) & W Avon Road intersection.
    b. One (1) 3/4th access driveway along M-150 (Rochester Road).
        i. This driveway permits southbound right-, eastbound right-, and northbound left-turn movements only. Vehicles wanting to turn left onto M-150 (Rochester Road) will need to utilize the RI/RO driveway along W Avon Road and make the appropriate movement required at the M-150 (Rochester Road) & W Avon Road intersection.

ii. Approximately 293 feet from center of Driveway to center of the M-150 (Rochester Road) & W Avon Road intersection.

The proposed driveways are planned to be constructed to the furthest possible distance from the W Avon Road & M-150 (Rochester Road) intersection feasibility within the existing parcel boundary limits.

- The proposed Speedway Fuel Center site plan provides a shared access drive to the existing adjacent shopping plaza. The existing shopping plaza currently has existing driveway access along W Avon Road and M-150 (Rochester Road) which will promote site circulation and driveway utilization off site to/from the proposed Speedway Fuel Center from the adjacent roadways.

## 4.2 Trip Generation and Distribution

The amount of the traffic generated by the proposed project depends on the type and size of the land use being proposed. Estimates for the volume of traffic generated by this development were based upon existing peak hour site driveway volumes and rates published in the Institute of Transportation Engineers (ITE) report titled, *Trip Generation, 10th Edition*. The ITE report is a compilation of national traffic data surveys utilized to estimate traffic generated by various land uses. Both ITE (based on vehicle fueling positions and building square footage) and calculated rates from the existing Speedway Fuel Center are presented in Table 4.1. The recommended trip generation was based on on a gas station/service center with a convenience market, which were the higher of the evaluated alternatives.

**Table 4.1 Trip Generation Summary**

**Existing Site Trips**

*[1]Higher of Existing Driveway Counts and ITE Trip Generation Rates*

| Land Use Code | ITE Land Use Units | AM Peak Hour | | | PM Peak Hour | | | Weekday | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | IN | OUT | TOTAL | IN | OUT | TOTAL | IN | OUT | TOTAL |
| N/A | Existing Turning Movement Counts | 86 | 80 | 166 | 60 | 61 | 121 | N/A | | |
| 945 | Gasoline/Service Station with Convenience Market (10 Vehicle Fueling Positions) | 48 | 45 | 93 | 72 | 68 | 140 | 762 | 762 | 1,524 |
| 945 | Gasoline/Service Station with Convenience Market (1.8 kGFA) | 70 | 67 | 137 | 82 | 77 | 159 | 1,296 | 1,296 | 2,592 |
| [1]Subtotal Existing Site Trips | | 86 | 80 | 166 | 82 | 77 | 159 | 1,296 | 1,296 | 2,592 |

**Proposed Site Trips**

*[2]Higher of Prorated Existing Driveway Counts (Economy of Scale) and ITE Trip Generation Rates*

*[3]Subtotal New Site Trips = Difference of Proposed Site Trips and Existing Site Trips*

| Land Use Code | ITE Land Use (Units) | AM Peak Hour | | | PM Peak Hour | | | Weekday | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | IN | OUT | TOTAL | IN | OUT | TOTAL | IN | OUT | TOTAL |
| N/A | Prorated from Existing Turning Movement Counts (Economy of Scale) | 120 | 112 | 232 | 84 | 120 | 204 | N/A | | |
| 945 | Gasoline/Service Station with Convenience Market (14 Vehicle Fueling Positions) | 90 | 85 | 175 | 100 | 96 | 196 | 1,437 | 1,437 | 2,597 |
| 945 | Gasoline/Service Station with Convenience Market (4.6 kGFA) | 179 | 171 | 350 | 208 | 198 | 406 | 3,312 | 3,312 | 6,624 |
| [2]Subtotal Proposed Site Trips | | 179 | 171 | 350 | 208 | 198 | 406 | 3,312 | 3,312 | 6,624 |
| [3]Subtotal New Site Trips | | 93 | 91 | 184 | 126 | 121 | 247 | 2,016 | 2,016 | 4,032 |

**Less Pass-By Trip Reduction**

*(per ITE; AM 62%, PM 56%)*

| Land Use Code | ITE Land Use | AM Peak Hour | | | PM Peak Hour | | | Weekday | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | IN | OUT | TOTAL | IN | OUT | TOTAL | IN | OUT | TOTAL |
| 945 | Gasoline/Service Station with Convenience Market | (58) | (57) | (115) | (70) | (69) | (139) | N/A | | |
| Total New Driveway Trips | | 35 | 34 | 69 | 56 | 52 | 108 | 2,016 | 2,016 | 4,032 |

### 4.2.1 Driveway Trips

Trip estimates from the Institute of Transportation Engineers (ITE) publication *Trip Generation Manual, 10th Edition* were utilized to develop site traffic projections for the various components of the project. Detailed calculations for each Land Use (variable, value, and number of trips) can be found in Appendix C. The estimates provide the number of vehicular trips expected to be present at the site access points. Therefore, the proposed Speedway Fuel Station will generate 69 new trips in the AM new peak hour (35 inbound, 34 outbound), and 108 new trips in the PM new peak hour (56 inbound, 52 outbound) to the study area. On a daily basis, the Speedway Fuel Station is expected to generate 4,032 new trips (2,016 inbound, 2,016 outbound) to the study area.

### 4.2.2 Pass-By Trip Reductions

Considered in the trip generation estimates in Table 4.1 were "Pass-By" trips, which are trips, made as intermediate stops on the way from an origin to a primary trip destination outside of the proposed development. Pass-by trips are attracted from existing traffic passing the site on an adjacent street that contains direct access to the development. The total trip generation for the development does not change, but the existing volumes passing the site are reduced to reflect this pass-by traffic being added to the site. Pass-by traffic reductions were based upon data contained in the ITE *Trip Generation, 10th Edition*.

## 4.3 Trip Distribution and Assignment

The total new inbound and outbound trips (Table 4.1) was distributed throughout the study roadway network based on existing traffic patterns and engineering judgement. Traffic generated by the proposed development has been assigned to the roadway network for the weekday AM and PM peak hours. The AM and PM peak hour site trips are shown in Figure 4.2.

Site traffic was added to the No Build (2021) traffic volumes for the AM and PM peak hours to develop the Build (2021) Opening Day traffic volumes. The total future traffic volumes for this scenario are illustrated in Figure 4.3.

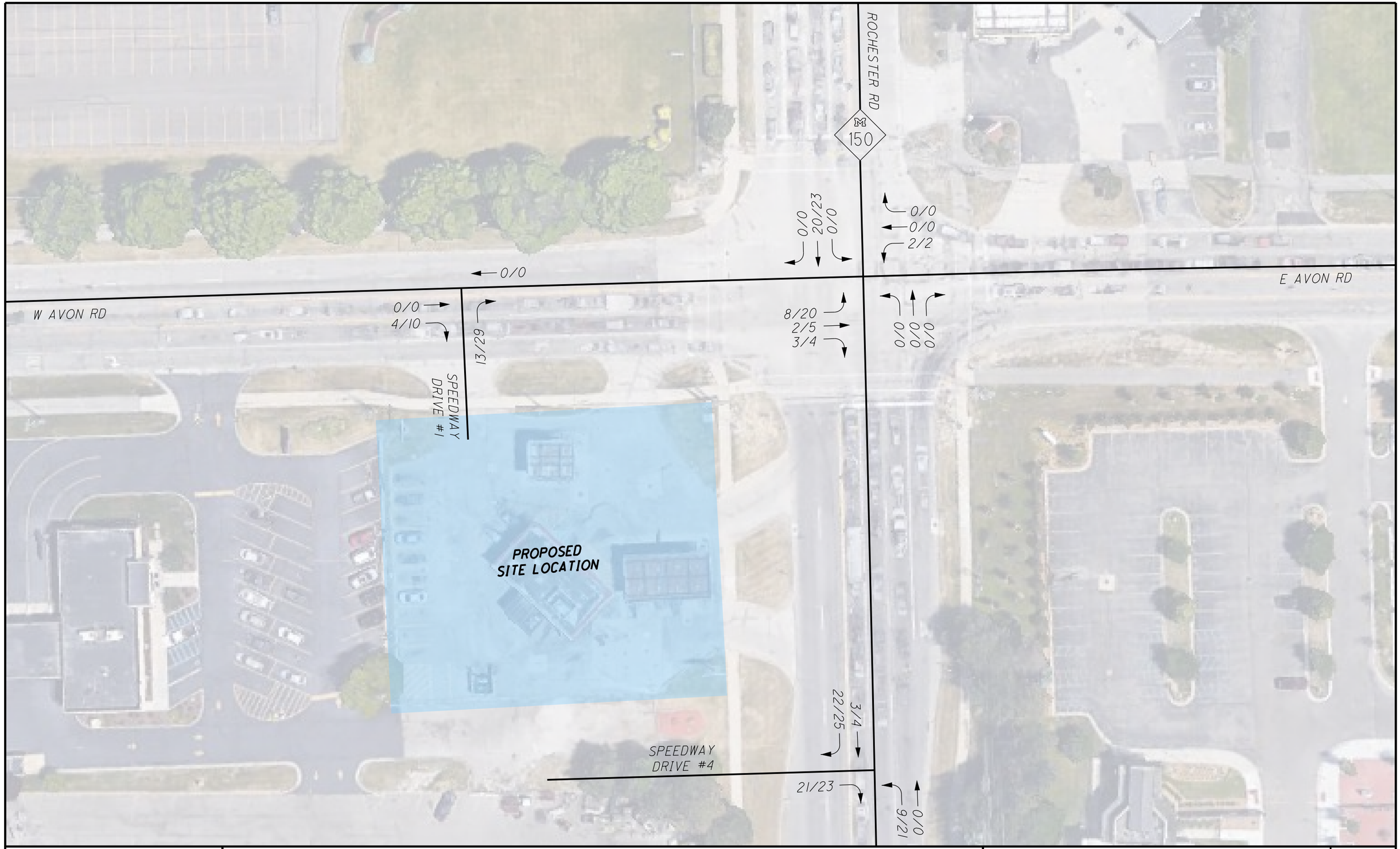



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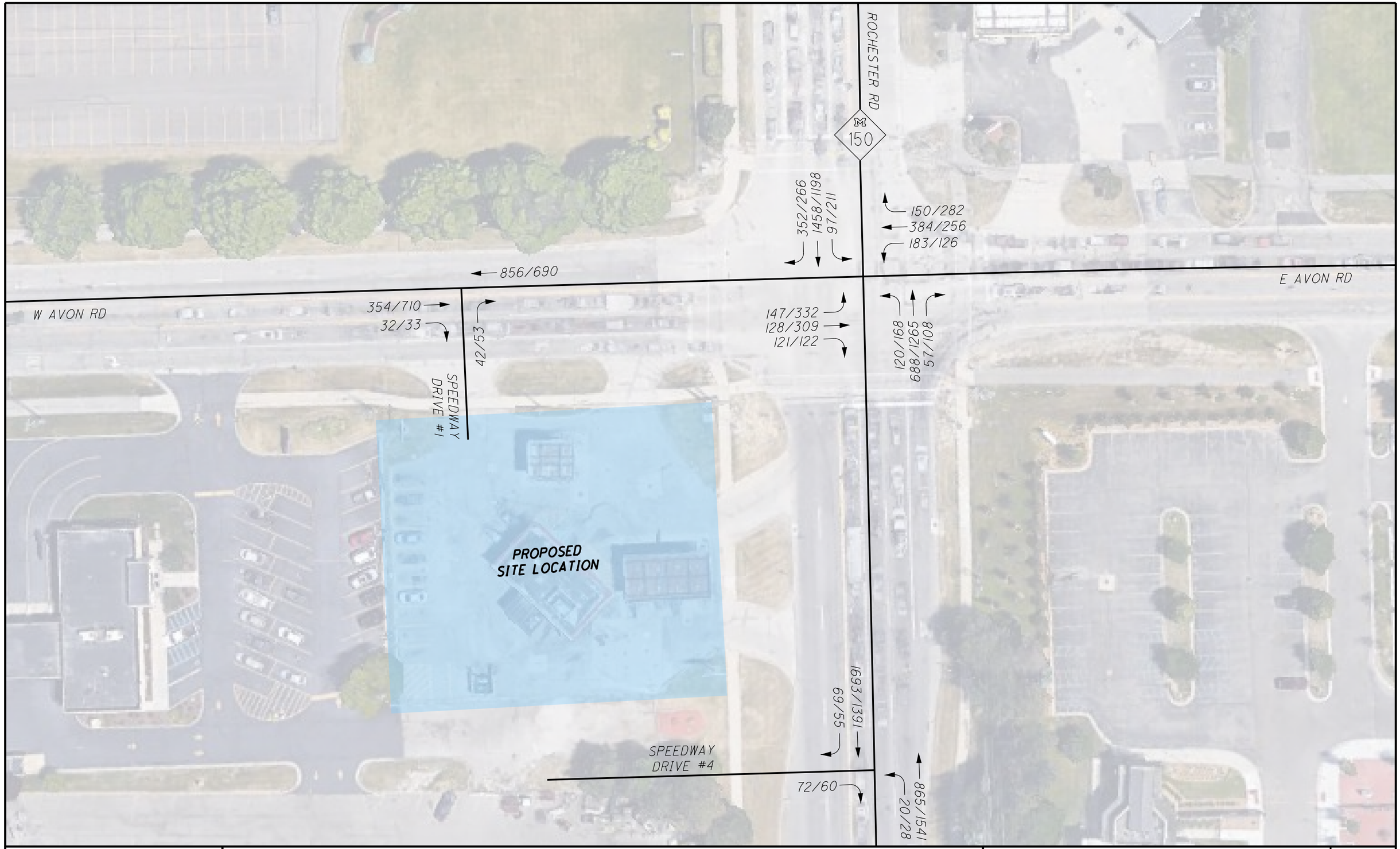
**FIGURE 4.2**

**SITE GENERATED TRIPS**

**LEGEND**

123/X = AM/PM TURN COUNTS




Mannik Smith GROUP
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**FIGURE 4.3**

**BUILD (2021) PEAK HOUR TRAFFIC VOLUMES**

**LEGEND**

123/X = AM/PM TURN COUNTS

## 5.0 BUILD CONDITIONS TRAFFIC ANALYSIS

The objective of the operational analysis for this study is to determine what impacts, if any, the proposed development will have on traffic operations along adjacent public roadways. To quantify these impacts, the traffic operations under the No Build (2021) conditions is compared to the operations under the Build (2021) conditions for the Opening Year scenario. It will be assumed that the impact of the proposed Speedway Fuel Center on local traffic operations will be minimal if one or more of the following are met:

- If the intersection LOS under the Build (2021) conditions remains acceptable (LOS D or better);
- The project traffic does not cause any lane group movements to degrade to failing operations (LOS E or F);
- Intersection LOS is not considerably worse than the No Build (2021) conditions.

If any of those conditions do occur, it will be assumed that the proposed Speedway Fuel Center does have an impact on local traffic operations. In this instance, mitigation improvements will be proposed with the intention of returning the overall intersection operations to LOS D or as near to the No Build (2021) conditions as feasible for overall intersection operations or affected lane group movements. See Appendix D for the Build Conditions LOS analysis reports.

### 5.1 Opening Year (2020) Build Conditions Traffic Analysis

Table 5.1 summarizes the Build (2021) peak hour conditions at the main study intersections. The table includes the analysis of the proposed consolidation of the existing site driveways along M-150 (Rochester Road) and W Avon Road. The Build (2021) scenario presented in Table 5.1 assumes no further mitigation improvements are implemented within the study area.

| Table 5.1 Intersection LOS Analysis Summary – Build (2021) | | | | | | | |
|---|---|---|---|---|---|---|---|
| Approach | Movement | Existing Conditions | | 2021 No Build Conditions | | 2021 Build Conditions | |
| | | AM Peak LOS (Delay) | PM Peak LOS (Delay) | AM Peak LOS (Delay) | PM Peak LOS (Delay) | AM Peak LOS (Delay | PM Peak LOS (Delay |
| M-150 (Rochester Road) & W Avon Road (Signalized) | | | | | | | |
| Eastbound | Left | E (60.3) | E (73.2) | E (61.5) | E (74.0) | E (71.2) | F (80.7) |
| | Thru | D (53.2) | D (49.5) | D (53.4) | D (49.5) | D (54.5) | D (48.9) |
| | Right | D (54.2) | D (42.5) | D (54.4) | D (42.4) | D (55.9) | D (41.9) |
| | Approach | E (56.1) | E (58.4) | E (56.6) | E (58.7) | E (61.1) | E (61.6) |
| Westbound | Left | D (48.1) | D (48.8) | D (48.1) | D (49.0) | D (48.1) | D (48.8) |
| | Thru | F (87.1) | F (99.0) | F (88.5) | F (100.8) | F (88.5) | F (102.1) |
| | Thru-Right | F (93.2) | F (182.0) | F (94.7) | F (185.1) | F (94.7) | F (187.5) |
| | Approach | E (79.4) | F (125.0) | F (80.5) | F (127.0) | F (80.4) | F (128.3) |
| Northbound | Left | D (43.6) | D (40.5) | D (45.2) | D (40.9) | D (50.6) | D (47.8) |
| | Thru | C (22.0) | D (45.0) | C (22.2) | D (47.1) | C (22.2) | D (49.3) |
| | Right | B (17.9) | C (27.4) | B (18.0) | C (27.9) | B (18.0) | C (28.6) |
| | Approach | C (24.5) | D (43.3) | C (25.0) | D (45.0) | C (25.8) | D (47.7) |
| Northbound | Left | B (17.2) | E (61.4) | B (17.2) | E (62.5) | B (17.3) | E (66.6) |
| | Thru | D (35.7) | D (39.0) | D (36.3) | D (39.7) | D (37.7) | D (41.5) |
| | Right | C (25.2) | C (30.0) | C (25.4) | C (30.3) | C (25.4) | C (30.9) |
| | Approach | C (32.8) | D (40.4) | C (33.2) | D (41.3) | C (34.4) | D (42.9) |
| Intersection Overall | | D (42.2) | E (56.6) | D (42.7) | E (57.7) | D (44.0) | E (59.9) |
| Speedway Drive #1 & W Avon Road (One Way Stop Controlled)* | | | | | | | |
| Eastbound | Approach | A (0.0) | A (0.0) | A (0.0) | A (0.0) | A (0.0) | A (0.0) |
| Westbound | Approach | A (8.1) | A (9.2) | A (8.2) | A (9.2) | *N/A | *N/A |
| Northbound | Approach | B (12.3) | B (11.9) | B (12.3) | B (11.9) | A (9.8) | B (11.7) |
| Intersection Overall | | B (12.3) | B (11.9) | B (12.3) | B (11.9) | A (9.8) | B (11.7) |
| Speedway Drive #2 & W Avon Road (One Way Stop Controlled) | | | | | | | |
| Eastbound | Approach | A (0.0) | A (0.0) | A (0.0) | A (0.0) | *See Speedway Drive #1 & W Avon Road* | |
| Westbound | Approach | A (8.1) | A (9.2) | A (8.1) | A (9.2) | | |
| Northbound | Approach | B (11.6) | B (11.7) | B (11.6) | B (11.7) | | |
| Intersection Overall | | B (11.6) | B (11.7) | B (11.6) | B (11.7) | | |
| Speedway Drive #3 & M-150 (Rochester Road) (One Way Stop Controlled) | | | | | | | |
| Eastbound | Approach | C (19.0) | B (14.9) | C (19.2) | B (15.0) | *See Speedway Drive #4 & M-150 (Rochester Road)* | |
| Northbound | Approach | B (14.0) | B (13.8) | B (14.0) | B (13.8) | | |
| Southbound | Approach | A (0.0) | A (0.0) | A (0.0) | A (0.0) | | |
| Intersection Overall | | C (19.0) | B (14.9) | C (19.2) | B (15.0) | | |
| Speedway Drive #4 & M-150 (Rochester Road) (One Way Stop Controlled)** | | | | | | | |
| Eastbound | Approach | C (23.7) | C (16.7) | C (24.1) | C (16.8) | C (17.0) | B (13.1) |
| Northbound | Approach | B (13.3) | B (14.0) | B (13.6) | B (14.0) | B (11.6) | A (9.9) |
| Southbound | Approach | A (0.0) | A (0.0) | A (0.0) | A (0.0) | A (0.0) | A (0.0) |
| Intersection Overall | | C (23.7) | C (16.7) | C (24.1) | C (16.8) | C (17.0) | B (13.1) |

**Driveway converts from a full access driveway to a Right-In/Right-Out driveway*
***Driveway converts from a full access driveway to a 3/4th driveway (left-turn exit prohibited)*

As shown in Table 5.1, the M-150 (Rochester Road) & W Avon Road intersection lane groups and approaches are expected to continue to operate at similar LOS under the Build (2021) conditions compared to the No Build (2021) and Existing (2019) conditions during the AM and PM peak hours, except for the following:

- Eastbound Left Turn – PM Peak Hour: expected LOS F with 80.5 seconds of delay; increase from LOS E with 74.0 seconds a delay during the No Build (2021) conditions.

This increase in LOS and delay for the eastbound left turn movement can be attributed to the prohibited eastbound left turn movement at the new Speedway Drive #4 configuration. However, this increase in LOS and delay is acceptable because Drive #4 decreases the number of conflict points on M-150 (Rochester Road) increasing the overall safety of the proposed site. Additionally, the proposed access driveway to the adjacent shopping center allows patrons access a full access driveway at M-150 (Rochester Road) approximately 250 feet south of Driveway #4; if vehicles do not wish

the exit the Speedway Fuel Center from Drive #1 (RI/RO) and then make a left to head north at the M-150 (Rochester Road) & W Avon Road.

The Build (2021) traffic analysis concludes that the proposed site access driveway configurations are expected to operate at an acceptable over LOS C or better. Additionally, the proposed access driveway to the adjacent shopping center allows patrons access a full access driveway at W Avon Road and M-150 (Rochester Road), approximately 250 feet west and south of Driveway #1 and Driveway #4, respectively.

## 6.0 CONCLUSIONS AND RECOMMENDATIONS

The Existing (2019) and future No Build (2021) (background) conditions intersection capacity analysis indicates that although all study intersections are operating at relatively acceptable levels of service with several lane group movements and approaches operating at LOS E or worse.

Under the Build (2021) conditions (with the proposed new Speedway Fuel Center), the project is expected to have minimal impact on LOS and delay at each of the five (5) study intersections. It may be noted that traffic operations at the several lane groups and approaches at the M-150 (Rochester Road) and W Avon Road intersection is expected to continue operate at a LOS E or worse (similar to No Build conditions). As LOS values for the Build condition were largely unchanged from the No Build condition, no mitigation improvements for traffic related to the proposed development are recommended.

# APPENDIX A
## EXISTING TRAFFIC COUNTS AND TIMING PERMITS

Mannik & Smith Group (OH)
1800 Indian Wood Circle

Maumee, Ohio, United States 43537
(419) 891-2222 dhelou@manniksmithgroup.com

Count Name: M-150 (Rochester Road) & W Avon Road
Site Code:
Start Date: 07/31/2019
Page No: 1

## Turning Movement Data

| Start Time | M-150 (Rochester Road) Southbound | | | | | | W Avon Road Westbound | | | | | | M-150 (Rochester Road) Northbound | | | | | | W Avon Road Eastbound | | | | | | Int. Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Right | Thru | Left | U-Turn | Peds | App. Total | Right | Thru | Left | U-Turn | Peds | App. Total | Right | Thru | Left | U-Turn | Peds | App. Total | Right | Thru | Left | U-Turn | Peds | App. Total | |
| 7:00 AM | 59 | 374 | 24 | 0 | 0 | 457 | 22 | 79 | 24 | 0 | 1 | 125 | 13 | 108 | 26 | 0 | 0 | 147 | 20 | 22 | 20 | 0 | 1 | 62 | 791 |
| 7:15 AM | 78 | 402 | 27 | 0 | 0 | 507 | 25 | 89 | 38 | 0 | 0 | 152 | 13 | 147 | 14 | 0 | 0 | 174 | 21 | 24 | 17 | 0 | 0 | 62 | 895 |
| 7:30 AM | 83 | 349 | 27 | 0 | 0 | 459 | 30 | 83 | 58 | 0 | 0 | 171 | 7 | 122 | 23 | 0 | 1 | 152 | 26 | 33 | 22 | 0 | 1 | 81 | 863 |
| 7:45 AM | 86 | 416 | 23 | 0 | 0 | 525 | 38 | 84 | 42 | 0 | 0 | 164 | 14 | 186 | 34 | 0 | 0 | 234 | 27 | 32 | 26 | 0 | 1 | 85 | 1008 |
| Hourly Total | 306 | 1541 | 101 | 0 | 0 | 1948 | 115 | 335 | 162 | 0 | 1 | 612 | 47 | 563 | 97 | 0 | 1 | 707 | 94 | 111 | 85 | 0 | 3 | 290 | 3557 |
| 8:00 AM | 91 | 333 | 19 | 0 | 0 | 443 | 37 | 115 | 50 | 0 | 0 | 202 | 15 | 145 | 18 | 0 | 0 | 178 | 27 | 29 | 27 | 0 | 0 | 83 | 906 |
| 8:15 AM | 100 | 353 | 31 | 0 | 1 | 484 | 37 | 81 | 37 | 0 | 0 | 155 | 13 | 177 | 30 | 0 | 0 | 220 | 30 | 29 | 37 | 0 | 2 | 96 | 955 |
| 8:30 AM | 77 | 317 | 24 | 0 | 0 | 418 | 37 | 101 | 51 | 0 | 1 | 189 | 18 | 178 | 31 | 0 | 1 | 227 | 33 | 32 | 44 | 0 | 0 | 109 | 943 |
| 8:45 AM | 87 | 308 | 26 | 0 | 0 | 421 | 41 | 73 | 32 | 0 | 0 | 146 | 16 | 223 | 39 | 0 | 0 | 278 | 22 | 26 | 34 | 0 | 0 | 82 | 927 |
| Hourly Total | 355 | 1311 | 100 | 0 | 1 | 1766 | 152 | 370 | 170 | 0 | 1 | 692 | 62 | 723 | 118 | 0 | 1 | 903 | 112 | 116 | 142 | 0 | 2 | 370 | 3731 |
| *** BREAK *** | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 4:00 PM | 67 | 257 | 40 | 0 | 3 | 364 | 45 | 71 | 36 | 0 | 1 | 152 | 26 | 288 | 45 | 0 | 7 | 359 | 44 | 74 | 73 | 0 | 0 | 191 | 1066 |
| 4:15 PM | 59 | 280 | 54 | 0 | 2 | 393 | 51 | 58 | 28 | 0 | 0 | 137 | 37 | 309 | 54 | 0 | 1 | 400 | 43 | 60 | 68 | 0 | 1 | 171 | 1101 |
| 4:30 PM | 42 | 325 | 38 | 0 | 1 | 405 | 73 | 50 | 37 | 0 | 0 | 160 | 26 | 321 | 49 | 0 | 0 | 396 | 28 | 57 | 83 | 0 | 2 | 168 | 1129 |
| 4:45 PM | 62 | 288 | 60 | 0 | 1 | 410 | 69 | 68 | 31 | 0 | 0 | 168 | 29 | 304 | 40 | 0 | 0 | 373 | 31 | 73 | 75 | 0 | 0 | 179 | 1130 |
| Hourly Total | 230 | 1150 | 192 | 0 | 7 | 1572 | 238 | 247 | 132 | 0 | 1 | 617 | 118 | 1222 | 188 | 0 | 8 | 1528 | 146 | 264 | 299 | 0 | 3 | 709 | 4426 |
| 5:00 PM | 57 | 302 | 51 | 0 | 2 | 410 | 57 | 65 | 31 | 0 | 0 | 153 | 25 | 325 | 44 | 0 | 0 | 394 | 30 | 79 | 79 | 0 | 0 | 188 | 1145 |
| 5:15 PM | 72 | 295 | 43 | 0 | 2 | 410 | 85 | 62 | 28 | 0 | 1 | 175 | 32 | 297 | 32 | 0 | 2 | 361 | 24 | 82 | 90 | 0 | 0 | 196 | 1142 |
| 5:30 PM | 74 | 278 | 55 | 0 | 0 | 407 | 69 | 59 | 33 | 0 | 1 | 161 | 21 | 328 | 51 | 0 | 0 | 400 | 32 | 67 | 64 | 0 | 0 | 163 | 1131 |
| 5:45 PM | 63 | 267 | 53 | 0 | 1 | 383 | 78 | 80 | 35 | 0 | 0 | 193 | 19 | 337 | 43 | 0 | 0 | 399 | 35 | 56 | 59 | 0 | 0 | 150 | 1125 |
| Hourly Total | 266 | 1142 | 202 | 0 | 5 | 1610 | 289 | 266 | 127 | 0 | 2 | 682 | 97 | 1287 | 170 | 0 | 2 | 1554 | 121 | 284 | 292 | 0 | 0 | 697 | 4543 |
| Grand Total | 1157 | 5144 | 595 | 0 | 13 | 6896 | 794 | 1218 | 591 | 0 | 5 | 2603 | 324 | 3795 | 573 | 0 | 12 | 4692 | 473 | 775 | 818 | 0 | 8 | 2066 | 16257 |
| Approach % | 16.8 | 74.6 | 8.6 | 0.0 | - | - | 30.5 | 46.8 | 22.7 | 0.0 | - | - | 6.9 | 80.9 | 12.2 | 0.0 | - | - | 22.9 | 37.5 | 39.6 | 0.0 | - | - | - |
| Total % | 7.1 | 31.6 | 3.7 | 0.0 | - | 42.4 | 4.9 | 7.5 | 3.6 | 0.0 | - | 16.0 | 2.0 | 23.3 | 3.5 | 0.0 | - | 28.9 | 2.9 | 4.8 | 5.0 | 0.0 | - | 12.7 | - |
| Lights | 1125 | 5049 | 584 | 0 | - | 6758 | 782 | 1196 | 582 | 0 | - | 2560 | 319 | 3728 | 562 | 0 | - | 4609 | 463 | 756 | 804 | 0 | - | 2023 | 15950 |
| % Lights | 97.2 | 98.2 | 98.2 | - | - | 98.0 | 98.5 | 98.2 | 98.5 | - | - | 98.3 | 98.5 | 98.2 | 98.1 | - | - | 98.2 | 97.9 | 97.5 | 98.3 | - | - | 97.9 | 98.1 |
| Other Vehicles | 32 | 95 | 11 | 0 | - | 138 | 12 | 22 | 9 | 0 | - | 43 | 5 | 67 | 11 | 0 | - | 83 | 10 | 19 | 14 | 0 | - | 43 | 307 |
| % Other Vehicles | 2.8 | 1.8 | 1.8 | - | - | 2.0 | 1.5 | 1.8 | 1.5 | - | - | 1.7 | 1.5 | 1.8 | 1.9 | - | - | 1.8 | 2.1 | 2.5 | 1.7 | - | - | 2.1 | 1.9 |
| Bicycles on Crosswalk | - | - | - | - | 3 | - | - | - | - | - | 2 | - | - | - | - | - | 6 | - | - | - | - | - | 5 | - | - |
| % Bicycles on Crosswalk | - | - | - | - | 23.1 | - | - | - | - | - | 40.0 | - | - | - | - | - | 50.0 | - | - | - | - | - | 62.5 | - | - |
| Pedestrians | - | - | - | - | 10 | - | - | - | - | - | 3 | - | - | - | - | - | 6 | - | - | - | - | - | 3 | - | - |
| % Pedestrians | - | - | - | - | 76.9 | - | - | - | - | - | 60.0 | - | - | - | - | - | 50.0 | - | - | - | - | - | 37.5 | - | - |

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1800 Indian Wood Circle

Maumee, Ohio, United States 43537
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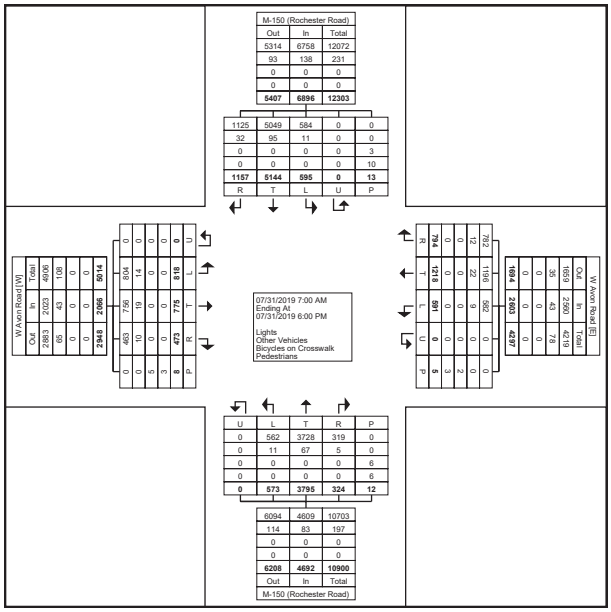
Site Code:
Start Date: 07/31/2019
Page No: 2




Turning Movement Data Plot

Mannik & Smith Group (OH)
1800 Indian Wood Circle

Maumee, Ohio, United States 43537
(419) 891-2222 dhelou@manniksmithgroup.com

Count Name: M-150 (Rochester Road) & W Avon Road
Site Code:
Start Date: 07/31/2019


## Turning Movement Peak Hour Data (7:45 AM)

| Start Time | M-150 (Rochester Road) Southbound | | | | | | W Avon Road Westbound | | | | | | M-150 (Rochester Road) Northbound | | | | | | W Avon Road Eastbound | | | | | | Int. Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Right | Thru | Left | U-Turn | Peds | App. Total | Right | Thru | Left | U-Turn | Peds | App. Total | Right | Thru | Left | U-Turn | Peds | App. Total | Right | Thru | Left | U-Turn | Peds | App. Total | |
| 7:45 AM | 86 | 416 | 23 | 0 | 0 | 525 | 38 | 84 | 42 | 0 | 0 | 164 | 14 | 186 | 34 | 0 | 0 | 234 | 27 | 32 | 26 | 0 | 1 | 85 | 1008 |
| 8:00 AM | 91 | 333 | 19 | 0 | 0 | 443 | 37 | 115 | 50 | 0 | 0 | 202 | 15 | 145 | 18 | 0 | 0 | 178 | 27 | 29 | 27 | 0 | 0 | 83 | 906 |
| 8:15 AM | 100 | 353 | 31 | 0 | 1 | 484 | 37 | 81 | 37 | 0 | 0 | 155 | 13 | 177 | 30 | 0 | 0 | 220 | 30 | 29 | 37 | 0 | 2 | 96 | 955 |
| 8:30 AM | 77 | 317 | 24 | 0 | 0 | 418 | 37 | 101 | 51 | 0 | 1 | 189 | 18 | 178 | 31 | 0 | 1 | 227 | 33 | 32 | 44 | 0 | 0 | 109 | 943 |
| Total | 354 | 1419 | 97 | 0 | 1 | 1870 | 149 | 381 | 180 | 0 | 1 | 710 | 60 | 686 | 113 | 0 | 1 | 859 | 117 | 122 | 134 | 0 | 3 | 373 | 3812 |
| Approach % | 18.9 | 75.9 | 5.2 | 0.0 | - | - | 21.0 | 53.7 | 25.4 | 0.0 | - | - | 7.0 | 79.9 | 13.2 | 0.0 | - | - | 31.4 | 32.7 | 35.9 | 0.0 | - | - | - |
| Total % | 9.3 | 37.2 | 2.5 | 0.0 | - | 49.1 | 3.9 | 10.0 | 4.7 | 0.0 | - | 18.6 | 1.6 | 18.0 | 3.0 | 0.0 | - | 22.5 | 3.1 | 3.2 | 3.5 | 0.0 | - | 9.8 | - |
| PHF | 0.885 | 0.853 | 0.782 | 0.000 | - | 0.890 | 0.980 | 0.828 | 0.882 | 0.000 | - | 0.879 | 0.833 | 0.922 | 0.831 | 0.000 | - | 0.918 | 0.886 | 0.953 | 0.761 | 0.000 | - | 0.856 | 0.945 |
| Lights | 342 | 1394 | 94 | 0 | - | 1830 | 143 | 373 | 174 | 0 | - | 690 | 58 | 657 | 111 | 0 | - | 826 | 114 | 117 | 132 | 0 | - | 363 | 3709 |
| % Lights | 96.6 | 98.2 | 96.9 | - | - | 97.9 | 96.0 | 97.9 | 96.7 | - | - | 97.2 | 96.7 | 95.8 | 98.2 | - | - | 96.2 | 97.4 | 95.9 | 98.5 | - | - | 97.3 | 97.3 |
| Other Vehicles | 12 | 25 | 3 | 0 | - | 40 | 6 | 8 | 6 | 0 | - | 20 | 2 | 29 | 2 | 0 | - | 33 | 3 | 5 | 2 | 0 | - | 10 | 103 |
| % Other Vehicles | 3.4 | 1.8 | 3.1 | - | - | 2.1 | 4.0 | 2.1 | 3.3 | - | - | 2.8 | 3.3 | 4.2 | 1.8 | - | - | 3.8 | 2.6 | 4.1 | 1.5 | - | - | 2.7 | 2.7 |
| Bicycles on Crosswalk | - | - | - | - | 0 | - | - | - | - | - | 0 | - | - | - | - | - | 0 | - | - | - | - | - | 1 | - | - |
| % Bicycles on Crosswalk | - | - | - | - | 0.0 | - | - | - | - | - | 0.0 | - | - | - | - | - | 0.0 | - | - | - | - | - | 33.3 | - | - |
| Pedestrians | - | - | - | - | 1 | - | - | - | - | - | 1 | - | - | - | - | - | 1 | - | - | - | - | - | 2 | - | - |
| % Pedestrians | - | - | - | - | 100.0 | - | - | - | - | - | 100.0 | - | - | - | - | - | 100.0 | - | - | - | - | - | 66.7 | - | - |

Mannik & Smith Group (OH)
1800 Indian Wood Circle

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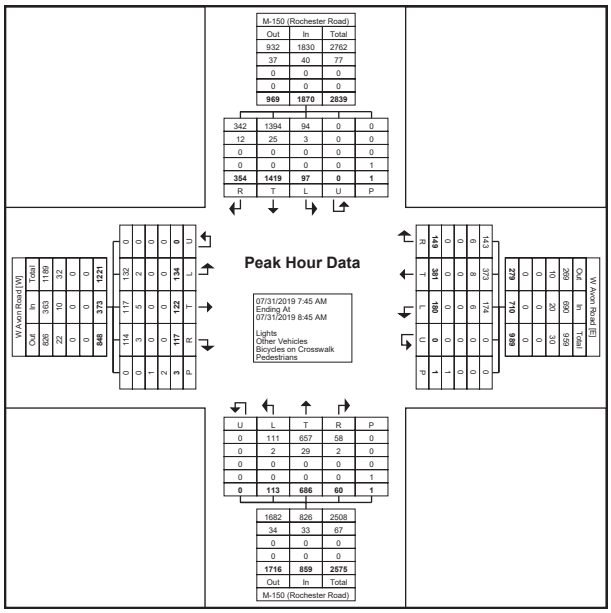
Count Name: M-150 (Rochester Road) & W Avon Road
Site Code:
Start Date: 07/31/2019


Turning Movement Peak Hour Data Plot (7:45 AM)

Mannik & Smith Group (OH)
1800 Indian Wood Circle

Maumee, Ohio, United States 43537
(419) 891-2222 dhelou@manniksmithgroup.com

Count Name: M-150 (Rochester Road) & W Avon Road
Site Code:
Start Date: 07/31/2019

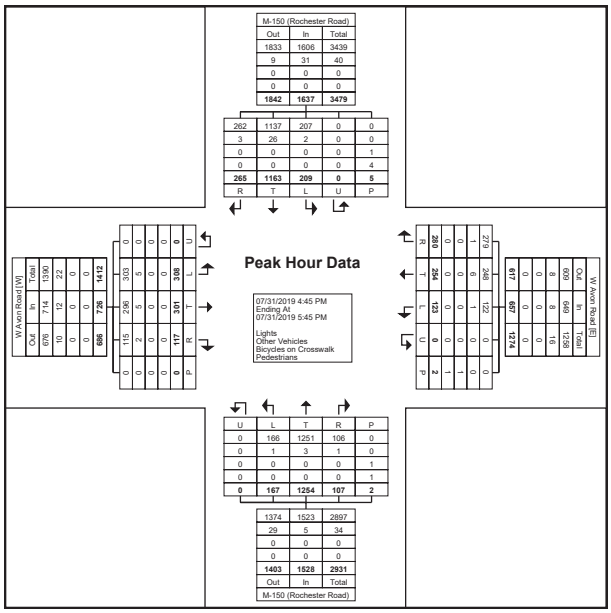

## Turning Movement Peak Hour Data (4:45 PM)

| Start Time | M-150 (Rochester Road) Southbound | | | | | | W Avon Road Westbound | | | | | | M-150 (Rochester Road) Northbound | | | | | | W Avon Road Eastbound | | | | | | Int. Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Right | Thru | Left | U-Turn | Peds | App. Total | Right | Thru | Left | U-Turn | Peds | App. Total | Right | Thru | Left | U-Turn | Peds | App. Total | Right | Thru | Left | U-Turn | Peds | App. Total | |
| 4:45 PM | 62 | 288 | 60 | 0 | 1 | 410 | 69 | 68 | 31 | 0 | 0 | 168 | 29 | 304 | 40 | 0 | 0 | 373 | 31 | 73 | 75 | 0 | 0 | 179 | 1130 |
| 5:00 PM | 57 | 302 | 51 | 0 | 2 | 410 | 57 | 65 | 31 | 0 | 0 | 153 | 25 | 325 | 44 | 0 | 0 | 394 | 30 | 79 | 79 | 0 | 0 | 188 | 1145 |
| 5:15 PM | 72 | 295 | 43 | 0 | 2 | 410 | 85 | 62 | 28 | 0 | 1 | 175 | 32 | 297 | 32 | 0 | 2 | 361 | 24 | 82 | 90 | 0 | 0 | 196 | 1142 |
| 5:30 PM | 74 | 278 | 55 | 0 | 0 | 407 | 69 | 59 | 33 | 0 | 1 | 161 | 21 | 328 | 51 | 0 | 0 | 400 | 32 | 67 | 64 | 0 | 0 | 163 | 1131 |
| Total | 265 | 1163 | 209 | 0 | 5 | 1637 | 280 | 254 | 123 | 0 | 2 | 657 | 107 | 1254 | 167 | 0 | 2 | 1528 | 117 | 301 | 308 | 0 | 0 | 726 | 4548 |
| Approach % | 16.2 | 71.0 | 12.8 | 0.0 | - | - | 42.6 | 38.7 | 18.7 | 0.0 | - | - | 7.0 | 82.1 | 10.9 | 0.0 | - | - | 16.1 | 41.5 | 42.4 | 0.0 | - | - | - |
| Total % | 5.8 | 25.6 | 4.6 | 0.0 | - | 36.0 | 6.2 | 5.6 | 2.7 | 0.0 | - | 14.4 | 2.4 | 27.6 | 3.7 | 0.0 | - | 33.6 | 2.6 | 6.6 | 6.8 | 0.0 | - | 16.0 | - |
| PHF | 0.895 | 0.963 | 0.871 | 0.000 | - | 0.998 | 0.824 | 0.934 | 0.932 | 0.000 | - | 0.939 | 0.836 | 0.956 | 0.819 | 0.000 | - | 0.955 | 0.914 | 0.918 | 0.856 | 0.000 | - | 0.926 | 0.993 |
| Lights | 262 | 1137 | 207 | 0 | - | 1606 | 279 | 248 | 122 | 0 | - | 649 | 106 | 1251 | 166 | 0 | - | 1523 | 115 | 296 | 303 | 0 | - | 714 | 4492 |
| % Lights | 98.9 | 97.8 | 99.0 | - | - | 98.1 | 99.6 | 97.6 | 99.2 | - | - | 98.8 | 99.1 | 99.8 | 99.4 | - | - | 99.7 | 98.3 | 98.3 | 98.4 | - | - | 98.3 | 98.8 |
| Other Vehicles | 3 | 26 | 2 | 0 | - | 31 | 1 | 6 | 1 | 0 | - | 8 | 1 | 3 | 1 | 0 | - | 5 | 2 | 5 | 5 | 0 | - | 12 | 56 |
| % Other Vehicles | 1.1 | 2.2 | 1.0 | - | - | 1.9 | 0.4 | 2.4 | 0.8 | - | - | 1.2 | 0.9 | 0.2 | 0.6 | - | - | 0.3 | 1.7 | 1.7 | 1.6 | - | - | 1.7 | 1.2 |
| Bicycles on Crosswalk | - | - | - | - | 1 | - | - | - | - | - | 1 | - | - | - | - | - | 1 | - | - | - | - | - | 0 | - | - |
| % Bicycles on Crosswalk | - | - | - | - | 20.0 | - | - | - | - | - | 50.0 | - | - | - | - | - | 50.0 | - | - | - | - | - | - | - | - |
| Pedestrians | - | - | - | - | 4 | - | - | - | - | - | 1 | - | - | - | - | - | 1 | - | - | - | - | - | 0 | - | - |
| % Pedestrians | - | - | - | - | 80.0 | - | - | - | - | - | 50.0 | - | - | - | - | - | 50.0 | - | - | - | - | - | - | - | - |

Mannik & Smith Group (OH)
1800 Indian Wood Circle

Maumee, Ohio, United States 43537
(419) 891-2222 dhelou@manniksmithgroup.com

Count Name: M-150 (Rochester Road) & W Avon Road
Site Code:
Start Date: 07/31/2019


Turning Movement Peak Hour Data Plot (4:45 PM)

Mannik & Smith Group (OH)
1800 Indian Wood Circle

Maumee, Ohio, United States 43537
(419) 891-2222 dhelou@manniksmithgroup.com

Count Name: Speedway Drive #1 & W Avon Road
Site Code:
Start Date: 07/31/2019


## Turning Movement Data

| Start Time | W Avon Road Westbound | | | | Speedway Drive #1 Northbound | | | | W Avon Road Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Thru | Left | U-Turn | App. Total | Right | Left | U-Turn | App. Total | Right | Thru | U-Turn | App. Total | Int. Total |
| 7:00 AM | 157 | 1 | 0 | 158 | 4 | 0 | 0 | 4 | 4 | 61 | 0 | 65 | 227 |
| 7:15 AM | 176 | 1 | 0 | 177 | 3 | 2 | 0 | 5 | 1 | 65 | 0 | 66 | 248 |
| 7:30 AM | 185 | 1 | 0 | 186 | 2 | 2 | 0 | 4 | 7 | 72 | 0 | 79 | 269 |
| 7:45 AM | 202 | 3 | 0 | 205 | 0 | 0 | 0 | 0 | 4 | 86 | 0 | 90 | 295 |
| Hourly Total | 720 | 6 | 0 | 726 | 9 | 4 | 0 | 13 | 16 | 284 | 0 | 300 | 1039 |
| 8:00 AM | 225 | 0 | 0 | 225 | 6 | 2 | 0 | 8 | 11 | 75 | 0 | 86 | 319 |
| 8:15 AM | 210 | 2 | 0 | 212 | 8 | 1 | 0 | 9 | 3 | 93 | 0 | 96 | 317 |
| 8:30 AM | 208 | 0 | 0 | 208 | 5 | 3 | 0 | 8 | 9 | 100 | 0 | 109 | 325 |
| 8:45 AM | 196 | 1 | 0 | 197 | 1 | 1 | 0 | 2 | 5 | 87 | 0 | 92 | 291 |
| Hourly Total | 839 | 3 | 0 | 842 | 20 | 7 | 0 | 27 | 28 | 355 | 0 | 383 | 1252 |
| *** BREAK *** | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 4:00 PM | 180 | 0 | 0 | 180 | 1 | 1 | 0 | 2 | 5 | 177 | 0 | 182 | 364 |
| 4:15 PM | 174 | 0 | 0 | 174 | 3 | 1 | 0 | 4 | 3 | 174 | 0 | 177 | 355 |
| 4:30 PM | 141 | 0 | 0 | 141 | 1 | 0 | 0 | 1 | 2 | 164 | 0 | 166 | 308 |
| 4:45 PM | 165 | 0 | 0 | 165 | 6 | 0 | 0 | 6 | 3 | 176 | 0 | 179 | 350 |
| Hourly Total | 660 | 0 | 0 | 660 | 11 | 2 | 0 | 13 | 13 | 691 | 0 | 704 | 1377 |
| 5:00 PM | 169 | 0 | 0 | 169 | 3 | 0 | 0 | 3 | 5 | 187 | 0 | 192 | 364 |
| 5:15 PM | 167 | 0 | 0 | 167 | 5 | 0 | 0 | 5 | 10 | 191 | 0 | 201 | 373 |
| 5:30 PM | 185 | 1 | 0 | 186 | 5 | 0 | 0 | 5 | 5 | 160 | 0 | 165 | 356 |
| 5:45 PM | 183 | 0 | 0 | 183 | 2 | 0 | 0 | 2 | 6 | 145 | 0 | 151 | 336 |
| Hourly Total | 704 | 1 | 0 | 705 | 15 | 0 | 0 | 15 | 26 | 683 | 0 | 709 | 1429 |
| Grand Total | 2923 | 10 | 0 | 2933 | 55 | 13 | 0 | 68 | 83 | 2013 | 0 | 2096 | 5097 |
| Approach % | 99.7 | 0.3 | 0.0 | - | 80.9 | 19.1 | 0.0 | - | 4.0 | 96.0 | 0.0 | - | - |
| Total % | 57.3 | 0.2 | 0.0 | 57.5 | 1.1 | 0.3 | 0.0 | 1.3 | 1.6 | 39.5 | 0.0 | 41.1 | - |
| Lights | 2855 | 9 | 0 | 2864 | 54 | 10 | 0 | 64 | 80 | 1975 | 0 | 2055 | 4983 |
| % Lights | 97.7 | 90.0 | - | 97.6 | 98.2 | 76.9 | - | 94.1 | 96.4 | 98.1 | - | 98.0 | 97.8 |
| Other Vehicles | 68 | 1 | 0 | 69 | 1 | 3 | 0 | 4 | 3 | 38 | 0 | 41 | 114 |
| % Other Vehicles | 2.3 | 10.0 | - | 2.4 | 1.8 | 23.1 | - | 5.9 | 3.6 | 1.9 | - | 2.0 | 2.2 |

Mannik & Smith Group (OH)
1800 Indian Wood Circle

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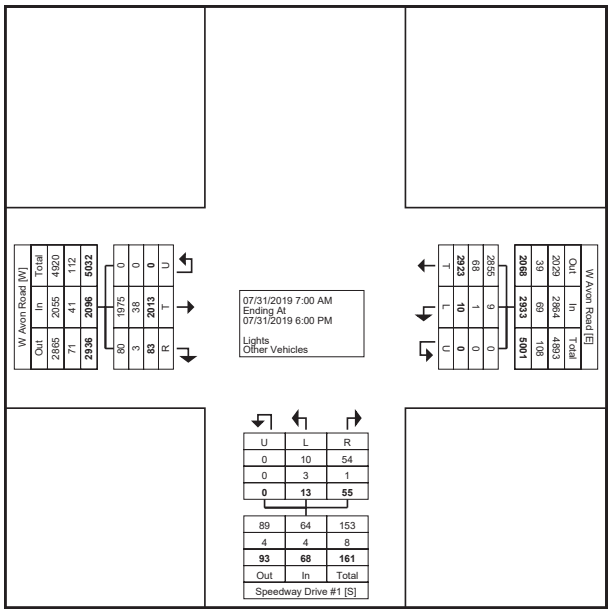
(419) 891-2222 dhelou@manniksmithgroup.com

Count Name: Speedway Drive #1 & W Avon Road
Site Code:
Start Date: 07/31/2019


Turning Movement Data Plot

Mannik & Smith Group (OH)
1800 Indian Wood Circle

Maumee, Ohio, United States 43537
(419) 891-2222 dhelou@manniksmithgroup.com

Count Name: Speedway Drive #1 & W Avon Road
Site Code:
Start Date: 07/31/2019


## Turning Movement Peak Hour Data (7:45 AM)

| Start Time | W Avon Road Westbound | | | | Speedway Drive #1 Northbound | | | | W Avon Road Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Thru | Left | U-Turn | App. Total | Right | Left | U-Turn | App. Total | Right | Thru | U-Turn | App. Total | Int. Total |
| 7:45 AM | 202 | 3 | 0 | 205 | 0 | 0 | 0 | 0 | 4 | 86 | 0 | 90 | 295 |
| 8:00 AM | 225 | 0 | 0 | 225 | 6 | 2 | 0 | 8 | 11 | 75 | 0 | 86 | 319 |
| 8:15 AM | 210 | 2 | 0 | 212 | 8 | 1 | 0 | 9 | 3 | 93 | 0 | 96 | 317 |
| 8:30 AM | 208 | 0 | 0 | 208 | 5 | 3 | 0 | 8 | 9 | 100 | 0 | 109 | 325 |
| Total | 845 | 5 | 0 | 850 | 19 | 6 | 0 | 25 | 27 | 354 | 0 | 381 | 1256 |
| Approach % | 99.4 | 0.6 | 0.0 | - | 76.0 | 24.0 | 0.0 | - | 7.1 | 92.9 | 0.0 | - | - |
| Total % | 67.3 | 0.4 | 0.0 | 67.7 | 1.5 | 0.5 | 0.0 | 2.0 | 2.1 | 28.2 | 0.0 | 30.3 | - |
| PHF | 0.939 | 0.417 | 0.000 | 0.944 | 0.594 | 0.500 | 0.000 | 0.694 | 0.614 | 0.885 | 0.000 | 0.874 | 0.966 |
| Lights | 819 | 5 | 0 | 824 | 18 | 4 | 0 | 22 | 26 | 346 | 0 | 372 | 1218 |
| % Lights | 96.9 | 100.0 | - | 96.9 | 94.7 | 66.7 | - | 88.0 | 96.3 | 97.7 | - | 97.6 | 97.0 |
| Other Vehicles | 26 | 0 | 0 | 26 | 1 | 2 | 0 | 3 | 1 | 8 | 0 | 9 | 38 |
| % Other Vehicles | 3.1 | 0.0 | - | 3.1 | 5.3 | 33.3 | - | 12.0 | 3.7 | 2.3 | - | 2.4 | 3.0 |

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1800 Indian Wood Circle

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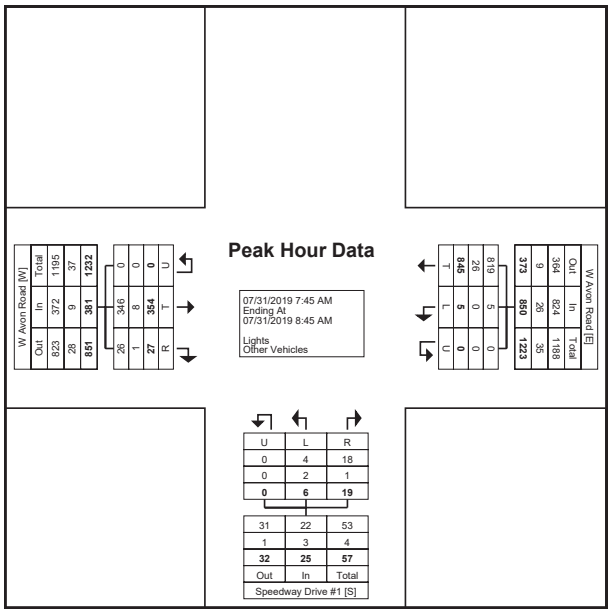
Count Name: Speedway Drive #1 & W Avon Road
Site Code:
Start Date: 07/31/2019


Turning Movement Peak Hour Data Plot (7:45 AM)

Mannik & Smith Group (OH)
1800 Indian Wood Circle

Maumee, Ohio, United States 43537
(419) 891-2222 dhelou@manniksmithgroup.com

Count Name: Speedway Drive #1 & W Avon Road
Site Code:
Start Date: 07/31/2019


## Turning Movement Peak Hour Data (4:45 PM)

| Start Time | W Avon Road Westbound | | | | Speedway Drive #1 Northbound | | | | W Avon Road Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Thru | Left | U-Turn | App. Total | Right | Left | U-Turn | App. Total | Right | Thru | U-Turn | App. Total | Int. Total |
| 4:45 PM | 165 | 0 | 0 | 165 | 6 | 0 | 0 | 6 | 3 | 176 | 0 | 179 | 350 |
| 5:00 PM | 169 | 0 | 0 | 169 | 3 | 0 | 0 | 3 | 5 | 187 | 0 | 192 | 364 |
| 5:15 PM | 167 | 0 | 0 | 167 | 5 | 0 | 0 | 5 | 10 | 191 | 0 | 201 | 373 |
| 5:30 PM | 185 | 1 | 0 | 186 | 5 | 0 | 0 | 5 | 5 | 160 | 0 | 165 | 356 |
| Total | 686 | 1 | 0 | 687 | 19 | 0 | 0 | 19 | 23 | 714 | 0 | 737 | 1443 |
| Approach % | 99.9 | 0.1 | 0.0 | - | 100.0 | 0.0 | 0.0 | - | 3.1 | 96.9 | 0.0 | - | - |
| Total % | 47.5 | 0.1 | 0.0 | 47.6 | 1.3 | 0.0 | 0.0 | 1.3 | 1.6 | 49.5 | 0.0 | 51.1 | - |
| PHF | 0.927 | 0.250 | 0.000 | 0.923 | 0.792 | 0.000 | 0.000 | 0.792 | 0.575 | 0.935 | 0.000 | 0.917 | 0.967 |
| Lights | 675 | 1 | 0 | 676 | 19 | 0 | 0 | 19 | 22 | 704 | 0 | 726 | 1421 |
| % Lights | 98.4 | 100.0 | - | 98.4 | 100.0 | - | - | 100.0 | 95.7 | 98.6 | - | 98.5 | 98.5 |
| Other Vehicles | 11 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 1 | 10 | 0 | 11 | 22 |
| % Other Vehicles | 1.6 | 0.0 | - | 1.6 | 0.0 | - | - | 0.0 | 4.3 | 1.4 | - | 1.5 | 1.5 |

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1800 Indian Wood Circle

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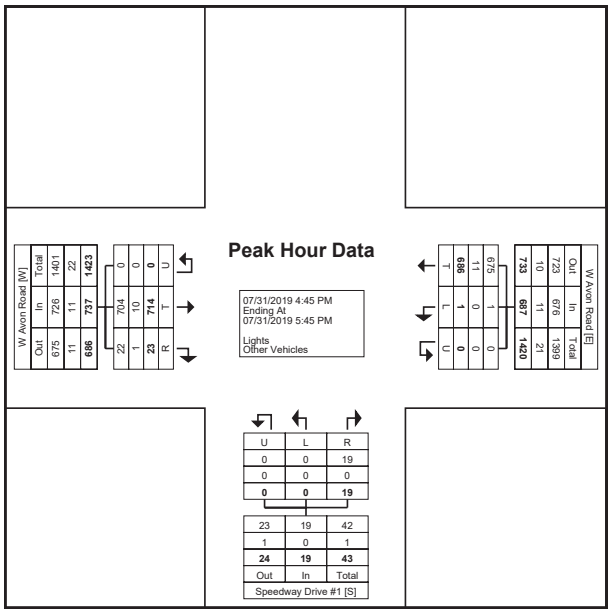
(419) 891-2222 dhelou@manniksmithgroup.com

Count Name: Speedway Drive #1 & W Avon Road
Site Code:
Start Date: 07/31/2019


Turning Movement Peak Hour Data Plot (4:45 PM)

Mannik & Smith Group (OH)
1800 Indian Wood Circle

Maumee, Ohio, United States 43537
(419) 891-2222 dhelou@manniksmithgroup.com

Count Name: Speedway Drive #2 & W Avon Road
Site Code:
Start Date: 07/31/2019
Page No: 1

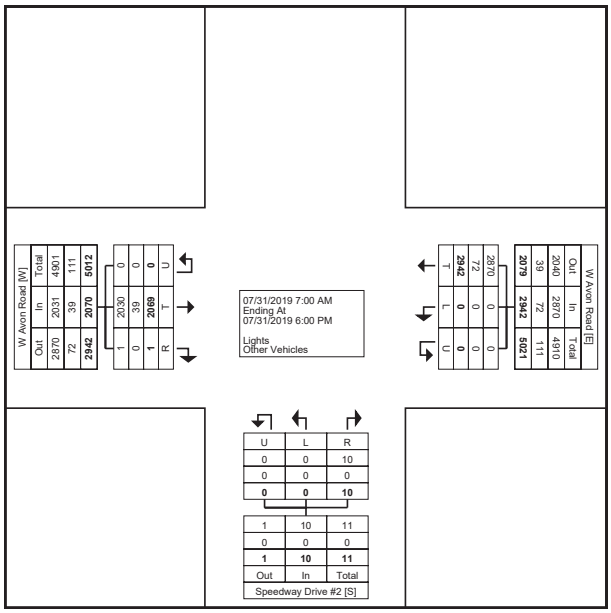
## Turning Movement Data

| Start Time | W Avon Road Westbound | | | | Speedway Drive #2 Northbound | | | | W Avon Road Eastbound | | | | Int. Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Thru | Left | U-Turn | App. Total | Right | Left | U-Turn | App. Total | Right | Thru | U-Turn | App. Total | |
| 7:00 AM | 166 | 0 | 0 | 166 | 0 | 0 | 0 | 0 | 0 | 64 | 0 | 64 | 230 |
| 7:15 AM | 179 | 0 | 0 | 179 | 0 | 0 | 0 | 0 | 0 | 65 | 0 | 65 | 244 |
| 7:30 AM | 188 | 0 | 0 | 188 | 0 | 0 | 0 | 0 | 0 | 78 | 0 | 78 | 266 |
| 7:45 AM | 204 | 0 | 0 | 204 | 2 | 0 | 0 | 2 | 0 | 84 | 0 | 84 | 290 |
| Hourly Total | 737 | 0 | 0 | 737 | 2 | 0 | 0 | 2 | 0 | 291 | 0 | 291 | 1030 |
| 8:00 AM | 226 | 0 | 0 | 226 | 0 | 0 | 0 | 0 | 1 | 83 | 0 | 84 | 310 |
| 8:15 AM | 213 | 0 | 0 | 213 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 100 | 313 |
| 8:30 AM | 209 | 0 | 0 | 209 | 1 | 0 | 0 | 1 | 0 | 105 | 0 | 105 | 315 |
| 8:45 AM | 198 | 0 | 0 | 198 | 0 | 0 | 0 | 0 | 0 | 85 | 0 | 85 | 283 |
| Hourly Total | 846 | 0 | 0 | 846 | 1 | 0 | 0 | 1 | 1 | 373 | 0 | 374 | 1221 |
| *** BREAK *** | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 4:00 PM | 182 | 0 | 0 | 182 | 1 | 0 | 0 | 1 | 0 | 186 | 0 | 186 | 369 |
| 4:15 PM | 173 | 0 | 0 | 173 | 0 | 0 | 0 | 0 | 0 | 176 | 0 | 176 | 349 |
| 4:30 PM | 141 | 0 | 0 | 141 | 0 | 0 | 0 | 0 | 0 | 167 | 0 | 167 | 308 |
| 4:45 PM | 169 | 0 | 0 | 169 | 2 | 0 | 0 | 2 | 0 | 177 | 0 | 177 | 348 |
| Hourly Total | 665 | 0 | 0 | 665 | 3 | 0 | 0 | 3 | 0 | 706 | 0 | 706 | 1374 |
| 5:00 PM | 163 | 0 | 0 | 163 | 0 | 0 | 0 | 0 | 0 | 187 | 0 | 187 | 350 |
| 5:15 PM | 168 | 0 | 0 | 168 | 0 | 0 | 0 | 0 | 0 | 197 | 0 | 197 | 365 |
| 5:30 PM | 181 | 0 | 0 | 181 | 2 | 0 | 0 | 2 | 0 | 161 | 0 | 161 | 344 |
| 5:45 PM | 182 | 0 | 0 | 182 | 2 | 0 | 0 | 2 | 0 | 154 | 0 | 154 | 338 |
| Hourly Total | 694 | 0 | 0 | 694 | 4 | 0 | 0 | 4 | 0 | 699 | 0 | 699 | 1397 |
| Grand Total | 2942 | 0 | 0 | 2942 | 10 | 0 | 0 | 10 | 1 | 2069 | 0 | 2070 | 5022 |
| Approach % | 100.0 | 0.0 | 0.0 | - | 100.0 | 0.0 | 0.0 | - | 0.0 | 100.0 | 0.0 | - | - |
| Total % | 58.6 | 0.0 | 0.0 | 58.6 | 0.2 | 0.0 | 0.0 | 0.2 | 0.0 | 41.2 | 0.0 | 41.2 | - |
| Lights | 2870 | 0 | 0 | 2870 | 10 | 0 | 0 | 10 | 1 | 2030 | 0 | 2031 | 4911 |
| % Lights | 97.6 | - | - | 97.6 | 100.0 | - | - | 100.0 | 100.0 | 98.1 | - | 98.1 | 97.8 |
| Other Vehicles | 72 | 0 | 0 | 72 | 0 | 0 | 0 | 0 | 0 | 39 | 0 | 39 | 111 |
| % Other Vehicles | 2.4 | - | - | 2.4 | 0.0 | - | - | 0.0 | 0.0 | 1.9 | - | 1.9 | 2.2 |

Mannik & Smith Group (OH)
1800 Indian Wood Circle

Maumee, Ohio, United States 43537
(419) 891-2222 dhelou@manniksmithgroup.com

Count Name: Speedway Drive #2 & W Avon Road
Site Code:
Start Date: 07/31/2019
Page No: 2




Turning Movement Data Plot

Mannik & Smith Group (OH)
1800 Indian Wood Circle

Maumee, Ohio, United States 43537
(419) 891-2222 dhelou@manniksmithgroup.com

Count Name: Speedway Drive #2 & W Avon Road
Site Code:
Start Date: 07/31/2019


## Turning Movement Peak Hour Data (7:45 AM)

| Start Time | W Avon Road Westbound | | | | Speedway Drive #2 Northbound | | | | W Avon Road Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Thru | Left | U-Turn | App. Total | Right | Left | U-Turn | App. Total | Right | Thru | U-Turn | App. Total | Int. Total |
| 7:45 AM | 204 | 0 | 0 | 204 | 2 | 0 | 0 | 2 | 0 | 84 | 0 | 84 | 290 |
| 8:00 AM | 226 | 0 | 0 | 226 | 0 | 0 | 0 | 0 | 1 | 83 | 0 | 84 | 310 |
| 8:15 AM | 213 | 0 | 0 | 213 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 100 | 313 |
| 8:30 AM | 209 | 0 | 0 | 209 | 1 | 0 | 0 | 1 | 0 | 105 | 0 | 105 | 315 |
| Total | 852 | 0 | 0 | 852 | 3 | 0 | 0 | 3 | 1 | 372 | 0 | 373 | 1228 |
| Approach % | 100.0 | 0.0 | 0.0 | - | 100.0 | 0.0 | 0.0 | - | 0.3 | 99.7 | 0.0 | - | - |
| Total % | 69.4 | 0.0 | 0.0 | 69.4 | 0.2 | 0.0 | 0.0 | 0.2 | 0.1 | 30.3 | 0.0 | 30.4 | - |
| PHF | 0.942 | 0.000 | 0.000 | 0.942 | 0.375 | 0.000 | 0.000 | 0.375 | 0.250 | 0.886 | 0.000 | 0.888 | 0.975 |
| Lights | 825 | 0 | 0 | 825 | 3 | 0 | 0 | 3 | 1 | 363 | 0 | 364 | 1192 |
| % Lights | 96.8 | - | - | 96.8 | 100.0 | - | - | 100.0 | 100.0 | 97.6 | - | 97.6 | 97.1 |
| Other Vehicles | 27 | 0 | 0 | 27 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 9 | 36 |
| % Other Vehicles | 3.2 | - | - | 3.2 | 0.0 | - | - | 0.0 | 0.0 | 2.4 | - | 2.4 | 2.9 |

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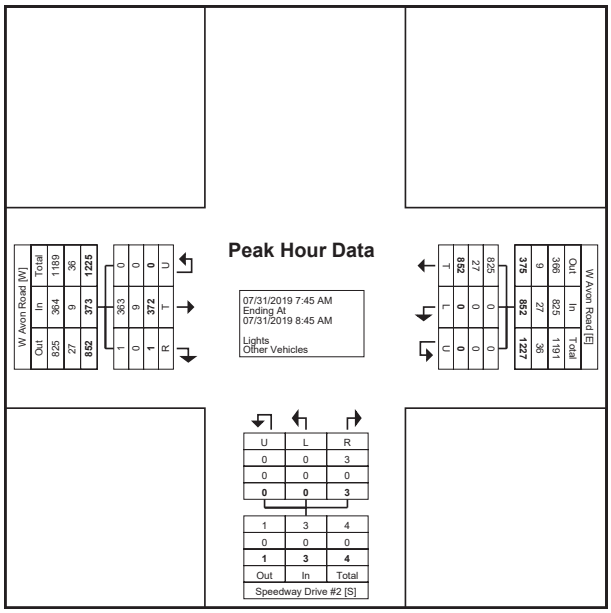
Count Name: Speedway Drive #2 & W Avon Road
Site Code:
Start Date: 07/31/2019


Turning Movement Peak Hour Data Plot (7:45 AM)

Mannik & Smith Group (OH)
1800 Indian Wood Circle

Maumee, Ohio, United States 43537
(419) 891-2222 dhelou@manniksmithgroup.com

Count Name: Speedway Drive #2 & W Avon Road
Site Code:
Start Date: 07/31/2019


## Turning Movement Peak Hour Data (4:45 PM)

| Start Time | W Avon Road Westbound | | | | Speedway Drive #2 Northbound | | | | W Avon Road Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Thru | Left | U-Turn | App. Total | Right | Left | U-Turn | App. Total | Right | Thru | U-Turn | App. Total | Int. Total |
| 4:45 PM | 169 | 0 | 0 | 169 | 2 | 0 | 0 | 2 | 0 | 177 | 0 | 177 | 348 |
| 5:00 PM | 163 | 0 | 0 | 163 | 0 | 0 | 0 | 0 | 0 | 187 | 0 | 187 | 350 |
| 5:15 PM | 168 | 0 | 0 | 168 | 0 | 0 | 0 | 0 | 0 | 197 | 0 | 197 | 365 |
| 5:30 PM | 181 | 0 | 0 | 181 | 2 | 0 | 0 | 2 | 0 | 161 | 0 | 161 | 344 |
| Total | 681 | 0 | 0 | 681 | 4 | 0 | 0 | 4 | 0 | 722 | 0 | 722 | 1407 |
| Approach % | 100.0 | 0.0 | 0.0 | - | 100.0 | 0.0 | 0.0 | - | 0.0 | 100.0 | 0.0 | - | - |
| Total % | 48.4 | 0.0 | 0.0 | 48.4 | 0.3 | 0.0 | 0.0 | 0.3 | 0.0 | 51.3 | 0.0 | 51.3 | - |
| PHF | 0.941 | 0.000 | 0.000 | 0.941 | 0.500 | 0.000 | 0.000 | 0.500 | 0.000 | 0.916 | 0.000 | 0.916 | 0.964 |
| Lights | 671 | 0 | 0 | 671 | 4 | 0 | 0 | 4 | 0 | 712 | 0 | 712 | 1387 |
| % Lights | 98.5 | - | - | 98.5 | 100.0 | - | - | 100.0 | - | 98.6 | - | 98.6 | 98.6 |
| Other Vehicles | 10 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 10 | 20 |
| % Other Vehicles | 1.5 | - | - | 1.5 | 0.0 | - | - | 0.0 | - | 1.4 | - | 1.4 | 1.4 |

Mannik & Smith Group (OH)
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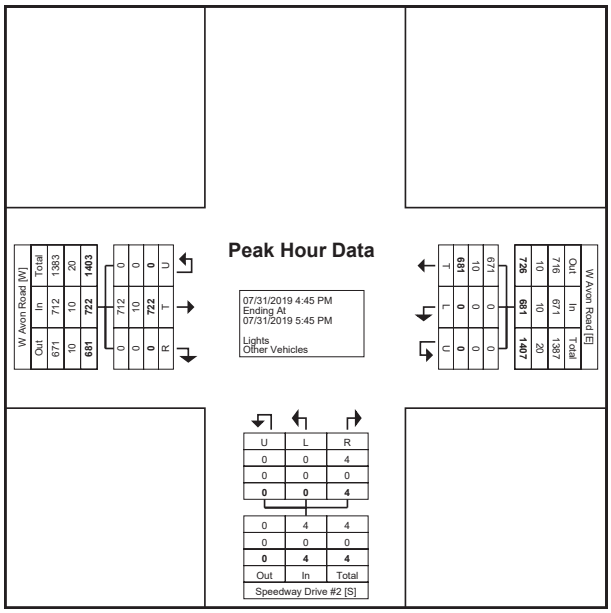
Count Name: Speedway Drive #2 & W Avon Road
Site Code:
Start Date: 07/31/2019


Turning Movement Peak Hour Data Plot (4:45 PM)

Mannik & Smith Group (OH)
1800 Indian Wood Circle

Maumee, Ohio, United States 43537
(419) 891-2222 dhelou@manniksmithgroup.com

Count Name: Speedway Drive #3 & M-150 (Rochester Road)
Site Code:
Start Date: 07/31/2019

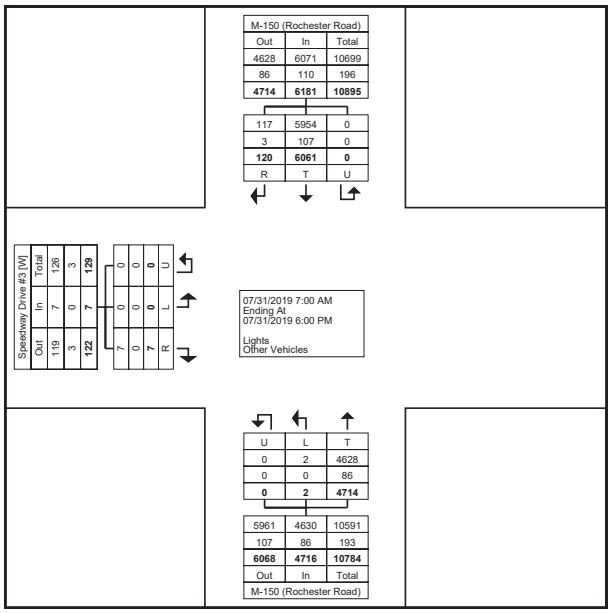

## Turning Movement Data

| Start Time | M-150 (Rochester Road) Southbound | | | | M-150 (Rochester Road) Northbound | | | | Speedway Drive #3 Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Right | Thru | U-Turn | App. Total | Thru | Left | U-Turn | App. Total | Right | Left | U-Turn | App. Total | Int. Total |
| 7:00 AM | 7 | 412 | 0 | 419 | 147 | 0 | 0 | 147 | 0 | 0 | 0 | 0 | 566 |
| 7:15 AM | 6 | 456 | 0 | 462 | 171 | 0 | 0 | 171 | 0 | 0 | 0 | 0 | 633 |
| 7:30 AM | 4 | 430 | 0 | 434 | 158 | 0 | 0 | 158 | 0 | 0 | 0 | 0 | 592 |
| 7:45 AM | 11 | 473 | 0 | 484 | 233 | 0 | 0 | 233 | 2 | 0 | 0 | 2 | 719 |
| Hourly Total | 28 | 1771 | 0 | 1799 | 709 | 0 | 0 | 709 | 2 | 0 | 0 | 2 | 2510 |
| 8:00 AM | 19 | 385 | 0 | 404 | 174 | 1 | 0 | 175 | 3 | 0 | 0 | 3 | 582 |
| 8:15 AM | 7 | 408 | 0 | 415 | 228 | 0 | 0 | 228 | 0 | 0 | 0 | 0 | 643 |
| 8:30 AM | 5 | 399 | 0 | 404 | 241 | 0 | 0 | 241 | 0 | 0 | 0 | 0 | 645 |
| 8:45 AM | 7 | 354 | 0 | 361 | 277 | 0 | 0 | 277 | 0 | 0 | 0 | 0 | 638 |
| Hourly Total | 38 | 1546 | 0 | 1584 | 920 | 1 | 0 | 921 | 3 | 0 | 0 | 3 | 2508 |
| *** BREAK *** | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 4:00 PM | 6 | 331 | 0 | 337 | 360 | 0 | 0 | 360 | 0 | 0 | 0 | 0 | 697 |
| 4:15 PM | 6 | 342 | 0 | 348 | 401 | 0 | 0 | 401 | 0 | 0 | 0 | 0 | 749 |
| 4:30 PM | 10 | 381 | 0 | 391 | 396 | 0 | 0 | 396 | 1 | 0 | 0 | 1 | 788 |
| 4:45 PM | 8 | 343 | 0 | 351 | 374 | 0 | 0 | 374 | 0 | 0 | 0 | 0 | 725 |
| Hourly Total | 30 | 1397 | 0 | 1427 | 1531 | 0 | 0 | 1531 | 1 | 0 | 0 | 1 | 2959 |
| 5:00 PM | 4 | 348 | 0 | 352 | 401 | 0 | 0 | 401 | 0 | 0 | 0 | 0 | 753 |
| 5:15 PM | 6 | 348 | 0 | 354 | 359 | 0 | 0 | 359 | 1 | 0 | 0 | 1 | 714 |
| 5:30 PM | 7 | 334 | 0 | 341 | 401 | 1 | 0 | 402 | 0 | 0 | 0 | 0 | 743 |
| 5:45 PM | 7 | 317 | 0 | 324 | 393 | 0 | 0 | 393 | 0 | 0 | 0 | 0 | 717 |
| Hourly Total | 24 | 1347 | 0 | 1371 | 1554 | 1 | 0 | 1555 | 1 | 0 | 0 | 1 | 2927 |
| Grand Total | 120 | 6061 | 0 | 6181 | 4714 | 2 | 0 | 4716 | 7 | 0 | 0 | 7 | 10904 |
| Approach % | 1.9 | 98.1 | 0.0 | - | 100.0 | 0.0 | 0.0 | - | 100.0 | 0.0 | 0.0 | - | - |
| Total % | 1.1 | 55.6 | 0.0 | 56.7 | 43.2 | 0.0 | 0.0 | 43.3 | 0.1 | 0.0 | 0.0 | 0.1 | - |
| Lights | 117 | 5954 | 0 | 6071 | 4628 | 2 | 0 | 4630 | 7 | 0 | 0 | 7 | 10708 |
| % Lights | 97.5 | 98.2 | - | 98.2 | 98.2 | 100.0 | - | 98.2 | 100.0 | - | - | 100.0 | 98.2 |
| Other Vehicles | 3 | 107 | 0 | 110 | 86 | 0 | 0 | 86 | 0 | 0 | 0 | 0 | 196 |
| % Other Vehicles | 2.5 | 1.8 | - | 1.8 | 1.8 | 0.0 | - | 1.8 | 0.0 | - | - | 0.0 | 1.8 |

Mannik & Smith Group (OH)
1800 Indian Wood Circle

Maumee, Ohio, United States 43537
(419) 891-2222 dhelou@manniksmithgroup.com

Count Name: Speedway Drive #3 & M-150 (Rochester Road)
Site Code:
Start Date: 07/31/2019


Turning Movement Data Plot

Mannik & Smith Group (OH)
1800 Indian Wood Circle

Maumee, Ohio, United States 43537
(419) 891-2222 dhelou@manniksmithgroup.com

Count Name: Speedway Drive #3 & M-150 (Rochester Road)
Site Code:
Start Date: 07/31/2019


## Turning Movement Peak Hour Data (7:45 AM)

| Start Time | M-150 (Rochester Road) Southbound | | | | M-150 (Rochester Road) Northbound | | | | Speedway Drive #3 Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Right | Thru | U-Turn | App. Total | Thru | Left | U-Turn | App. Total | Right | Left | U-Turn | App. Total | Int. Total |
| 7:45 AM | 11 | 473 | 0 | 484 | 233 | 0 | 0 | 233 | 2 | 0 | 0 | 2 | 719 |
| 8:00 AM | 19 | 385 | 0 | 404 | 174 | 1 | 0 | 175 | 3 | 0 | 0 | 3 | 582 |
| 8:15 AM | 7 | 408 | 0 | 415 | 228 | 0 | 0 | 228 | 0 | 0 | 0 | 0 | 643 |
| 8:30 AM | 5 | 399 | 0 | 404 | 241 | 0 | 0 | 241 | 0 | 0 | 0 | 0 | 645 |
| Total | 42 | 1665 | 0 | 1707 | 876 | 1 | 0 | 877 | 5 | 0 | 0 | 5 | 2589 |
| Approach % | 2.5 | 97.5 | 0.0 | - | 99.9 | 0.1 | 0.0 | - | 100.0 | 0.0 | 0.0 | - | - |
| Total % | 1.6 | 64.3 | 0.0 | 65.9 | 33.8 | 0.0 | 0.0 | 33.9 | 0.2 | 0.0 | 0.0 | 0.2 | - |
| PHF | 0.553 | 0.880 | 0.000 | 0.882 | 0.909 | 0.250 | 0.000 | 0.910 | 0.417 | 0.000 | 0.000 | 0.417 | 0.900 |
| Lights | 41 | 1632 | 0 | 1673 | 843 | 1 | 0 | 844 | 5 | 0 | 0 | 5 | 2522 |
| % Lights | 97.6 | 98.0 | - | 98.0 | 96.2 | 100.0 | - | 96.2 | 100.0 | - | - | 100.0 | 97.4 |
| Other Vehicles | 1 | 33 | 0 | 34 | 33 | 0 | 0 | 33 | 0 | 0 | 0 | 0 | 67 |
| % Other Vehicles | 2.4 | 2.0 | - | 2.0 | 3.8 | 0.0 | - | 3.8 | 0.0 | - | - | 0.0 | 2.6 |

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1800 Indian Wood Circle

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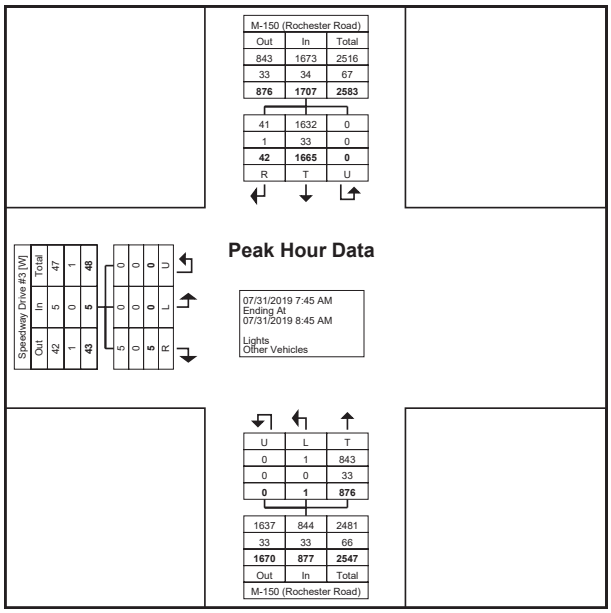
Count Name: Speedway Drive #3 & M-150 (Rochester Road)
Site Code:
Start Date: 07/31/2019


Turning Movement Peak Hour Data Plot (7:45 AM)

Mannik & Smith Group (OH)
1800 Indian Wood Circle

Maumee, Ohio, United States 43537
(419) 891-2222 dhelou@manniksmithgroup.com



## Turning Movement Peak Hour Data (4:15 PM)

| Start Time | M-150 (Rochester Road) Southbound | | | | M-150 (Rochester Road) Northbound | | | | Speedway Drive #3 Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Right | Thru | U-Turn | App. Total | Thru | Left | U-Turn | App. Total | Right | Left | U-Turn | App. Total | Int. Total |
| 4:15 PM | 6 | 342 | 0 | 348 | 401 | 0 | 0 | 401 | 0 | 0 | 0 | 0 | 749 |
| 4:30 PM | 10 | 381 | 0 | 391 | 396 | 0 | 0 | 396 | 1 | 0 | 0 | 1 | 788 |
| 4:45 PM | 8 | 343 | 0 | 351 | 374 | 0 | 0 | 374 | 0 | 0 | 0 | 0 | 725 |
| 5:00 PM | 4 | 348 | 0 | 352 | 401 | 0 | 0 | 401 | 0 | 0 | 0 | 0 | 753 |
| Total | 28 | 1414 | 0 | 1442 | 1572 | 0 | 0 | 1572 | 1 | 0 | 0 | 1 | 3015 |
| Approach % | 1.9 | 98.1 | 0.0 | - | 100.0 | 0.0 | 0.0 | - | 100.0 | 0.0 | 0.0 | - | - |
| Total % | 0.9 | 46.9 | 0.0 | 47.8 | 52.1 | 0.0 | 0.0 | 52.1 | 0.0 | 0.0 | 0.0 | 0.0 | - |
| PHF | 0.700 | 0.928 | 0.000 | 0.922 | 0.980 | 0.000 | 0.000 | 0.980 | 0.250 | 0.000 | 0.000 | 0.250 | 0.957 |
| Lights | 26 | 1386 | 0 | 1412 | 1566 | 0 | 0 | 1566 | 1 | 0 | 0 | 1 | 2979 |
| % Lights | 92.9 | 98.0 | - | 97.9 | 99.6 | - | - | 99.6 | 100.0 | - | - | 100.0 | 98.8 |
| Other Vehicles | 2 | 28 | 0 | 30 | 6 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 36 |
| % Other Vehicles | 7.1 | 2.0 | - | 2.1 | 0.4 | - | - | 0.4 | 0.0 | - | - | 0.0 | 1.2 |

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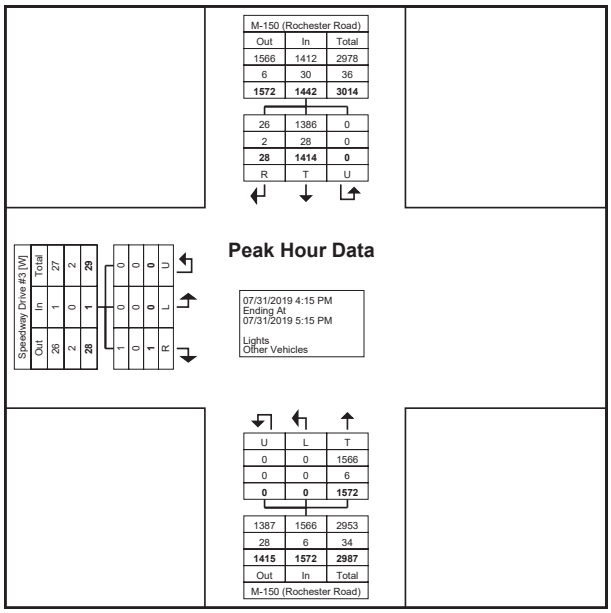


Turning Movement Peak Hour Data Plot (4:15 PM)

Mannik & Smith Group (OH)
1800 Indian Wood Circle

Maumee, Ohio, United States 43537
(419) 891-2222 dhelou@manniksmithgroup.com

Count Name: Speedway Drive #4 & M-150 (Rochester Road)
Site Code:
Start Date: 07/31/2019


## Turning Movement Data

| Start Time | M-150 (Rochester Road) Southbound | | | | M-150 (Rochester Road) Northbound | | | | Speedway Drive #4 Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Right | Thru | U-Turn | App. Total | Thru | Left | U-Turn | App. Total | Right | Left | U-Turn | App. Total | Int. Total |
| 7:00 AM | 0 | 423 | 0 | 423 | 141 | 3 | 0 | 144 | 8 | 1 | 0 | 9 | 576 |
| 7:15 AM | 0 | 458 | 0 | 458 | 163 | 5 | 0 | 168 | 6 | 1 | 0 | 7 | 633 |
| 7:30 AM | 0 | 433 | 0 | 433 | 159 | 2 | 0 | 161 | 9 | 0 | 0 | 9 | 603 |
| 7:45 AM | 0 | 479 | 0 | 479 | 230 | 1 | 0 | 231 | 12 | 0 | 0 | 12 | 722 |
| Hourly Total | 0 | 1793 | 0 | 1793 | 693 | 11 | 0 | 704 | 35 | 2 | 0 | 37 | 2534 |
| 8:00 AM | 0 | 390 | 0 | 390 | 189 | 3 | 0 | 192 | 14 | 1 | 0 | 15 | 597 |
| 8:15 AM | 0 | 411 | 0 | 411 | 228 | 5 | 0 | 233 | 9 | 0 | 0 | 9 | 653 |
| 8:30 AM | 0 | 396 | 0 | 396 | 250 | 1 | 0 | 251 | 11 | 0 | 0 | 11 | 658 |
| 8:45 AM | 0 | 348 | 0 | 348 | 287 | 4 | 0 | 291 | 6 | 0 | 0 | 6 | 645 |
| Hourly Total | 0 | 1545 | 0 | 1545 | 954 | 13 | 0 | 967 | 40 | 1 | 0 | 41 | 2553 |
| *** BREAK *** | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 4:00 PM | 0 | 335 | 0 | 335 | 372 | 2 | 0 | 374 | 9 | 0 | 0 | 9 | 718 |
| 4:15 PM | 0 | 345 | 0 | 345 | 397 | 2 | 0 | 399 | 6 | 0 | 0 | 6 | 750 |
| 4:30 PM | 1 | 387 | 0 | 388 | 401 | 2 | 0 | 403 | 11 | 0 | 0 | 11 | 802 |
| 4:45 PM | 0 | 344 | 0 | 344 | 362 | 1 | 0 | 363 | 10 | 1 | 0 | 11 | 718 |
| Hourly Total | 1 | 1411 | 0 | 1412 | 1532 | 7 | 0 | 1539 | 36 | 1 | 0 | 37 | 2988 |
| 5:00 PM | 0 | 356 | 0 | 356 | 387 | 2 | 0 | 389 | 9 | 0 | 0 | 9 | 754 |
| 5:15 PM | 0 | 358 | 0 | 358 | 365 | 2 | 0 | 367 | 4 | 1 | 0 | 5 | 730 |
| 5:30 PM | 0 | 337 | 0 | 337 | 394 | 1 | 0 | 395 | 12 | 0 | 0 | 12 | 744 |
| 5:45 PM | 0 | 339 | 0 | 339 | 404 | 2 | 0 | 406 | 11 | 1 | 0 | 12 | 757 |
| Hourly Total | 0 | 1390 | 0 | 1390 | 1550 | 7 | 0 | 1557 | 36 | 2 | 0 | 38 | 2985 |
| Grand Total | 1 | 6139 | 0 | 6140 | 4729 | 38 | 0 | 4767 | 147 | 6 | 0 | 153 | 11060 |
| Approach % | 0.0 | 100.0 | 0.0 | - | 99.2 | 0.8 | 0.0 | - | 96.1 | 3.9 | 0.0 | - | - |
| Total % | 0.0 | 55.5 | 0.0 | 55.5 | 42.8 | 0.3 | 0.0 | 43.1 | 1.3 | 0.1 | 0.0 | 1.4 | - |
| Lights | 1 | 6039 | 0 | 6040 | 4648 | 37 | 0 | 4685 | 143 | 6 | 0 | 149 | 10874 |
| % Lights | 100.0 | 98.4 | - | 98.4 | 98.3 | 97.4 | - | 98.3 | 97.3 | 100.0 | - | 97.4 | 98.3 |
| Other Vehicles | 0 | 100 | 0 | 100 | 81 | 1 | 0 | 82 | 4 | 0 | 0 | 4 | 186 |
| % Other Vehicles | 0.0 | 1.6 | - | 1.6 | 1.7 | 2.6 | - | 1.7 | 2.7 | 0.0 | - | 2.6 | 1.7 |

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1800 Indian Wood Circle

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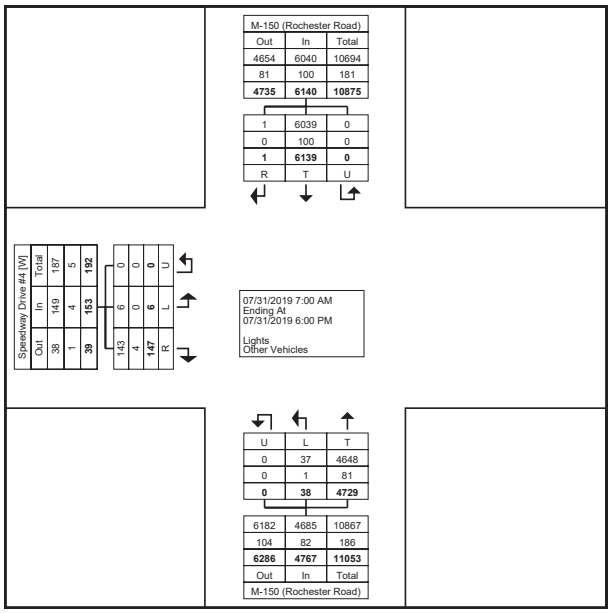
(419) 891-2222 dhelou@manniksmithgroup.com

Count Name: Speedway Drive #4 & M-150 (Rochester Road)
Site Code:
Start Date: 07/31/2019


Turning Movement Data Plot

Mannik & Smith Group (OH)
1800 Indian Wood Circle

Maumee, Ohio, United States 43537
(419) 891-2222 dhelou@manniksmithgroup.com

Count Name: Speedway Drive #4 & M-150 (Rochester Road)
Site Code:
Start Date: 07/31/2019


## Turning Movement Peak Hour Data (7:45 AM)

| Start Time | M-150 (Rochester Road) Southbound | | | | M-150 (Rochester Road) Northbound | | | | Speedway Drive #4 Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Right | Thru | U-Turn | App. Total | Thru | Left | U-Turn | App. Total | Right | Left | U-Turn | App. Total | Int. Total |
| 7:45 AM | 0 | 479 | 0 | 479 | 230 | 1 | 0 | 231 | 12 | 0 | 0 | 12 | 722 |
| 8:00 AM | 0 | 390 | 0 | 390 | 189 | 3 | 0 | 192 | 14 | 1 | 0 | 15 | 597 |
| 8:15 AM | 0 | 411 | 0 | 411 | 228 | 5 | 0 | 233 | 9 | 0 | 0 | 9 | 653 |
| 8:30 AM | 0 | 396 | 0 | 396 | 250 | 1 | 0 | 251 | 11 | 0 | 0 | 11 | 658 |
| Total | 0 | 1676 | 0 | 1676 | 897 | 10 | 0 | 907 | 46 | 1 | 0 | 47 | 2630 |
| Approach % | 0.0 | 100.0 | 0.0 | - | 98.9 | 1.1 | 0.0 | - | 97.9 | 2.1 | 0.0 | - | - |
| Total % | 0.0 | 63.7 | 0.0 | 63.7 | 34.1 | 0.4 | 0.0 | 34.5 | 1.7 | 0.0 | 0.0 | 1.8 | - |
| PHF | 0.000 | 0.875 | 0.000 | 0.875 | 0.897 | 0.500 | 0.000 | 0.903 | 0.821 | 0.250 | 0.000 | 0.783 | 0.911 |
| Lights | 0 | 1646 | 0 | 1646 | 865 | 9 | 0 | 874 | 45 | 1 | 0 | 46 | 2566 |
| % Lights | - | 98.2 | - | 98.2 | 96.4 | 90.0 | - | 96.4 | 97.8 | 100.0 | - | 97.9 | 97.6 |
| Other Vehicles | 0 | 30 | 0 | 30 | 32 | 1 | 0 | 33 | 1 | 0 | 0 | 1 | 64 |
| % Other Vehicles | - | 1.8 | - | 1.8 | 3.6 | 10.0 | - | 3.6 | 2.2 | 0.0 | - | 2.1 | 2.4 |

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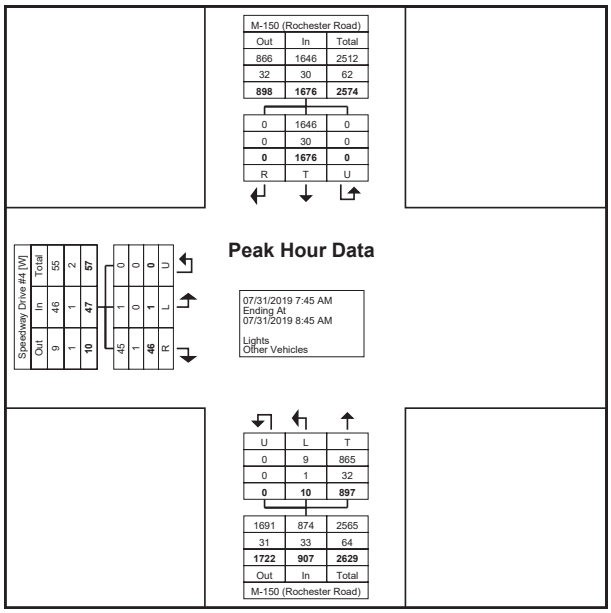
Count Name: Speedway Drive #4 & M-150 (Rochester Road)
Site Code:
Start Date: 07/31/2019


Turning Movement Peak Hour Data Plot (7:45 AM)

Mannik & Smith Group (OH)
1800 Indian Wood Circle

Maumee, Ohio, United States 43537
(419) 891-2222 dhelou@manniksmithgroup.com

Count Name: Speedway Drive #4 & M-150 (Rochester Road)
Site Code:
Start Date: 07/31/2019


## Turning Movement Peak Hour Data (4:15 PM)

| Start Time | M-150 (Rochester Road) Southbound | | | | M-150 (Rochester Road) Northbound | | | | Speedway Drive #4 Eastbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Right | Thru | U-Turn | App. Total | Thru | Left | U-Turn | App. Total | Right | Left | U-Turn | App. Total | Int. Total |
| 4:15 PM | 0 | 345 | 0 | 345 | 397 | 2 | 0 | 399 | 6 | 0 | 0 | 6 | 750 |
| 4:30 PM | 1 | 387 | 0 | 388 | 401 | 2 | 0 | 403 | 11 | 0 | 0 | 11 | 802 |
| 4:45 PM | 0 | 344 | 0 | 344 | 362 | 1 | 0 | 363 | 10 | 1 | 0 | 11 | 718 |
| 5:00 PM | 0 | 356 | 0 | 356 | 387 | 2 | 0 | 389 | 9 | 0 | 0 | 9 | 754 |
| Total | 1 | 1432 | 0 | 1433 | 1547 | 7 | 0 | 1554 | 36 | 1 | 0 | 37 | 3024 |
| Approach % | 0.1 | 99.9 | 0.0 | - | 99.5 | 0.5 | 0.0 | - | 97.3 | 2.7 | 0.0 | - | - |
| Total % | 0.0 | 47.4 | 0.0 | 47.4 | 51.2 | 0.2 | 0.0 | 51.4 | 1.2 | 0.0 | 0.0 | 1.2 | - |
| PHF | 0.250 | 0.925 | 0.000 | 0.923 | 0.964 | 0.875 | 0.000 | 0.964 | 0.818 | 0.250 | 0.000 | 0.841 | 0.943 |
| Lights | 1 | 1408 | 0 | 1409 | 1540 | 7 | 0 | 1547 | 34 | 1 | 0 | 35 | 2991 |
| % Lights | 100.0 | 98.3 | - | 98.3 | 99.5 | 100.0 | - | 99.5 | 94.4 | 100.0 | - | 94.6 | 98.9 |
| Other Vehicles | 0 | 24 | 0 | 24 | 7 | 0 | 0 | 7 | 2 | 0 | 0 | 2 | 33 |
| % Other Vehicles | 0.0 | 1.7 | - | 1.7 | 0.5 | 0.0 | - | 0.5 | 5.6 | 0.0 | - | 5.4 | 1.1 |

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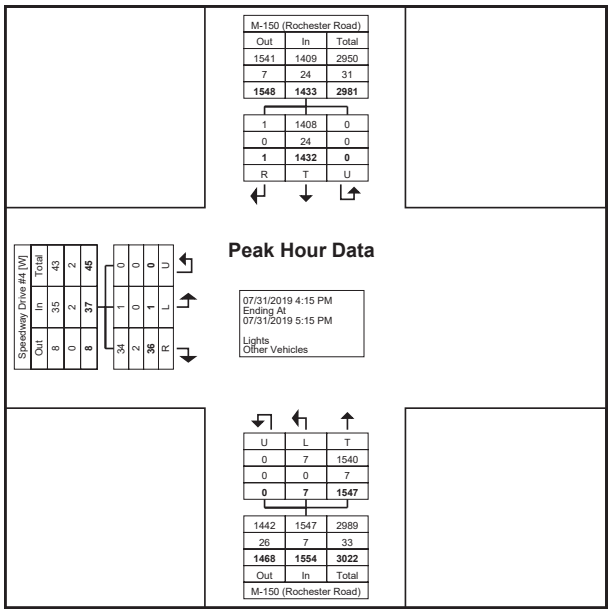
Count Name: Speedway Drive #4 & M-150 (Rochester Road)
Site Code:
Start Date: 07/31/2019


Turning Movement Peak Hour Data Plot (4:15 PM)

Mannik & Smith Group (OH)
1800 Indian Wood Circle

Maumee, Ohio, United States 43537
(419) 891-2222 dhelou@manniksmithgroup.com

Count Name: M-150 (Rochester Road) - ADT
Site Code:
Start Date: 07/31/2019


**Direction (Southbound)**

| Start Time | Lights | Other Vehicles | Total |
|---|---|---|---|
| 07/31/2019 12:00 AM | 51 | 0 | 51 |
| 12:15 AM | 35 | 1 | 36 |
| 12:30 AM | 11 | 0 | 11 |
| 12:45 AM | 17 | 0 | 17 |
| 1:00 AM | 24 | 0 | 24 |
| 1:15 AM | 24 | 0 | 24 |
| 1:30 AM | 11 | 0 | 11 |
| 1:45 AM | 12 | 1 | 13 |
| 2:00 AM | 15 | 0 | 15 |
| 2:15 AM | 14 | 2 | 16 |
| 2:30 AM | 11 | 0 | 11 |
| 2:45 AM | 9 | 0 | 9 |
| 3:00 AM | 10 | 0 | 10 |
| 3:15 AM | 8 | 0 | 8 |
| 3:30 AM | 9 | 0 | 9 |
| 3:45 AM | 8 | 1 | 9 |
| 4:00 AM | 18 | 1 | 19 |
| 4:15 AM | 29 | 2 | 31 |
| 4:30 AM | 40 | 0 | 40 |
| 4:45 AM | 45 | 0 | 45 |
| 5:00 AM | 81 | 2 | 83 |
| 5:15 AM | 116 | 1 | 117 |
| 5:30 AM | 153 | 0 | 153 |
| 5:45 AM | 213 | 1 | 214 |
| 6:00 AM | 222 | 3 | 225 |
| 6:15 AM | 346 | 1 | 347 |
| 6:30 AM | 419 | 6 | 425 |
| 6:45 AM | 374 | 3 | 377 |
| 7:00 AM | 413 | 5 | 418 |
| 7:15 AM | 450 | 10 | 460 |
| 7:30 AM | 432 | 7 | 439 |
| 7:45 AM | 489 | 3 | 492 |
| 8:00 AM | 393 | 10 | 403 |
| 8:15 AM | 411 | 8 | 419 |
| 8:30 AM | 396 | 9 | 405 |
| 8:45 AM | 351 | 7 | 358 |
| 9:00 AM | 355 | 10 | 365 |
| 9:15 AM | 359 | 15 | 374 |
| 9:30 AM | 425 | 10 | 435 |
| 9:45 AM | 374 | 17 | 391 |
| 10:00 AM | 384 | 10 | 394 |
| 10:15 AM | 373 | 17 | 390 |
| 10:30 AM | 392 | 20 | 412 |
| 10:45 AM | 370 | 24 | 394 |
| 11:00 AM | 362 | 12 | 374 |
| 11:15 AM | 390 | 10 | 400 |
| 11:30 AM | 381 | 7 | 388 |
| 11:45 AM | 416 | 10 | 426 |
| 12:00 PM | 402 | 10 | 412 |
| 12:15 PM | 409 | 9 | 418 |
| 12:30 PM | 375 | 18 | 393 |
| 12:45 PM | 367 | 10 | 377 |
| 1:00 PM | 406 | 12 | 418 |
| 1:15 PM | 382 | 6 | 388 |
| 1:30 PM | 404 | 7 | 411 |
| 1:45 PM | 395 | 13 | 408 |
| 2:00 PM | 391 | 17 | 408 |
| 2:15 PM | 377 | 6 | 383 |
| 2:30 PM | 352 | 11 | 363 |
| 2:45 PM | 369 | 7 | 376 |
| 3:00 PM | 384 | 6 | 390 |
| 3:15 PM | 410 | 8 | 418 |
| 3:30 PM | 361 | 10 | 371 |
| 3:45 PM | 365 | 7 | 372 |
| 4:00 PM | 341 | 5 | 346 |
| 4:15 PM | 339 | 6 | 345 |
| 4:30 PM | 391 | 6 | 397 |
| 4:45 PM | 345 | 7 | 352 |
| 5:00 PM | 346 | 9 | 355 |
| 5:15 PM | 348 | 7 | 355 |
| 5:30 PM | 344 | 3 | 347 |
| 5:45 PM | 325 | 0 | 325 |
| 6:00 PM | 330 | 4 | 334 |
| 6:15 PM | 367 | 5 | 372 |
| 6:30 PM | 322 | 2 | 324 |
| 6:45 PM | 340 | 4 | 344 |
| 7:00 PM | 320 | 0 | 320 |
| 7:15 PM | 303 | 2 | 305 |
| 7:30 PM | 285 | 3 | 288 |
| 7:45 PM | 317 | 1 | 318 |
| 8:00 PM | 315 | 0 | 315 |
| 8:15 PM | 269 | 3 | 272 |
| 8:30 PM | 299 | 0 | 299 |
| 8:45 PM | 252 | 0 | 252 |
| 9:00 PM | 262 | 1 | 263 |
| 9:15 PM | 225 | 0 | 225 |
| 9:30 PM | 211 | 0 | 211 |
| 9:45 PM | 185 | 2 | 187 |
| 10:00 PM | 169 | 1 | 170 |
| 10:15 PM | 132 | 0 | 132 |
| 10:30 PM | 105 | 1 | 106 |

| | | | |
|---|---|---|---|
| 10:45 PM | 93 | 1 | 94 |
| 11:00 PM | 76 | 2 | 78 |
| 11:15 PM | 71 | 0 | 71 |
| 11:30 PM | 68 | 1 | 69 |
| 11:45 PM | 55 | 0 | 55 |
| Total | 24540 | 479 | 25019 |
| Total % | 98.1 | 1.9 | 100.0 |
| AM Times | 11:00 AM | 9:45 AM | 11:00 AM |
| AM Peaks | 1549 | 64 | 1588 |
| PM Times | 1:30 PM | 1:45 PM | 1:30 PM |
| PM Peaks | 1567 | 47 | 1610 |

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1800 Indian Wood Circle

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(419) 891-2222 dhelou@manniksmithgroup.com

Count Name: M-150 (Rochester Road) - ADT
Site Code:
Start Date: 07/31/2019


**Direction (Northbound)**

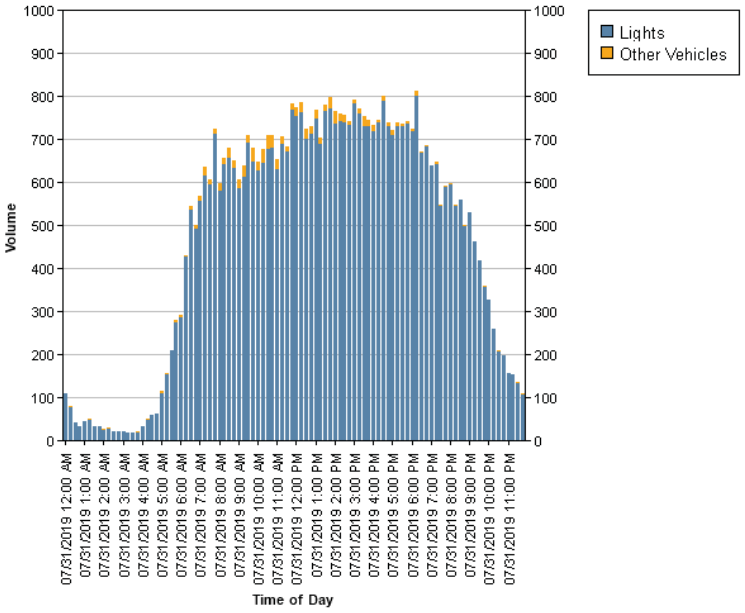
| Start Time | Lights | Other Vehicles | Total |
|---|---|---|---|
| 07/31/2019 12:00 AM | 58 | 0 | 58 |
| 12:15 AM | 42 | 0 | 42 |
| 12:30 AM | 29 | 0 | 29 |
| 12:45 AM | 15 | 0 | 15 |
| 1:00 AM | 20 | 0 | 20 |
| 1:15 AM | 23 | 2 | 25 |
| 1:30 AM | 22 | 0 | 22 |
| 1:45 AM | 20 | 0 | 20 |
| 2:00 AM | 9 | 2 | 11 |
| 2:15 AM | 12 | 1 | 13 |
| 2:30 AM | 9 | 1 | 10 |
| 2:45 AM | 12 | 0 | 12 |
| 3:00 AM | 11 | 0 | 11 |
| 3:15 AM | 9 | 0 | 9 |
| 3:30 AM | 8 | 0 | 8 |
| 3:45 AM | 11 | 1 | 12 |
| 4:00 AM | 14 | 0 | 14 |
| 4:15 AM | 18 | 0 | 18 |
| 4:30 AM | 20 | 0 | 20 |
| 4:45 AM | 17 | 0 | 17 |
| 5:00 AM | 28 | 3 | 31 |
| 5:15 AM | 38 | 1 | 39 |
| 5:30 AM | 55 | 2 | 57 |
| 5:45 AM | 61 | 3 | 64 |
| 6:00 AM | 63 | 3 | 66 |
| 6:15 AM | 81 | 2 | 83 |
| 6:30 AM | 116 | 2 | 118 |
| 6:45 AM | 118 | 4 | 122 |
| 7:00 AM | 143 | 8 | 151 |
| 7:15 AM | 165 | 9 | 174 |
| 7:30 AM | 163 | 5 | 168 |
| 7:45 AM | 223 | 8 | 231 |
| 8:00 AM | 187 | 6 | 193 |
| 8:15 AM | 230 | 6 | 236 |
| 8:30 AM | 259 | 14 | 273 |
| 8:45 AM | 280 | 13 | 293 |
| 9:00 AM | 231 | 9 | 240 |
| 9:15 AM | 252 | 11 | 263 |
| 9:30 AM | 265 | 8 | 273 |

| | | | |
|---|---|---|---|
| 9:45 AM | 272 | 15 | 287 |
| 10:00 AM | 242 | 12 | 254 |
| 10:15 AM | 271 | 15 | 286 |
| 10:30 AM | 285 | 11 | 296 |
| 10:45 AM | 308 | 7 | 315 |
| 11:00 AM | 267 | 11 | 278 |
| 11:15 AM | 297 | 9 | 306 |
| 11:30 AM | 291 | 3 | 294 |
| 11:45 AM | 351 | 6 | 357 |
| 12:00 PM | 350 | 12 | 362 |
| 12:15 PM | 352 | 14 | 366 |
| 12:30 PM | 325 | 6 | 331 |
| 12:45 PM | 344 | 8 | 352 |
| 1:00 PM | 342 | 8 | 350 |
| 1:15 PM | 307 | 9 | 316 |
| 1:30 PM | 362 | 7 | 369 |
| 1:45 PM | 376 | 12 | 388 |
| 2:00 PM | 345 | 11 | 356 |
| 2:15 PM | 363 | 14 | 377 |
| 2:30 PM | 385 | 9 | 394 |
| 2:45 PM | 362 | 2 | 364 |
| 3:00 PM | 397 | 3 | 400 |
| 3:15 PM | 348 | 4 | 352 |
| 3:30 PM | 369 | 12 | 381 |
| 3:45 PM | 365 | 6 | 371 |
| 4:00 PM | 378 | 7 | 385 |
| 4:15 PM | 400 | 0 | 400 |
| 4:30 PM | 398 | 4 | 402 |
| 4:45 PM | 385 | 1 | 386 |
| 5:00 PM | 364 | 1 | 365 |
| 5:15 PM | 382 | 2 | 384 |
| 5:30 PM | 384 | 3 | 387 |
| 5:45 PM | 411 | 5 | 416 |
| 6:00 PM | 389 | 1 | 390 |
| 6:15 PM | 434 | 5 | 439 |
| 6:30 PM | 345 | 3 | 348 |
| 6:45 PM | 341 | 1 | 342 |
| 7:00 PM | 317 | 0 | 317 |
| 7:15 PM | 339 | 2 | 341 |
| 7:30 PM | 258 | 1 | 259 |
| 7:45 PM | 270 | 3 | 273 |
| 8:00 PM | 280 | 1 | 281 |
| 8:15 PM | 276 | 0 | 276 |
| 8:30 PM | 259 | 1 | 260 |
| 8:45 PM | 244 | 3 | 247 |
| 9:00 PM | 266 | 0 | 266 |
| 9:15 PM | 237 | 1 | 238 |
| 9:30 PM | 206 | 0 | 206 |
| 9:45 PM | 172 | 0 | 172 |
| 10:00 PM | 157 | 0 | 157 |
| 10:15 PM | 126 | 1 | 127 |
| 10:30 PM | 102 | 0 | 102 |
| 10:45 PM | 104 | 0 | 104 |
| 11:00 PM | 79 | 0 | 79 |
| 11:15 PM | 83 | 0 | 83 |
| 11:30 PM | 65 | 0 | 65 |
| 11:45 PM | 52 | 1 | 53 |
| Total | 20116 | 397 | 20513 |
| Total % | 98.1 | 1.9 | 100.0 |
| AM Times | 11:00 AM | 9:45 AM | 11:00 AM |
| AM Peaks | 1206 | 53 | 1235 |
| PM Times | 1:30 PM | 1:45 PM | 1:30 PM |
| PM Peaks | 1446 | 46 | 1490 |

Mannik & Smith Group (OH)
1800 Indian Wood Circle

Maumee, Ohio, United States 43537
(419) 891-2222 dhelou@manniksmithgroup.com

Count Name: M-150 (Rochester Road) - ADT
Site Code:
Start Date: 07/31/2019

Mannik & Smith Group (OH)
1800 Indian Wood Circle

Maumee, Ohio, United States 43537
(419) 891-2222 dhelou@manniksmithgroup.com

Count Name: W Avon Road - ADT
Site Code:
Start Date: 07/31/2019


**Direction (Westbound)**

| Start Time | Lights | Other Vehicles | Total |
|---|---|---|---|
| 07/31/2019 12:00 AM | 18 | 0 | 18 |
| 12:15 AM | 8 | 0 | 8 |
| 12:30 AM | 6 | 0 | 6 |
| 12:45 AM | 11 | 0 | 11 |
| 1:00 AM | 4 | 1 | 5 |
| 1:15 AM | 7 | 0 | 7 |
| 1:30 AM | 8 | 0 | 8 |
| 1:45 AM | 3 | 1 | 4 |
| 2:00 AM | 4 | 0 | 4 |
| 2:15 AM | 2 | 2 | 4 |
| 2:30 AM | 4 | 0 | 4 |
| 2:45 AM | 4 | 1 | 5 |
| 3:00 AM | 2 | 0 | 2 |
| 3:15 AM | 5 | 0 | 5 |
| 3:30 AM | 1 | 0 | 1 |
| 3:45 AM | 6 | 0 | 6 |
| 4:00 AM | 5 | 0 | 5 |
| 4:15 AM | 10 | 0 | 10 |
| 4:30 AM | 21 | 1 | 22 |
| 4:45 AM | 21 | 0 | 21 |
| 5:00 AM | 27 | 0 | 27 |
| 5:15 AM | 36 | 0 | 36 |
| 5:30 AM | 49 | 1 | 50 |
| 5:45 AM | 61 | 1 | 62 |
| 6:00 AM | 72 | 0 | 72 |
| 6:15 AM | 89 | 1 | 90 |
| 6:30 AM | 132 | 0 | 132 |
| 6:45 AM | 167 | 2 | 169 |
| 7:00 AM | 161 | 4 | 165 |
| 7:15 AM | 173 | 9 | 182 |
| 7:30 AM | 186 | 1 | 187 |
| 7:45 AM | 197 | 4 | 201 |
| 8:00 AM | 225 | 3 | 228 |
| 8:15 AM | 204 | 6 | 210 |
| 8:30 AM | 196 | 11 | 207 |
| 8:45 AM | 183 | 9 | 192 |
| 9:00 AM | 167 | 3 | 170 |
| 9:15 AM | 177 | 8 | 185 |
| 9:30 AM | 144 | 3 | 147 |
| 9:45 AM | 180 | 8 | 188 |
| 10:00 AM | 145 | 7 | 152 |
| 10:15 AM | 168 | 10 | 178 |
| 10:30 AM | 180 | 8 | 188 |
| 10:45 AM | 164 | 4 | 168 |
| 11:00 AM | 152 | 2 | 154 |
| 11:15 AM | 145 | 4 | 149 |
| 11:30 AM | 172 | 6 | 178 |
| 11:45 AM | 173 | 5 | 178 |
| 12:00 PM | 161 | 7 | 168 |
| 12:15 PM | 192 | 9 | 201 |
| 12:30 PM | 183 | 6 | 189 |
| 12:45 PM | 173 | 11 | 184 |
| 1:00 PM | 185 | 5 | 190 |
| 1:15 PM | 186 | 4 | 190 |
| 1:30 PM | 162 | 13 | 175 |
| 1:45 PM | 199 | 3 | 202 |
| 2:00 PM | 185 | 2 | 187 |
| 2:15 PM | 180 | 7 | 187 |
| 2:30 PM | 174 | 5 | 179 |
| 2:45 PM | 164 | 6 | 170 |
| 3:00 PM | 173 | 3 | 176 |
| 3:15 PM | 146 | 4 | 150 |
| 3:30 PM | 172 | 2 | 174 |
| 3:45 PM | 178 | 4 | 182 |
| 4:00 PM | 177 | 5 | 182 |
| 4:15 PM | 168 | 3 | 171 |
| 4:30 PM | 140 | 1 | 141 |
| 4:45 PM | 161 | 4 | 165 |
| 5:00 PM | 165 | 2 | 167 |
| 5:15 PM | 161 | 5 | 166 |
| 5:30 PM | 183 | 0 | 183 |
| 5:45 PM | 181 | 1 | 182 |
| 6:00 PM | 198 | 0 | 198 |
| 6:15 PM | 159 | 0 | 159 |
| 6:30 PM | 164 | 2 | 166 |
| 6:45 PM | 156 | 0 | 156 |
| 7:00 PM | 137 | 0 | 137 |
| 7:15 PM | 132 | 2 | 134 |
| 7:30 PM | 142 | 1 | 143 |
| 7:45 PM | 136 | 2 | 138 |
| 8:00 PM | 126 | 1 | 127 |
| 8:15 PM | 131 | 0 | 131 |
| 8:30 PM | 104 | 0 | 104 |
| 8:45 PM | 125 | 0 | 125 |
| 9:00 PM | 99 | 0 | 99 |
| 9:15 PM | 104 | 1 | 105 |
| 9:30 PM | 83 | 0 | 83 |
| 9:45 PM | 68 | 0 | 68 |
| 10:00 PM | 64 | 0 | 64 |
| 10:15 PM | 50 | 0 | 50 |
| 10:30 PM | 47 | 1 | 48 |

| | | | |
|---|---|---|---|
| 10:45 PM | 46 | 0 | 46 |
| 11:00 PM | 23 | 0 | 23 |
| 11:15 PM | 22 | 0 | 22 |
| 11:30 PM | 23 | 0 | 23 |
| 11:45 PM | 24 | 1 | 25 |
| Total | 10787 | 249 | 11036 |
| Total % | 97.7 | 2.3 | 100.0 |
| AM Times | 11:00 AM | 8:30 AM | 11:00 AM |
| AM Peaks | 642 | 31 | 659 |
| PM Times | 1:45 PM | 12:00 PM | 1:45 PM |
| PM Peaks | 738 | 33 | 755 |

Mannik & Smith Group (OH)
1800 Indian Wood Circle

Maumee, Ohio, United States 43537
(419) 891-2222 dhelou@manniksmithgroup.com

Count Name: W Avon Road - ADT
Site Code:
Start Date: 07/31/2019


**Direction (Eastbound)**

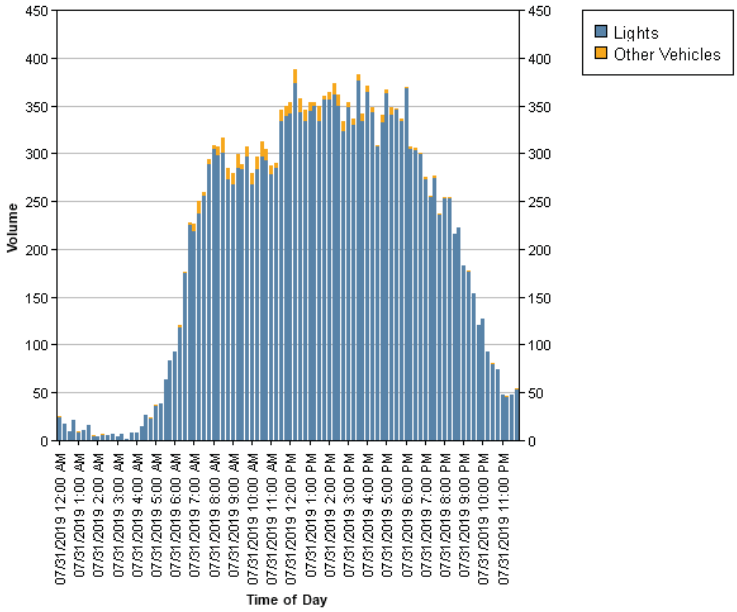
| Start Time | Lights | Other Vehicles | Total |
|---|---|---|---|
| 07/31/2019 12:00 AM | 6 | 1 | 7 |
| 12:15 AM | 9 | 0 | 9 |
| 12:30 AM | 3 | 0 | 3 |
| 12:45 AM | 10 | 0 | 10 |
| 1:00 AM | 4 | 0 | 4 |
| 1:15 AM | 3 | 0 | 3 |
| 1:30 AM | 8 | 0 | 8 |
| 1:45 AM | 1 | 0 | 1 |
| 2:00 AM | 0 | 0 | 0 |
| 2:15 AM | 3 | 0 | 3 |
| 2:30 AM | 1 | 0 | 1 |
| 2:45 AM | 2 | 0 | 2 |
| 3:00 AM | 2 | 0 | 2 |
| 3:15 AM | 2 | 0 | 2 |
| 3:30 AM | 0 | 0 | 0 |
| 3:45 AM | 2 | 0 | 2 |
| 4:00 AM | 3 | 0 | 3 |
| 4:15 AM | 4 | 0 | 4 |
| 4:30 AM | 5 | 0 | 5 |
| 4:45 AM | 2 | 1 | 3 |
| 5:00 AM | 9 | 1 | 10 |
| 5:15 AM | 3 | 0 | 3 |
| 5:30 AM | 14 | 0 | 14 |
| 5:45 AM | 22 | 0 | 22 |
| 6:00 AM | 20 | 0 | 20 |
| 6:15 AM | 29 | 1 | 30 |
| 6:30 AM | 43 | 1 | 44 |
| 6:45 AM | 58 | 1 | 59 |
| 7:00 AM | 57 | 4 | 61 |
| 7:15 AM | 64 | 4 | 68 |
| 7:30 AM | 70 | 3 | 73 |
| 7:45 AM | 92 | 1 | 93 |
| 8:00 AM | 80 | 0 | 80 |
| 8:15 AM | 94 | 3 | 97 |
| 8:30 AM | 104 | 5 | 109 |
| 8:45 AM | 90 | 3 | 93 |
| 9:00 AM | 100 | 9 | 109 |
| 9:15 AM | 107 | 7 | 114 |
| 9:30 AM | 139 | 3 | 142 |

| | | | |
|---|---|---|---|
| 9:45 AM | 117 | 2 | 119 |
| 10:00 AM | 123 | 4 | 127 |
| 10:15 AM | 115 | 4 | 119 |
| 10:30 AM | 117 | 7 | 124 |
| 10:45 AM | 129 | 8 | 137 |
| 11:00 AM | 126 | 7 | 133 |
| 11:15 AM | 139 | 2 | 141 |
| 11:30 AM | 162 | 5 | 167 |
| 11:45 AM | 166 | 5 | 171 |
| 12:00 PM | 180 | 5 | 185 |
| 12:15 PM | 181 | 6 | 187 |
| 12:30 PM | 160 | 9 | 169 |
| 12:45 PM | 160 | 1 | 161 |
| 1:00 PM | 159 | 4 | 163 |
| 1:15 PM | 164 | 0 | 164 |
| 1:30 PM | 171 | 4 | 175 |
| 1:45 PM | 157 | 1 | 158 |
| 2:00 PM | 171 | 6 | 177 |
| 2:15 PM | 181 | 5 | 186 |
| 2:30 PM | 176 | 6 | 182 |
| 2:45 PM | 159 | 4 | 163 |
| 3:00 PM | 175 | 3 | 178 |
| 3:15 PM | 183 | 3 | 186 |
| 3:30 PM | 204 | 4 | 208 |
| 3:45 PM | 156 | 3 | 159 |
| 4:00 PM | 187 | 1 | 188 |
| 4:15 PM | 175 | 2 | 177 |
| 4:30 PM | 167 | 0 | 167 |
| 4:45 PM | 171 | 4 | 175 |
| 5:00 PM | 198 | 2 | 200 |
| 5:15 PM | 179 | 3 | 182 |
| 5:30 PM | 163 | 1 | 164 |
| 5:45 PM | 153 | 1 | 154 |
| 6:00 PM | 170 | 1 | 171 |
| 6:15 PM | 146 | 2 | 148 |
| 6:30 PM | 139 | 1 | 140 |
| 6:45 PM | 143 | 1 | 144 |
| 7:00 PM | 136 | 2 | 138 |
| 7:15 PM | 122 | 0 | 122 |
| 7:30 PM | 132 | 1 | 133 |
| 7:45 PM | 99 | 0 | 99 |
| 8:00 PM | 127 | 0 | 127 |
| 8:15 PM | 122 | 1 | 123 |
| 8:30 PM | 112 | 0 | 112 |
| 8:45 PM | 97 | 0 | 97 |
| 9:00 PM | 83 | 0 | 83 |
| 9:15 PM | 72 | 0 | 72 |
| 9:30 PM | 70 | 0 | 70 |
| 9:45 PM | 53 | 0 | 53 |
| 10:00 PM | 63 | 0 | 63 |
| 10:15 PM | 43 | 0 | 43 |
| 10:30 PM | 33 | 0 | 33 |
| 10:45 PM | 28 | 0 | 28 |
| 11:00 PM | 24 | 0 | 24 |
| 11:15 PM | 23 | 1 | 24 |
| 11:30 PM | 25 | 0 | 25 |
| 11:45 PM | 29 | 0 | 29 |
| Total | 8680 | 180 | 8860 |
| Total % | 98.0 | 2.0 | 100.0 |
| AM Times | 11:00 AM | 8:30 AM | 11:00 AM |
| AM Peaks | 593 | 24 | 612 |
| PM Times | 1:45 PM | 12:00 PM | 1:45 PM |
| PM Peaks | 685 | 21 | 703 |

Mannik & Smith Group (OH)
1800 Indian Wood Circle

Maumee, Ohio, United States 43537
(419) 891-2222 dhelou@manniksmithgroup.com

Count Name: W Avon Road - ADT
Site Code:
Start Date: 07/31/2019
Page No: 7



INTERSECTION :- 13206  ROCHESTER & AVON
DESCRIPTION PROMS :- X00020R / F4808
CONTROLLER TYPE :- STANDARD PERSONALITY CONTROLLER
SOFTWARE TYPE :- MOD 52 SCATS S30
INPUTS :-

| | |
|---|---|
| 1. EB AVON LT (LK) | 10. WB AVON LT (LK) |
| 2. EB AVON LT ADV (LK) | 11. WB AVON LT ADV (LK) |
| 3. EB AVON L (LK) | 12. WB AVON L (LK) |
| 4. EB AVON R (LK) | 13. WB AVON R (LK) |
| 5. NB ROCHESTER LT (LK) | 14. SB ROCHESTER LT (LK) |
| 6. NB ROCHESTER LT ADV (LK) | 15. SB ROCHESTER LT ADV (LK) |
| 7. NB ROCHESTER L (LK) | 16. SB ROCHESTER L (LK) |
| 8. NB ROCHESTER C (LK) | 17. SB ROCHESTER C (LK) |
| 9. NB ROCHESTER R (LK) | 18. SB ROCHESTER R (LK) |

NOTE :- ALL DETECTORS ARE AUTOSCOPE (TERRA RACKVISION W/FLIR CAMERAS).

PED 2: NB ROCHESTER PED EAST P.B. (WA)
PED 4: WB AVON PED NORTH P.B. (WB)
PED 6: SB ROCHESTER PED WEST P.B. (WC)
PED 8: EB AVON PED SOUTH P.B. (WD)

APPROACHES :-

| | |
|---|---|
| A APPR 1 : SB ROCHESTER | A APPR 2 : NB ROCHESTER |
| B APPR 1 : EB AVON LT | B APPR 2 : WB AVON LT |
| B APPR 3 : EB AVON | B APPR 4 : WB AVON |
| C APPR 1 : EB AVON | C APPR 2 : WB AVON |
| D APPR 1 : SB ROCHESTER LT | D APPR 2 : NB ROCHESTER LT |
| D APPR 3 : SB ROCHESTER | D APPR 4 : NB ROCHESTER |

FLEXIDATA:-

| SEQUENCE | A,B,C,D | A,B,C,D |
|---|---|---|
| AUTO REL | | |
| R- REL | A | A |
| R+ REL | B | B |
| Q- REL | C | C |
| Q+ REL | D | D |
| LOOKAHEAD | | |

PEDESTRIANS:-

PED 2: NB ROCHESTER PED EAST P.B.
PED 4: WB AVON PED NORTH P.B.
PED 6: SB ROCHESTER PED WEST P.B.
PED 8: EB AVON PED SOUTH P.B.

SPECIAL FEATURES :-
The personality revision number is currently 3 (=C).
A STAGE HAS A PERMANENT DEMAND.
DEMAND FOR STAGES B,C,D IN FLEXI & ISOLATED. SET XSF8(XL Value = 80)TO DISABLE.
Pedestrians have automatic introduction using SCATS Y-.
Night Flash code: Set Y+ to activate the night flash in Flexilink

IN MASTERLINK AND FLEXILINK:
XSF09 (XH Value = 01) sets MAX recall for SG1 left turn.
XSF10 (XH Value = 02) sets min recall for SG1 left turn.
XSF11 (XH Value = 04) sets MAX recall for SG3 left turn.
XSF12 (XH Value = 08) sets min recall for SG3 left turn.
XSF13 (XH Value = 10) sets MAX recall for SG5 left turn.
XSF14 (XH Value = 20) sets min recall for SG5 left turn.
XSF15 (XH Value = 40) sets MAX recall for SG7 left turn.
XSF16 (XH Value = 80) sets min recall for SG7 left turn.

B1-C O/L OR B2-C O/L MAY APPEAR IN B1 OR B2 RESPECTIVELY
HOWEVER IF THE OVERLAP TERMINATES IN B THEN THE C AMBER
AND C RED TIMES ARE USED FOR B STAGE

Set BT = nS in SCATS data to enable Z5 flag in B stage to C.
This allows termination of o/lap phase minimum timer if the
appropriate phase o/lap is to occur and C is next, otherwise
phase minimum is guaranteed by phase minimum timer.

BACKPANEL :- SIZE P44-16

| | | |
|---|---|---|
| LOAD SWITCH 1: SB ROCHESTER LT | CL | FLR |
| LOAD SWITCH 2: NB ROCHESTER | A | FLR |
| LOAD SWITCH 3: EB AVON LT; SB ROCHESTER RT | DL,CR | FLR |
| LOAD SWITCH 4: WB AVON | B | FLR |
| LOAD SWITCH 5: NB ROCHESTER LT; EB AVON RT | AL,DR | FLR |
| LOAD SWITCH 6: SB ROCHESTER | C | FLR |
| LOAD SWITCH 7: WB AVON LT; NB ROCHESTER RT | BL,AR | FLR |
| LOAD SWITCH 8: EB AVON | D | FLR |
| LOAD SWITCH 9: NB ROCHESTER PED EAST | WA | |
| LOAD SWITCH 10: WB AVON PED NORTH | WB | |
| LOAD SWITCH 11: SB ROCHESTER PED WEST | WC | |
| LOAD SWITCH 12: EB AVON PED SOUTH | WD | |

Note: ADD BACKPANAL JUMPER 16 MMU FLASH - 116 MONITOR ST OUT.

MMU 2 :-(MENU : SET/VIEW CONFIG)

Field Check Enable
Channel 1: G, Y, R
Channel 2: G, Y, R
Channel 3: G, Y, R
Channel 4: G, Y, R
Channel 5: G, Y, R
Channel 6: G, Y, R
Channel 7: G, Y, R
Channel 8: G, Y, R

Dual Indication Enable: R+G: Channel 1,2,3,4,5,6,7,8,9,10,11,12
R+Y: Channel 1,2,3,4,5,6,7,8
G+Y: Channel 1,2,3,4,5,6,7,8,

Red Fail Enable: Enable: Channel 1,2,3,4,5,6,7,8

Y & R Clearance Disable: Channel 1,2,3,4,5,6,7,8 Enabled

Flashing Yellow Arrow: None

Unit Options: All OFF except:
Recurrent pulse
Program Memory Card

Program Card: Compatible Channels: 1-5,1-6,1-11,2-5,2-6,2-9,
2-11,3-7,3-8,3-12,4-7,4-8,4-10,4-12,5-9,6-9,6-11,
7-10,8-10,8-12,9-11,10-12

Min Flash Time : 4+2+1
Min Yellow Change Disable: 9,10,11,12
Voltage Monitor Latch: None

```
*********************************
* CONTROLLER INFORMATION SHEET *
*     FOR SITE NO.  13206      *
*          E LABIANO           *
*        12-AUGUST-2016        *
*********************************
```

CHECKSUMS
TIMES: 38 / 070
PERS: 13 / 023
TOTAL: 2B / 053

# FLEXILINK PLAN DATA

**Intersection #** 13206 **State #** _____ **Date:** 08/12/16 **Prepared By:** E Labiano

**Intersection:** Rochester & Avon **City:** Troy

**Hours of Operation:** 7 Days: 24 Hours **Approved By:** Rachel Jones

**Hours of Flashing:** None

| | | PL0 | PL1 | PL2 | PL3 | PL4 | PL5 | PL6 | PL7 | PL8 |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | CL | | 140 | 140 | 140 | 90 | | | | |
| 1 | A | | 0 | 0 | 0 | 0 | | | | |
| 2 | B | | 68 | 70 | 64 | 37 | | | | |
| 3 | C | | 89 | 87 | 87 | 49 | | | | |
| 4 | D | | 116 | 119 | 116 | 69 | | | | |
| 5 | E | | | | | | | | | |
| 6 | F | | | | | | | | | |
| 7 | G | | | | | | | | | |
| 8 | R- | | | | | | | | | |
| 9 | R+ | | | | | | | | | |
| 10 | Of (Y-) | | 67 | 123 | 105 | 45 | | | | |
| 11 | Y+ | C | | | | | | | | |
| 12 | Z- | | | | | | | | | |
| 13 | Z+ | | | | | | | | | |
| 14 | Q- | | | | | | | | | |
| 15 | Q+ | | | | | | | | | |
| 16 | XH | | | | | | | | | |
| 17 | XL | | | | | | | | | |

**NOTE:** Stages with 1 second of phase time are skipped. Blank entries are default values equal to 0. Except for an AWA controller, entries #8 to #15 (=254) and 'C' entry means continuous (=255).

| | | | | | | | Timers | | |
|---|---|---|---|---|---|---|---|---|---|
| **Phase** | **Direction** | **Min** | **Max** | **ECO** | **Amber** | **All Red** | **Gap** | **Hdwy** | **Waste** |
| A | Rochester | 10.0 | 50.0 | | 4.7 | 2.0 | 3.0 | 1.2 | 10.0 |
| B | Avon LT | 5.0 | 20.0 | | 4.7 | 2.4 | 3.0 | 1.2 | 10.0 |
| C | Avon | 7.0 | 35.0 | | 4.7 | 2.4 | 3.0 | 1.2 | 10.0 |
| D | Rochester LT | 5.0 | 20.0 | | 4.7 | 2.0 | 3.0 | 1.2 | 10.0 |
| E | | | | | | | | | |
| F | | | | | | | | | |
| G | | | | | | | | | |

| | Day | Hours | Plan# |
|---|---|---|---|
| SC1 | 14 | 0:00 | 1 |
| SC2 | 8 | 5:00 | 2 |
| SC3 | 8 | 10:00 | 1 |
| SC4 | 8 | 14:00 | 3 |
| SC5 | 8 | 19:00 | 1 |
| SC6 | | | |
| SC7 | | | |
| SC8 | | | |
| SC9 | | | |
| SC10 | | | |

**Pedestrian Crossing Times**

| Direction | Walk | CL 1 | CL 2 |
|---|---|---|---|
| NB Rochester Ped East (Ped 2) | 7.0 | 14.0 | 3.7 |
| WB Avon Ped North (Ped 4) | 8.0 | 20.0 | 4.1 |
| SB Rochester Ped West (Ped 6) | 7.0 | 14.0 | 3.7 |
| EB Avon Ped South (Ped 8) | 8.0 | 20.0 | 4.1 |

Flash Rate Timesettings TSM28=0.6 (on rate); TSM29=0.4 (off rate)

**Normal Operating Mode**

| Isolated | Flexilink | Masterlink | Master Isolated | Flexi Isolated |
|---|---|---|---|---|
| | | X | | |

**DAY OF WEEK CODE NUMBER**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0 | End of Schedule | 4 | WED | 8 | MON-FRI | 12 | MON,FRI,SAT |
| 1 | SUN | 5 | THUR | 9 | MON-SAT | 13 | SAT,SUN |
| 2 | MON | 6 | FRI | 10 | TUE,WED,THU | 14 | EVERY DAY |
| 3 | TUE | 7 | SAT | 11 | MON,FRI | 15 | NEVER |

# TS2 Terra Rackvision Det Rack BIU #1

**CO# 13206**

| Camera / Card # | Description | Detector No. on Print | Input Description (LS Red) | Rack Output |
|---|---|---|---|---|
| 1 | EB AVON LT | 1 | Load Switch 3 Red | 1 |
| 1 | EB AVON LT ADV | 2 | Load Switch 3 Red | 2 |
| 1 | EB AVON L | 3 | Load Switch 8 Red | 3 |
| 1 | EB AVON R | 4 | Load Switch 8 Red | 4 |
| 2 | NB ROCHESTER LT | 5 | Load Switch 5 Red | 5 |
| 2 | NB ROCHESTER LT ADV | 6 | Load Switch 5 Red | 6 |
| 2 | NB ROCHESTER L | 7 | Load Switch 2 Red | 7 |
| 2 | NB ROCHESTER C | 8 | Load Switch 2 Red | 8 |
| 2 | NB ROCHESTER R | 9 | Load Switch 2 Red | 9 |
| 3 | WB AVON LT | 10 | Load Switch 7 Red | 10 |
| 3 | WB AVON LT ADV | 11 | Load Switch 7 Red | 11 |
| 3 | WB AVON L | 12 | Load Switch 4 Red | 12 |
| 3 | WB AVON R | 13 | Load Siwtch 4 Red | 13 |
| | | | | |
| | | | | |
| | | | | |

# TS2 Terra Rackvision Det Rack BIU #2

**CO# 13206**

| Camera / Card # | Description | Detector No. on Print | Input Description (LS Red) | Rack Output |
|---|---|---|---|---|
| 4 | SB ROCHESTER LT | 14 | Load Switch 1 Red | 17 |
| 4 | SB ROCHESTER LT ADV | 15 | Load Switch 1 Red | 18 |
| 4 | SB ROCHESTER L | 16 | Load Switch 6 Red | 19 |
| 4 | SB ROCHESTER C | 17 | Load Switch 6 Red | 20 |
| 4 | SB ROCHESTER R | 18 | Load Switch 6 Red | 21 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
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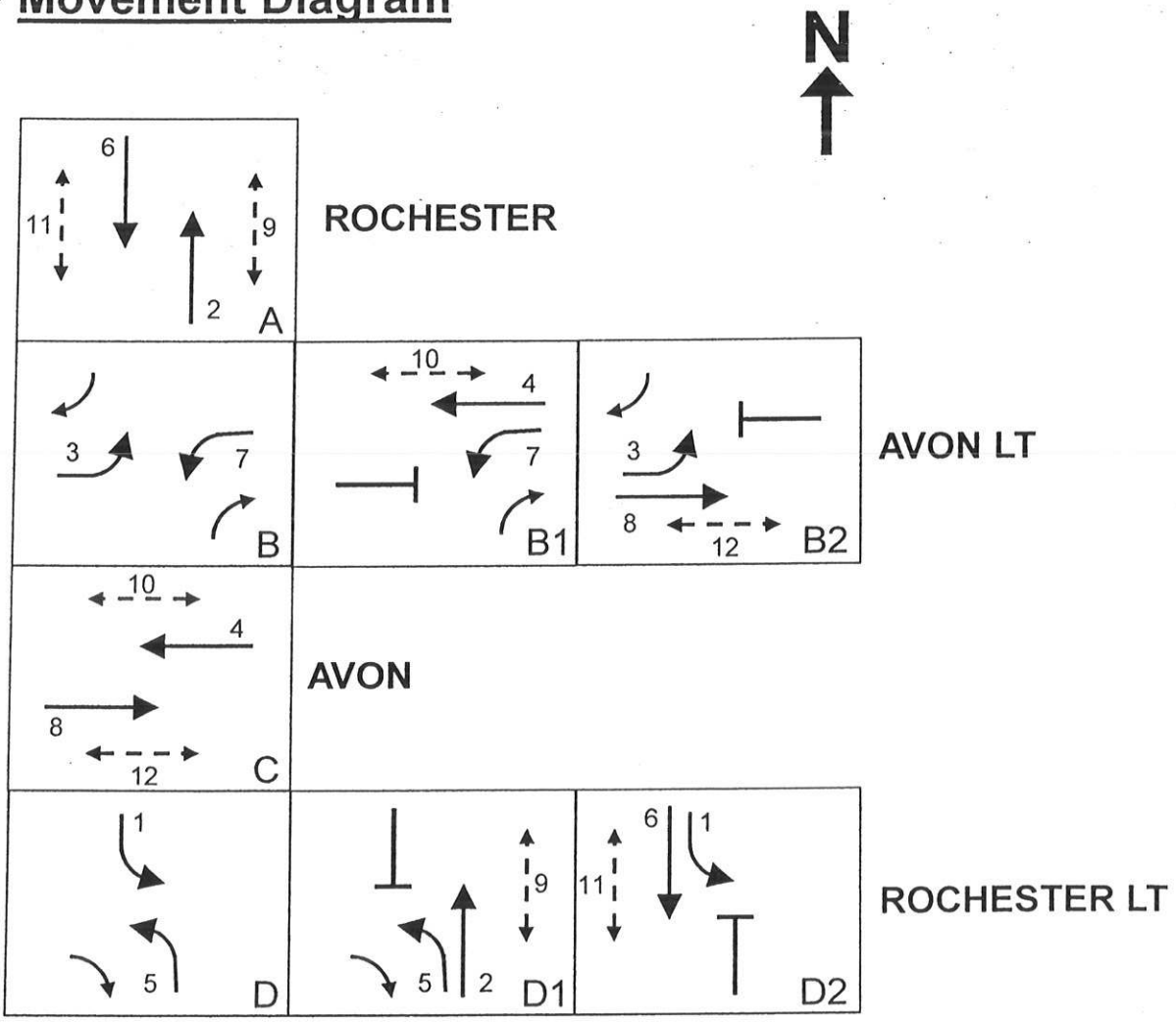
| | | | | |
| | | | | |

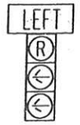
# #13206 – ROCHESTER & AVON

- **Movement Diagram**



CS #1-4 ⑱⑱⑱⑱

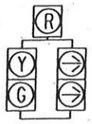
INSTALL 1-WAY 12"x27" NON-ILLUMINATED CASE SIGN




FACING ALL DIRECTIONS

TS #3, TS #7
TS #14

INSTALL DOGHOUSE




FACING WEST, SOUTH, NORTH

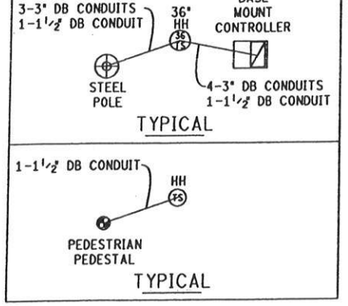
⑥PEDESTRIAN PEDESTAL
⑦PEDESTAL FOUNDATION
⑭SEE DETAIL B-2 SHEET SIG-028-A
PUSH BUTTON STATION AND SIGN B FOR
⑧CROSSING M-150 (FACING SOUTH)

NEW SPAN 3 POCH = 26'-02"
NEW SPAN 4 POCH = 32'-06"
⑲40' ANCHOR BASE STEEL STRAIN POLE
⑳42" DIA. FOUNDATION - DEPTH = 16.5'
㉑CASING = 5.5'
⑮18' TRUSS ARM
⑰VIDEO DETECTION CAMERA
⑨SERVICE DISCONNECT

16 LOAD SWITCH BAY CONTROLLER
④AND BASE MOUNTED CABINET
⑤CONTROLLER FOUNDATION
⑯VIDEO DETECTION SYSTEM
㉓PEDESTRIAN SIGNAL SYSTEM

⑥PEDESTRIAN PEDESTAL
⑦PEDESTAL FOUNDATION
⑭SEE DETAIL B-2 SHEET SIG-028-A
PUSH BUTTON STATION AND SIGN A FOR
⑧CROSSING AVON (FACING EAST)

CAUTION - CRITICAL UTILITY




TYPICAL




TYPICAL

EXISTING CONDUITS AND HAND HOLES TO BE REUSED, IF POSSIBLE. OTHERWISE, INSTALL NEW AS DIRECTED BY THE ENGINEER.

⑥PEDESTRIAN PEDESTAL
⑦PEDESTAL FOUNDATION
⑭SEE DETAIL B-2 SHEET SIG-028-A
PUSH BUTTON STATION AND SIGN B FOR
⑧CROSSING AVON (FACING EAST)

NEW SPAN 2 POCH = 24'-09"
NEW SPAN 3 POCH = 32'-06"
⑲40' ANCHOR BASE STEEL STRAIN POLE
⑳42" DIA. FOUNDATION - DEPTH = 13.5'
㉑CASING = 4.5'
⑮18' TRUSS ARM
⑰VIDEO DETECTION CAMERA

⑥PEDESTRIAN PEDESTAL
⑦PEDESTAL FOUNDATION
⑭SEE DETAIL B-2 SHEET SIG-028-A
PUSH BUTTON STATION AND SIGN A FOR
⑧CROSSING M-150 (FACING NORTH)

BACKPLATES AND TETHER WIRES TO BE USED FOR ALL TRAFFIC SIGNAL HEADS. INSTALL AS DIRECTED BY THE ENGINEER.




PEDESTRIAN PEDESTAL ⑥
PEDESTAL FOUNDATION ⑦
SEE DETAIL B-2 SHEET SIG-028-A ⑭
PUSH BUTTON STATION AND SIGN A FOR
CROSSING M-150 (FACING SOUTH) ⑧

NEW SPAN 1 POCH = 34'-00"
NEW SPAN 4 POCH = 23'-10"
40' ANCHOR BASE STEEL STRAIN POLE ⑲
42" DIA. FOUNDATION - DEPTH = 21' ⑳
CASING = 11' ㉑
18' TRUSS ARM ⑮
VIDEO DETECTION CAMERA ⑰

PEDESTRIAN PEDESTAL ⑥
PEDESTAL FOUNDATION ⑦
SEE DETAIL B-2 SHEET SIG-028-A ⑭
PUSH BUTTON STATION AND SIGN B FOR
CROSSING AVON (FACING WEST) ⑧

R10-3e




PUSHBUTTON SIGN A

R10-3e




PUSHBUTTON SIGN B

PEDESTRIAN PEDESTAL ⑥
PEDESTAL FOUNDATION ⑦
SEE DETAIL B-2 SHEET SIG-028-A ⑭
PUSH BUTTON STATION AND SIGN A FOR
CROSSING AVON (FACING WEST) ⑧

PEDESTRIAN PEDESTAL ⑥
PEDESTAL FOUNDATION ⑦
SEE DETAIL B-2 SHEET SIG-028-A ⑭
PUSH BUTTON STATION AND SIGN B FOR
CROSSING M-150 (FACING NORTH) ⑧

NEW SPAN 1 POCH = 26'-07"
NEW SPAN 2 POCH = 31'-09"
40' ANCHOR BASE STEEL STRAIN POLE ⑲
42" DIA. FOUNDATION - DEPTH = 13.5' ⑳
CASING = 7' ㉑
18' TRUSS ARM ⑮
VIDEO DETECTION CAMERA ⑰

| SIGNALS | |
|---|---|
| OPENINGS: | 60 |
| CYCLIC WATTS: | 662 |
| STEADY WATTS: | 0 |
| PLAN: 63132-01-006 | |

| FINAL ROW PLAN REVISIONS ( SUBMITTAL DATE: ) | | | | | | | |
|---|---|---|---|---|---|---|---|
| NO. | DATE | AUTH | DESCRIPTION | NO. | DATE | AUTH | DESCRIPTION |
| | | | | | | | |

TETRA TECH

MDOT Michigan Department of Transportation

0 HORZ. (FT) 30

| | | | |
|---|---|---|---|
| 63132-01-006 | DATE: 09/12/14 | CS: 63900 | M-150 (ROCHESTER ROAD) AT AVON ROAD CITY OF ROCHESTER HILLS, OAKLAND COUNTY |
| | DESIGN UNIT: PITT | JN: 114867A | |
| FILE: 114867 6313201006 CON001.DGN | TSC: OAKLAND | | |

| DRAWING | SHEET |
|---|---|
| M-150 SIGNAL 030 | SECT 1 51 |

# APPENDIX B
## EXISTING & NO BUILD CAPACITY REPORTS

HCM 6th Signalized Intersection Summary
206: M-150 (Rochester Rd & W Avon Rd

Existing Conditions - AM Peak
08/06/2019

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 134 | 122 | 117 | 180 | 381 | 149 | 113 | 686 | 60 | 91 | 1419 | 354 |
| Future Volume (veh/h) | 134 | 122 | 117 | 180 | 381 | 149 | 113 | 686 | 60 | 91 | 1419 | 354 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.98 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1953 | 1953 | 1953 | 1953 | 1953 | 1953 | 1938 | 1938 | 1938 | 1969 | 1969 | 1969 |
| Adj Flow Rate, veh/h | 156 | 142 | 136 | 205 | 433 | 169 | 123 | 746 | 65 | 102 | 1594 | 398 |
| Peak Hour Factor | 0.86 | 0.86 | 0.86 | 0.88 | 0.88 | 0.88 | 0.92 | 0.92 | 0.92 | 0.89 | 0.89 | 0.89 |
| Percent Heavy Veh, % | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 2 | 2 | 2 |
| Cap, veh/h | 206 | 328 | 277 | 327 | 466 | 179 | 166 | 1867 | 832 | 383 | 1870 | 815 |
| Arrive On Green | 0.08 | 0.17 | 0.17 | 0.09 | 0.18 | 0.18 | 0.05 | 0.51 | 0.51 | 0.04 | 0.50 | 0.50 |
| Sat Flow, veh/h | 1860 | 1953 | 1652 | 1860 | 2620 | 1006 | 1845 | 3681 | 1641 | 1875 | 3741 | 1631 |
| Grp Volume(v), veh/h | 156 | 142 | 136 | 205 | 305 | 297 | 123 | 746 | 65 | 102 | 1594 | 398 |
| Grp Sat Flow(s),veh/h/ln | 1860 | 1953 | 1652 | 1860 | 1856 | 1770 | 1845 | 1841 | 1641 | 1875 | 1870 | 1631 |
| Q Serve(g_s), s | 9.7 | 9.1 | 10.4 | 12.3 | 22.6 | 23.2 | 4.5 | 17.5 | 2.8 | 3.7 | 52.0 | 22.6 |
| Cycle Q Clear(g_c), s | 9.7 | 9.1 | 10.4 | 12.3 | 22.6 | 23.2 | 4.5 | 17.5 | 2.8 | 3.7 | 52.0 | 22.6 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.57 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 206 | 328 | 277 | 327 | 330 | 315 | 166 | 1867 | 832 | 383 | 1870 | 815 |
| V/C Ratio(X) | 0.76 | 0.43 | 0.49 | 0.63 | 0.92 | 0.94 | 0.74 | 0.40 | 0.08 | 0.27 | 0.85 | 0.49 |
| Avail Cap(c_a), veh/h | 206 | 328 | 277 | 327 | 330 | 315 | 188 | 1867 | 832 | 390 | 1870 | 815 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 45.4 | 52.3 | 52.8 | 44.3 | 56.6 | 56.9 | 30.9 | 21.3 | 17.7 | 16.8 | 30.5 | 23.2 |
| Incr Delay (d2), s/veh | 14.9 | 0.9 | 1.3 | 3.8 | 30.5 | 36.3 | 12.8 | 0.6 | 0.2 | 0.4 | 5.2 | 2.1 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 5.2 | 4.5 | 4.4 | 6.2 | 13.2 | 13.4 | 2.5 | 7.5 | 1.1 | 1.6 | 23.4 | 8.8 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 60.3 | 53.2 | 54.2 | 48.1 | 87.1 | 93.2 | 43.6 | 22.0 | 17.9 | 17.2 | 35.7 | 25.2 |
| LnGrp LOS | E | D | D | D | F | F | D | C | B | B | D | C |
| Approach Vol, veh/h | | 434 | | | 807 | | | 934 | | | 2094 | |
| Approach Delay, s/veh | | 56.1 | | | 79.4 | | | 24.5 | | | 32.8 | |
| Approach LOS | | E | | | E | | | C | | | C | |

| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 12.3 | 77.7 | 18.0 | 32.0 | 13.3 | 76.7 | 19.4 | 30.6 |
| Change Period (Y+Rc), s | 6.7 | 6.7 | 7.1 | 7.1 | 6.7 | 6.7 | 7.1 | 7.1 |
| Max Green Setting (Gmax), s | 6.1 | 70.5 | 10.9 | 24.9 | 8.3 | 68.3 | 12.3 | 23.5 |
| Max Q Clear Time (g_c+I1), s | 5.7 | 19.5 | 11.7 | 25.2 | 6.5 | 54.0 | 14.3 | 12.4 |
| Green Ext Time (p_c), s | 0.0 | 5.9 | 0.0 | 0.0 | 0.1 | 10.6 | 0.0 | 1.0 |

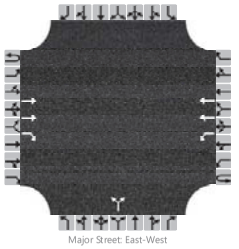
| Intersection Summary | |
|---|---|
| HCM 6th Ctrl Delay | 42.2 |
| HCM 6th LOS | D |



# HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | MSG | Intersection | Speedway Driveway #1 |
| Agency/Co. | | Jurisdiction | RCOC |
| Date Performed | 07/31/2019 | East/West Street | W Avon Rd |
| Analysis Year | 2019 | North/South Street | Speedway Driveway #1 |
| Time Analyzed | AM Peak Hour | Peak Hour Factor | 0.95 |
| Intersection Orientation | East-West | Analysis Time Period (hrs) | 0.25 |
| Project Description | Speedway Fuel Station | | |

## Lanes




## Vehicle Volumes and Adjustments

| Approach | Eastbound | | | | Westbound | | | | Northbound | | | | Southbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | U | L | T | R | U | L | T | R | U | L | T | R | U | L | T | R |
| Priority | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 | | 7 | 8 | 9 | | 10 | 11 | 12 |
| Number of Lanes | 0 | 0 | 2 | 1 | 0 | 1 | 2 | 0 | | 0 | 1 | 0 | | 0 | 0 | 0 |
| Configuration | | | T | R | | L | T | | | | LR | | | | | |
| Volume, V (veh/h) | | | 352 | 27 | | 5 | 843 | | | 6 | | 19 | | | | |
| Percent Heavy Vehicles (%) | | | | | | 3 | | | | 33 | | 5 | | | | |
| Proportion Time Blocked | | | | | | 0.000 | | | | 0.500 | | 0.500 | | | | |
| Percent Grade (%) | | | | | | | | | | 0 | | | | | | |
| Right Turn Channelized | | No | | | | No | | | | No | | | | No | | |
| Median Type/Storage | | Undivided | | | | | | | | | | | | | | |

## Critical and Follow-up Headways

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Critical Headway (sec) | | | | | | 4.1 | | | | 7.5 | | 6.9 | | | | |
| Critical Headway (sec) | | | | | | 4.16 | | | | 7.46 | | 7.00 | | | | |
| Base Follow-Up Headway (sec) | | | | | | 2.2 | | | | 3.5 | | 3.3 | | | | |
| Follow-Up Headway (sec) | | | | | | 2.23 | | | | 3.83 | | 3.35 | | | | |

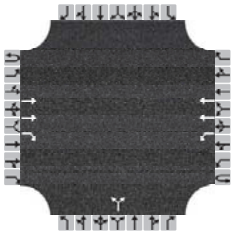
## Delay, Queue Length, and Level of Service

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow Rate, v (veh/h) | | | | | | 5 | | | | | 26 | | | | | |
| Capacity, c (veh/h) | | | | | | 1149 | | | | | 519 | | | | | |
| v/c Ratio | | | | | | 0.00 | | | | | 0.05 | | | | | |
| 95% Queue Length, $Q_{95}$ (veh) | | | | | | 0.0 | | | | | 0.2 | | | | | |
| Control Delay (s/veh) | | | | | | 8.1 | | | | | 12.3 | | | | | |
| Level of Service, LOS | | | | | | A | | | | | B | | | | | |
| Approach Delay (s/veh) | | | | | | 0.0 | | | | 12.3 | | | | | | |
| Approach LOS | | | | | | | | | | B | | | | | | |

# HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | MSG | Intersection | Speedway Driveway #2 |
| Agency/Co. | | Jurisdiction | RCOC |
| Date Performed | 07/31/2019 | East/West Street | W Avon Rd |
| Analysis Year | 2019 | North/South Street | Speedway Driveway #2 |
| Time Analyzed | AM Peak Hour | Peak Hour Factor | 0.95 |
| Intersection Orientation | East-West | Analysis Time Period (hrs) | 0.25 |
| Project Description | Speedway Fuel Station | | |

## Lanes



Major Street: East-West

## Vehicle Volumes and Adjustments

| Approach | Eastbound | | | | Westbound | | | | Northbound | | | | Southbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | U | L | T | R | U | L | T | R | U | L | T | R | U | L | T | R |
| Priority | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 | | 7 | 8 | 9 | | 10 | 11 | 12 |
| Number of Lanes | 0 | 0 | 2 | 1 | 0 | 1 | 2 | 0 | | 0 | 1 | 0 | | 0 | 0 | 0 |
| Configuration | | | T | R | | L | T | | | | LR | | | | | |
| Volume, V (veh/h) | | | 370 | 1 | | 0 | 848 | | | 0 | | 3 | | | | |
| Percent Heavy Vehicles (%) | | | | | | 3 | | | | 0 | | 0 | | | | |
| Proportion Time Blocked | | | | | | 0.000 | | | | 0.500 | | 0.500 | | | | |
| Percent Grade (%) | | | | | | | | | | 0 | | | | | | |
| Right Turn Channelized | | No | | | | No | | | | No | | | | No | | |
| Median Type/Storage | | Undivided | | | | | | | | | | | | | | |

## Critical and Follow-up Headways

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Critical Headway (sec) | | | | | | 4.1 | | | | 7.5 | | 6.9 | | | | |
| Critical Headway (sec) | | | | | | 4.16 | | | | 6.80 | | 6.90 | | | | |
| Base Follow-Up Headway (sec) | | | | | | 2.2 | | | | 3.5 | | 3.3 | | | | |
| Follow-Up Headway (sec) | | | | | | 2.23 | | | | 3.50 | | 3.30 | | | | |

## Delay, Queue Length, and Level of Service

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow Rate, v (veh/h) | | | | | | 0 | | | | | 3 | | | | | |
| Capacity, c (veh/h) | | | | | | 1157 | | | | | 545 | | | | | |
| v/c Ratio | | | | | | 0.00 | | | | | 0.01 | | | | | |
| 95% Queue Length, $Q_{95}$ (veh) | | | | | | 0.0 | | | | | 0.0 | | | | | |
| Control Delay (s/veh) | | | | | | 8.1 | | | | | 11.6 | | | | | |
| Level of Service, LOS | | | | | | A | | | | | B | | | | | |
| Approach Delay (s/veh) | | | | | | 0.0 | | | | | 11.6 | | | | | |
| Approach LOS | | | | | | | | | | | B | | | | | |

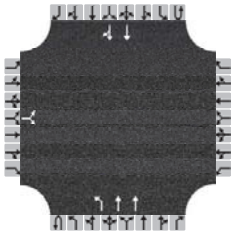




# HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | MSG | Intersection | Speedway Driveway #3 |
| Agency/Co. | | Jurisdiction | RCOC |
| Date Performed | 07/31/2019 | East/West Street | Speedway Driveway #3 |
| Analysis Year | 2019 | North/South Street | M-150 (Rochester Rd) |
| Time Analyzed | AM Peak Hour | Peak Hour Factor | 0.90 |
| Intersection Orientation | North-South | Analysis Time Period (hrs) | 0.25 |
| Project Description | Speedway Fuel Station | | |

## Lanes



Major Street: North-South

## Vehicle Volumes and Adjustments

| Approach | Eastbound | | | | Westbound | | | | Northbound | | | | Southbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | U | L | T | R | U | L | T | R | U | L | T | R | U | L | T | R |
| Priority | | 10 | 11 | 12 | | 7 | 8 | 9 | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 |
| Number of Lanes | | 0 | 1 | 0 | | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 2 | 0 |
| Configuration | | | LR | | | | | | | L | T | | | | T | TR |
| Volume, V (veh/h) | | 0 | | 5 | | | | | | 1 | 859 | | | | 1674 | 42 |
| Percent Heavy Vehicles (%) | | 0 | | 0 | | | | | | 4 | | | | | | |
| Proportion Time Blocked | | 0.800 | | 0.000 | | | | | | 0.750 | | | | | | |
| Percent Grade (%) | | 0 | | | | | | | | | | | | | | |
| Right Turn Channelized | | No | | | | No | | | | No | | | | No | | |
| Median Type/Storage | | Undivided | | | | | | | | | | | | | | |

## Critical and Follow-up Headways

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Critical Headway (sec) | | 7.5 | | 6.9 | | | | | | 4.1 | | | | | | |
| Critical Headway (sec) | | 6.80 | | 6.90 | | | | | | 4.18 | | | | | | |
| Base Follow-Up Headway (sec) | | 3.5 | | 3.3 | | | | | | 2.2 | | | | | | |
| Follow-Up Headway (sec) | | 3.50 | | 3.30 | | | | | | 2.24 | | | | | | |

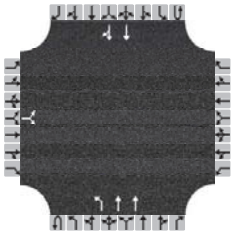
## Delay, Queue Length, and Level of Service

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow Rate, v (veh/h) | | | 6 | | | | | | | 1 | | | | | | |
| Capacity, c (veh/h) | | | 263 | | | | | | | 402 | | | | | | |
| v/c Ratio | | | 0.02 | | | | | | | 0.00 | | | | | | |
| 95% Queue Length, $Q_{95}$ (veh) | | | 0.1 | | | | | | | 0.0 | | | | | | |
| Control Delay (s/veh) | | | 19.0 | | | | | | | 14.0 | | | | | | |
| Level of Service, LOS | | | C | | | | | | | B | | | | | | |
| Approach Delay (s/veh) | | 19.0 | | | | | | | | 0.0 | | | | | | |
| Approach LOS | | C | | | | | | | | | | | | | | |

# HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | MSG | Intersection | Speedway Driveway #4 |
| Agency/Co. | | Jurisdiction | RCOC |
| Date Performed | 07/31/2019 | East/West Street | Speedway Driveway #4 |
| Analysis Year | 2019 | North/South Street | M-150 (Rochester Rd) |
| Time Analyzed | AM Peak Hour | Peak Hour Factor | 0.91 |
| Intersection Orientation | North-South | Analysis Time Period (hrs) | 0.25 |
| Project Description | Speedway Fuel Station | | |

## Lanes



Major Street: North-South

## Vehicle Volumes and Adjustments

| Approach | Eastbound | | | | Westbound | | | | Northbound | | | | Southbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | U | L | T | R | U | L | T | R | U | L | T | R | U | L | T | R |
| Priority | | 10 | 11 | 12 | | 7 | 8 | 9 | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 |
| Number of Lanes | | 0 | 1 | 0 | | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 2 | 0 |
| Configuration | | | LR | | | | | | | L | T | | | | T | TR |
| Volume, V (veh/h) | | 1 | | 46 | | | | | | 10 | 859 | | | | 1679 | 0 |
| Percent Heavy Vehicles (%) | | 0 | | 2 | | | | | | 4 | | | | | | |
| Proportion Time Blocked | | 0.500 | | 0.000 | | | | | | 0.500 | | | | | | |
| Percent Grade (%) | | 0 | | | | | | | | | | | | | | |
| Right Turn Channelized | | No | | | | No | | | | No | | | | No | | |
| Median Type/Storage | | Undivided | | | | | | | | | | | | | | |

## Critical and Follow-up Headways

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Critical Headway (sec) | | 7.5 | | 6.9 | | | | | | 4.1 | | | | | | |
| Critical Headway (sec) | | 6.80 | | 6.94 | | | | | | 4.18 | | | | | | |
| Base Follow-Up Headway (sec) | | 3.5 | | 3.3 | | | | | | 2.2 | | | | | | |
| Follow-Up Headway (sec) | | 3.50 | | 3.32 | | | | | | 2.24 | | | | | | |

## Delay, Queue Length, and Level of Service

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow Rate, v (veh/h) | | | 52 | | | | | | | 11 | | | | | | |
| Capacity, c (veh/h) | | | 244 | | | | | | | 444 | | | | | | |
| v/c Ratio | | | 0.21 | | | | | | | 0.02 | | | | | | |
| 95% Queue Length, $Q_{95}$ (veh) | | | 0.8 | | | | | | | 0.1 | | | | | | |
| Control Delay (s/veh) | | | 23.7 | | | | | | | 13.3 | | | | | | |
| Level of Service, LOS | | | C | | | | | | | B | | | | | | |
| Approach Delay (s/veh) | | 23.7 | | | | | | | | 0.2 | | | | | | |
| Approach LOS | | C | | | | | | | | | | | | | | |

HCM 6th Signalized Intersection Summary
206: M-150 (Rochester Rd & W Avon Rd

Existing Conditions - PM Peak
08/06/2019

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 308 | 301 | 117 | 123 | 254 | 280 | 167 | 1254 | 107 | 209 | 1163 | 265 |
| Future Volume (veh/h) | 308 | 301 | 117 | 123 | 254 | 280 | 167 | 1254 | 107 | 209 | 1163 | 265 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 0.99 | 1.00 | | 0.98 | 1.00 | | 0.99 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1953 | 1953 | 1953 | 1984 | 1984 | 1984 | 2000 | 2000 | 2000 | 1969 | 1969 | 1969 |
| Adj Flow Rate, veh/h | 331 | 324 | 126 | 131 | 270 | 298 | 176 | 1320 | 113 | 220 | 1224 | 279 |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.94 | 0.94 | 0.94 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Percent Heavy Veh, % | 3 | 3 | 3 | 1 | 1 | 1 | 0 | 0 | 0 | 2 | 2 | 2 |
| Cap, veh/h | 354 | 499 | 417 | 262 | 284 | 248 | 234 | 1529 | 673 | 247 | 1570 | 700 |
| Arrive On Green | 0.16 | 0.26 | 0.26 | 0.06 | 0.15 | 0.15 | 0.07 | 0.40 | 0.40 | 0.09 | 0.42 | 0.42 |
| Sat Flow, veh/h | 1860 | 1953 | 1632 | 1890 | 1885 | 1646 | 1905 | 3800 | 1672 | 1875 | 3741 | 1668 |
| Grp Volume(v), veh/h | 331 | 324 | 126 | 131 | 270 | 298 | 176 | 1320 | 113 | 220 | 1224 | 279 |
| Grp Sat Flow(s),veh/h/ln | 1860 | 1953 | 1632 | 1890 | 1885 | 1646 | 1905 | 1900 | 1672 | 1875 | 1870 | 1668 |
| Q Serve(g_s), s | 20.7 | 20.7 | 8.7 | 8.1 | 19.9 | 21.1 | 7.5 | 44.5 | 6.1 | 10.0 | 39.5 | 16.3 |
| Cycle Q Clear(g_c), s | 20.7 | 20.7 | 8.7 | 8.1 | 19.9 | 21.1 | 7.5 | 44.5 | 6.1 | 10.0 | 39.5 | 16.3 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 354 | 499 | 417 | 262 | 284 | 248 | 234 | 1529 | 673 | 247 | 1570 | 700 |
| V/C Ratio(X) | 0.94 | 0.65 | 0.30 | 0.50 | 0.95 | 1.20 | 0.75 | 0.86 | 0.17 | 0.89 | 0.78 | 0.40 |
| Avail Cap(c_a), veh/h | 356 | 501 | 419 | 262 | 284 | 248 | 263 | 1529 | 673 | 264 | 1570 | 700 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 41.5 | 46.5 | 42.1 | 47.4 | 58.9 | 59.5 | 30.1 | 38.3 | 26.8 | 33.2 | 35.0 | 28.3 |
| Incr Delay (d2), s/veh | 31.6 | 2.9 | 0.4 | 1.5 | 40.0 | 122.6 | 10.3 | 6.7 | 0.5 | 28.2 | 3.9 | 1.7 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 12.4 | 10.3 | 3.5 | 4.0 | 12.5 | 17.1 | 4.0 | 21.3 | 2.5 | 6.2 | 18.2 | 6.7 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 73.2 | 49.5 | 42.5 | 48.8 | 99.0 | 182.0 | 40.5 | 45.0 | 27.4 | 61.4 | 39.0 | 30.0 |
| LnGrp LOS | E | D | D | D | F | F | D | D | C | E | D | C |
| Approach Vol, veh/h | | 781 | | | 699 | | | 1609 | | | 1723 | |
| Approach Delay, s/veh | | 58.4 | | | 125.0 | | | 43.3 | | | 40.4 | |
| Approach LOS | | E | | | F | | | D | | | D | |

| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 18.9 | 63.0 | 29.8 | 28.2 | 16.5 | 65.4 | 15.2 | 42.8 |
| Change Period (Y+Rc), s | 6.7 | 6.7 | 7.1 | 7.1 | 6.7 | 6.7 | 7.1 | 7.1 |
| Max Green Setting (Gmax), s | 13.5 | 54.9 | 22.9 | 21.1 | 12.0 | 56.4 | 8.1 | 35.9 |
| Max Q Clear Time (g_c+I1), s | 12.0 | 46.5 | 22.7 | 23.1 | 9.5 | 41.5 | 10.1 | 22.7 |
| Green Ext Time (p_c), s | 0.3 | 5.4 | 0.1 | 0.0 | 0.3 | 8.5 | 0.0 | 2.0 |

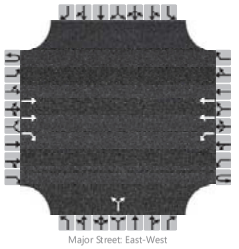
| Intersection Summary | |
|---|---|
| HCM 6th Ctrl Delay | 56.6 |
| HCM 6th LOS | E |



# HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | MSG | Intersection | Speedway Driveway #1 |
| Agency/Co. | | Jurisdiction | RCOC |
| Date Performed | 07/31/2019 | East/West Street | W Avon Rd |
| Analysis Year | 2019 | North/South Street | Speedway Driveway #1 |
| Time Analyzed | PM Peak Hour | Peak Hour Factor | 0.95 |
| Intersection Orientation | East-West | Analysis Time Period (hrs) | 0.25 |
| Project Description | Speedway Fuel Station | | |

## Lanes




## Vehicle Volumes and Adjustments

| Approach | Eastbound | | | | Westbound | | | | Northbound | | | | Southbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | U | L | T | R | U | L | T | R | U | L | T | R | U | L | T | R |
| Priority | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 | | 7 | 8 | 9 | | 10 | 11 | 12 |
| Number of Lanes | 0 | 0 | 2 | 1 | 0 | 1 | 2 | 0 | | 0 | 1 | 0 | | 0 | 0 | 0 |
| Configuration | | | T | R | | L | T | | | | LR | | | | | |
| Volume, V (veh/h) | | | 703 | 23 | | 1 | 685 | | | 0 | | 19 | | | | |
| Percent Heavy Vehicles (%) | | | | | | 1 | | | | 0 | | 0 | | | | |
| Proportion Time Blocked | | | | | | 0.000 | | | | 0.500 | | 0.500 | | | | |
| Percent Grade (%) | | | | | | | | | | 0 | | | | | | |
| Right Turn Channelized | | No | | | | No | | | | No | | | | No | | |
| Median Type/Storage | | Undivided | | | | | | | | | | | | | | |

## Critical and Follow-up Headways

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Critical Headway (sec) | | | | | | 4.1 | | | | 7.5 | | 6.9 | | | | |
| Critical Headway (sec) | | | | | | 4.12 | | | | 6.80 | | 6.90 | | | | |
| Base Follow-Up Headway (sec) | | | | | | 2.2 | | | | 3.5 | | 3.3 | | | | |
| Follow-Up Headway (sec) | | | | | | 2.21 | | | | 3.50 | | 3.30 | | | | |

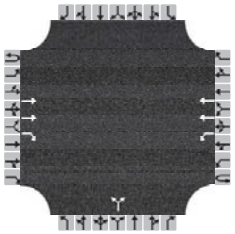
## Delay, Queue Length, and Level of Service

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow Rate, v (veh/h) | | | | | | 1 | | | | | 20 | | | | | |
| Capacity, c (veh/h) | | | | | | 851 | | | | | 545 | | | | | |
| v/c Ratio | | | | | | 0.00 | | | | | 0.04 | | | | | |
| 95% Queue Length, $Q_{95}$ (veh) | | | | | | 0.0 | | | | | 0.1 | | | | | |
| Control Delay (s/veh) | | | | | | 9.2 | | | | | 11.9 | | | | | |
| Level of Service, LOS | | | | | | A | | | | | B | | | | | |
| Approach Delay (s/veh) | | | | | | 0.0 | | | | 11.9 | | | | | | |
| Approach LOS | | | | | | | | | | B | | | | | | |

# HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | MSG | Intersection | Speedway Driveway #2 |
| Agency/Co. | | Jurisdiction | RCOC |
| Date Performed | 07/31/2019 | East/West Street | W Avon Rd |
| Analysis Year | 2019 | North/South Street | Speedway Driveway #2 |
| Time Analyzed | PM Peak Hour | Peak Hour Factor | 0.95 |
| Intersection Orientation | East-West | Analysis Time Period (hrs) | 0.25 |
| Project Description | Speedway Fuel Station | | |

## Lanes



Major Street: East-West

## Vehicle Volumes and Adjustments

| Approach | Eastbound | | | | Westbound | | | | Northbound | | | | Southbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | U | L | T | R | U | L | T | R | U | L | T | R | U | L | T | R |
| Priority | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 | | 7 | 8 | 9 | | 10 | 11 | 12 |
| Number of Lanes | 0 | 0 | 2 | 1 | 0 | 1 | 2 | 0 | | 0 | 1 | 0 | | 0 | 0 | 0 |
| Configuration | | | T | R | | L | T | | | | LR | | | | | |
| Volume, V (veh/h) | | | 722 | 0 | | 0 | 686 | | | 0 | | 4 | | | | |
| Percent Heavy Vehicles (%) | | | | | | 1 | | | | 0 | | 0 | | | | |
| Proportion Time Blocked | | | | | | 0.000 | | | | 0.500 | | 0.500 | | | | |
| Percent Grade (%) | | | | | | | | | | 0 | | | | | | |
| Right Turn Channelized | | No | | | | No | | | | No | | | | No | | |
| Median Type/Storage | | Undivided | | | | | | | | | | | | | | |

## Critical and Follow-up Headways

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Critical Headway (sec) | | | | | | 4.1 | | | | 7.5 | | 6.9 | | | | |
| Critical Headway (sec) | | | | | | 4.12 | | | | 6.80 | | 6.90 | | | | |
| Base Follow-Up Headway (sec) | | | | | | 2.2 | | | | 3.5 | | 3.3 | | | | |
| Follow-Up Headway (sec) | | | | | | 2.21 | | | | 3.50 | | 3.30 | | | | |

## Delay, Queue Length, and Level of Service

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow Rate, v (veh/h) | | | | | | 0 | | | | | 4 | | | | | |
| Capacity, c (veh/h) | | | | | | 854 | | | | | 545 | | | | | |
| v/c Ratio | | | | | | 0.00 | | | | | 0.01 | | | | | |
| 95% Queue Length, $Q_{95}$ (veh) | | | | | | 0.0 | | | | | 0.0 | | | | | |
| Control Delay (s/veh) | | | | | | 9.2 | | | | | 11.7 | | | | | |
| Level of Service, LOS | | | | | | A | | | | | B | | | | | |
| Approach Delay (s/veh) | | | | | | 0.0 | | | | | 11.7 | | | | | |
| Approach LOS | | | | | | | | | | | B | | | | | |

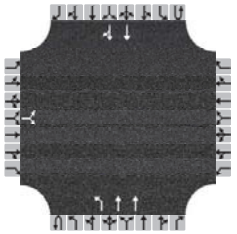




# HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | MSG | Intersection | Speedway Driveway #3 |
| Agency/Co. | | Jurisdiction | RCOC |
| Date Performed | 07/31/2019 | East/West Street | Speedway Driveway #3 |
| Analysis Year | 2019 | North/South Street | M-150 (Rochester Rd) |
| Time Analyzed | PM Peak Hour | Peak Hour Factor | 0.95 |
| Intersection Orientation | North-South | Analysis Time Period (hrs) | 0.25 |
| Project Description | Speedway Fuel Station | | |

## Lanes



Major Street: North-South

## Vehicle Volumes and Adjustments

| Approach | Eastbound | | | | Westbound | | | | Northbound | | | | Southbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | U | L | T | R | U | L | T | R | U | L | T | R | U | L | T | R |
| Priority | | 10 | 11 | 12 | | 7 | 8 | 9 | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 |
| Number of Lanes | | 0 | 1 | 0 | | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 2 | 0 |
| Configuration | | | LR | | | | | | | L | T | | | | T | TR |
| Volume, V (veh/h) | | 0 | | 1 | | | | | | 0 | 1528 | | | | 1375 | 28 |
| Percent Heavy Vehicles (%) | | 0 | | 0 | | | | | | 0 | | | | | | |
| Proportion Time Blocked | | 0.800 | | 0.000 | | | | | | 0.750 | | | | | | |
| Percent Grade (%) | | 0 | | | | | | | | | | | | | | |
| Right Turn Channelized | | No | | | | No | | | | No | | | | No | | |
| Median Type/Storage | | Undivided | | | | | | | | | | | | | | |

## Critical and Follow-up Headways

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Critical Headway (sec) | | 7.5 | | 6.9 | | | | | | 4.1 | | | | | | |
| Critical Headway (sec) | | 6.80 | | 6.90 | | | | | | 4.10 | | | | | | |
| Base Follow-Up Headway (sec) | | 3.5 | | 3.3 | | | | | | 2.2 | | | | | | |
| Follow-Up Headway (sec) | | 3.50 | | 3.30 | | | | | | 2.20 | | | | | | |

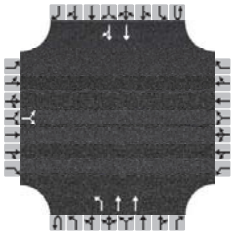
## Delay, Queue Length, and Level of Service

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow Rate, v (veh/h) | | | 1 | | | | | | | 0 | | | | | | |
| Capacity, c (veh/h) | | | 365 | | | | | | | 409 | | | | | | |
| v/c Ratio | | | 0.00 | | | | | | | 0.00 | | | | | | |
| 95% Queue Length, $Q_{95}$ (veh) | | | 0.0 | | | | | | | 0.0 | | | | | | |
| Control Delay (s/veh) | | | 14.9 | | | | | | | 13.8 | | | | | | |
| Level of Service, LOS | | | B | | | | | | | B | | | | | | |
| Approach Delay (s/veh) | | 14.9 | | | | | | | | 0.0 | | | | | | |
| Approach LOS | | B | | | | | | | | | | | | | | |

# HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | MSG | Intersection | Speedway Driveway #4 |
| Agency/Co. | | Jurisdiction | RCOC |
| Date Performed | 07/31/2019 | East/West Street | Speedway Driveway #4 |
| Analysis Year | 2019 | North/South Street | M-150 (Rochester Rd) |
| Time Analyzed | PM Peak Hour | Peak Hour Factor | 0.94 |
| Intersection Orientation | North-South | Analysis Time Period (hrs) | 0.25 |
| Project Description | Speedway Fuel Station | | |

## Lanes



Major Street: North-South

## Vehicle Volumes and Adjustments

| Approach | Eastbound | | | | Westbound | | | | Northbound | | | | Southbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | U | L | T | R | U | L | T | R | U | L | T | R | U | L | T | R |
| Priority | | 10 | 11 | 12 | | 7 | 8 | 9 | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 |
| Number of Lanes | | 0 | 1 | 0 | | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 2 | 0 |
| Configuration | | | LR | | | | | | | L | T | | | | T | TR |
| Volume, V (veh/h) | | 1 | | 36 | | | | | | 7 | 1527 | | | | 1375 | 1 |
| Percent Heavy Vehicles (%) | | 0 | | 6 | | | | | | 1 | | | | | | |
| Proportion Time Blocked | | 0.800 | | 0.000 | | | | | | 0.750 | | | | | | |
| Percent Grade (%) | 0 | | | | | | | | | | | | | | | |
| Right Turn Channelized | No | | | | No | | | | No | | | | No | | | |
| Median Type/Storage | Undivided | | | | | | | | | | | | | | | |

## Critical and Follow-up Headways

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Critical Headway (sec) | | 7.5 | | 6.9 | | | | | | 4.1 | | | | | | |
| Critical Headway (sec) | | 6.80 | | 7.02 | | | | | | 4.12 | | | | | | |
| Base Follow-Up Headway (sec) | | 3.5 | | 3.3 | | | | | | 2.2 | | | | | | |
| Follow-Up Headway (sec) | | 3.50 | | 3.36 | | | | | | 2.21 | | | | | | |

## Delay, Queue Length, and Level of Service

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow Rate, v (veh/h) | | | 39 | | | | | | | 7 | | | | | | |
| Capacity, c (veh/h) | | | 348 | | | | | | | 407 | | | | | | |
| v/c Ratio | | | 0.11 | | | | | | | 0.02 | | | | | | |
| 95% Queue Length, $Q_{95}$ (veh) | | | 0.4 | | | | | | | 0.1 | | | | | | |
| Control Delay (s/veh) | | | 16.7 | | | | | | | 14.0 | | | | | | |
| Level of Service, LOS | | | C | | | | | | | B | | | | | | |
| Approach Delay (s/veh) | 16.7 | | | | | | | | 0.1 | | | | | | | |
| Approach LOS | C | | | | | | | | | | | | | | | |

HCM 6th Signalized Intersection Summary
206: M-150 (Rochester Rd & W Avon Rd

No Build 2021 - AM Peak
08/07/2019

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 135 | 123 | 118 | 181 | 384 | 150 | 114 | 692 | 60 | 97 | 1433 | 357 |
| Future Volume (veh/h) | 135 | 123 | 118 | 181 | 384 | 150 | 114 | 692 | 60 | 97 | 1433 | 357 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.98 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1953 | 1953 | 1953 | 1953 | 1953 | 1953 | 1938 | 1938 | 1938 | 1969 | 1969 | 1969 |
| Adj Flow Rate, veh/h | 157 | 143 | 137 | 206 | 436 | 170 | 124 | 752 | 65 | 109 | 1610 | 401 |
| Peak Hour Factor | 0.86 | 0.86 | 0.86 | 0.88 | 0.88 | 0.88 | 0.92 | 0.92 | 0.92 | 0.89 | 0.89 | 0.89 |
| Percent Heavy Veh, % | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 2 | 2 | 2 |
| Cap, veh/h | 205 | 325 | 275 | 327 | 466 | 179 | 165 | 1859 | 829 | 383 | 1869 | 815 |
| Arrive On Green | 0.08 | 0.17 | 0.17 | 0.09 | 0.18 | 0.18 | 0.05 | 0.51 | 0.51 | 0.04 | 0.50 | 0.50 |
| Sat Flow, veh/h | 1860 | 1953 | 1652 | 1860 | 2621 | 1005 | 1845 | 3681 | 1641 | 1875 | 3741 | 1631 |
| Grp Volume(v), veh/h | 157 | 143 | 137 | 206 | 307 | 299 | 124 | 752 | 65 | 109 | 1610 | 401 |
| Grp Sat Flow(s),veh/h/ln | 1860 | 1953 | 1652 | 1860 | 1856 | 1770 | 1845 | 1841 | 1641 | 1875 | 1870 | 1631 |
| Q Serve(g_s), s | 9.8 | 9.2 | 10.6 | 12.5 | 22.8 | 23.4 | 4.6 | 17.8 | 2.9 | 4.0 | 52.9 | 22.8 |
| Cycle Q Clear(g_c), s | 9.8 | 9.2 | 10.6 | 12.5 | 22.8 | 23.4 | 4.6 | 17.8 | 2.9 | 4.0 | 52.9 | 22.8 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.57 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 205 | 325 | 275 | 327 | 330 | 315 | 165 | 1859 | 829 | 383 | 1869 | 815 |
| V/C Ratio(X) | 0.77 | 0.44 | 0.50 | 0.63 | 0.93 | 0.95 | 0.75 | 0.40 | 0.08 | 0.28 | 0.86 | 0.49 |
| Avail Cap(c_a), veh/h | 205 | 325 | 275 | 327 | 330 | 315 | 186 | 1859 | 829 | 387 | 1869 | 815 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 45.6 | 52.5 | 53.0 | 44.3 | 56.7 | 56.9 | 31.1 | 21.5 | 17.9 | 16.8 | 30.8 | 23.2 |
| Incr Delay (d2), s/veh | 15.9 | 0.9 | 1.4 | 3.8 | 31.8 | 37.7 | 14.1 | 0.7 | 0.2 | 0.4 | 5.5 | 2.1 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 5.3 | 4.5 | 4.4 | 6.3 | 13.4 | 13.6 | 2.6 | 7.6 | 1.1 | 1.7 | 23.9 | 8.9 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 61.5 | 53.4 | 54.4 | 48.1 | 88.5 | 94.7 | 45.2 | 22.2 | 18.0 | 17.2 | 36.3 | 25.4 |
| LnGrp LOS | E | D | D | D | F | F | D | C | B | B | D | C |
| Approach Vol, veh/h | | 437 | | | 812 | | | 941 | | | 2120 | |
| Approach Delay, s/veh | | 56.6 | | | 80.5 | | | 25.0 | | | 33.2 | |
| Approach LOS | | E | | | F | | | C | | | C | |

| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 12.6 | 77.4 | 18.0 | 32.0 | 13.3 | 76.7 | 19.6 | 30.4 |
| Change Period (Y+Rc), s | 6.7 | 6.7 | 7.1 | 7.1 | 6.7 | 6.7 | 7.1 | 7.1 |
| Max Green Setting (Gmax), s | 6.2 | 70.4 | 10.9 | 24.9 | 8.3 | 68.3 | 12.5 | 23.3 |
| Max Q Clear Time (g_c+I1), s | 6.0 | 19.8 | 11.8 | 25.4 | 6.6 | 54.9 | 14.5 | 12.6 |
| Green Ext Time (p_c), s | 0.0 | 6.0 | 0.0 | 0.0 | 0.1 | 10.1 | 0.0 | 1.0 |

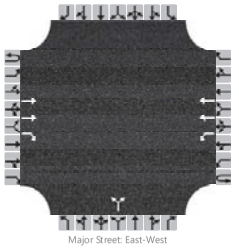
| Intersection Summary | |
|---|---|
| HCM 6th Ctrl Delay | 42.7 |
| HCM 6th LOS | D |



# HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | MSG | Intersection | Speedway Driveway #1 |
| Agency/Co. | | Jurisdiction | RCOC |
| Date Performed | 07/31/2019 | East/West Street | W Avon Rd |
| Analysis Year | 2021 | North/South Street | Speedway Driveway #1 |
| Time Analyzed | AM Peak Hour | Peak Hour Factor | 0.95 |
| Intersection Orientation | East-West | Analysis Time Period (hrs) | 0.25 |
| Project Description | Speedway Fuel Station | | |

## Lanes




## Vehicle Volumes and Adjustments

| Approach | Eastbound | | | | Westbound | | | | Northbound | | | | Southbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | U | L | T | R | U | L | T | R | U | L | T | R | U | L | T | R |
| Priority | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 | | 7 | 8 | 9 | | 10 | 11 | 12 |
| Number of Lanes | 0 | 0 | 2 | 1 | 0 | 1 | 2 | 0 | | 0 | 1 | 0 | | 0 | 0 | 0 |
| Configuration | | | T | R | | L | T | | | | LR | | | | | |
| Volume, V (veh/h) | | | 355 | 27 | | 5 | 850 | | | 6 | | 19 | | | | |
| Percent Heavy Vehicles (%) | | | | | | 3 | | | | 33 | | 5 | | | | |
| Proportion Time Blocked | | | | | | 0.000 | | | | 0.500 | | 0.500 | | | | |
| Percent Grade (%) | | | | | | | | | | 0 | | | | | | |
| Right Turn Channelized | | No | | | | No | | | | No | | | | No | | |
| Median Type/Storage | | Undivided | | | | | | | | | | | | | | |

## Critical and Follow-up Headways

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Critical Headway (sec) | | | | | | 4.1 | | | | 7.5 | | 6.9 | | | | |
| Critical Headway (sec) | | | | | | 4.16 | | | | 7.46 | | 7.00 | | | | |
| Base Follow-Up Headway (sec) | | | | | | 2.2 | | | | 3.5 | | 3.3 | | | | |
| Follow-Up Headway (sec) | | | | | | 2.23 | | | | 3.83 | | 3.35 | | | | |

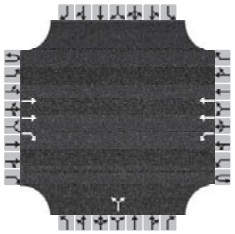
## Delay, Queue Length, and Level of Service

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow Rate, v (veh/h) | | | | | | 5 | | | | | 26 | | | | | |
| Capacity, c (veh/h) | | | | | | 1146 | | | | | 519 | | | | | |
| v/c Ratio | | | | | | 0.00 | | | | | 0.05 | | | | | |
| 95% Queue Length, $Q_{95}$ (veh) | | | | | | 0.0 | | | | | 0.2 | | | | | |
| Control Delay (s/veh) | | | | | | 8.2 | | | | | 12.3 | | | | | |
| Level of Service, LOS | | | | | | A | | | | | B | | | | | |
| Approach Delay (s/veh) | | | | | | 0.0 | | | | 12.3 | | | | | | |
| Approach LOS | | | | | | | | | | B | | | | | | |

# HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | MSG | Intersection | Speedway Driveway #2 |
| Agency/Co. | | Jurisdiction | RCOC |
| Date Performed | 07/31/2019 | East/West Street | W Avon Rd |
| Analysis Year | 2021 | North/South Street | Speedway Driveway #2 |
| Time Analyzed | AM Peak Hour | Peak Hour Factor | 0.95 |
| Intersection Orientation | East-West | Analysis Time Period (hrs) | 0.25 |
| Project Description | Speedway Fuel Station | | |

## Lanes



Major Street: East-West

## Vehicle Volumes and Adjustments

| Approach | Eastbound | | | | Westbound | | | | Northbound | | | | Southbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | U | L | T | R | U | L | T | R | U | L | T | R | U | L | T | R |
| Priority | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 | | 7 | 8 | 9 | | 10 | 11 | 12 |
| Number of Lanes | 0 | 0 | 2 | 1 | 0 | 1 | 2 | 0 | | 0 | 1 | 0 | | 0 | 0 | 0 |
| Configuration | | | T | R | | L | T | | | | LR | | | | | |
| Volume, V (veh/h) | | | 373 | 1 | | 0 | 855 | | | 0 | | 3 | | | | |
| Percent Heavy Vehicles (%) | | | | | | 3 | | | | 0 | | 0 | | | | |
| Proportion Time Blocked | | | | | | 0.000 | | | | 0.500 | | 0.500 | | | | |
| Percent Grade (%) | | | | | | | | | | 0 | | | | | | |
| Right Turn Channelized | | No | | | | No | | | | No | | | | No | | |
| Median Type/Storage | | Undivided | | | | | | | | | | | | | | |

## Critical and Follow-up Headways

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Critical Headway (sec) | | | | | | 4.1 | | | | 7.5 | | 6.9 | | | | |
| Critical Headway (sec) | | | | | | 4.16 | | | | 6.80 | | 6.90 | | | | |
| Base Follow-Up Headway (sec) | | | | | | 2.2 | | | | 3.5 | | 3.3 | | | | |
| Follow-Up Headway (sec) | | | | | | 2.23 | | | | 3.50 | | 3.30 | | | | |

## Delay, Queue Length, and Level of Service

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow Rate, v (veh/h) | | | | | | 0 | | | | | 3 | | | | | |
| Capacity, c (veh/h) | | | | | | 1154 | | | | | 545 | | | | | |
| v/c Ratio | | | | | | 0.00 | | | | | 0.01 | | | | | |
| 95% Queue Length, $Q_{95}$ (veh) | | | | | | 0.0 | | | | | 0.0 | | | | | |
| Control Delay (s/veh) | | | | | | 8.1 | | | | | 11.6 | | | | | |
| Level of Service, LOS | | | | | | A | | | | | B | | | | | |
| Approach Delay (s/veh) | | | | | | 0.0 | | | | | 11.6 | | | | | |
| Approach LOS | | | | | | | | | | | B | | | | | |

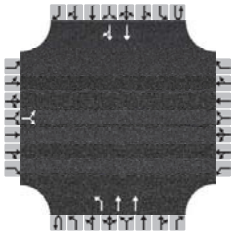




# HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | MSG | Intersection | Speedway Driveway #3 |
| Agency/Co. | | Jurisdiction | RCOC |
| Date Performed | 07/31/2019 | East/West Street | Speedway Driveway #3 |
| Analysis Year | 2021 | North/South Street | M-150 (Rochester Rd) |
| Time Analyzed | AM Peak Hour | Peak Hour Factor | 0.90 |
| Intersection Orientation | North-South | Analysis Time Period (hrs) | 0.25 |
| Project Description | Speedway Fuel Station | | |

## Lanes



Major Street: North-South

## Vehicle Volumes and Adjustments

| Approach | Eastbound | | | | Westbound | | | | Northbound | | | | Southbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | U | L | T | R | U | L | T | R | U | L | T | R | U | L | T | R |
| Priority | | 10 | 11 | 12 | | 7 | 8 | 9 | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 |
| Number of Lanes | | 0 | 1 | 0 | | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 2 | 0 |
| Configuration | | | LR | | | | | | | L | T | | | | T | TR |
| Volume, V (veh/h) | | 0 | | 5 | | | | | | 1 | 866 | | | | 1690 | 42 |
| Percent Heavy Vehicles (%) | | 0 | | 0 | | | | | | 4 | | | | | | |
| Proportion Time Blocked | | 0.800 | | 0.000 | | | | | | 0.750 | | | | | | |
| Percent Grade (%) | | 0 | | | | | | | | | | | | | | |
| Right Turn Channelized | | No | | | | No | | | | No | | | | No | | |
| Median Type/Storage | | Undivided | | | | | | | | | | | | | | |

## Critical and Follow-up Headways

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Critical Headway (sec) | | 7.5 | | 6.9 | | | | | | 4.1 | | | | | | |
| Critical Headway (sec) | | 6.80 | | 6.90 | | | | | | 4.18 | | | | | | |
| Base Follow-Up Headway (sec) | | 3.5 | | 3.3 | | | | | | 2.2 | | | | | | |
| Follow-Up Headway (sec) | | 3.50 | | 3.30 | | | | | | 2.24 | | | | | | |

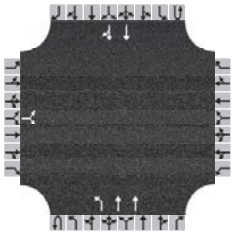
## Delay, Queue Length, and Level of Service

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow Rate, v (veh/h) | | | 6 | | | | | | | 1 | | | | | | |
| Capacity, c (veh/h) | | | 260 | | | | | | | 402 | | | | | | |
| v/c Ratio | | | 0.02 | | | | | | | 0.00 | | | | | | |
| 95% Queue Length, $Q_{95}$ (veh) | | | 0.1 | | | | | | | 0.0 | | | | | | |
| Control Delay (s/veh) | | | 19.2 | | | | | | | 14.0 | | | | | | |
| Level of Service, LOS | | | C | | | | | | | B | | | | | | |
| Approach Delay (s/veh) | | 19.2 | | | | | | | | 0.0 | | | | | | |
| Approach LOS | | C | | | | | | | | | | | | | | |

# HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | MSG | Intersection | Speedway Driveway #4 |
| Agency/Co. | | Jurisdiction | RCOC |
| Date Performed | 07/31/2019 | East/West Street | Speedway Driveway #4 |
| Analysis Year | 2021 | North/South Street | M-150 (Rochester Rd) |
| Time Analyzed | AM Peak Hour | Peak Hour Factor | 0.91 |
| Intersection Orientation | North-South | Analysis Time Period (hrs) | 0.25 |
| Project Description | Speedway Fuel Station | | |

## Lanes



Major Street: North-South

## Vehicle Volumes and Adjustments

| Approach | Eastbound | | | | Westbound | | | | Northbound | | | | Southbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | U | L | T | R | U | L | T | R | U | L | T | R | U | L | T | R |
| Priority | | 10 | 11 | 12 | | 7 | 8 | 9 | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 |
| Number of Lanes | | 0 | 1 | 0 | | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 2 | 0 |
| Configuration | | | LR | | | | | | | L | T | | | | T | TR |
| Volume, V (veh/h) | | 1 | | 46 | | | | | | 10 | 866 | | | | 1695 | 0 |
| Percent Heavy Vehicles (%) | | 0 | | 2 | | | | | | 4 | | | | | | |
| Proportion Time Blocked | | 0.500 | | 0.000 | | | | | | 0.500 | | | | | | |
| Percent Grade (%) | | 0 | | | | | | | | | | | | | | |
| Right Turn Channelized | | No | | | | No | | | | No | | | | No | | |
| Median Type/Storage | | Undivided | | | | | | | | | | | | | | |

## Critical and Follow-up Headways

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Critical Headway (sec) | | 7.5 | | 6.9 | | | | | | 4.1 | | | | | | |
| Critical Headway (sec) | | 6.80 | | 6.94 | | | | | | 4.18 | | | | | | |
| Base Follow-Up Headway (sec) | | 3.5 | | 3.3 | | | | | | 2.2 | | | | | | |
| Follow-Up Headway (sec) | | 3.50 | | 3.32 | | | | | | 2.24 | | | | | | |

## Delay, Queue Length, and Level of Service

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow Rate, v (veh/h) | | | 52 | | | | | | | 11 | | | | | | |
| Capacity, c (veh/h) | | | 239 | | | | | | | 430 | | | | | | |
| v/c Ratio | | | 0.22 | | | | | | | 0.03 | | | | | | |
| 95% Queue Length, $Q_{95}$ (veh) | | | 0.8 | | | | | | | 0.1 | | | | | | |
| Control Delay (s/veh) | | | 24.1 | | | | | | | 13.6 | | | | | | |
| Level of Service, LOS | | | C | | | | | | | B | | | | | | |
| Approach Delay (s/veh) | | 24.1 | | | | | | | | 0.2 | | | | | | |
| Approach LOS | | C | | | | | | | | | | | | | | |

## HCM 6th Signalized Intersection Summary
## 206: M-150 (Rochester Rd & W Avon Rd)

No Build 2021 - PM Peak
08/06/2019

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 311 | 304 | 118 | 124 | 256 | 282 | 168 | 1266 | 108 | 211 | 1174 | 267 |
| Future Volume (veh/h) | 311 | 304 | 118 | 124 | 256 | 282 | 168 | 1266 | 108 | 211 | 1174 | 267 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 0.99 | 1.00 | | 0.98 | 1.00 | | 0.99 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1953 | 1953 | 1953 | 1984 | 1984 | 1984 | 2000 | 2000 | 2000 | 1969 | 1969 | 1969 |
| Adj Flow Rate, veh/h | 334 | 327 | 127 | 132 | 272 | 300 | 177 | 1333 | 114 | 222 | 1236 | 281 |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.94 | 0.94 | 0.94 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Percent Heavy Veh, % | 3 | 3 | 3 | 1 | 1 | 1 | 0 | 0 | 0 | 2 | 2 | 2 |
| Cap, veh/h | 356 | 501 | 419 | 262 | 284 | 248 | 233 | 1509 | 664 | 249 | 1561 | 696 |
| Arrive On Green | 0.16 | 0.26 | 0.26 | 0.06 | 0.15 | 0.15 | 0.07 | 0.40 | 0.40 | 0.09 | 0.42 | 0.42 |
| Sat Flow, veh/h | 1860 | 1953 | 1632 | 1890 | 1885 | 1646 | 1905 | 3800 | 1672 | 1875 | 3741 | 1668 |
| Grp Volume(v), veh/h | 334 | 327 | 127 | 132 | 272 | 300 | 177 | 1333 | 114 | 222 | 1236 | 281 |
| Grp Sat Flow(s),veh/h/ln | 1860 | 1953 | 1632 | 1890 | 1885 | 1646 | 1905 | 1900 | 1672 | 1875 | 1870 | 1668 |
| Q Serve(g_s), s | 20.9 | 20.9 | 8.8 | 8.1 | 20.0 | 21.1 | 7.6 | 45.6 | 6.2 | 10.5 | 40.3 | 16.5 |
| Cycle Q Clear(g_c), s | 20.9 | 20.9 | 8.8 | 8.1 | 20.0 | 21.1 | 7.6 | 45.6 | 6.2 | 10.5 | 40.3 | 16.5 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 356 | 501 | 419 | 262 | 284 | 248 | 233 | 1509 | 664 | 249 | 1561 | 696 |
| V/C Ratio(X) | 0.94 | 0.65 | 0.30 | 0.50 | 0.96 | 1.21 | 0.76 | 0.88 | 0.17 | 0.89 | 0.79 | 0.40 |
| Avail Cap(c_a), veh/h | 356 | 501 | 419 | 262 | 284 | 248 | 270 | 1509 | 664 | 269 | 1561 | 696 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 41.6 | 46.5 | 42.0 | 47.4 | 59.0 | 59.5 | 30.5 | 39.2 | 27.3 | 35.1 | 35.5 | 28.6 |
| Incr Delay (d2), s/veh | 32.3 | 3.0 | 0.4 | 1.6 | 41.8 | 125.6 | 10.4 | 7.9 | 0.6 | 27.4 | 4.2 | 1.7 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 12.5 | 10.4 | 3.5 | 4.0 | 12.7 | 17.3 | 4.0 | 22.1 | 2.5 | 6.5 | 18.5 | 6.8 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 74.0 | 49.5 | 42.4 | 49.0 | 100.8 | 185.1 | 40.9 | 47.1 | 27.9 | 62.5 | 39.7 | 30.3 |
| LnGrp LOS | E | D | D | D | F | F | D | D | C | E | D | C |
| Approach Vol, veh/h | | 788 | | | 704 | | | 1624 | | | 1739 | |
| Approach Delay, s/veh | | 58.7 | | | 127.0 | | | 45.0 | | | 41.1 | |
| Approach LOS | | E | | | F | | | D | | | D | |

| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 19.5 | 62.3 | 30.0 | 28.2 | 16.7 | 65.1 | 15.2 | 43.0 |
| Change Period (Y+Rc), s | 6.7 | 6.7 | 7.1 | 7.1 | 6.7 | 6.7 | 7.1 | 7.1 |
| Max Green Setting (Gmax), s | 14.3 | 54.1 | 22.9 | 21.1 | 12.7 | 55.7 | 8.1 | 35.9 |
| Max Q Clear Time (g_c+I1), s | 12.5 | 47.6 | 22.9 | 23.1 | 9.6 | 42.3 | 10.1 | 22.9 |
| Green Ext Time (p_c), s | 0.3 | 4.5 | 0.0 | 0.0 | 0.4 | 8.0 | 0.0 | 2.0 |

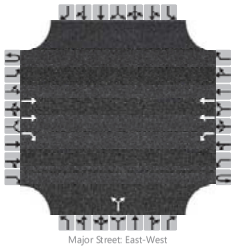
| Intersection Summary | |
|---|---|
| HCM 6th Ctrl Delay | 57.7 |
| HCM 6th LOS | E |



## HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | MSG | Intersection | Speedway Driveway #1 |
| Agency/Co. | | Jurisdiction | RCOC |
| Date Performed | 07/31/2019 | East/West Street | W Avon Rd |
| Analysis Year | 2021 | North/South Street | Speedway Driveway #1 |
| Time Analyzed | PM Peak Hour | Peak Hour Factor | 0.95 |
| Intersection Orientation | East-West | Analysis Time Period (hrs) | 0.25 |
| Project Description | Speedway Fuel Station | | |

### Lanes




### Vehicle Volumes and Adjustments

| Approach | Eastbound | | | | Westbound | | | | Northbound | | | | Southbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | U | L | T | R | U | L | T | R | U | L | T | R | U | L | T | R |
| Priority | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 | | 7 | 8 | 9 | | 10 | 11 | 12 |
| Number of Lanes | 0 | 0 | 2 | 1 | 0 | 1 | 2 | 0 | | 0 | 1 | 0 | | 0 | 0 | 0 |
| Configuration | | | T | R | | L | T | | | | LR | | | | | |
| Volume, V (veh/h) | | | 710 | 23 | | 1 | 690 | | | 0 | | 19 | | | | |
| Percent Heavy Vehicles (%) | | | | | | 1 | | | | 0 | | 0 | | | | |
| Proportion Time Blocked | | | | | | 0.000 | | | | 0.500 | | 0.500 | | | | |
| Percent Grade (%) | | | | | | | | | | 0 | | | | | | |
| Right Turn Channelized | | No | | | | No | | | | No | | | | No | | |
| Median Type/Storage | | Undivided | | | | | | | | | | | | | | |

### Critical and Follow-up Headways

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Critical Headway (sec) | | | | | | 4.1 | | | | 7.5 | | 6.9 | | | | |
| Critical Headway (sec) | | | | | | 4.12 | | | | 6.80 | | 6.90 | | | | |
| Base Follow-Up Headway (sec) | | | | | | 2.2 | | | | 3.5 | | 3.3 | | | | |
| Follow-Up Headway (sec) | | | | | | 2.21 | | | | 3.50 | | 3.30 | | | | |

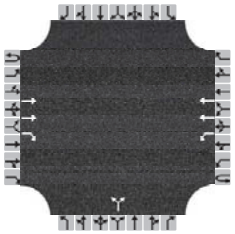
### Delay, Queue Length, and Level of Service

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow Rate, v (veh/h) | | | | | | 1 | | | | | 20 | | | | | |
| Capacity, c (veh/h) | | | | | | 846 | | | | | 545 | | | | | |
| v/c Ratio | | | | | | 0.00 | | | | | 0.04 | | | | | |
| 95% Queue Length, $Q_{95}$ (veh) | | | | | | 0.0 | | | | | 0.1 | | | | | |
| Control Delay (s/veh) | | | | | | 9.3 | | | | | 11.9 | | | | | |
| Level of Service, LOS | | | | | | A | | | | | B | | | | | |
| Approach Delay (s/veh) | | | | | | 0.0 | | | | 11.9 | | | | | | |
| Approach LOS | | | | | | | | | | B | | | | | | |

# HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | MSG | Intersection | Speedway Driveway #2 |
| Agency/Co. | | Jurisdiction | RCOC |
| Date Performed | 07/31/2019 | East/West Street | W Avon Rd |
| Analysis Year | 2021 | North/South Street | Speedway Driveway #2 |
| Time Analyzed | PM Peak Hour | Peak Hour Factor | 0.95 |
| Intersection Orientation | East-West | Analysis Time Period (hrs) | 0.25 |
| Project Description | Speedway Fuel Station | | |

## Lanes



Major Street: East-West

## Vehicle Volumes and Adjustments

| Approach | Eastbound | | | | Westbound | | | | Northbound | | | | Southbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | U | L | T | R | U | L | T | R | U | L | T | R | U | L | T | R |
| Priority | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 | | 7 | 8 | 9 | | 10 | 11 | 12 |
| Number of Lanes | 0 | 0 | 2 | 1 | 0 | 1 | 2 | 0 | | 0 | 1 | 0 | | 0 | 0 | 0 |
| Configuration | | | T | R | | L | T | | | | LR | | | | | |
| Volume, V (veh/h) | | | 729 | 0 | | 0 | 691 | | | 0 | | 4 | | | | |
| Percent Heavy Vehicles (%) | | | | | | 1 | | | | 0 | | 0 | | | | |
| Proportion Time Blocked | | | | | | 0.000 | | | | 0.500 | | 0.500 | | | | |
| Percent Grade (%) | | | | | | | | | | 0 | | | | | | |
| Right Turn Channelized | | No | | | | No | | | | No | | | | No | | |
| Median Type/Storage | | Undivided | | | | | | | | | | | | | | |

## Critical and Follow-up Headways

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Critical Headway (sec) | | | | | | 4.1 | | | | 7.5 | | 6.9 | | | | |
| Critical Headway (sec) | | | | | | 4.12 | | | | 6.80 | | 6.90 | | | | |
| Base Follow-Up Headway (sec) | | | | | | 2.2 | | | | 3.5 | | 3.3 | | | | |
| Follow-Up Headway (sec) | | | | | | 2.21 | | | | 3.50 | | 3.30 | | | | |

## Delay, Queue Length, and Level of Service

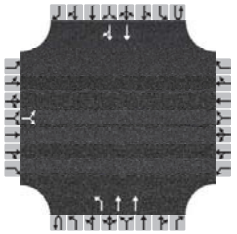
| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow Rate, v (veh/h) | | | | | | 0 | | | | | 4 | | | | | |
| Capacity, c (veh/h) | | | | | | 849 | | | | | 545 | | | | | |
| v/c Ratio | | | | | | 0.00 | | | | | 0.01 | | | | | |
| 95% Queue Length, $Q_{95}$ (veh) | | | | | | 0.0 | | | | | 0.0 | | | | | |
| Control Delay (s/veh) | | | | | | 9.2 | | | | | 11.7 | | | | | |
| Level of Service, LOS | | | | | | A | | | | | B | | | | | |
| Approach Delay (s/veh) | | | | | | 0.0 | | | | | 11.7 | | | | | |
| Approach LOS | | | | | | | | | | | B | | | | | |




# HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | MSG | Intersection | Speedway Driveway #3 |
| Agency/Co. | | Jurisdiction | RCOC |
| Date Performed | 07/31/2019 | East/West Street | Speedway Driveway #3 |
| Analysis Year | 2021 | North/South Street | M-150 (Rochester Rd) |
| Time Analyzed | PM Peak Hour | Peak Hour Factor | 0.95 |
| Intersection Orientation | North-South | Analysis Time Period (hrs) | 0.25 |
| Project Description | Speedway Fuel Station | | |

## Lanes



Major Street: North-South

## Vehicle Volumes and Adjustments

| Approach | Eastbound | | | | Westbound | | | | Northbound | | | | Southbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | U | L | T | R | U | L | T | R | U | L | T | R | U | L | T | R |
| Priority | | 10 | 11 | 12 | | 7 | 8 | 9 | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 |
| Number of Lanes | | 0 | 1 | 0 | | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 2 | 0 |
| Configuration | | | LR | | | | | | | L | T | | | | T | TR |
| Volume, V (veh/h) | | 0 | | 1 | | | | | | 0 | 1542 | | | | 1388 | 28 |
| Percent Heavy Vehicles (%) | | 0 | | 0 | | | | | | 0 | | | | | | |
| Proportion Time Blocked | | 0.800 | | 0.000 | | | | | | 0.750 | | | | | | |
| Percent Grade (%) | | 0 | | | | | | | | | | | | | | |
| Right Turn Channelized | | No | | | | No | | | | No | | | | No | | |
| Median Type/Storage | | Undivided | | | | | | | | | | | | | | |

## Critical and Follow-up Headways

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Critical Headway (sec) | | 7.5 | | 6.9 | | | | | | 4.1 | | | | | | |
| Critical Headway (sec) | | 6.80 | | 6.90 | | | | | | 4.10 | | | | | | |
| Base Follow-Up Headway (sec) | | 3.5 | | 3.3 | | | | | | 2.2 | | | | | | |
| Follow-Up Headway (sec) | | 3.50 | | 3.30 | | | | | | 2.20 | | | | | | |

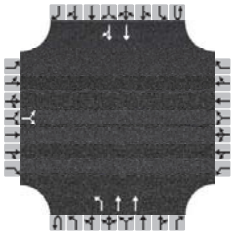
## Delay, Queue Length, and Level of Service

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow Rate, v (veh/h) | | | 1 | | | | | | | 0 | | | | | | |
| Capacity, c (veh/h) | | | 361 | | | | | | | 409 | | | | | | |
| v/c Ratio | | | 0.00 | | | | | | | 0.00 | | | | | | |
| 95% Queue Length, $Q_{95}$ (veh) | | | 0.0 | | | | | | | 0.0 | | | | | | |
| Control Delay (s/veh) | | | 15.0 | | | | | | | 13.8 | | | | | | |
| Level of Service, LOS | | | B | | | | | | | B | | | | | | |
| Approach Delay (s/veh) | | 15.0 | | | | | | | | 0.0 | | | | | | |
| Approach LOS | | B | | | | | | | | | | | | | | |

# HCS7 Two-Way Stop-Control Report

| General Information | | Site Information | |
|---|---|---|---|
| Analyst | MSG | Intersection | Speedway Driveway #4 |
| Agency/Co. | | Jurisdiction | RCOC |
| Date Performed | 07/31/2019 | East/West Street | Speedway Driveway #4 |
| Analysis Year | 2021 | North/South Street | M-150 (Rochester Rd) |
| Time Analyzed | PM Peak Hour | Peak Hour Factor | 0.94 |
| Intersection Orientation | North-South | Analysis Time Period (hrs) | 0.25 |
| Project Description | Speedway Fuel Station | | |

## Lanes



Major Street: North-South

## Vehicle Volumes and Adjustments

| Approach | Eastbound | | | | Westbound | | | | Northbound | | | | Southbound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | U | L | T | R | U | L | T | R | U | L | T | R | U | L | T | R |
| Priority | | 10 | 11 | 12 | | 7 | 8 | 9 | 1U | 1 | 2 | 3 | 4U | 4 | 5 | 6 |
| Number of Lanes | | 0 | 1 | 0 | | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 2 | 0 |
| Configuration | | | LR | | | | | | | L | T | | | | T | TR |
| Volume, V (veh/h) | | 1 | | 36 | | | | | | 7 | 1541 | | | | 1388 | 1 |
| Percent Heavy Vehicles (%) | | 0 | | 6 | | | | | | 1 | | | | | | |
| Proportion Time Blocked | | 0.800 | | 0.000 | | | | | | 0.750 | | | | | | |
| Percent Grade (%) | 0 | | | | | | | | | | | | | | | |
| Right Turn Channelized | No | | | | No | | | | No | | | | No | | | |
| Median Type/Storage | Undivided | | | | | | | | | | | | | | | |

## Critical and Follow-up Headways

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Critical Headway (sec) | | 7.5 | | 6.9 | | | | | | 4.1 | | | | | | |
| Critical Headway (sec) | | 6.80 | | 7.02 | | | | | | 4.12 | | | | | | |
| Base Follow-Up Headway (sec) | | 3.5 | | 3.3 | | | | | | 2.2 | | | | | | |
| Follow-Up Headway (sec) | | 3.50 | | 3.36 | | | | | | 2.21 | | | | | | |

## Delay, Queue Length, and Level of Service

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow Rate, v (veh/h) | | | 39 | | | | | | | 7 | | | | | | |
| Capacity, c (veh/h) | | | 344 | | | | | | | 407 | | | | | | |
| v/c Ratio | | | 0.11 | | | | | | | 0.02 | | | | | | |
| 95% Queue Length, $Q_{95}$ (veh) | | | 0.4 | | | | | | | 0.1 | | | | | | |
| Control Delay (s/veh) | | | 16.8 | | | | | | | 14.0 | | | | | | |
| Level of Service, LOS | | | C | | | | | | | B | | | | | | |
| Approach Delay (s/veh) | 16.8 | | | | | | | | 0.1 | | | | | | | |
| Approach LOS | C | | | | | | | | | | | | | | | |

# APPENDIX C
## SITE INFORMATION

# Land Use: 945
# Gasoline/Service Station with Convenience Market

### Description

This land use includes gasoline/service stations with convenience markets where the primary business is the fueling of motor vehicles. These service stations may also have ancillary facilities for servicing and repairing motor vehicles and may have a car wash. Some commonly sold convenience items are newspapers, coffee or other beverages, and snack items that are usually consumed in the car. The sites included in this land use category have the following two specific characteristics:

- The gross floor area of the convenience market is between 2,000 and 3,000 gross square feet
- The number of vehicle fueling positions is at least 10

Convenience market (Land Use 851), convenience market with gasoline pumps (Land Use 853), gasoline/service station (Land Use 944), truck stop (Land Use 950), and super convenience market/gas station (Land Use 960) are related uses.

### Additional Data

The independent variable, vehicle fueling positions, is defined as the maximum number of vehicles that can be fueled simultaneously.

Gasoline/service stations in this land use include “pay-at-the-pump” and traditional fueling stations.

Time-of-day distribution data for this land use are presented in Appendix A. For the five general urban/suburban sites with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 7:30 and 8:30 a.m. and 3:45 and 4:45 p.m., respectively.

A multi-variable regression analysis based on both the convenience market gross floor area (GFA) and the number of vehicle fueling positions (VFP) produced a series of fitted curve equations. The equations are in the form of:

Vehicle Trips = [(VFP Factor) x (Number of VFP)] + [(GFA Factor) x (GFA)] + (Constant)

The values for the VFP factor, GFA factor, and constant are presented in the following table for each time period for which a fitted curve equation could produce an $R^2$ value of at least 0.50.

| Time Period | VFP Factor | GFA Factor | Constant | $R^2$ |
|---|---|---|---|---|
| Weekday, AM Peak Hour of Generator | 15.6 | 108 | -295 | 0.62 |
| Weekday, PM Peak Hour of Generator | Not Available | | | |
| Weekday, AM Peak Hour of Adjacent Street | 15.7 | 97.3 | -284 | 0.59 |
| Weekday, PM Peak Hour of Adjacent Street | Not Available | | | |

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alberta (CA), California, Connecticut, Florida, Indiana, Iowa, Kentucky, Minnesota, New Hampshire, New Jersey, Texas, and Wisconsin.

### Source Numbers

245, 340, 350, 385, 440, 617, 813, 864, 865, 883, 888, 954, 960, 977

# Gasoline/Service Station With Convenience Market
(945)

**Vehicle Trip Ends vs:** Vehicle Fueling Positions
**On a:** Weekday

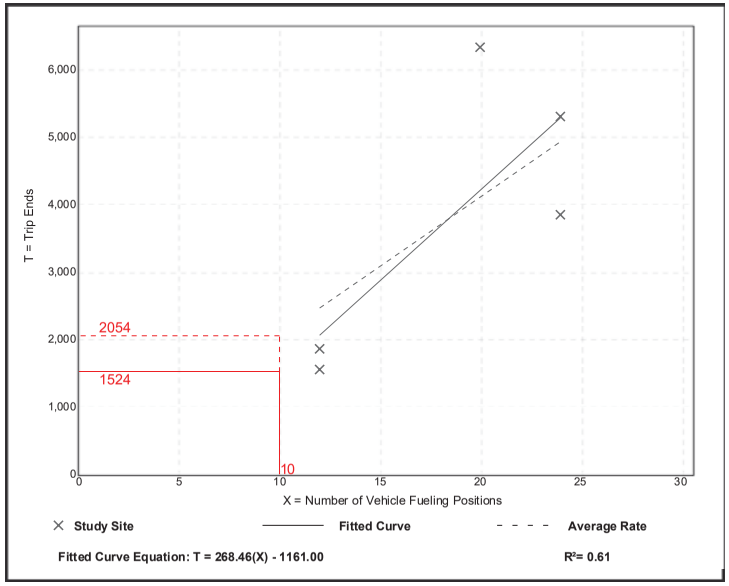
**Setting/Location:** General Urban/Suburban
Number of Studies: 5
Avg. Num. of Vehicle Fueling Positions: 18
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per Vehicle Fueling Position

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 205.36 | 129.50 - 316.45 | 73.80 |

## Data Plot and Equation

*Caution – Small Sample Size*

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# Gasoline/Service Station With Convenience Market
(945)

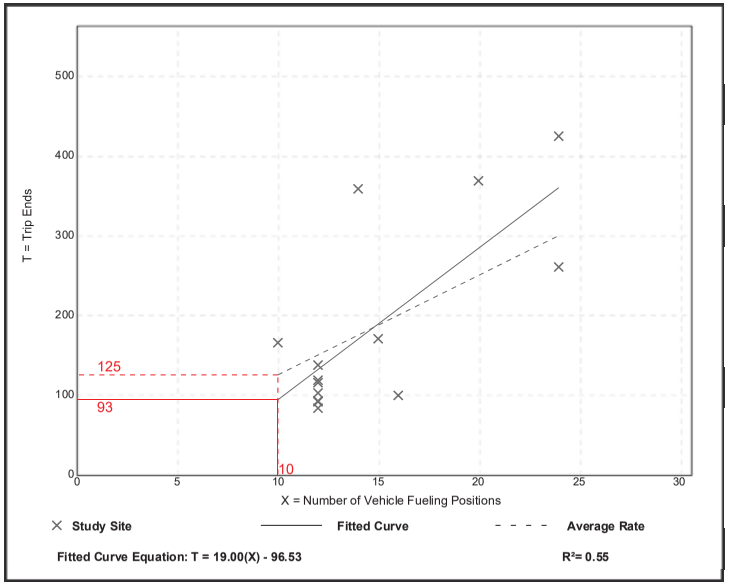
**Vehicle Trip Ends vs:** Vehicle Fueling Positions
**On a:** Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

**Setting/Location:** General Urban/Suburban
Number of Studies: 14
Avg. Num. of Vehicle Fueling Positions: 15
Directional Distribution: 51% entering, 49% exiting

## Vehicle Trip Generation per Vehicle Fueling Position

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 12.47 | 6.19 - 25.57 | 5.56 |

## Data Plot and Equation

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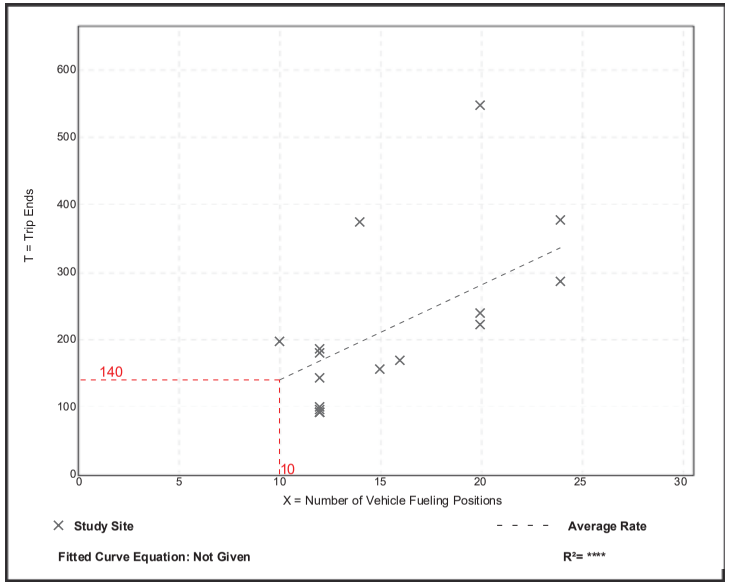
# Gasoline/Service Station With Convenience Market
(945)

**Vehicle Trip Ends vs:** **Vehicle Fueling Positions**
**On a:** **Weekday,**
**Peak Hour of Adjacent Street Traffic,**
**One Hour Between 4 and 6 p.m.**
**Setting/Location:** **General Urban/Suburban**
Number of Studies: 16
Avg. Num. of Vehicle Fueling Positions: 15
Directional Distribution: 51% entering, 49% exiting

## Vehicle Trip Generation per Vehicle Fueling Position

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 13.99 | 7.67 - 27.35 | 6.18 |

## Data Plot and Equation

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# Gasoline/Service Station With Convenience Market
(945)

**Vehicle Trip Ends vs:** **1000 Sq. Ft. GFA**
**On a:** **Weekday**

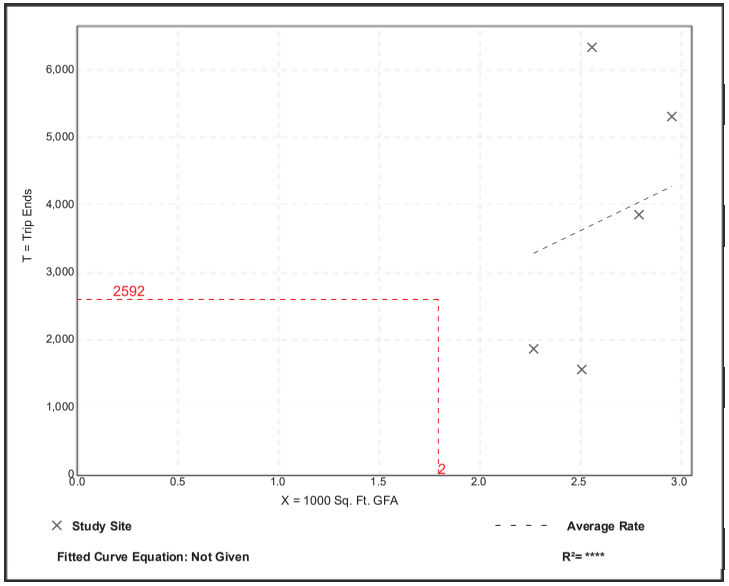
**Setting/Location:** **General Urban/Suburban**
Number of Studies: 5
Avg. 1000 Sq. Ft. GFA: 3
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 1440.02 | 617.89 - 2466.48 | 734.23 |

## Data Plot and Equation

***Caution – Small Sample Size***

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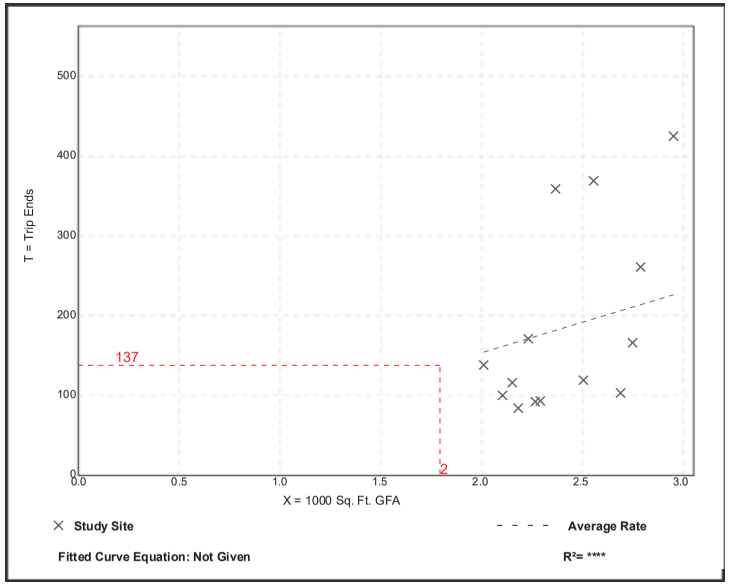
# Gasoline/Service Station With Convenience Market
(945)

**Vehicle Trip Ends vs:** 1000 Sq. Ft. GFA
**On a:** Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
**Setting/Location:** General Urban/Suburban
Number of Studies: 14
Avg. 1000 Sq. Ft. GFA: 2
Directional Distribution: 51% entering, 49% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 75.99 | 37.78 - 150.67 | 42.87 |

## Data Plot and Equation

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Page 1 of 1

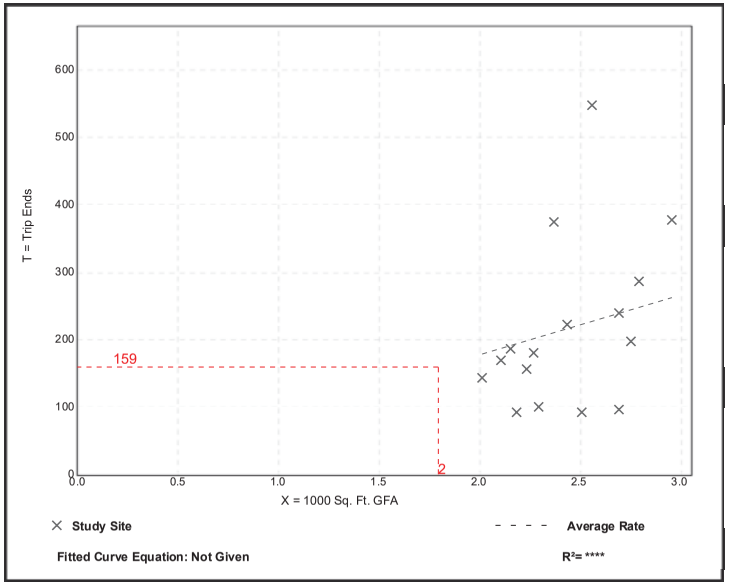
# Gasoline/Service Station With Convenience Market
(945)

**Vehicle Trip Ends vs:** 1000 Sq. Ft. GFA
**On a:** Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
**Setting/Location:** General Urban/Suburban
Number of Studies: 16
Avg. 1000 Sq. Ft. GFA: 2
Directional Distribution: 51% entering, 49% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 88.35 | 35.56 - 213.17 | 47.42 |

## Data Plot and Equation

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# Gasoline/Service Station With Convenience Market
(945)

**Vehicle Trip Ends vs:** Vehicle Fueling Positions
**On a:** Weekday

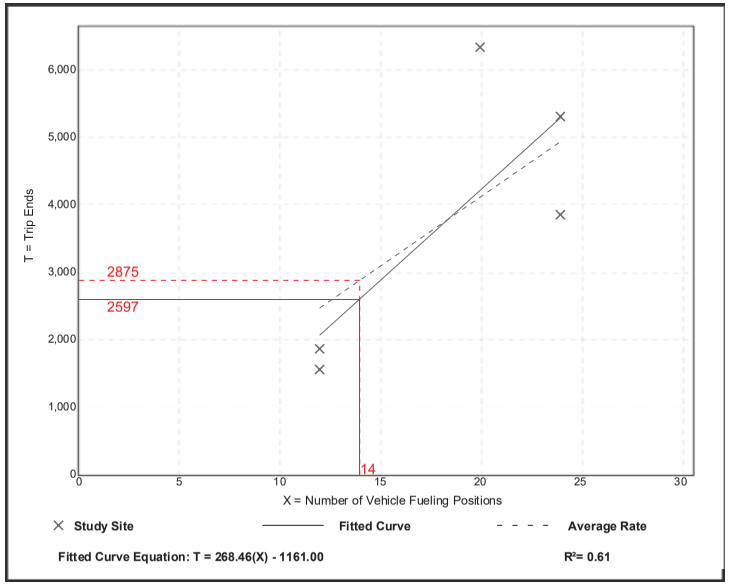
**Setting/Location:** General Urban/Suburban
Number of Studies: 5
Avg. Num. of Vehicle Fueling Positions: 18
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per Vehicle Fueling Position

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 205.36 | 129.50 - 316.45 | 73.80 |

## Data Plot and Equation

*Caution – Small Sample Size*

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# Gasoline/Service Station With Convenience Market
(945)

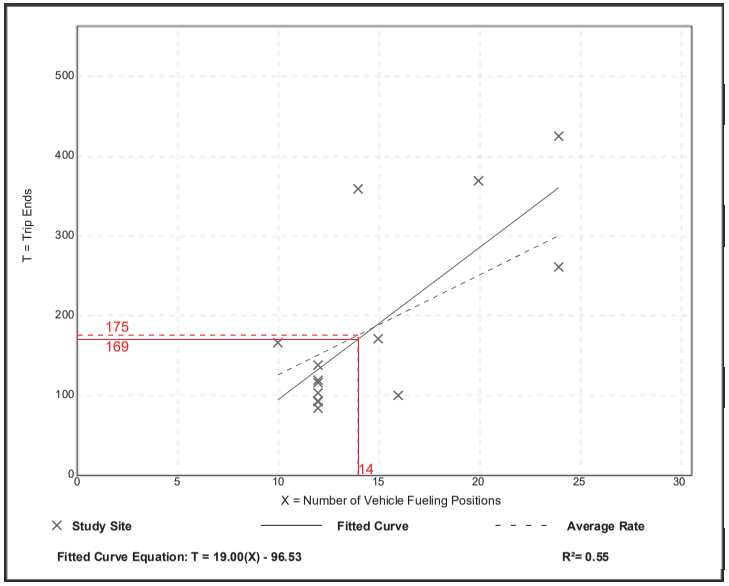
**Vehicle Trip Ends vs:** Vehicle Fueling Positions
**On a:** Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

**Setting/Location:** General Urban/Suburban
Number of Studies: 14
Avg. Num. of Vehicle Fueling Positions: 15
Directional Distribution: 51% entering, 49% exiting

## Vehicle Trip Generation per Vehicle Fueling Position

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 12.47 | 6.19 - 25.57 | 5.56 |

## Data Plot and Equation

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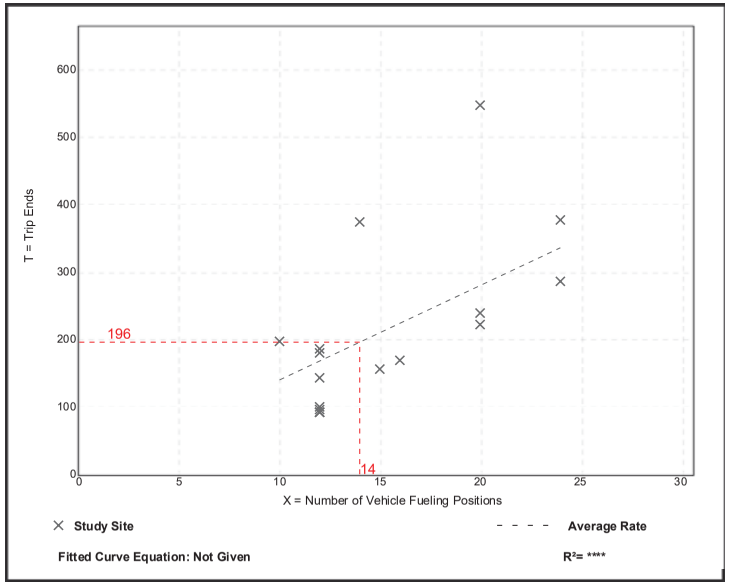
# Gasoline/Service Station With Convenience Market
(945)

**Vehicle Trip Ends vs:** **Vehicle Fueling Positions**
**On a:** **Weekday,**
**Peak Hour of Adjacent Street Traffic,**
**One Hour Between 4 and 6 p.m.**
**Setting/Location:** **General Urban/Suburban**
Number of Studies: 16
Avg. Num. of Vehicle Fueling Positions: 15
Directional Distribution: 51% entering, 49% exiting

## Vehicle Trip Generation per Vehicle Fueling Position

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 13.99 | 7.67 - 27.35 | 6.18 |

## Data Plot and Equation




*Trip Generation Manual*, 10th Edition ● Institute of Transportation Engineers





# Gasoline/Service Station With Convenience Market
(945)

**Vehicle Trip Ends vs:** **1000 Sq. Ft. GFA**
**On a:** **Weekday**

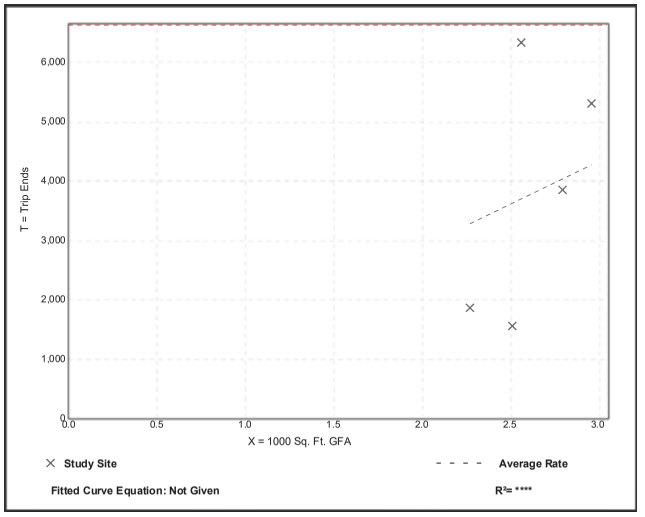
**Setting/Location:** **General Urban/Suburban**
Number of Studies: 5
Avg. 1000 Sq. Ft. GFA: 3
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 1440.02 | 617.89 - 2466.48 | 734.23 |

## Data Plot and Equation

***Caution – Small Sample Size***




*Trip Generation Manual*, 10th Edition ● Institute of Transportation Engineers

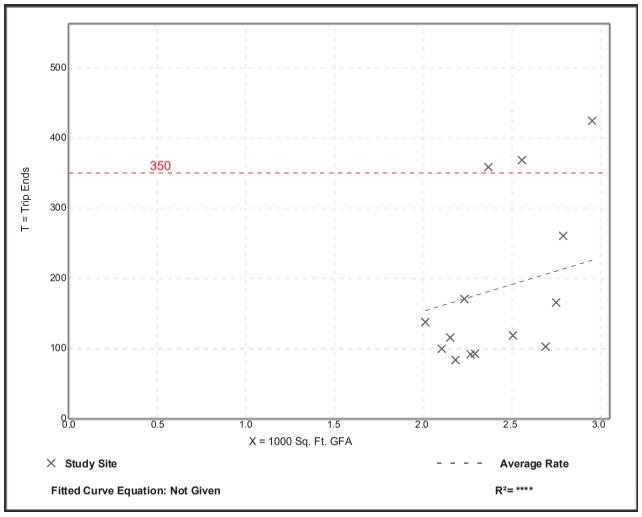
# Gasoline/Service Station With Convenience Market
(945)

**Vehicle Trip Ends vs:** 1000 Sq. Ft. GFA
**On a:** Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
**Setting/Location:** General Urban/Suburban
Number of Studies: 14
Avg. 1000 Sq. Ft. GFA: 2
Directional Distribution: 51% entering, 49% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 75.99 | 37.78 - 150.67 | 42.87 |

## Data Plot and Equation

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Page 1 of 1

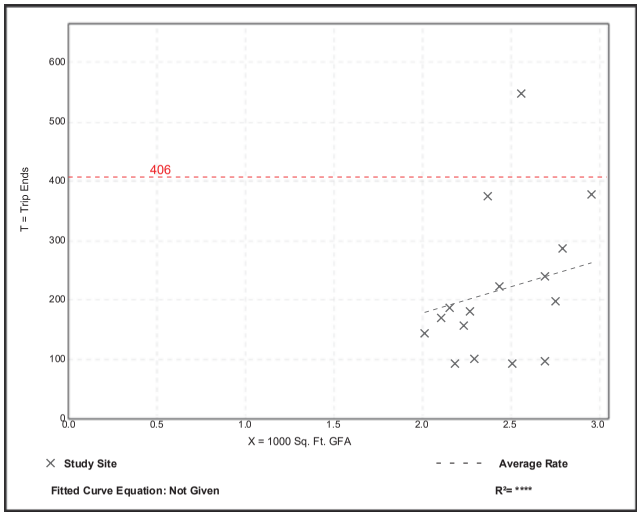
# Gasoline/Service Station With Convenience Market
(945)

**Vehicle Trip Ends vs:** 1000 Sq. Ft. GFA
**On a:** Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
**Setting/Location:** General Urban/Suburban
Number of Studies: 16
Avg. 1000 Sq. Ft. GFA: 2
Directional Distribution: 51% entering, 49% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 88.35 | 35.56 - 213.17 | 47.42 |

## Data Plot and Equation

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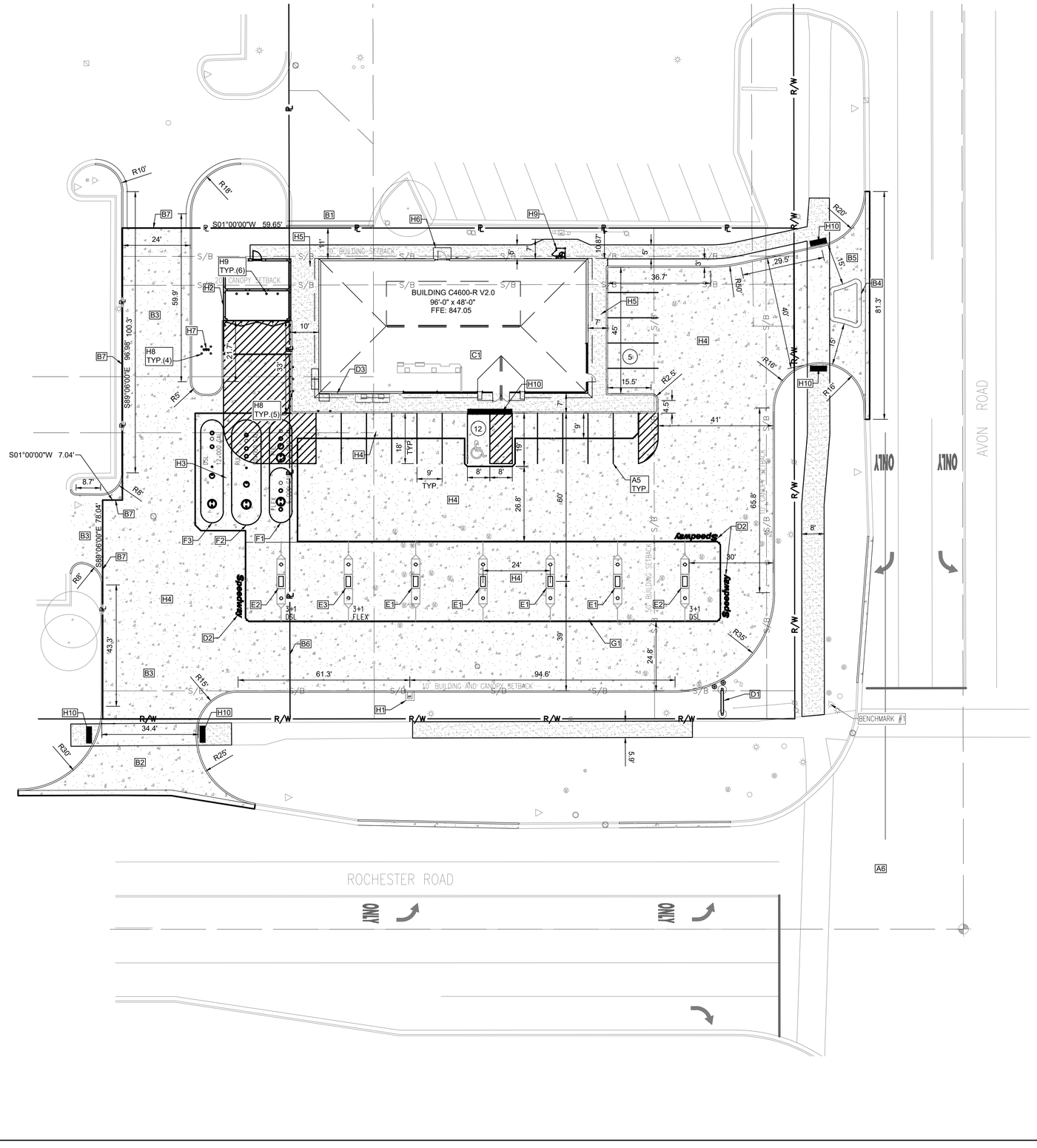


A. GENERAL NOTES

1. GENERAL SCOPE OF WORK INCLUDES: LOT LINE ADJUSTMENT, BUILDING, CANOPY, FUEL TANKS, PIPING, DISPENSERS AND PARKING
2. TRUCK TURNS HAVE BEEN PERFORMED ON THIS SITE TO CONFIRM LOCATION OF USTs
3. FINAL DESIGN OF SITE SUBJECT TO LOCAL AND STATE REGULATIONS
4. EXISTING PROPERTY SIZE: 31,503.45 SQ.FT.± / 0.723 AC.±
   ADDITIONAL PROPERTY SIZE: 10,956.60 SQ.FT.± / 0.251 AC.±
   TOTAL PROPERTY SIZE: 42,460.05 SQ.FT.± / 0.974 AC.±
   TOTAL ACREAGE TO BE DETERMINED BY AN UPDATED SURVEY IN THE FUTURE
5. PROVIDED PARKING: (1) ADA PARKING SPACE AND (16) STANDARD PARKING SPACES
6. THE ADJACENT INTERSECTION IS SIGNALIZED

B. SITE WORK

1. EXISTING SHARED ACCESS DRIVE APPROACH CLOSED
2. PROPOSED FULL MOVEMENT ACCESS
3. PROPOSED ACCESS DRIVE (AN UPDATED ACCESS EASEMENT MAY BE NEEDED)
4. MOUNTABLE CONCRETE ISLAND
5. PROPOSED RIGHT-IN / RIGHT OUT ACCESS
6. EXISTING LOT LINE TO BE REMOVED
7. PROPOSED LOT LINE

C. BUILDING

1. STANDARD #4600-R V2.0 BUILDING

D. EXTERIOR APPEARANCE & SIGNAGE

1. 165 SQ. FT. GOALPOST TRADEMARK SIGN
2. CANOPY SIGNAGE
3. INSTALL READERBOARD

E. DISPENSERS

1. (4) 3+0 DISPENSERS, SUMPS AND ISLANDS
2. (3) 3+1 DISPENSERS, SUMPS AND ISLANDS
3. (1) 3+1 FLEX DISPENSER, SUMP AND ISLAND

F. UNDERGROUND STORAGE TANKS

1. (1) 12,000 GALLON TANK FOR PREMIUM & ETHANOL FLEX FUEL
2. (1) 20,000 GALLON TANK FOR UNLEADED
3. (1) 12,000 GALLON TANK FOR AUTO DIESEL

G. CANOPY

1. 28' x 169' (7) ISLAND AUTO CANOPY PER CURRENT STANDARDS

H. YARD

1. AIR ISLAND
2. TRASH ENCLOSURE AND BOTTLE STORAGE
3. CONCRETE TANK SLAB
4. CONCRETE PAVEMENT
5. CONCRETE SIDEWALK
6. AWNING
7. RISERS FOR UNDERGROUND TANKS
8. BOLLARDS
9. CO2 TANK AND FENCE
10. ADA RAMP WITH DETECTABLE WARNING STRIP

PAVEMENT LEGEND

- STANDARD DUTY CONCRETE PAVEMENT
- CONCRETE WALK

NORTH

Know what's **below.**
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Project # 019-00651-00


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Prepared By:
Speedway
Engineering and Construction Dept.
Enon, OH 45323

| NO. | REVISIONS | DESIGNER DATE | PROJECT MANAGER DATE | REVIEWER DATE |
|---|---|---|---|---|
| A | CE OWNER REVIEW | 06/04/19 | 06/04/19 | 06/04/19 |



# PRELIMINARY PLOT PLAN

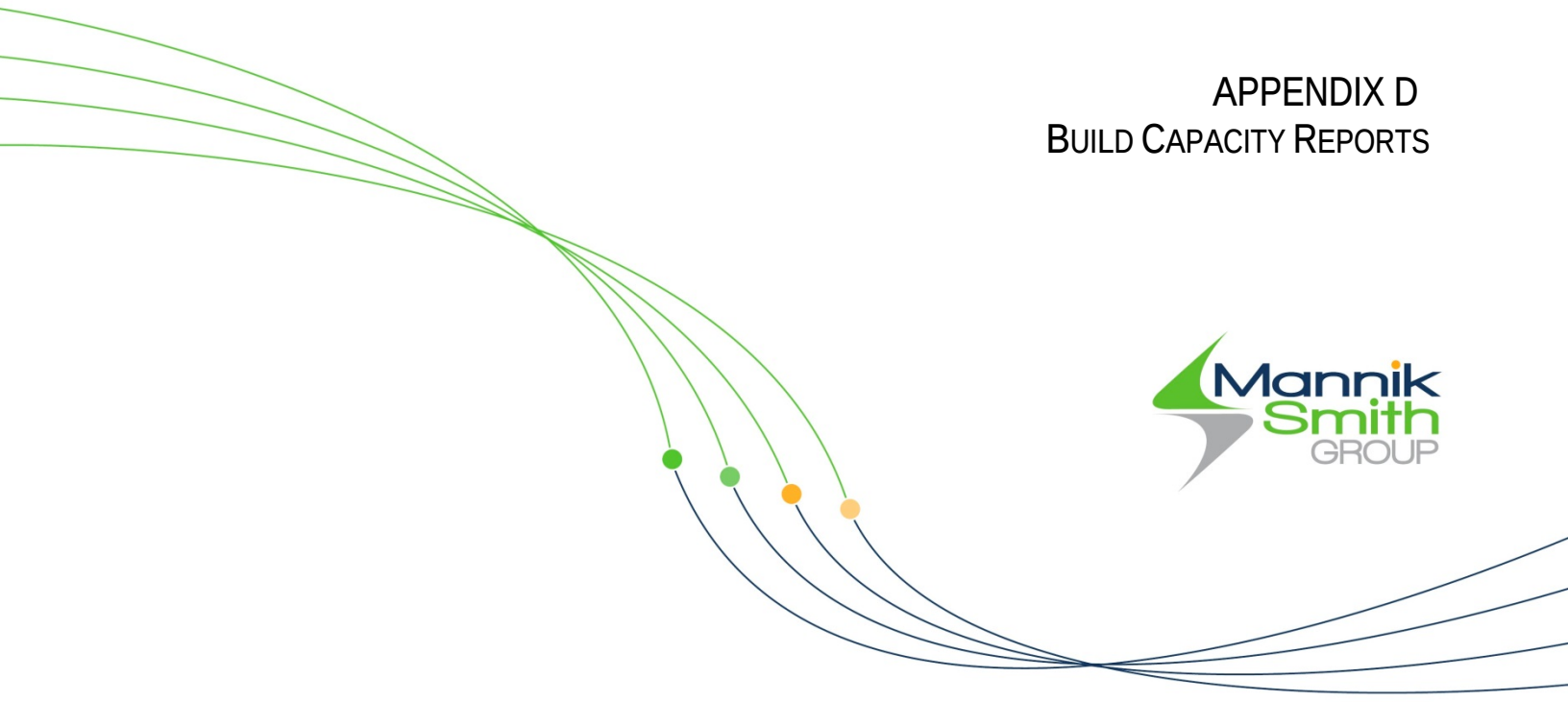
REBUILD
1010 S. ROCHESTER RD
OAKLAND
ROCHESTER HILLS, MI

| | |
|---|---|
| STORE OR BLDG NO. | 008832 |
| VERSION OR PROJECT ID | 8252 |
| SCALE | 1" = 20' |

| DESIGN TEAM | DATE |
|---|---|
| DGNR. B. HALL | 06/04/19 |
| P.MGR. M. ALFIERI | 06/04/19 |
| RVWR. E. RANDOLPH | 06/04/19 |
| DRWG. NO. 8832_CS | |


$STIMES, $STIMES
$DGN-SPEC$, $DGN-SPEC$, $DGN-SPEC$, $DGN-SPEC$

# APPENDIX D
## BUILD CAPACITY REPORTS



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 147 | 128 | 121 | 183 | 384 | 150 | 120 | 688 | 57 | 97 | 1458 | 352 |
| Future Volume (veh/h) | 147 | 128 | 121 | 183 | 384 | 150 | 120 | 688 | 57 | 97 | 1458 | 352 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.98 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1953 | 1953 | 1953 | 1953 | 1953 | 1953 | 1938 | 1938 | 1938 | 1969 | 1969 | 1969 |
| Adj Flow Rate, veh/h | 171 | 149 | 141 | 208 | 436 | 170 | 130 | 748 | 62 | 109 | 1638 | 396 |
| Peak Hour Factor | 0.86 | 0.86 | 0.86 | 0.88 | 0.88 | 0.88 | 0.92 | 0.92 | 0.92 | 0.89 | 0.89 | 0.89 |
| Percent Heavy Veh, % | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 2 | 2 | 2 |
| Cap, veh/h | 205 | 314 | 266 | 327 | 466 | 179 | 164 | 1859 | 829 | 385 | 1863 | 812 |
| Arrive On Green | 0.08 | 0.16 | 0.16 | 0.09 | 0.18 | 0.18 | 0.05 | 0.50 | 0.50 | 0.04 | 0.50 | 0.50 |
| Sat Flow, veh/h | 1860 | 1953 | 1652 | 1860 | 2621 | 1005 | 1845 | 3681 | 1641 | 1875 | 3741 | 1631 |
| Grp Volume(v), veh/h | 171 | 149 | 141 | 208 | 307 | 299 | 130 | 748 | 62 | 109 | 1638 | 396 |
| Grp Sat Flow(s),veh/h/ln | 1860 | 1953 | 1652 | 1860 | 1856 | 1770 | 1845 | 1841 | 1641 | 1875 | 1870 | 1631 |
| Q Serve(g_s), s | 10.8 | 9.7 | 11.0 | 13.1 | 22.8 | 23.4 | 4.8 | 17.7 | 2.7 | 4.0 | 54.8 | 22.5 |
| Cycle Q Clear(g_c), s | 10.8 | 9.7 | 11.0 | 13.1 | 22.8 | 23.4 | 4.8 | 17.7 | 2.7 | 4.0 | 54.8 | 22.5 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.57 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 205 | 314 | 266 | 327 | 330 | 315 | 164 | 1859 | 829 | 385 | 1863 | 812 |
| V/C Ratio(X) | 0.84 | 0.47 | 0.53 | 0.64 | 0.93 | 0.95 | 0.79 | 0.40 | 0.07 | 0.28 | 0.88 | 0.49 |
| Avail Cap(c_a), veh/h | 205 | 314 | 266 | 327 | 330 | 315 | 183 | 1859 | 829 | 389 | 1863 | 812 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 46.5 | 53.4 | 53.9 | 44.1 | 56.7 | 56.9 | 31.5 | 21.5 | 17.8 | 16.9 | 31.4 | 23.3 |
| Incr Delay (d2), s/veh | 24.8 | 1.1 | 2.0 | 4.0 | 31.8 | 37.7 | 19.0 | 0.7 | 0.2 | 0.4 | 6.3 | 2.1 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 6.3 | 4.8 | 4.6 | 6.4 | 13.4 | 13.6 | 2.9 | 7.5 | 1.1 | 1.7 | 24.9 | 8.8 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 71.2 | 54.5 | 55.9 | 48.1 | 88.5 | 94.7 | 50.6 | 22.2 | 18.0 | 17.3 | 37.7 | 25.4 |
| LnGrp LOS | E | D | E | D | F | F | D | C | B | B | D | C |
| Approach Vol, veh/h | | 461 | | | 814 | | | 940 | | | 2143 | |
| Approach Delay, s/veh | | 61.1 | | | 80.4 | | | 25.8 | | | 34.4 | |
| Approach LOS | | E | | | F | | | C | | | C | |

| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 12.6 | 77.4 | 18.0 | 32.0 | 13.6 | 76.4 | 20.4 | 29.6 |
| Change Period (Y+Rc), s | 6.7 | 6.7 | 7.1 | 7.1 | 6.7 | 6.7 | 7.1 | 7.1 |
| Max Green Setting (Gmax), s | 6.2 | 70.4 | 10.9 | 24.9 | 8.3 | 68.3 | 13.3 | 22.5 |
| Max Q Clear Time (g_c+I1), s | 6.0 | 19.7 | 12.8 | 25.4 | 6.8 | 56.8 | 15.1 | 13.0 |
| Green Ext Time (p_c), s | 0.0 | 5.9 | 0.0 | 0.0 | 0.1 | 9.0 | 0.0 | 1.0 |

| Intersection Summary | |
|---|---|
| HCM 6th Ctrl Delay | 44.0 |
| HCM 6th LOS | D |





| Intersection | |
|---|---|
| Int Delay, s/veh | 0.3 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 354 | 32 | 0 | 856 | 0 | 42 |
| Future Vol, veh/h | 354 | 32 | 0 | 856 | 0 | 42 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | - | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 385 | 35 | 0 | 930 | 0 | 46 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | - | - | - | 210 |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |
| Critical Hdwy | 10 | - | - | - | - | 6.94 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - |
| Follow-up Hdwy | - | - | - | - | - | 3.32 |
| Pot Cap-1 Maneuver | - | - | 0 | - | 0 | 796 |
| Stage 1 | - | - | 0 | - | 0 | - |
| Stage 2 | - | - | 0 | - | 0 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | - | - | - | 796 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 9.8 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT |
|---|---|---|---|---|
| Capacity (veh/h) | 796 | - | - | - |
| HCM Lane V/C Ratio | 0.057 | - | - | - |
| HCM Control Delay (s) | 9.8 | - | - | - |
| HCM Lane LOS | A | - | - | - |
| HCM 95th %tile Q(veh) | 0.2 | - | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.5 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 72 | 20 | 865 | 1693 | 69 |
| Future Vol, veh/h | 0 | 72 | 20 | 865 | 1693 | 69 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 0 | 100 | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 78 | 22 | 940 | 1840 | 75 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | - | 958 | 1915 | 0 | - | 0 |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |
| Critical Hdwy | - | 6.94 | 4.14 | - | - | - |
| Critical Hdwy Stg 1 | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - |
| Follow-up Hdwy | - | 3.32 | 2.22 | - | - | - |
| Pot Cap-1 Maneuver | 0 | *378 | *566 | - | - | - |
| Stage 1 | 0 | - | - | - | - | - |
| Stage 2 | 0 | - | - | - | - | - |
| Platoon blocked, % | | 1 | 1 | - | - | - |
| Mov Cap-1 Maneuver | - | *378 | *566 | - | - | - |
| Mov Cap-2 Maneuver | - | - | - | - | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 17 | 0.3 | 0 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | * 566 | - | 378 | - | - |
| HCM Lane V/C Ratio | 0.038 | - | 0.207 | - | - |
| HCM Control Delay (s) | 11.6 | - | 17 | - | - |
| HCM Lane LOS | B | - | C | - | - |
| HCM 95th %tile Q(veh) | 0.1 | - | 0.8 | - | - |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 332 | 309 | 122 | 126 | 256 | 282 | 168 | 1265 | 108 | 211 | 1198 | 266 |
| Future Volume (veh/h) | 332 | 309 | 122 | 126 | 256 | 282 | 168 | 1265 | 108 | 211 | 1198 | 266 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 0.99 | 1.00 | | 0.98 | 1.00 | | 0.99 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1953 | 1953 | 1953 | 1984 | 1984 | 1984 | 2000 | 2000 | 2000 | 1969 | 1969 | 1969 |
| Adj Flow Rate, veh/h | 357 | 332 | 131 | 134 | 272 | 300 | 177 | 1332 | 114 | 222 | 1261 | 280 |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.94 | 0.94 | 0.94 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Percent Heavy Veh, % | 3 | 3 | 3 | 1 | 1 | 1 | 0 | 0 | 0 | 2 | 2 | 2 |
| Cap, veh/h | 369 | 511 | 427 | 267 | 283 | 247 | 224 | 1480 | 651 | 247 | 1541 | 687 |
| Arrive On Green | 0.17 | 0.26 | 0.26 | 0.06 | 0.15 | 0.15 | 0.07 | 0.39 | 0.39 | 0.09 | 0.41 | 0.41 |
| Sat Flow, veh/h | 1860 | 1953 | 1632 | 1890 | 1885 | 1646 | 1905 | 3800 | 1672 | 1875 | 3741 | 1668 |
| Grp Volume(v), veh/h | 357 | 332 | 131 | 134 | 272 | 300 | 177 | 1332 | 114 | 222 | 1261 | 280 |
| Grp Sat Flow(s),veh/h/ln | 1860 | 1953 | 1632 | 1890 | 1885 | 1646 | 1905 | 1900 | 1672 | 1875 | 1870 | 1668 |
| Q Serve(g_s), s | 22.8 | 21.2 | 9.0 | 8.3 | 20.1 | 21.0 | 7.8 | 46.1 | 6.3 | 10.8 | 41.9 | 16.6 |
| Cycle Q Clear(g_c), s | 22.8 | 21.2 | 9.0 | 8.3 | 20.1 | 21.0 | 7.8 | 46.1 | 6.3 | 10.8 | 41.9 | 16.6 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 369 | 511 | 427 | 267 | 283 | 247 | 224 | 1480 | 651 | 247 | 1541 | 687 |
| V/C Ratio(X) | 0.97 | 0.65 | 0.31 | 0.50 | 0.96 | 1.22 | 0.79 | 0.90 | 0.18 | 0.90 | 0.82 | 0.41 |
| Avail Cap(c_a), veh/h | 369 | 511 | 427 | 267 | 283 | 247 | 232 | 1480 | 651 | 257 | 1541 | 687 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 42.5 | 46.0 | 41.5 | 47.3 | 59.1 | 59.5 | 31.4 | 40.2 | 28.0 | 36.3 | 36.5 | 29.1 |
| Incr Delay (d2), s/veh | 38.2 | 2.9 | 0.4 | 1.5 | 43.0 | 128.0 | 16.4 | 9.1 | 0.6 | 30.2 | 5.0 | 1.8 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 14.1 | 10.5 | 3.6 | 4.1 | 12.8 | 17.4 | 4.4 | 22.6 | 2.6 | 6.8 | 19.4 | 6.8 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 80.7 | 48.9 | 41.9 | 48.8 | 102.1 | 187.5 | 47.8 | 49.3 | 28.6 | 66.6 | 41.5 | 30.9 |
| LnGrp LOS | F | D | D | D | F | F | D | D | C | E | D | C |
| Approach Vol, veh/h | | 820 | | | 706 | | | 1623 | | | 1763 | |
| Approach Delay, s/veh | | 61.6 | | | 128.3 | | | 47.7 | | | 42.9 | |
| Approach LOS | | E | | | F | | | D | | | D | |

| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 19.7 | 61.2 | 31.0 | 28.1 | 16.5 | 64.4 | 15.4 | 43.7 |
| Change Period (Y+Rc), s | 6.7 | 6.7 | 7.1 | 7.1 | 6.7 | 6.7 | 7.1 | 7.1 |
| Max Green Setting (Gmax), s | 13.7 | 53.8 | 23.9 | 21.0 | 10.4 | 57.1 | 8.3 | 36.6 |
| Max Q Clear Time (g_c+I1), s | 12.8 | 48.1 | 24.8 | 23.0 | 9.8 | 43.9 | 10.3 | 23.2 |
| Green Ext Time (p_c), s | 0.2 | 4.0 | 0.0 | 0.0 | 0.1 | 8.0 | 0.0 | 2.1 |

| Intersection Summary | |
|---|---|
| HCM 6th Ctrl Delay | 59.9 |
| HCM 6th LOS | E |





| Intersection | |
|---|---|
| Int Delay, s/veh | 0.4 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 710 | 33 | 0 | 690 | 0 | 53 |
| Future Vol, veh/h | 710 | 33 | 0 | 690 | 0 | 53 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | - | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 772 | 36 | 0 | 750 | 0 | 58 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | - | - | - | 404 |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |
| Critical Hdwy | - | - | - | - | - | 6.94 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - |
| Follow-up Hdwy | - | - | - | - | - | 3.32 |
| Pot Cap-1 Maneuver | - | - | 0 | - | 0 | 596 |
| Stage 1 | - | - | 0 | - | 0 | - |
| Stage 2 | - | - | 0 | - | 0 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | - | - | - | 596 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 11.7 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT |
|---|---|---|---|---|
| Capacity (veh/h) | 596 | - | - | - |
| HCM Lane V/C Ratio | 0.097 | - | - | - |
| HCM Control Delay (s) | 11.7 | - | - | - |
| HCM Lane LOS | B | - | - | - |
| HCM 95th %tile Q(veh) | 0.3 | - | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.4 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 60 | 28 | 1541 | 1391 | 55 |
| Future Vol, veh/h | 0 | 60 | 28 | 1541 | 1391 | 55 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 0 | 100 | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 65 | 30 | 1675 | 1512 | 60 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | - | 786 | 1572 | 0 | - | 0 |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |
| Critical Hdwy | - | 6.94 | 4.14 | - | - | - |
| Critical Hdwy Stg 1 | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - |
| Follow-up Hdwy | - | 3.32 | 2.22 | - | - | - |
| Pot Cap-1 Maneuver | 0 | *510 | *762 | - | - | - |
| Stage 1 | 0 | - | - | - | - | - |
| Stage 2 | 0 | - | - | - | - | - |
| Platoon blocked, % | | 1 | 1 | - | - | - |
| Mov Cap-1 Maneuver | - | *510 | *762 | - | - | - |
| Mov Cap-2 Maneuver | - | - | - | - | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 13.1 | 0.2 | 0 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | * 762 | - | 510 | - | - |
| HCM Lane V/C Ratio | 0.04 | - | 0.128 | - | - |
| HCM Control Delay (s) | 9.9 | - | 13.1 | - | - |
| HCM Lane LOS | A | - | B | - | - |
| HCM 95th %tile Q(veh) | 0.1 | - | 0.4 | - | - |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |