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Claremont Business Park (Tract C, Filing 2)  
Transportation Memorandum  
PCD No. SP197  
(LSC #195040)  
July 2, 2020\*

Traffic Engineer's Statement

This traffic report and supporting information were prepared under my responsible charge and they comport with the standard of care. So far as is consistent with the standard of care, said report was prepared in general conformance with the criteria established by the County for traffic reports.



Developer's Statement

I, the Developer, have read and will comply with all commitments made on my behalf within this report.

  
Steve Hammers

7-29-2020  
Date

  
Lena Gail Case

7/29/2020  
Date

~~Randle W. (Randy) Case II~~  
Lena Gail Case

\*minor revision 7/28/2020 per an EPC Comment



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July 2, 2020\*

Robert Green  
Hammers Construction  
1411 Woolsey Heights  
Colorado Springs, CO 80915

RE: Claremont Business Park 2  
El Paso County, CO  
Traffic Impact Study  
LSC #195040  
PCD No. SP197  
\*(minor rev.7/28)

Dear Mr. Green,

LSC Transportation Consultants, Inc. has prepared this transportation memorandum for the proposed development on Claremont Business Park 2 site in El Paso County, CO. Located generally southwest of the intersection of Marksheffel Road/Meadowbrook Parkway (El Paso County parcel ID 5408101054) within the Claremont Business Park, the 13.72-acre site is currently vacant. Access to the site is proposed to Meadowbrook Parkway via two access points. No direct access is proposed to US Highway 24 (US Hwy 24) or Marksheffel Road. This report has been prepared to accompany the amendment to the Claremont Commercial Filing No. 2 Preliminary Plan.

This site was studied previously in the report entitled "Claremont Commercial Filing No. 2 Updated Traffic Impact Study" dated July 6, 2018. The El Paso County PCD Project number is SP-17-004.

## REPORT CONTENTS

The preparation of this report included the following:

- An inventory of existing roadway and traffic conditions on major thoroughfares adjacent to the site, including surface conditions, functional classification, widths, pavement markings, traffic-control signs, posted speed limits, intersection and access spacing, roadway and intersection alignments, roadway grades, and auxiliary turn lanes;
- Weekday peak-hour turning-movement traffic counts at the intersection of Marksheffel Road/Meadowbrook Parkway;

- Estimated average weekday traffic (AWT) volumes adjacent to the proposed development on Marksheffel Road and Meadowbrook Parkway;
- Projections of 20-year background traffic volumes on Marksheffel Road and Meadowbrook Parkway;
- The proposed site land use and access plan;
- Estimates of average weekday and weekday peak-hour trip generation for the proposed industrial park and the estimated directional distribution of site-generated vehicle-trips on roadways and intersections adjacent to and in the vicinity of the site;
- Projected site-generated and resulting total peak-hour intersection traffic volumes at the following study-area intersections:
  - Marksheffel Road/Meadowbrook Parkway
  - Meadowbrook Parkway/El Jefe Lane
  - Meadowbrook Parkway/Gary Watson Place
- Projected total daily and peak-hour traffic volumes at the study-area intersections;
- Intersection level of service analysis at the study-area intersections;
- Queuing analysis on Meadowbrook Parkway between El Jefe Lane and Marksheffel Road;
- Evaluation of short- and long-term projected intersection volumes to determine potential requirements for any auxiliary right-/left-turn lanes at the proposed site access points based on the criteria in El Paso County's *Engineering Criteria Manual (ECM)*. Also included are potential long-term lane requirements; and
- Findings and recommendations for submittal to El Paso County.

#### **LIST OF OTHER TRAFFIC REPORTS USED IN THE PREPARATION OF THIS REPORT**

Previously-completed traffic reports in the vicinity of the proposed Claremont Business Park have been provided for reference and to provide context:

- Claremont Commercial Filing No. 2, Updated Traffic Impact Study – July 6, 2018
- Claremont Business Park, Tract C, Filing 2 – November 26, 2019
- Claremont Business Park (Filing 1A, Lot 2) – February 10, 2020

#### **LAND USE AND ACCESS**

Figure 1 shows the site location relative to the adjacent and nearby roadways. Located generally southwest of the intersection of Marksheffel Road/Meadowbrook Parkway (El Paso County parcel ID 5408101054), the 8.38-acre parcel is currently vacant. The anticipated land use for the 13.72-acre site consists of office/warehousing space. Of the 10 lots on the site's preliminary plan, seven lots access Gary Watson Place and three lots are provided access via El Jefe Lane. Also, the abutting 5.35 acres to the north is still planned for future commercial.

The following floor areas have been assumed for the proposed Claremont Business Park:

- 34,000 square feet for commercial uses (17 percent floor area ratio)
- 66,750 square feet for office/warehousing uses

Figure 1 shows the area circulation and access points to the adjacent public roads, while Figure 2 contains the proposed site plan showing the proposed land uses, on-site circulation, and proposed access points. Two full-movement, stop sign-controlled access points to Meadowbrook Parkway are proposed:

- El Jefe Lane (north site access) – 491 feet west of Marksheffel Road/Meadowbrook Parkway
- Gary Watson Place (south site access) located 780 feet south of the existing gas station access to the north and about 450 feet northeast of Woolsey Heights/Meadowbrook Parkway

The 2018 TIS report showed a street connection between this industrial site and the abutting commercial site to the north. This street connection has been removed from the plan. However, the plan includes a 45-foot-wide access easement between the proposed private access drive and the future commercial site to the north. It is anticipated that future plans for the commercial site to the north will also be required to show a matching/connecting access easement on that site plan. The access easement is at the request of El Paso County and the purpose is to allow for a potential future vehicular connection between the commercial site and this industrial site's internal access street/drive and access point to Meadowbrook Parkway, if ever needed in the future.

#### **ACCESS SIGHT DISTANCE**

Stopping sight distances along Meadowbrook Parkway and access sight distances prescribed in Tables 2-33 and 2-35, respectively, in ECM Section 2.4.1 will need to be maintained along the site frontage of Meadowbrook Parkway. Any site improvements including (but not limited to) landscaping, parking areas, buildings, monument signs etc. must not impede the required lines of sight. Note: there are no vertical curves on Meadowbrook Parkway that would limit sight distance.

#### **ROAD AND TRAFFIC CONDITIONS AND MTCP CLASSIFICATION**

Figure 1 shows the roads adjacent to and in the vicinity of the site. Adjacent roads serving the site are identified below, followed by a brief description of each:

**US Highway 24 (US Hwy 24)** is a state highway extending locally from the City of Colorado Springs to Peyton in a northeasterly direction and then continuing east. US Hwy 24 is classified as an Expressway by the Colorado Department of Transportation (CDOT) in the vicinity of the site and is shown as an Expressway on the El Paso County *Major Transportation Corridors Plan (MTCP)*. The 2040 MTCP shows US Hwy 24 to be upgraded to a 6-lane Expressway in the long-term.

**Marksheffel Road** is a Principal Arterial that extends north from the City of Fountain to Woodmen Road. It is currently a four-lane roadway with a posted speed limit of 50 mph adjacent to the study area. The intersection with Meadowbrook Parkway was recently signalized. Marksheffel Road is shown as a six-lane Expressway in the 2016 MTCP for 2060 corridor preservation.

**Meadowbrook Parkway** is a public, Non-Residential Collector that extends through the Claremont Business Park area from the US Hwy 24/SH 94 intersection to Marksheffel Road (generally parallel to US Hwy 24). Meadowbrook Parkway continues east from Marksheffel Road into Claremont Ranch to the east. Auxiliary left- and right-turn lanes currently exist on all approaches at the intersection of Meadowbrook/Marksheffel, which was recently signalized in early 2020. The posted speed limits on Meadowbrook are 35 mph west of Marksheffel and 25 mph east of Marksheffel.

### **Existing Traffic Volumes**

Vehicular turning-movement counts were conducted at the intersection of Marksheffel Road/Meadowbrook Parkway from 6:30-8:30 a.m. and from 4:00-6:00 p.m. on Tuesday, February 11, 2020. Figure 3 shows these turning-movement volumes, as well as the average weekday traffic volumes (estimated based on factored peak-hour count data) on the study-area roadways, including at the commercial access points north of the site. Raw count data is attached.

### **Crash History**

Three years of crash data were collected at the study intersections. The intersection of Meadowbrook Parkway/Marksheffel Road experienced nine crashes with two resulting in injuries. Of the nine crashes, five were broadside type crashes between an eastbound left-turning vehicle and a southbound through vehicle. All of these crashes occurred prior to the signal installation. With the signal, the rate of broadside crashes at this intersection is likely to drop.

The intersection of US Hwy 24/Marksheffel Road also had eight broadside crashes with no patterns and 13 rear-end crashes with no crash patterns.

### **PEDESTRIAN AND BICYCLE FACILITIES**

Meadowbrook Parkway has sidewalks and the street width is sufficient to accommodate bicycles. There is a 12-foot paved concrete trail along the west side of Marksheffel Road extending north from just south of the bridge just north of Meadowbrook.

### **TRIP GENERATION**

Estimates of the vehicle-trips projected to be generated by the proposed Claremont Business Park development have been made using the nationally published trip generation rates from *Trip Generation, 10<sup>th</sup> Edition, 2017* by the Institute of Transportation Engineers (ITE). Corresponding trip generation rates from the following ITE Land Use Categories have been used to develop the trip generation estimates for site buildout:

- 150 – Warehousing
- 820 – Shopping Center

Table 1 below presents a summary of the estimated external site trip generation. A detailed trip generation estimate for the industrial park, including ITE rates for the proposed land uses, is presented in Table 6 (attached). Figure 2 shows the layout within the proposed industrial park.

**Table 1: Estimated External Site Vehicle-Trip Generation**

Analysis Period	Weekday		
	In	Out	Total
Morning Peak Hour	75	35	110
Afternoon Peak Hour	122	148	270
Daily/24-hour	1,452	1,452	2,911

The proposed Claremont Business Park 2 Preliminary Plan is projected to generate about 2,911 total vehicle-trips on the average weekday during a 24-hour period, with approximately half entering and half exiting the site. During the morning peak hour, approximately 75 entering vehicles and 35 exiting vehicles would be generated. Approximately 122 entering and 148 exiting vehicles would be generated by the site during the afternoon peak hour.

Compared to trip-generation estimates in the previously-submitted traffic impact study for Claremont Business Park, the site would generate approximately:

- Average weekday 24-hour period – 309 fewer daily trips
- Morning peak hour – 8 fewer entering trip and 4 additional exiting trips
- Afternoon peak hour – 2 fewer entering trips and 16 fewer exiting trips

### **Pass-By and Diverted Trips**

The total number of trips to be generated by the site has also been aggregated by trip type to account for pass-by and diverted trips. A pass-by trip is one made by a motorist who would already be on an adjacent road regardless of the proposed development, but who stops in at the site while passing by. That pass-by motorist would then continue on his or her way to a final destination in the original direction. Table 6 (attached) shows the percent of the trips generated that were assumed to be pass-by trips. Non-primary trip percentage has been based on data from the *Trip Generation Handbook - An ITE Proposed Recommended Practice, 3rd Edition, 2014* by ITE and adjustments by LSC for site-specific conditions.

LSC has adjusted the average ITE percentage as pass-by trips for this site to only include trips from adjacent Meadowbrook Parkway. Diverted trips from adjacent US Highway 24 and Marksheffel Road are considered non-pass-by trips. These trips would be added to Meadowbrook Parkway and would result in altered turning movements at the nearby major intersections, but generally would not add “new impact” trips to US Highway 24 or Marksheffel Road. ITE-average percent of non-primary trips for shopping-related land used for this study are summarized in Table 6. The resulting primary and non-primary trips are shown in Table 6.

ITE *Trip Generation* estimated that the proposed Claremont Business Park development is projected to generate about 2,635 total non-pass-by vehicle-trips on the average weekday during a 24-hour period, with about half entering the site and half exiting the site during the afternoon peak hour. Compared to the previously-submitted traffic impact study, this represents a decrease of 301 daily external trips generated by the site.

## **TRIP DISTRIBUTION AND ASSIGNMENT**

### **Trip Directional Distribution**

The directional-distribution estimate of site-generated vehicle-trips to the study-area roads and intersections is a necessary component in determining the site's traffic impacts. Figure 5 shows the percentages of the site-generated vehicle-trips projected to be oriented to and from the site's major approaches. Estimates have been based on the following factors: the proposed new land use, the area roadway system serving the site, and the site's geographic location relative to the overall greater El Paso County/Colorado Springs area. Directional-distribution splits from LSC's previously-conducted Claremont Business Park traffic study (dated July 6, 2018) were used to estimate trip distributions and background volumes within the vicinity of the site.

### **Site-Generated Traffic**

Site-generated traffic volumes have been estimated at the following intersections:

- Marksheffel Road/Meadowbrook Parkway
- Meadowbrook Parkway/El Jefe Lane (proposed north full-movement site access)
- Meadowbrook Parkway/Gary Watson Place (proposed south full-movement site access)
- US Highway 24/Marksheffel Road
- US Highway 24/State Highway 94/Meadowbrook Parkway

These volumes have been calculated by applying the directional-distribution percentages estimated by LSC (from Figure 5) to the trip-generation estimates (from Table 6). Figure 6 shows the projected site-generated traffic volumes for the weekday morning and afternoon peak hours. The figure also shows the estimated average daily traffic volumes (ADTs).

### **2023 Short-Term Background Traffic Volumes**

Figure 4 shows LSC's estimates for projected short-term (year 2023) background traffic volumes, which were based on existing traffic volumes (from Figure 3) with a yearly growth rate of 2 percent. In addition, planned nearby developments that are anticipated to be constructed in the short term have been included in the background traffic, including Villas at Claremont.

Note: The Monument View Academy charter school is planned for a site within Claremont Ranch to the northeast. LSC is in the process of preparing a TIS report for that project. Please refer to that report (once completed), which will include projected traffic volumes/scenarios for that

project. That report will incorporate the site-generated traffic from this project into the “background traffic.”

### 2023 Background + Site-Generated Traffic Volumes

Figure 7 shows the sum of the 2023 background traffic volumes (from Figure 4) and site-generated peak-hour traffic volumes (shown in Figure 6). These volumes represent the projected short-term total traffic following site buildout. Laneage and traffic control at the study-area intersections following site buildout are shown in Figure 7.

### 2040 Background Traffic Volumes

Long-term background traffic volumes are estimates by LSC, based on the Colorado Department of Transportation (CDOT) twenty-year growth factor (about one and a half percent per year) on US Hwy 24 adjacent to the site. Additionally, traffic generated by planned adjacent and nearby developments has been included in 2040 background traffic volumes, as shown in Figure 8.

### 2040 Total Traffic Volumes

Figure 9 shows the sum of 2040 background traffic volumes (from Figure 8) plus site-generated traffic volumes (from Figure 6).

### LEVEL OF SERVICE ANALYSIS

Level of service (LOS) is a quantitative measure of the level of congestion or delay at an intersection and is indicated on a scale from “A” to “F.” LOS A is indicative of little congestion or delay. LOS F indicates a high level of congestion or delay. Table 2 shows the level of service delay ranges for signalized and unsignalized intersections.

**Table 2: Intersection Levels of Service Delay Ranges**

Level of Service	Signalized Intersections	Unsignalized Intersections
	Average Control Delay (seconds per vehicle)	Average Control Delay (seconds per vehicle) <sup>1</sup>
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	≥ 80.1	≥ 50.1
<sup>1</sup> For unsignalized intersections, if V/C is > 1.00, then LOS is LOS F regardless of the projected average control delay per vehicle		



LOS values have been included on each figure for each turning movement/approach during the weekday morning and afternoon peak hours for the proposed site-access intersections and off-site intersections in the study area:

- Figure 3: 2020 Existing Traffic, Lane Geometry, Traffic Control, and LOS
- Figure 4: 2023 Background Traffic, Lane Geometry, Traffic Control, and LOS
- Figure 7: 2023 Background + Site Traffic, Lane Geometry, Traffic Control, and LOS
- Figure 8: 2040 Background Traffic, Lane Geometry, Traffic Control, and LOS
- Figure 9: 2040 Background + Site Traffic, Lane Geometry, Traffic Control, and LOS

The following intersections were analyzed for LOS values on “part a” of Figures 3, 4, 7, 8, and 9:

- Marksheffel Road/Meadowbrook Parkway
- Meadowbrook Parkway/El Jefe Lane (proposed north full-movement site access)
- Meadowbrook Parkway/Gary Watson Place (proposed south full-movement site access)

The following intersections were analyzed for LOS values on “part b” of Figures 3, 4, 7, 8, and 9:

- US Highway 24/Marksheffel Road
- US Highway 24/State Highway 94/Meadowbrook Parkway

LOS calculations for long-term scenarios were based upon recommended lane geometries and traffic controls outlined in the figures above (which were based on recommended improvements in LSC’s previously-conducted Claremont Business Park traffic study, dated July 6, 2018).

### **Marksheffel Road/Meadowbrook Parkway**

#### Short-Term

Overall, the intersection of Marksheffel Road/Meadowbrook Parkway is projected to operate at LOS B during the short term upon site buildout. The eastbound through, westbound left-turn, and westbound through lanes are projected to operate at LOS E during at least one short-term peak hour. However, analysis results show a volume-to-capacity (v/c) ratio to be well below 1.00 for the eastbound through turning movement during all short-term traffic scenarios. This is not uncommon for minor street approaches on arterial streets to operate at levels of service E or even F during peak periods, as signal timings would be adjusted to favor heavier northbound and southbound through volumes on Marksheffel Road. All other individual turning movements are expected to operate at LOS D or better during both short-term peak hours, with or without the site-generated traffic.

#### Long-Term

During the long term, the intersection of Marksheffel/Meadowbrook is projected to operate at LOS C or better *overall* during both peak hours. However, the following individual turning movements are projected to operate at LOS E or worse during at least one peak hour due to high through volumes on Marksheffel Road: eastbound through, westbound left, westbound through,

and northbound left. Levels of service in the E range are due to the assumed long cycle length and minimum phase splits for eastbound/westbound to maximize green time and signal progression for northbound Marksheffel Road.

#### **Meadowbrook Parkway/Gary Watson Place (South Site Access)**

All individual turning movements and approaches are projected to operate at LOS B or better during the short-term as a two-way stop sign-controlled intersection during both the short- and long-term traffic scenarios. Please refer to Figure 7 and Figure 9 for recommended lane configurations and LOS summaries at this intersection during the short- and long-term scenarios, respectively.

#### **Meadowbrook Parkway/El Jefe Lane (North Site Access)**

##### Short-Term

All individual turning movements and approaches are projected to operate at LOS B or better during the short-term as a two-way stop sign-controlled intersection with the addition of a westbound left-turn deceleration lane. Please refer to Figure 7 for lane configuration analyzed and LOS summaries at this intersection during the short-term scenario.

##### Long-Term

The PM peak-hour LOS analysis indicates the northbound approach is projected to operate at LOS F. Despite this Synchro-reported LOS F (HCM methodology) for the northbound approach projection during the afternoon peak hour, gaps created from the nearby signal at Marksheffel/Meadowbrook would allow northbound vehicles exiting the site to turn left onto Meadowbrook. Also, analysis assuming a separate northbound right-turn lane on this northbound approach shows improvement of the northbound right-turn movement to LOS B. Please refer to Figure 9 for analysis lane configurations and reported lane group levels of service at the proposed north site access during the long-term scenario.

#### **Marksheffel Road/US 24**

##### Short Term

The intersection of Marksheffel Road/US 24 is projected to operate at LOS E and LOS D overall during the morning and evening short-term peak hours, respectively, with or without the addition of short-term site-generated traffic. Southeast through- and northwest through-turning movements are projected to operate at LOS E or worse before and after considering site-generated traffic during the morning and afternoon peak hour, respectively. All other turning movements at this intersection are projected to operate at LOS D or better during the short term upon site buildout.

### Long Term

The intersection of Marksheffel Road/US 24 is projected to operate at LOS F overall during both the 2040 morning and afternoon peak hours, with and without considering site-generated traffic. High through volumes on US 24 and a high northeast-bound to north-bound left-turn volume (background traffic) are projected to result in LOS F overall operational performance during the 2040 evening peak hour.

### **US 24/Meadowbrook Parkway/SH 94**

#### Short Term

Overall, this intersection is projected to operate at LOS D or better during both the short-term morning and evening peak hours. The southwest-through turning movement at this intersection is projected to operate at LOS E during the morning peak hour, with or without the addition of site-generated traffic. All other individual turning movements would continue to operate at LOS D or better upon short-term buildout.

#### Long Term

Due to high through volumes on US 24 and a high left-turn volume from westbound SH 94 to southwest-bound US Hwy 24 (background traffic), the intersection of US Hwy 24/SH 94/Meadowbrook Parkway is projected to operate at LOS F overall during the 2040 morning peak hour and LOS D overall during the 2040 evening peak hour. The southwest-bound through movement is projected to operate at LOS F during the 2040 morning peak hour, while the northeast-bound through and southeast-bound through turning movements are projected to operate at LOS E during the 2040 afternoon peak hour. All other approaches are projected to operate at LOS D or better during both peak hours.

## **VEHICLE QUEUING**

### **Marksheffel Road/Meadowbrook Parkway**

This section contains the projected 95th-percentile queues for the eastbound approach at the intersection of Meadowbrook Parkway/Marksheffel Road and for the westbound left turn at El Jefe Lane. Projected queue lengths have also been shown for other key turning movements at this intersection. Table 3 through Table 5 present the 95th percentile queues reported on the Synchro analysis reports.

Both tables show the existing back-to-back left-turn vehicle storage lengths and the available stacking distance between the two intersections for the eastbound through/right lane. The latter distance is a function of the intersection spacing. The 95th-percentile queues for the projected short-term background plus site-generated and 2040 background plus site-generated scenarios are shown in the tables.

### Short-Term

Short-term scenario queue reports indicate that the 95th-percentile eastbound queues would **not** exceed the available stacking length during either peak hour. Synchro queueing reports indicated a 95th-percentile queue length of 39 feet and 126 feet in the short-term A.M. and P.M. peak hours, respectively.

**Table 3: 95th-Percentile Queues (2023 Background + Site)  
Marksheffel/Meadowbrook – Eastbound Left Turn Movement**

Turning Movement	A.M. Peak	P.M. Peak
Storage Length (ft)	225'	225'
Taper Length (ft)	50'	50'
95th-percentile Queue (ft)	39'	126'
Source: 95th-percentile queues from the Synchro reports		

### Long-Term

Synchro queueing reports indicated a 95th-percentile queue length of 95 feet and 218 feet in the long-term A.M. and P.M. peak hours, respectively.

**Table 4: 95th-Percentile Queues (2040 Background + Site)  
Marksheffel/Meadowbrook – Eastbound Dual Left-Turn Lanes**

Turning Movement	A.M. Peak	P.M. Peak
Storage Length (ft)	225'	225'
Taper Length (ft)	50'	50'
95th-percentile Queue (ft)	95'	218'
Source: 95th-percentile queues from the Synchro reports		

The 95th-percentile northbound left-turn queue on Marksheffel Road approaching Meadowbrook Parkway is projected to be about 142 feet and 60 feet long during the 2040 morning and afternoon peak hours, respectively. These queue lengths are based on the projected long-term total traffic volumes. The full-width lane length not including taper is about 420 feet.

### **Meadowbrook Parkway/El Jefe Lane**

The proposed westbound left-turn lane into the north site access point (El Jefe Lane) from Meadowbrook Parkway is 75 feet long plus a 65-foot taper. This stacking distance would provide adequate storage capacity to accommodate the projected 95th-percentile queues, as shown in Table 5.

**Table 5: 95<sup>th</sup> Percentile Queue Lengths  
Meadowbrook Parkway/El Jefe Lane – Westbound Left Turn**

<b>Traffic Scenario</b>	<b>Storage Length</b>	<b>Taper Length</b>	<b>95th-Percentile Queue</b>
<b>A.M. Peak Hour</b>			
2023 Background + Site	75'	65'	5'
2040 Background + Site	75'	65'	5'
<b>P.M. Peak Hour</b>			
2023 Background + Site	75'	65'	10'
2040 Background + Site	75'	65'	15'
Source: 95th-percentile queues from the Synchro reports			

#### **AUXILIARY TURN LANE ANALYSIS, INTERSECTION CONFIGURATION, AND TRAFFIC CONTROL**

Turn lanes associated with the north access were previously addressed with deviation requests. The turn lanes on Meadowbrook between El Jefe and Marksheffel cannot meet ECM criteria for deceleration plus storage plus taper due to the set intersection spacing. Note: deviation requests for these auxiliary turn lanes were approved by the County in 2018.

#### **Marksheffel Road/Meadowbrook Parkway**

The following auxiliary turn lanes were added at this intersection as part of an El Paso County intersection improvement project. No modifications would be required for the following auxiliary turn lanes as a result of site-generated traffic at this intersection:

- Dual eastbound left-turn deceleration lanes – 210 feet plus 55-foot taper
- Westbound left-turn deceleration lane – 300 feet plus 165-foot taper
- Westbound right-turn deceleration lane – 190 feet plus 125-foot taper

Additionally, an eastbound right-turn deceleration lane (195 feet plus 95-foot taper) was previously added as part of an El Paso County intersection improvement project.

#### **Meadowbrook Parkway/El Jefe Lane**

According to the El Paso County *Engineering Criteria Manual* (ECM), exclusive left-turn lanes shall be provided for any access on a Minor Arterial or Collector with a projected peak-hour ingress turning volume of 25 vehicles per hour (vph) or greater. The projected left-turn volumes at the north site access point (El Jefe Lane) is expected to exceed the minimum left-turn volume thresholds prescribing a turn lane outlined in the ECM upon site buildout. A westbound left-turn bay exists (75 feet plus 65-foot taper), as it was included in the recent redesign/improvement project at Meadowbrook Parkway/Marksheffel. No modifications to this westbound left-turn lane following site buildout.

Please refer to the Meadowbrook Parkway/Marksheffel intersection plans (project completed, plan sheet attached for reference), which shows the configuration of the back-to-back left-turn lanes on Meadowbrook Parkway between the north site access (El Jefe Lane) and Marksheffel Road. A westbound right-turn deceleration lane on Meadowbrook Parkway (for traffic turning right into the access/El Jefe Lane) would **not** be required at the proposed north site access (El Jefe Lane) based on projected turning movement volumes.

Note: Per the preliminary plan, ROW is being dedicated along the south side of Meadowbrook Parkway between Marksheffel and El Jefe Way. ROW reservation is being provided between El Jefe and Gary Watson Place. These were incorporated into the plan to accommodate potential future widening for additional laneage if ever needed.

### **Meadowbrook Parkway/Gary Watson Place**

A southbound auxiliary left-turn lane would be required at the proposed south site access (Gary Watson Place) based on projected turning-movement volumes. Meadowbrook Parkway has sufficient width for a striped center left-turn lane. Per ECM criteria, this southbound left-turn deceleration lane would be 315 feet long (155-foot lane length plus a 160-foot taper).

## **ROADWAY CLASSIFICATIONS**

Meadowbrook Parkway is an Urban, Non-Residential Collector Street. El Jefe Way and Gary Watson Place are proposed to be private streets.

## **COUNTY ROAD IMPROVEMENT FEE PROGRAM**

### **Transportation Impact Fees**

Per ECM Appendix B: *State what the current applicable Transportation Impact Fees are and what option the developer will be selecting for payment.*

It is our understanding that this site is within the Central Marksheffel District and will not be assessed any additional fees through the El Paso County Road Impact Fee program.

### **Reimbursable Improvements**

There are no El Paso County MTCP roadway improvement projects in the study identified by the year 2040 per Map 13 and Table 4 of El Paso County's 2016 MTCP.

## **MULTI-MODAL TRANSPORTATION AND TDM OPPORTUNITIES**

Meadowbrook Parkway has sidewalks and the street width is sufficient width to accommodate bicycles. There is a 12-foot wide paved concrete trail along the west side of Marksheffel Road

extending north from just south of the bridge just north of Meadowbrook. There is connectivity to the future Rock Island Regional Trail through the neighborhood to the north. The US Highway 24 PEL Study shows a proposed multi-use path along the north side of the highway. Mountain Metro Transit does not currently provide service adjacent to this site. However, the nearest route runs along Peterson Road (north of Galley). This is reasonably accessible via bicycle and the transit busses are furnished with bicycle racks. Transit service may expand to the east as growth continues to the east.

## **FINDINGS AND CONCLUSIONS**

- The site is projected to generate about 2,911 new driveway vehicle-trips on the average weekday.
- During the weekday morning peak hour of adjacent street traffic, 75 vehicles would enter the site while 35 vehicles would exit.
- During the weekday afternoon peak hour of adjacent street traffic, 122 vehicles would enter the site while 148 vehicles would exit.
- The northbound approach at the site access (El Jefe Lane) is projected to operate at LOS F during the PM peak hour. Please refer to the “Level of Service” section above for detailed LOS results and discussion regarding this reported level of service.
- Please refer to the “Auxiliary Turn Lane Analysis” section for evaluation of potential turn lane needs. With the development of the commercial site, LSC recommends consideration of the potential addition of a dedicated, separate northbound right-turn lane on El Jefe approaching Meadowbrook - for traffic exiting the commercial area. This shows improvement to LOS B for the right-turn movement.
- A southbound left-turn deceleration lane would be required based on projected total volumes at the intersection of Meadowbrook Parkway/Gary Watson Place. The owner of the commercial parcel has reserved additional potential future ROW along the south side of Meadowbrook Parkway to accommodate potential future widening for additional laneage if ever needed.
- Please refer to the “Auxiliary Turn Lane Analysis, Intersection Configuration, and Traffic Control” section for detailed findings/recommendations regarding turn lanes at the study area intersections.
- Meadowbrook Parkway is an Urban, Non-Residential Collector Street. El Jefe Way and Gary Watson Place are proposed to be private streets.
- Please refer to the “Queuing Analysis” section above for additional details. Long-term indicated that the eastbound 95<sup>th</sup> percentile left-turn queue at Marksheffel/Meadowbrook is

**not** projected to exceed the dual left-turn lane length during the morning or afternoon peak hour.

- Although the 95<sup>th</sup> percentile queue lengths from the Synchro reports are not greater than the available stacking lengths, there is the potential for queues to periodically back to the El Jefe/Meadowbrook intersection. Should eastbound vehicle queues more regularly begin extending back from Marksheffel/Meadowbrook to or through the El Jefe/Meadowbrook intersection, a “DO NOT BLOCK INTERSECTION” sign (MUTCD R10-7) could be installed on the eastbound approach to this intersection. This would notify eastbound motorists of the periodic need (during peak periods) to allow for a gap at the intersection – not only for traffic to turn from the side street onto Meadowbrook, but also not to impede the westbound left-in movement from Meadowbrook onto El Jefe and into the commercial site. Also, the owner of the commercial parcel has reserved additional potential future ROW along the south side of Meadowbrook Parkway to accommodate potential future widening/additional laneage if needed in the future.
- At some future date/time, a vehicular connection within the platted access easement between the commercial and industrial areas may need to be added in the future to provide an alternative to the north access. Another possibility could be to add another commercial access point (if necessary) between Lot 9 and Tract B with the commercial development. This would likely also be a private street/access, but would meet the local street spacing criteria along a Non-Residential Collector street (330 feet, per ECM Table 2-7).

\* \* \* \* \*

Please contact me if you have any questions regarding this report.

Respectfully Submitted,

LSC TRANSPORTATION CONSULTANTS, INC.

By: Jeffrey C. Hodsdon, P.E.  
Principal

JAB:jas

Enclosures: Table 6  
Figure 1 - Figure 9  
Traffic Count Reports  
SimTraffic Queue Reports  
Synchro LOS Reports



## Tables and Figures

---

**Table 6: Detailed Trip Generation Estimate**

ITE		Value	Units <sup>1</sup>	Trip Generation Rates <sup>2</sup>					% Internal	Driveway Trips Generated					% Pass-by	New External Trips Generated				
				Average	A.M.*		P.M.			Average	A.M.		P.M.			Average	A.M.		P.M.	
Code	Description			Weekday	In	Out	In	Out		Weekday	In	Out	In	Out		Weekday	In	Out	In	Out
Previously-Approved Land Uses (July 2018)																				
130	Industrial Park	6.260	Acres	61.17	6.81	1.39	1.79	6.74	0%	383	43	9	11	42	0%	383	43	9	11	42
820	Shopping Center	27.800	KSF	106.30	1.53	0.83	4.21	4.57	4%	2837	41	22	112	122	10%	2553	37	20	101	110
									Total	3220	83	31	124	164	Total	2936	79	29	112	152
Currently-Proposed Land Uses																				
150	Warehousing	66.750	KSF	2.26	0.38	0.11	0.14	0.39	0%	151	26	8	10	26	0%	151	26	8	10	26
820	Shopping Center	33.800	KSF	85.07	1.53	0.83	3.46	3.75	4%	2760	50	27	112	122	10%	2484	45	24	101	109
									Total	2911	75	35	122	148	Total	2635	70	32	111	136
Change in Trip Generation																				
150	Warehousing	-	-	-	-	-	-	-	-	-232	-17	-1	-2	-16	-	-232	-17	-1	-2	-16
820	Shopping Center	-	-	-	-	-	-	-	-	-77	9	5	0	0	-	-69	8	4	0	0
									Total	-309	-8	4	-2	-16	Total	-301	-9	3	-2	-16

<sup>1</sup> KSF = 1,000 square feet of floor space

<sup>2</sup> Source: "Trip Generation, 10th Edition, 2017" by the Institute of Transportation Engineers (ITE)

Note: A.M. Shopping Center rates were modified to match rates used in previous submittal (July 2018)

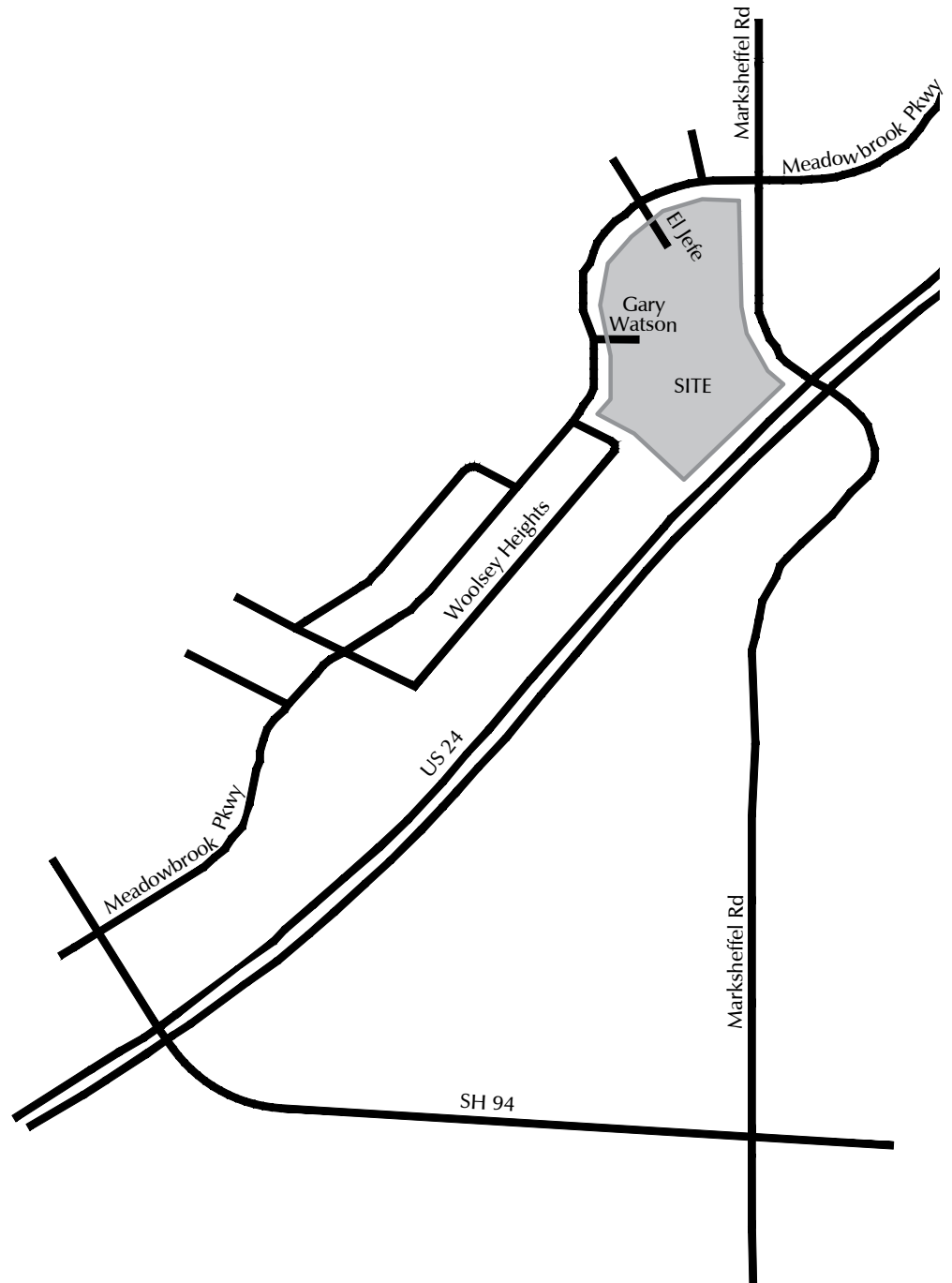
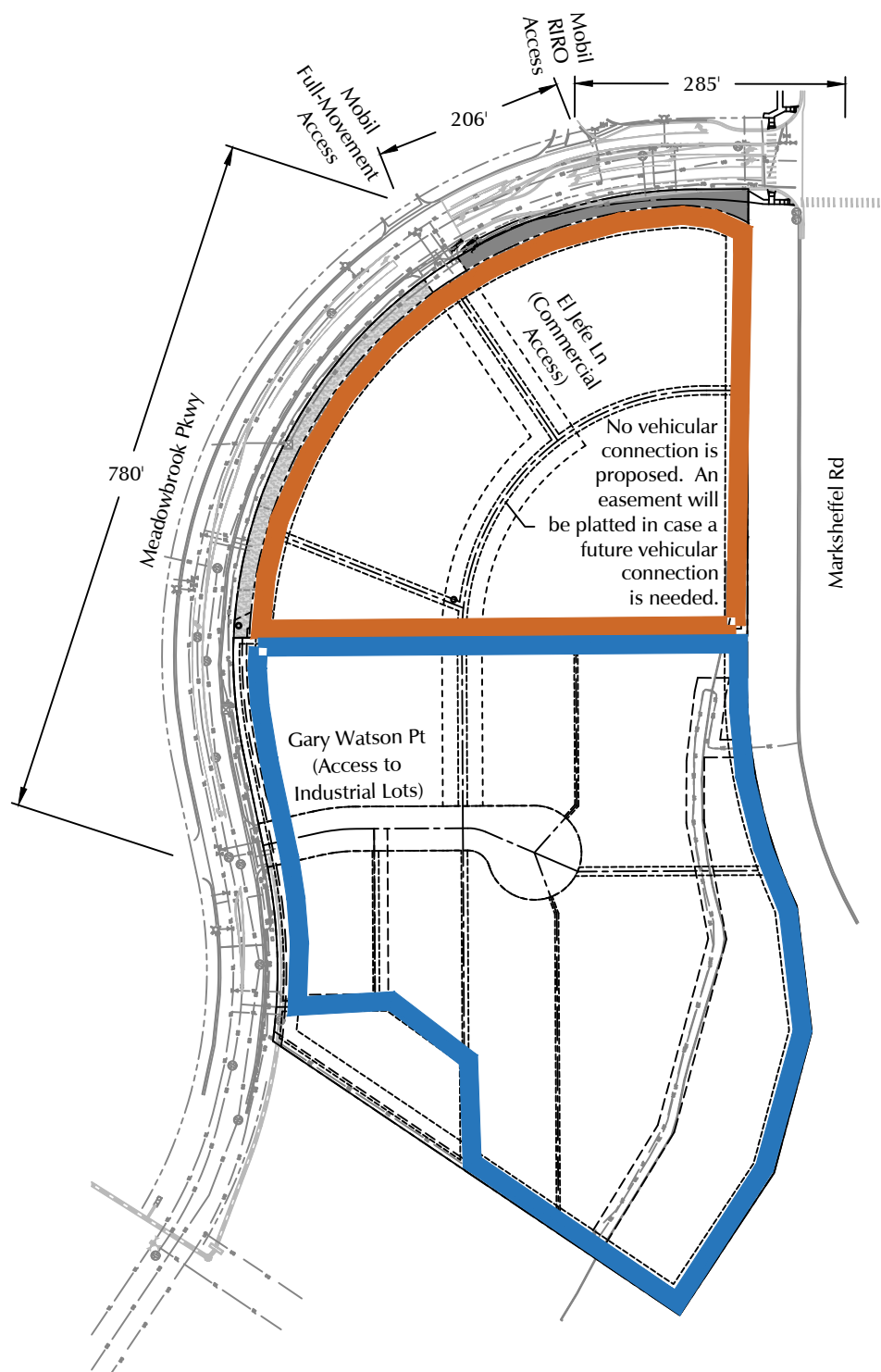


Figure 1  
Vicinity Map

Claremont Business Park 2 (LSC # 195040)

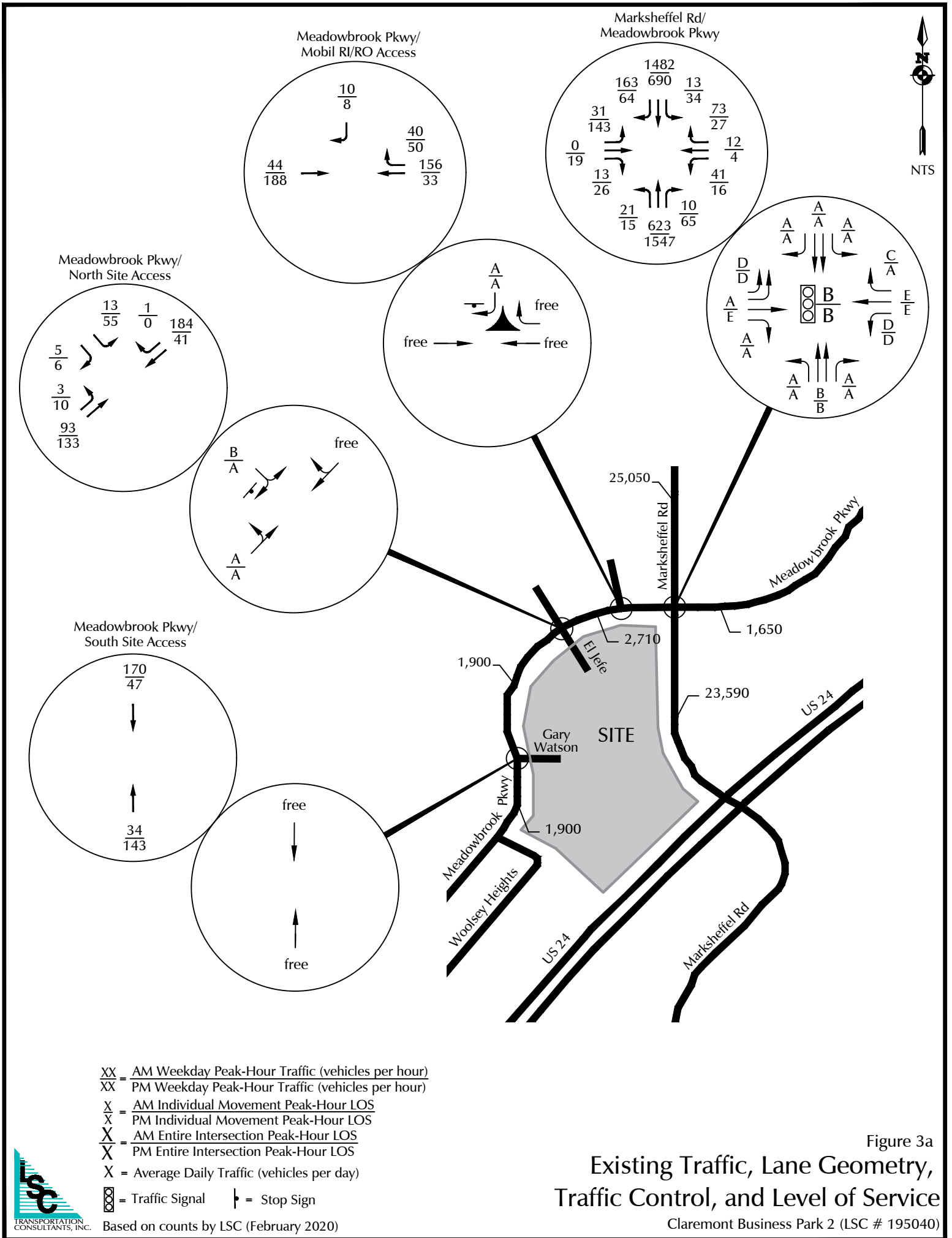


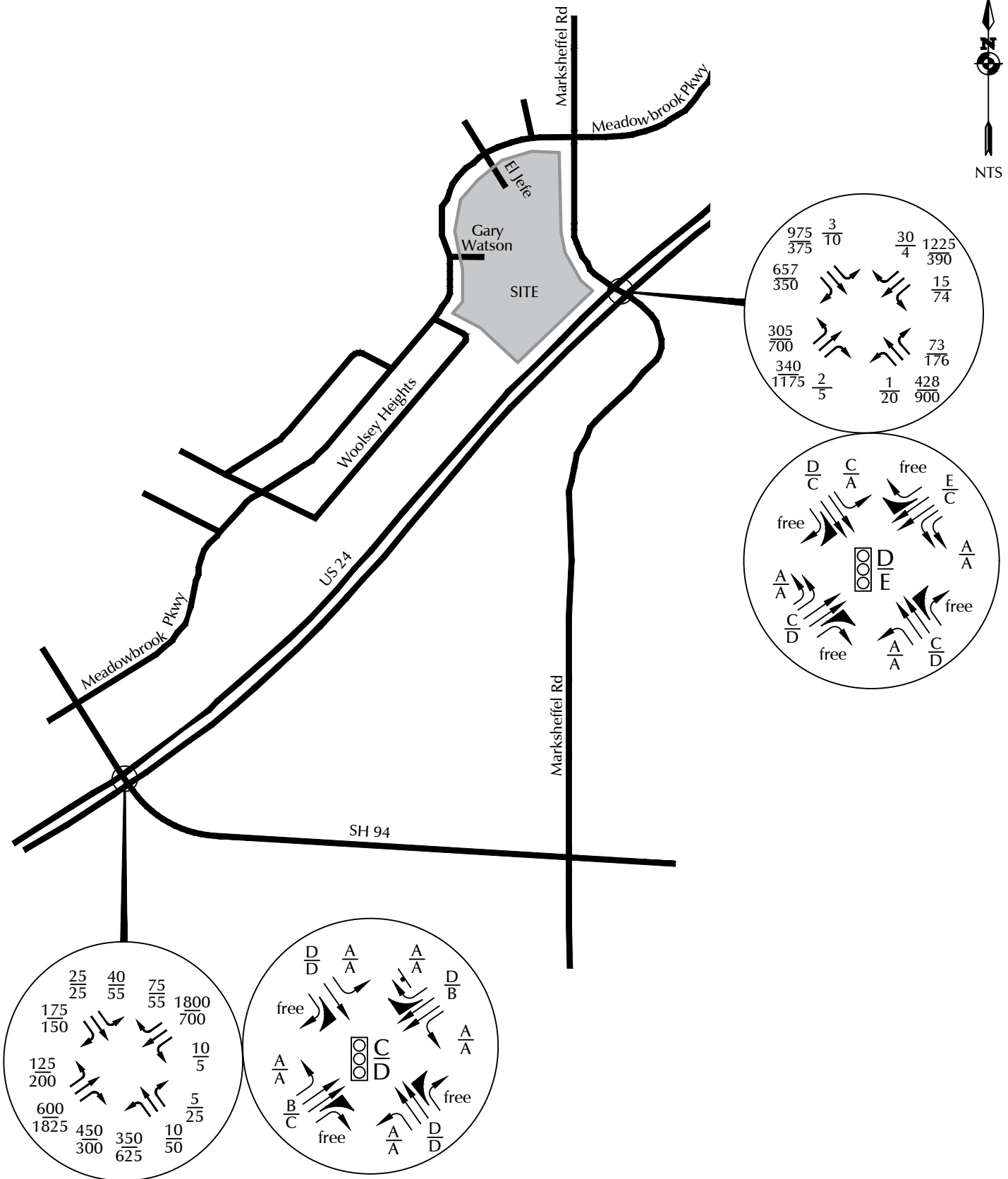
-  Future Commercial/Retail
-  Industrial Park

Note: See attached for lot details

Figure 2  
Site Plan

Claremont Business Park 2 (LSC # 195040)





- XX = AM Weekday Peak-Hour Traffic (vehicles per hour)
- XX = PM Weekday Peak-Hour Traffic (vehicles per hour)
- X = AM Individual Movement Peak-Hour LOS
- X = PM Individual Movement Peak-Hour LOS
- X = AM Entire Intersection Peak-Hour LOS
- X = PM Entire Intersection Peak-Hour LOS
- X = Average Daily Traffic (vehicles per day)
- = Traffic Signal
- = Stop Sign

Figure 3b  
Existing Traffic, Lane Geometry,  
Traffic Control, and Level of Service  
Claremont Business Park 2 (LSC # 195040)

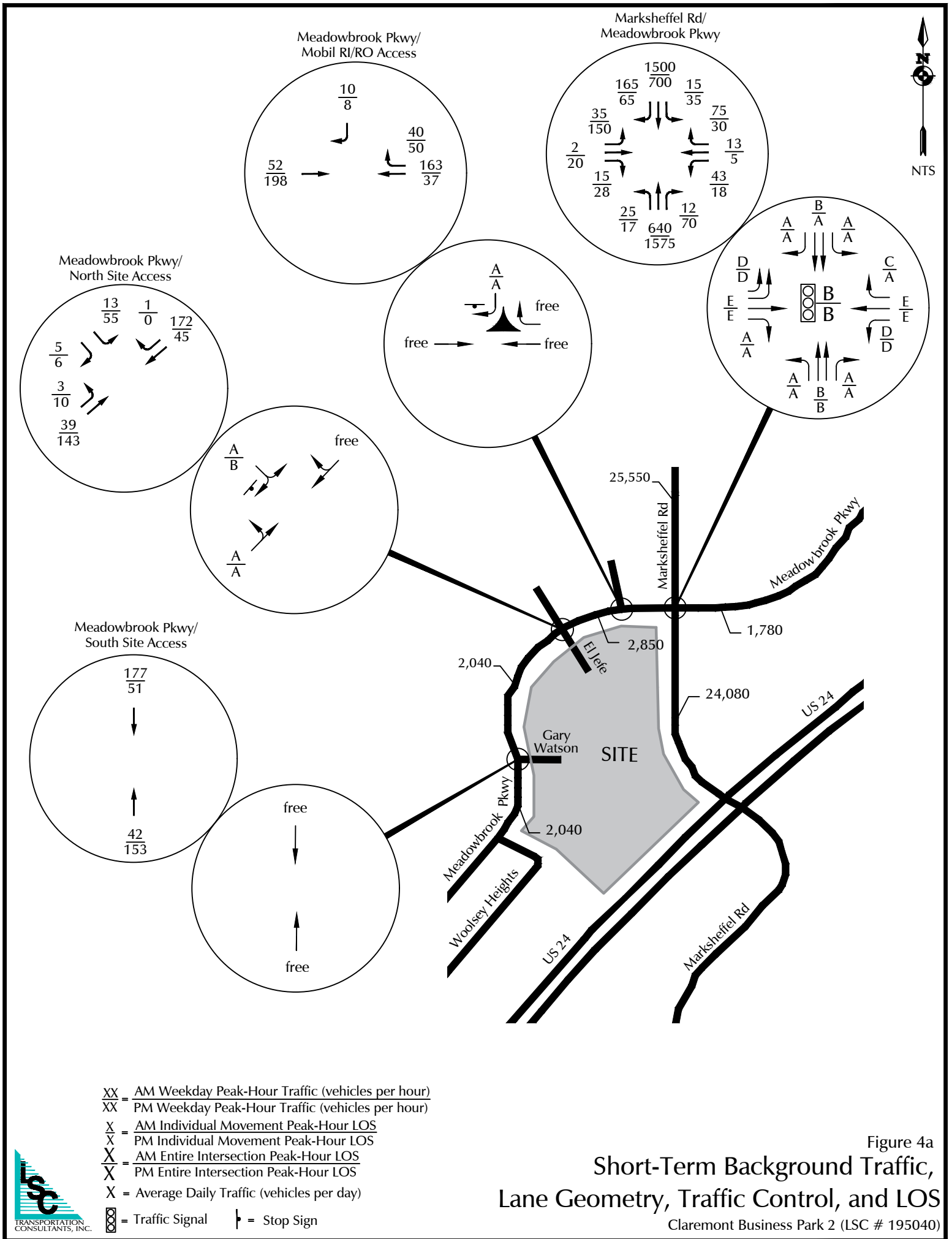
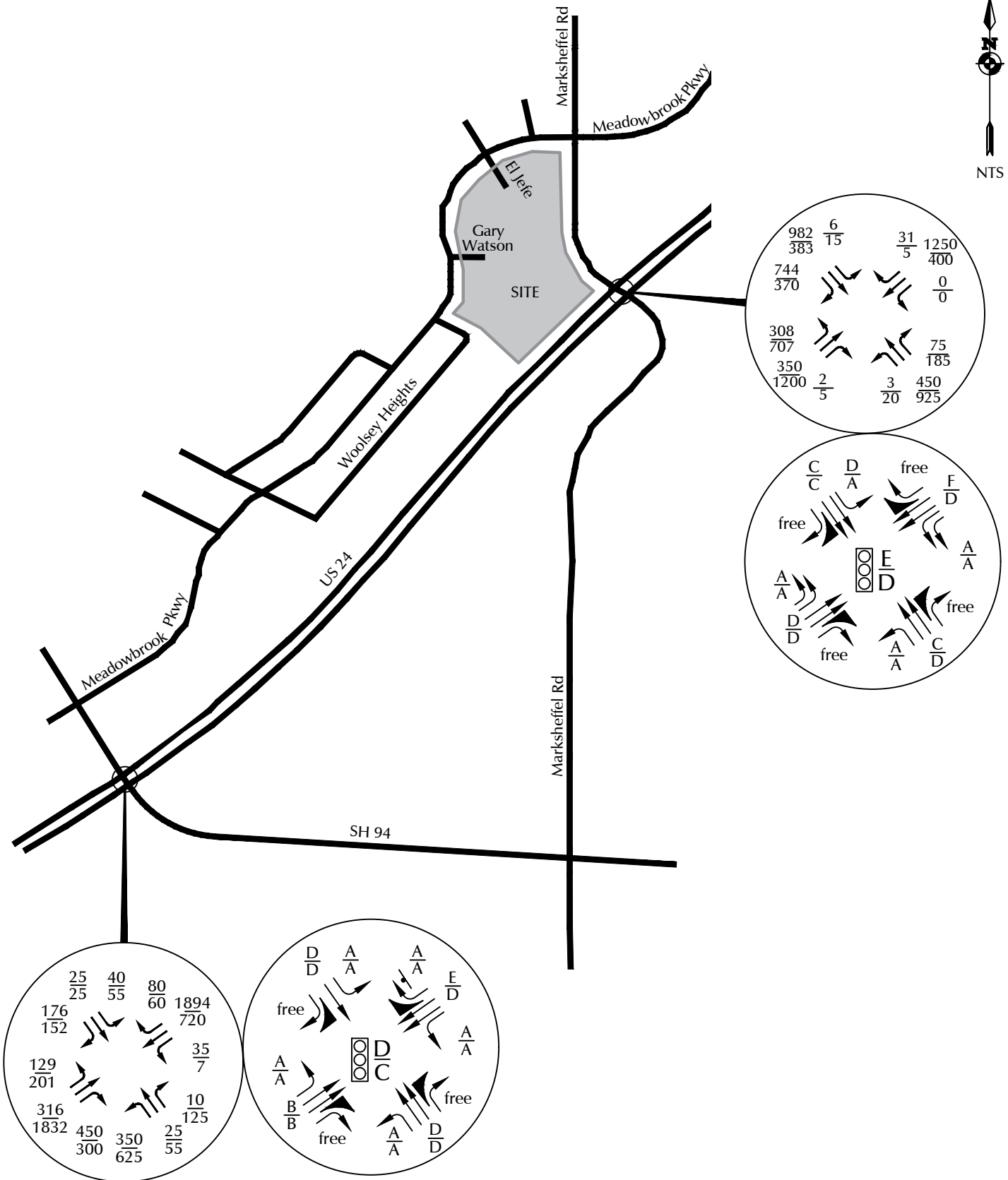


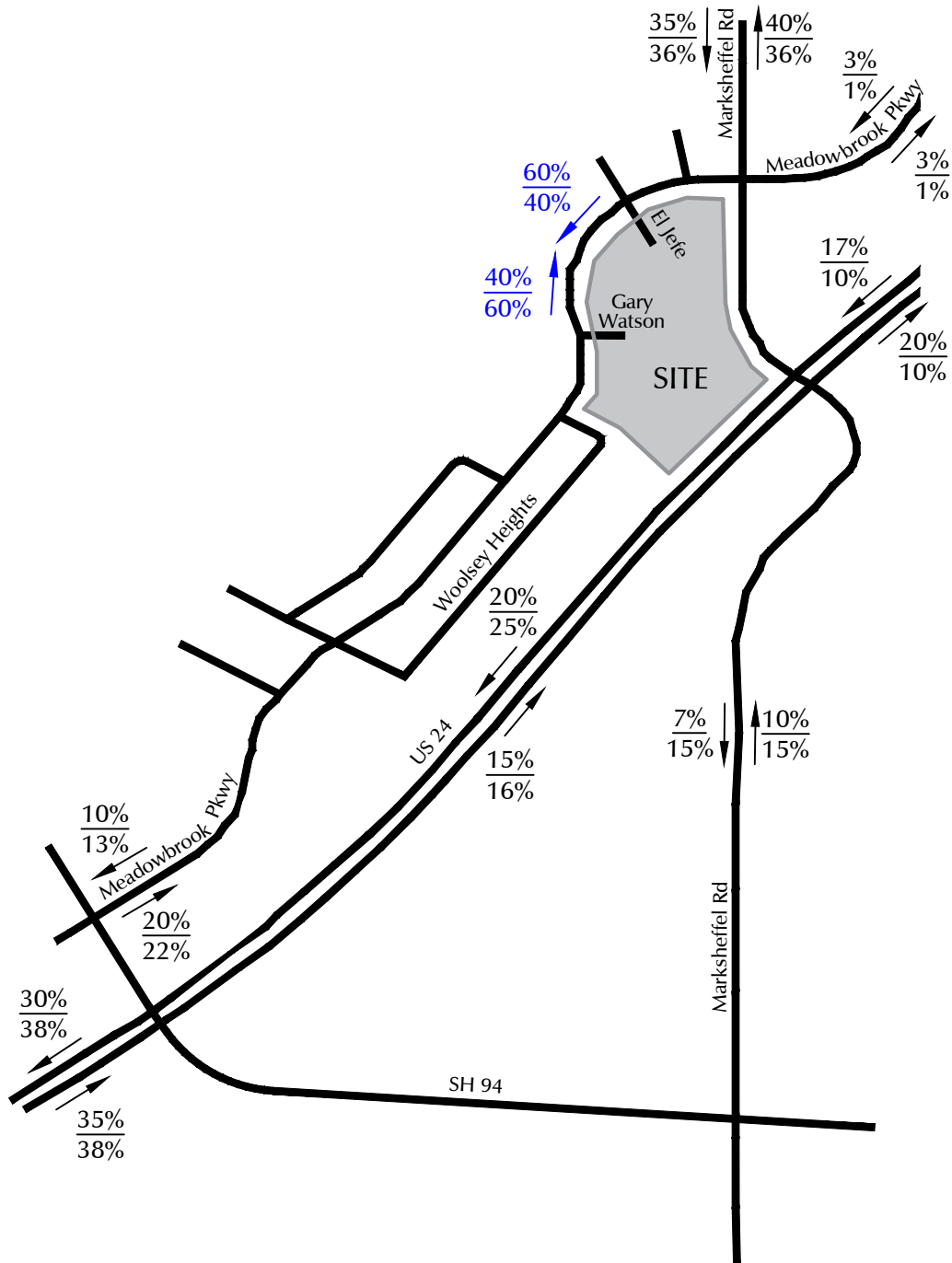
Figure 4a  
**Short-Term Background Traffic,  
 Lane Geometry, Traffic Control, and LOS**  
 Claremont Business Park 2 (LSC # 195040)



- XX = AM Weekday Peak-Hour Traffic (vehicles per hour)
- XX = PM Weekday Peak-Hour Traffic (vehicles per hour)
- X = AM Individual Movement Peak-Hour LOS
- X = PM Individual Movement Peak-Hour LOS
- X = AM Entire Intersection Peak-Hour LOS
- X = PM Entire Intersection Peak-Hour LOS
- X = Average Daily Traffic (vehicles per day)
- ⓧ = Traffic Signal
- ⓧ = Stop Sign

Figure 4b  
 Short-Term Background Traffic,  
 Lane Geometry, Traffic Control, and LOS  
 Claremont Business Park 2 (LSC # 195040)





Non-Pass-by\* Trip Directional Distributions

$$\frac{XX\%}{XX\%} = \frac{\text{Commercial}}{\text{Industrial Park}}$$

\* Blended percentages of primary + diverted trips

Pass-by Trip Directional Distributions

$$\frac{XX\%}{XX\%} = \frac{\text{Commercial}}{\text{Industrial Park}}$$

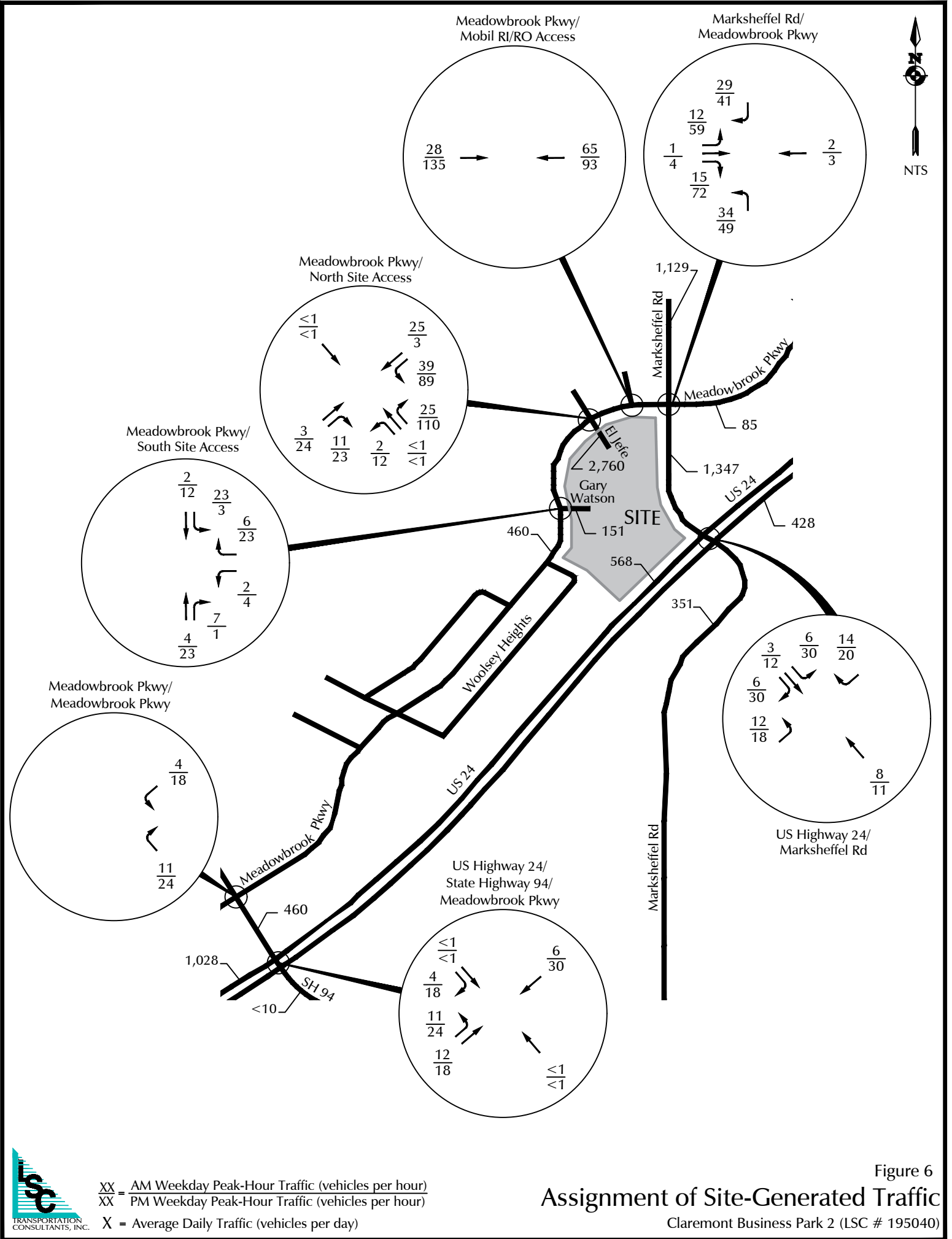


Figure 6  
**Assignment of Site-Generated Traffic**  
 Claremont Business Park 2 (LSC # 195040)

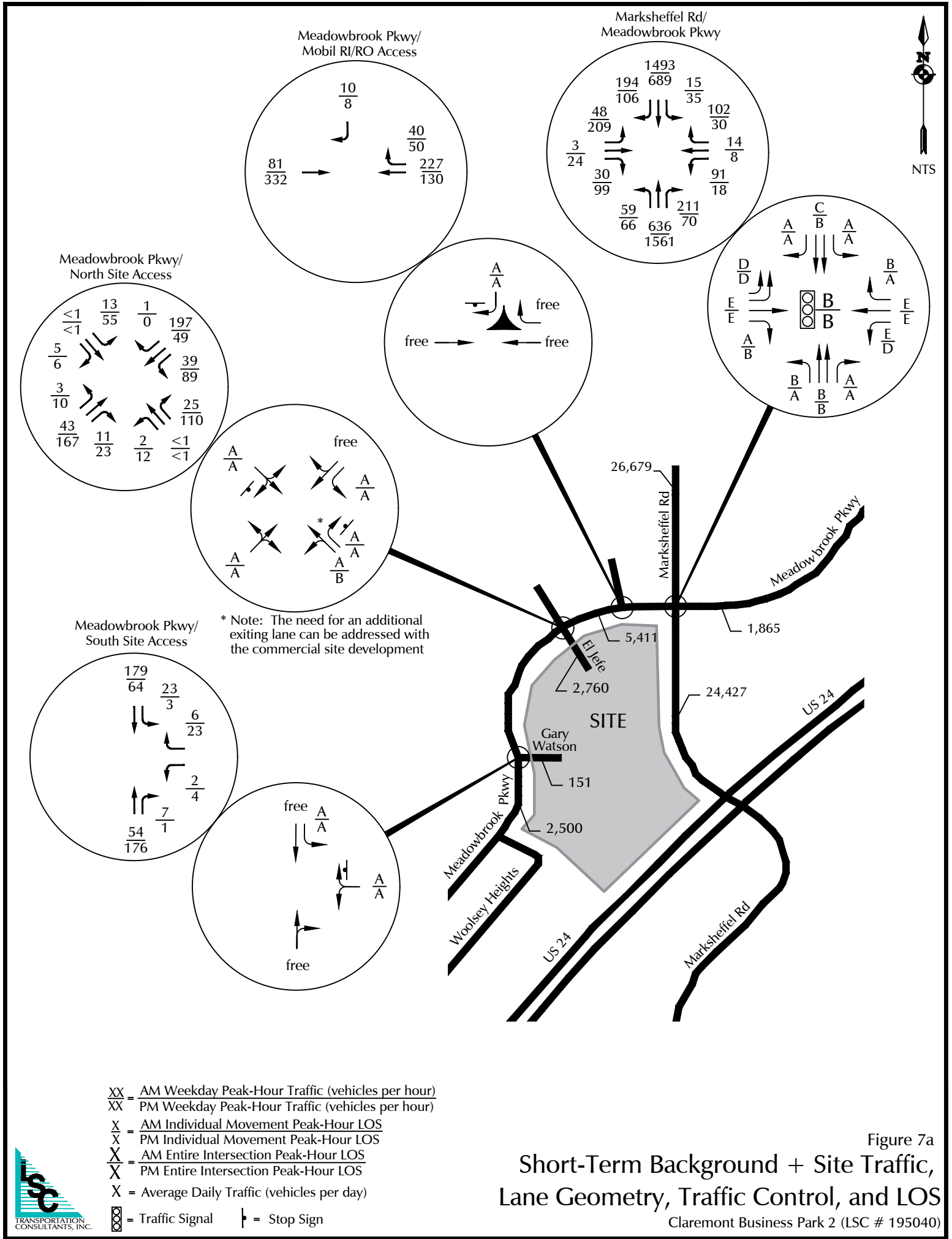
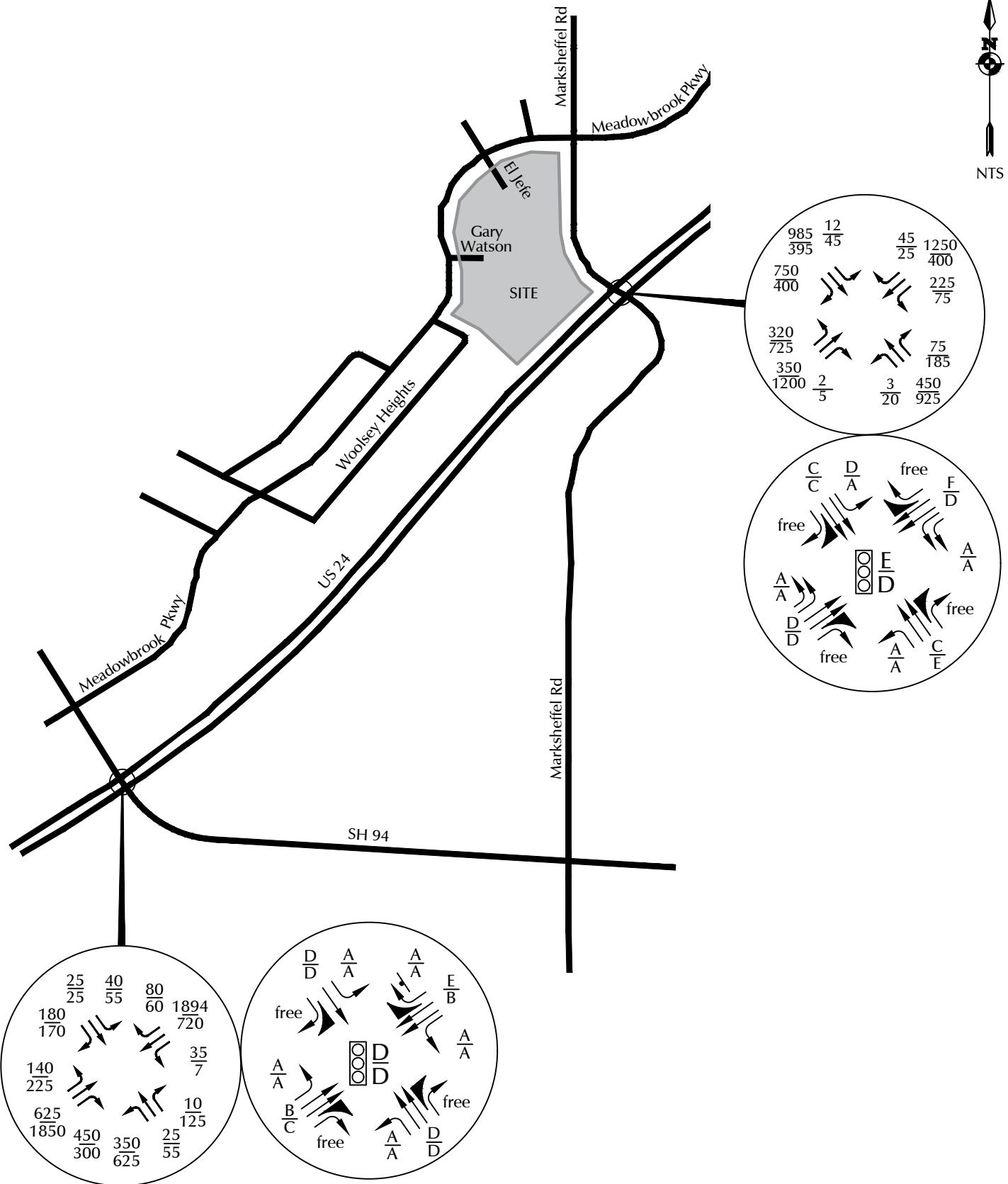


Figure 7a  
 Short-Term Background + Site Traffic,  
 Lane Geometry, Traffic Control, and LOS  
 Claremont Business Park 2 (LSC # 195040)



- XX = AM Weekday Peak-Hour Traffic (vehicles per hour)
- XX = PM Weekday Peak-Hour Traffic (vehicles per hour)
- X = AM Individual Movement Peak-Hour LOS
- X = PM Individual Movement Peak-Hour LOS
- X = AM Entire Intersection Peak-Hour LOS
- X = PM Entire Intersection Peak-Hour LOS
- X = Average Daily Traffic (vehicles per day)
- ⓧ = Traffic Signal
- ⓧ = Stop Sign

Figure 7b  
Short-Term Background + Site Traffic,  
Lane Geometry, Traffic Control, and LOS  
Claremont Business Park 2 (LSC # 195040)

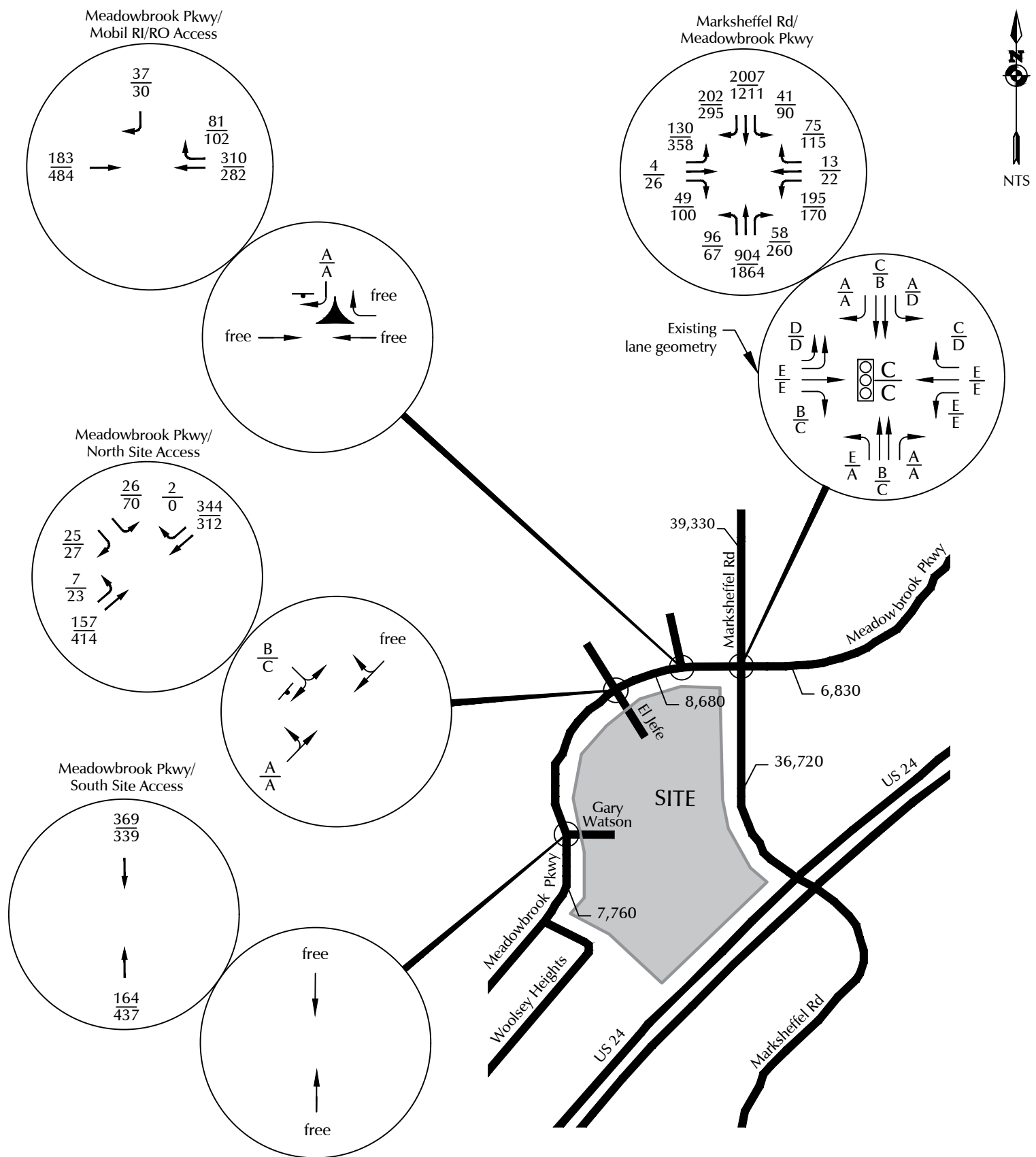
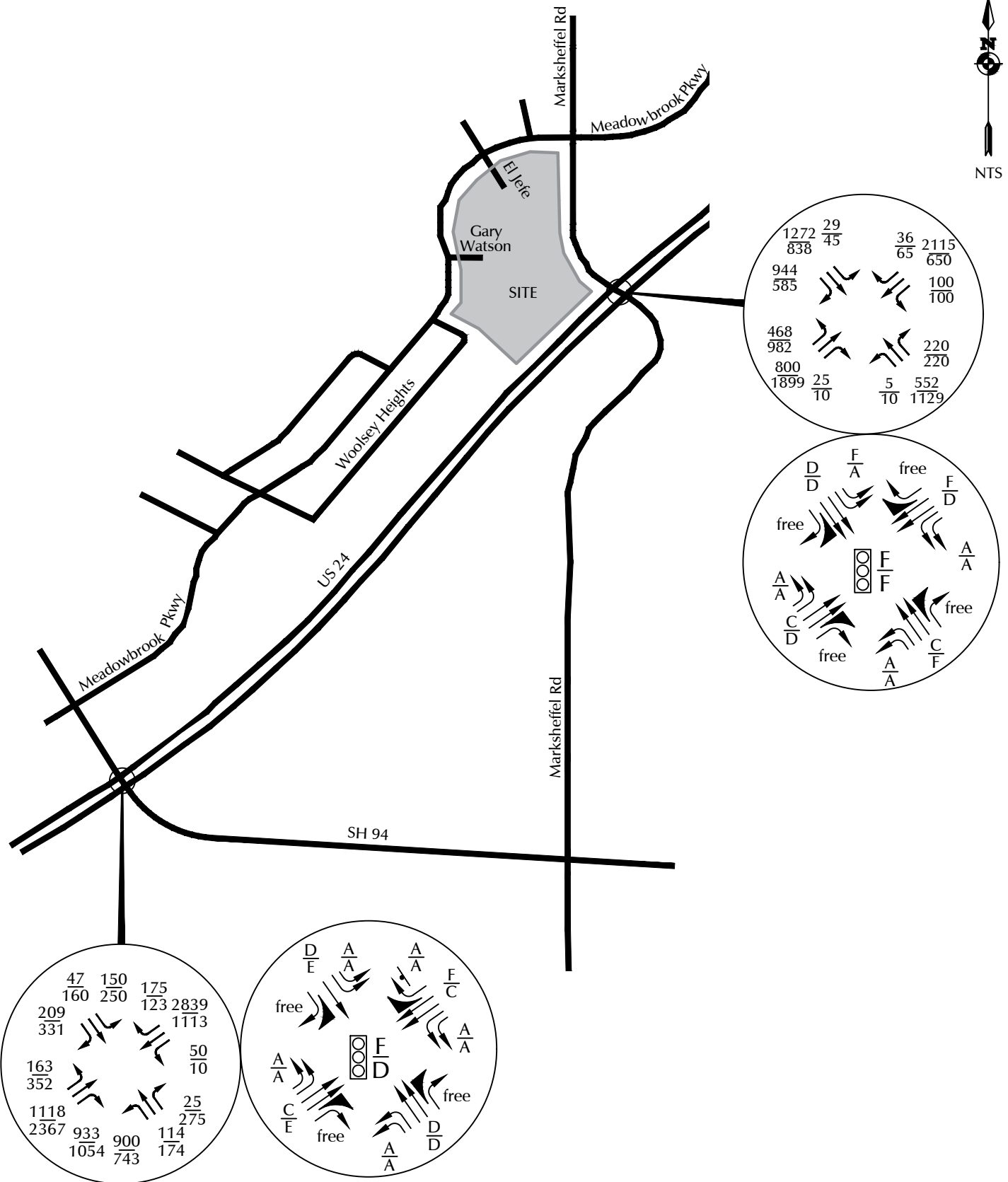


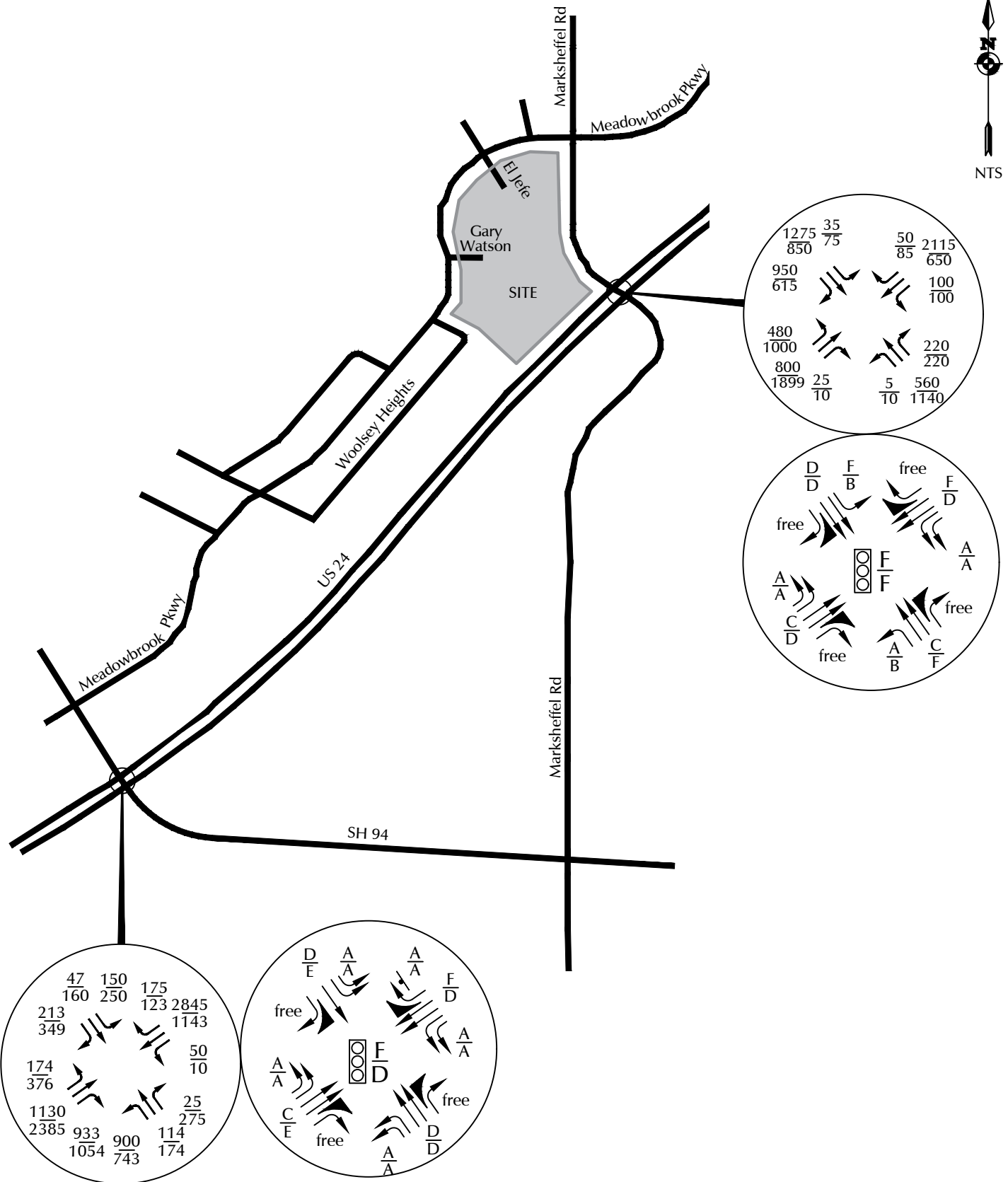
Figure 8a  
2040 Background Traffic, Lane  
Geometry, Traffic Control, and LOS  
Claremont Business Park 2 (LSC # 195040)



- XX = AM Weekday Peak-Hour Traffic (vehicles per hour)
- XX = PM Weekday Peak-Hour Traffic (vehicles per hour)
- X = AM Individual Movement Peak-Hour LOS
- X = PM Individual Movement Peak-Hour LOS
- X = AM Entire Intersection Peak-Hour LOS
- X = PM Entire Intersection Peak-Hour LOS
- X = Average Daily Traffic (vehicles per day)
- ⓧ = Traffic Signal
- ⓧ = Stop Sign

Figure 8b  
 2040 Background Traffic,  
 Lane Geometry, Traffic Control, and LOS  
 Claremont Business Park 2 (LSC # 195040)





- XX = AM Weekday Peak-Hour Traffic (vehicles per hour)
- XX = PM Weekday Peak-Hour Traffic (vehicles per hour)
- X = AM Individual Movement Peak-Hour LOS
- X = PM Individual Movement Peak-Hour LOS
- X = AM Entire Intersection Peak-Hour LOS
- X = PM Entire Intersection Peak-Hour LOS
- X = Average Daily Traffic (vehicles per day)
- ⓧ = Traffic Signal
- ⓧ = Stop Sign

Figure 9b  
2040 Background + Site Traffic,  
Lane Geometry, Traffic Control, and LOS  
Claremont Business Park 2 (LSC # 195040)



# Traffic Counts

---

# LSC Transportation Consultants, Inc.

545 E Pikes Peak Ave, Suite 210  
Colorado Springs, CO 80905  
719-633-2868

File Name : Marksheffel Rd - Meadowbrook Pkwy AM

Site Code : 174080

Start Date : 2/11/2020

Page No : 1

## Groups Printed- Unshifted

	Marksheffel Rd Southbound					Meadow Brook Pkwy Westbound					Marksheffel Rd Northbound					Meadow Brook Pkwy Eastbound					
Start Time	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Int. Total
06:30 AM	1	345	24	0	370	14	3	5	0	22	3	93	2	0	98	7	0	3	0	10	500
06:45 AM	5	379	29	0	413	7	1	11	0	19	4	115	0	0	119	8	0	5	0	13	564
Total	6	724	53	0	783	21	4	16	0	41	7	208	2	0	217	15	0	8	0	23	1064
07:00 AM	2	432	34	0	468	21	4	18	0	43	5	149	1	0	155	5	0	4	0	9	675
07:15 AM	3	402	43	0	448	5	1	18	0	24	2	161	2	0	165	3	0	3	0	6	643
07:30 AM	3	304	41	0	348	13	7	22	0	42	7	153	3	0	163	10	0	2	0	12	565
07:45 AM	5	344	45	0	394	2	0	15	0	17	7	160	4	0	171	13	0	4	0	17	599
Total	13	1482	163	0	1658	41	12	73	0	126	21	623	10	0	654	31	0	13	0	44	2482
08:00 AM	8	327	35	0	370	7	0	7	0	14	4	141	2	1	148	13	0	9	0	22	554
08:15 AM	4	280	32	0	316	3	0	4	0	7	3	111	4	1	119	15	0	5	0	20	462
Grand Total	31	2813	283	0	3127	72	16	100	0	188	35	1083	18	2	1138	74	0	35	0	109	4562
Apprch %	1	90	9.1	0		38.3	8.5	53.2	0		3.1	95.2	1.6	0.2		67.9	0	32.1	0		
Total %	0.7	61.7	6.2	0	68.5	1.6	0.4	2.2	0	4.1	0.8	23.7	0.4	0	24.9	1.6	0	0.8	0	2.4	

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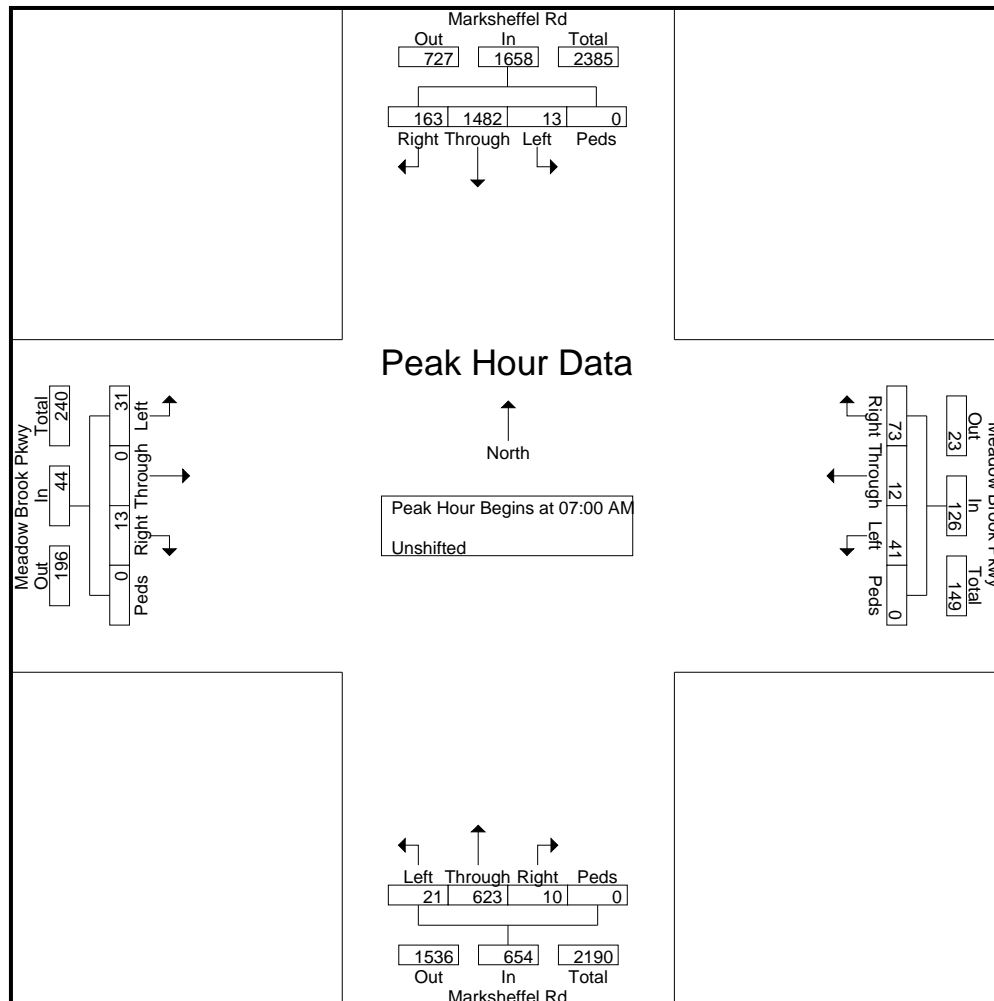
File Name : Marksheffel Rd - Meadowbrook Pkwy AM

Site Code : 174080

Start Date : 2/11/2020

Page No : 2

	Marksheffel Rd Southbound					Meadow Brook Pkwy Westbound					Marksheffel Rd Northbound					Meadow Brook Pkwy Eastbound					
Start Time	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Int. Total
<b>Peak Hour Analysis From 6:30:00 AM to 8:15:00 AM - Peak 1 of 1</b>																					
Peak Hour for Entire Intersection Begins at 7:00:00 AM																					
7:00:00 AM	2	432	34	0	468	21	4	18	0	43	5	149	1	0	155	5	0	4	0	9	675
7:15:00 AM	3	402	43	0	448	5	1	18	0	24	2	161	2	0	165	3	0	3	0	6	643
7:30:00 AM	3	304	41	0	348	13	7	22	0	42	7	153	3	0	163	10	0	2	0	12	565
7:45:00 AM	5	344	45	0	394	2	0	15	0	17	7	160	4	0	171	13	0	4	0	17	599
Total Volume	13	1482	163	0	1658	41	12	73	0	126	21	623	10	0	654	31	0	13	0	44	2482
% App. Total	0.8	89.4	9.8	0		32.5	9.5	57.9	0		3.2	95.3	1.5	0		70.5	0	29.5	0		
PHF	.650	.858	.906	.000	.886	.488	.429	.830	.000	.733	.750	.967	.625	.000	.956	.596	.000	.813	.000	.647	.919



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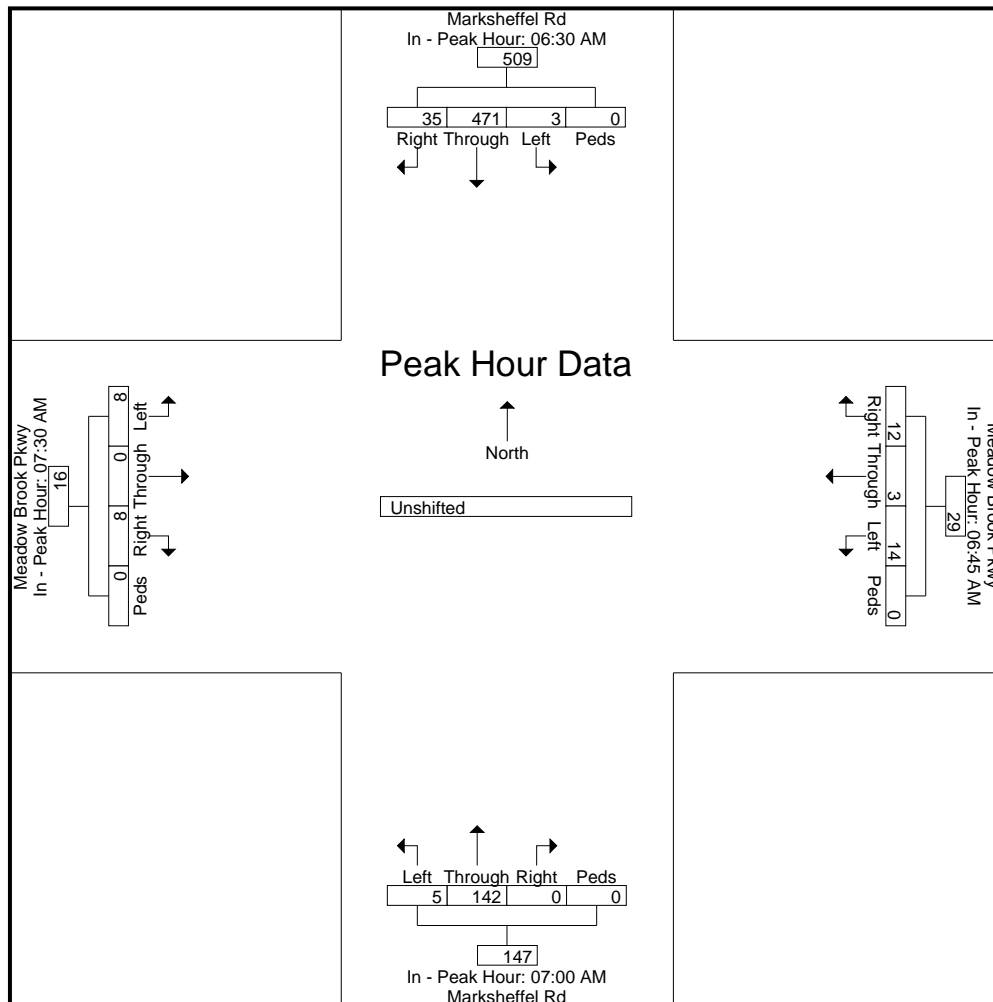
File Name : Marksheffel Rd - Meadowbrook Pkwy AM

Site Code : 174080

Start Date : 2/11/2020

Page No : 3

	Marksheffel Rd Southbound					Meadow Brook Pkwy Westbound					Marksheffel Rd Northbound					Meadow Brook Pkwy Eastbound					
Start Time	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Int. Total
<b>Peak Hour Analysis From 6:30:00 AM to 8:15:00 AM - Peak 1 of 1</b>																					
Peak Hour for Each Approach Begins at:																					
	6:30:00 AM					6:45:00 AM					7:00:00 AM					7:30:00 AM					
+0 mins.	1	345	24	0	370	7	1	11	0	19	5	149	1	0	155	10	0	2	0	12	
+5 mins.	5	379	29	0	413	21	4	18	0	43	2	161	2	0	165	13	0	4	0	17	
+10 mins.	2	432	34	0	468	5	1	18	0	24	7	153	3	0	163	13	0	9	0	22	
+15 mins.	3	402	43	0	448	13	7	22	0	42	7	160	4	0	171	15	0	5	0	20	
Total Volume	11	1558	130	0	1699	46	13	69	0	128	21	623	10	0	654	51	0	20	0	71	
% App. Total	0.6	91.7	7.7	0		35.9	10.2	53.9	0		3.2	95.3	1.5	0		71.8	0	28.2	0		
PHF	.550	.902	.756	.000	.908	.548	.464	.784	.000	.744	.750	.967	.625	.000	.956	.850	.000	.556	.000	.807	



# LSC Transportation Consultants, Inc.

545 E Pikes Peak Ave, Suite 210

Colorado Springs, CO 80905

719-633-2868

File Name : Marksheffel Rd - Meadowbrook Pkwy PM

Site Code : 174080

Start Date : 2/11/2020

Page No : 1

## Groups Printed- Unshifted

	Marksheffel Rd Southbound					Meadow Brook Pkwy Westbound					Marksheffel Rd Northbound					Meadow Brook Pkwy Eastbound					
Start Time	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Int. Total
04:00 PM	7	154	17	0	178	2	1	13	0	16	4	364	22	0	390	34	2	11	0	47	631
04:15 PM	15	157	16	1	189	6	3	6	0	15	4	381	16	0	401	19	1	5	0	25	630
04:30 PM	8	157	14	0	179	2	1	9	0	12	4	381	22	1	408	34	5	6	0	45	644
04:45 PM	9	172	19	0	200	4	2	6	0	12	1	380	14	0	395	35	4	1	0	40	647
Total	39	640	66	1	746	14	7	34	0	55	13	1506	74	1	1594	122	12	23	0	157	2552
05:00 PM	9	196	10	0	215	8	0	4	0	12	2	411	15	0	428	42	2	12	0	56	711
05:15 PM	8	165	21	0	194	2	1	8	0	11	8	375	14	0	397	32	8	7	0	47	649
05:30 PM	9	166	15	0	190	4	2	6	0	12	2	359	17	0	378	28	1	5	0	34	614
05:45 PM	14	148	13	0	175	1	2	8	0	11	6	255	14	0	275	16	4	7	0	27	488
Total	40	675	59	0	774	15	5	26	0	46	18	1400	60	0	1478	118	15	31	0	164	2462
Grand Total	79	1315	125	1	1520	29	12	60	0	101	31	2906	134	1	3072	240	27	54	0	321	5014
Apprch %	5.2	86.5	8.2	0.1		28.7	11.9	59.4	0		1	94.6	4.4	0		74.8	8.4	16.8	0		
Total %	1.6	26.2	2.5	0	30.3	0.6	0.2	1.2	0	2	0.6	58	2.7	0	61.3	4.8	0.5	1.1	0	6.4	

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719-633-2868

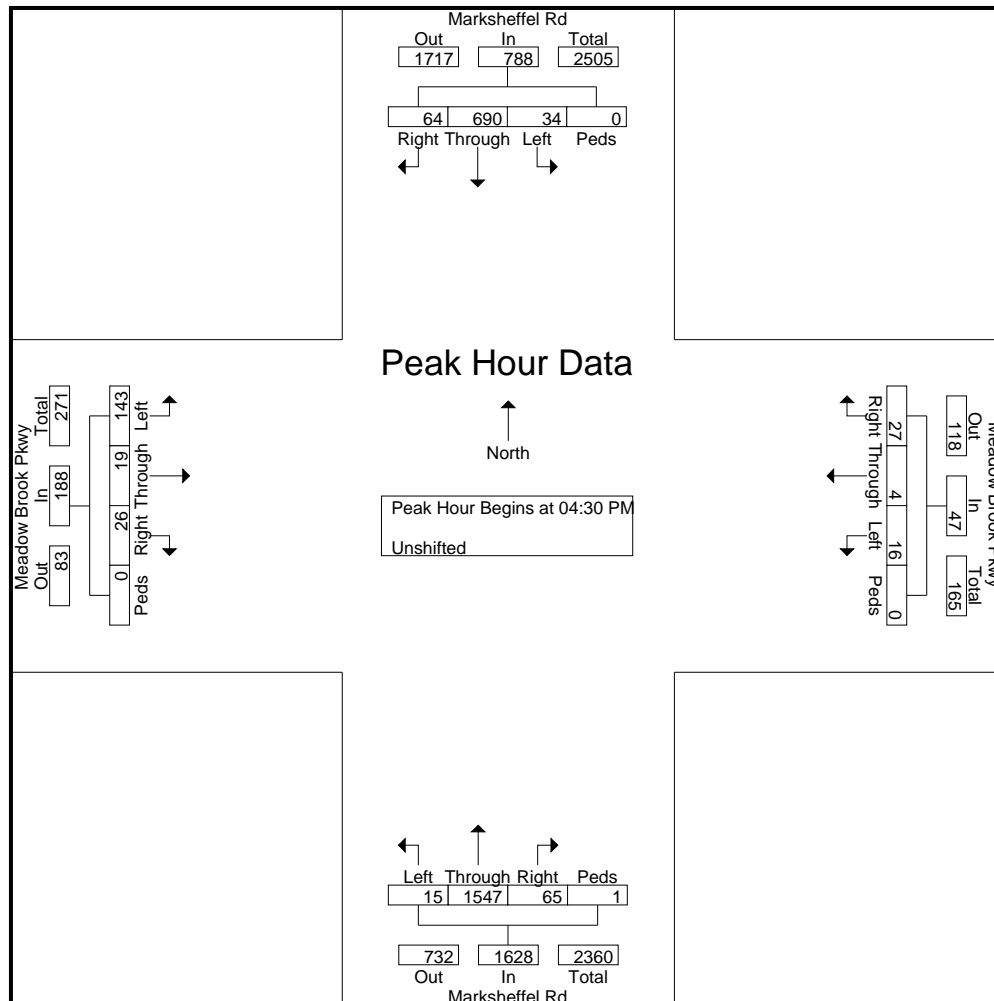
File Name : Marksheffel Rd - Meadowbrook Pkwy PM

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	Marksheffel Rd Southbound					Meadow Brook Pkwy Westbound					Marksheffel Rd Northbound					Meadow Brook Pkwy Eastbound					
Start Time	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Int. Total
<b>Peak Hour Analysis From 4:00:00 PM to 5:45:00 PM - Peak 1 of 1</b>																					
Peak Hour for Entire Intersection Begins at 4:30:00 PM																					
4:30:00 PM	8	157	14	0	179	2	1	9	0	12	4	381	22	1	408	34	5	6	0	45	644
4:45:00 PM	9	172	19	0	200	4	2	6	0	12	1	380	14	0	395	35	4	1	0	40	647
5:00:00 PM	9	196	10	0	215	8	0	4	0	12	2	411	15	0	428	42	2	12	0	56	711
5:15:00 PM	8	165	21	0	194	2	1	8	0	11	8	375	14	0	397	32	8	7	0	47	649
Total Volume	34	690	64	0	788	16	4	27	0	47	15	1547	65	1	1628	143	19	26	0	188	2651
% App. Total	4.3	87.6	8.1	0		34	8.5	57.4	0		0.9	95	4	0.1		76.1	10.1	13.8	0		
PHF	.944	.880	.762	.000	.916	.500	.500	.750	.000	.979	.469	.941	.739	.250	.951	.851	.594	.542	.000	.839	.932



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Colorado Springs, CO 80905  
719-633-2868

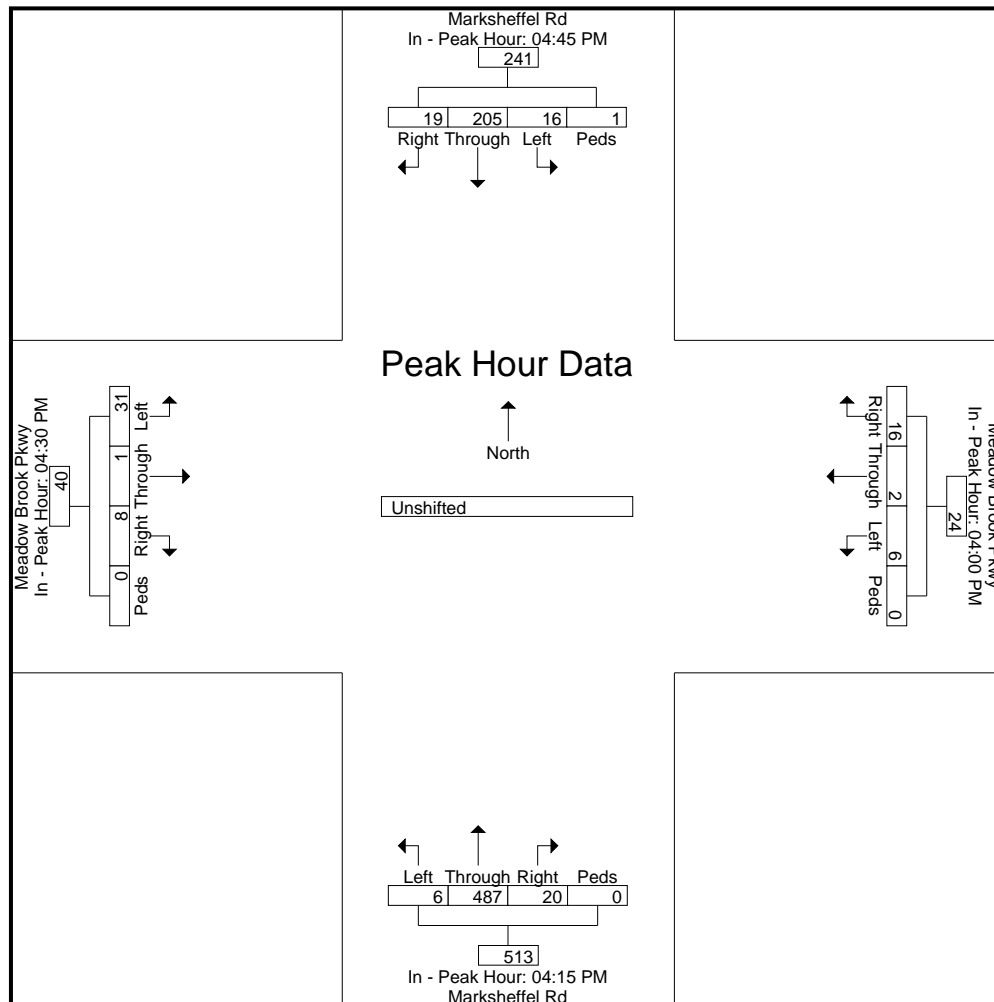
File Name : Marksheffel Rd - Meadowbrook Pkwy PM

Site Code : 174080

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Page No : 3

	Marksheffel Rd Southbound					Meadow Brook Pkwy Westbound					Marksheffel Rd Northbound					Meadow Brook Pkwy Eastbound					
Start Time	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Int. Total
<b>Peak Hour Analysis From 4:00:00 PM to 5:45:00 PM - Peak 1 of 1</b>																					
Peak Hour for Each Approach Begins at:																					
	4:45:00 PM					4:00:00 PM					4:15:00 PM					4:30:00 PM					
+0 mins.	9	172	19	0	200	2	1	13	0	16	4	381	16	0	401	34	5	6	0	45	
+5 mins.	9	196	10	0	215	6	3	6	0	15	4	381	22	1	408	35	4	1	0	40	
+10 mins.	8	165	21	0	194	2	1	9	0	12	1	380	14	0	395	42	2	12	0	56	
+15 mins.	9	166	15	0	190	4	2	6	0	12	2	411	15	0	428	32	8	7	0	47	
Total Volume	35	699	65	0	799	14	7	34	0	55	11	1553	67	1	1632	143	19	26	0	188	
% App. Total	4.4	87.5	8.1	0		25.5	12.7	61.8	0		0.7	95.2	4.1	0.1		76.1	10.1	13.8	0		
PHF	.972	.892	.774	.000	.929	.583	.583	.654	.000	.859	.688	.945	.761	.250	.953	.851	.594	.542	.000	.839	



























# Levels of Service

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Lanes, Volumes, Timings  
1: Marksheffel Rd & Meadowbrook Pkwy

2020 Existing  
AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	0	13	41	12	73	21	623	10	13	1482	163
Future Volume (vph)	31	0	13	41	12	73	21	623	10	13	1482	163
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	210		195	300		190	420		0	350		350
Storage Lanes	2		1	1		1	1		1	1		1
Taper Length (ft)	55			165			115			115		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1863	1583	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted				0.526			0.117			0.387		
Satd. Flow (perm)	3614	1863	1583	980	1863	1583	218	3539	1583	721	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			179			89			89			172
Link Speed (mph)		35			25			50			50	
Link Distance (ft)		495			926			1105			965	
Travel Time (s)		9.6			25.3			15.1			13.2	
Peak Hour Factor	0.78	0.78	0.78	0.87	0.87	0.87	0.93	0.93	0.93	0.95	0.95	0.95
Adj. Flow (vph)	40	0	17	47	14	84	23	670	11	14	1560	172
Shared Lane Traffic (%)												
Lane Group Flow (vph)	40	0	17	47	14	84	23	670	11	14	1560	172
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt		Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lanes, Volumes, Timings  
1: Marksheffel Rd & Meadowbrook Pkwy

2020 Existing  
AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	9.0	9.0	10.0	9.0	9.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	18.0	9.0	9.0	19.0	10.0	10.0	12.0	97.0	97.0	10.0	95.0	95.0
Total Split (%)	13.3%	6.7%	6.7%	14.1%	7.4%	7.4%	8.9%	71.9%	71.9%	7.4%	70.4%	70.4%
Maximum Green (s)	14.0	4.0	4.0	15.0	5.0	5.0	7.0	92.0	92.0	5.0	90.0	90.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effect Green (s)	10.0		5.8	16.7	7.2	7.2	107.1	104.6	104.6	105.5	102.1	102.1
Actuated g/C Ratio	0.07		0.04	0.12	0.05	0.05	0.79	0.77	0.77	0.78	0.76	0.76
v/c Ratio	0.15		0.07	0.24	0.14	0.50	0.10	0.24	0.01	0.02	0.58	0.14
Control Delay	53.6		0.5	53.2	62.9	21.1	9.6	12.7	1.3	3.7	9.8	1.3
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.6		0.5	53.2	62.9	21.1	9.6	12.7	1.3	3.7	9.8	1.3
LOS	D		A	D	E	C	A	B	A	A	A	A
Approach Delay		37.8			35.5			12.4			8.9	
Approach LOS		D			D			B			A	

Intersection Summary

Area Type: Other

Cycle Length: 135

Actuated Cycle Length: 135

Offset: 111 (82%), Referenced to phase 2:NBTL and 6:SBTL, Start of FDW or yellow

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.58

Intersection Signal Delay: 11.9

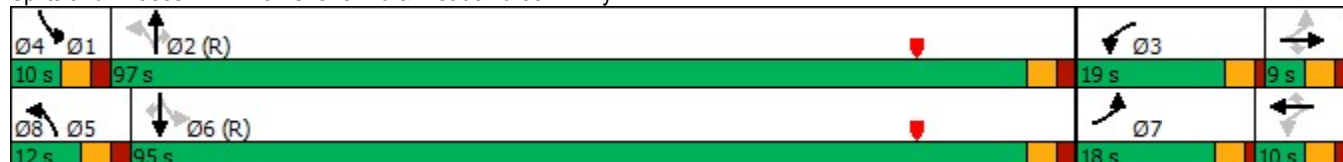
Intersection LOS: B





Intersection Capacity Utilization 59.3%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Marksheffel Rd & Meadowbrook Pkwy



Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Traffic Vol, veh/h	3	93	277	1	2	25
Future Vol, veh/h	3	93	277	1	2	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	92	92	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	112	301	1	3	32

























Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	302	0	0 422 302
Stage 1	-	-	- 302 -
Stage 2	-	-	- 120 -
Critical Hdwy	4.12	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.218	-	- 3.518 3.318
Pot Cap-1 Maneuver	1259	-	- 588 738
Stage 1	-	-	- 750 -
Stage 2	-	-	- 905 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1259	-	- 586 738
Mov Cap-2 Maneuver	-	-	- 586 -
Stage 1	-	-	- 748 -
Stage 2	-	-	- 905 -

Approach	EB	WB	SE
HCM Control Delay, s	0.2	0	10.2
HCM LOS	B		

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SELn1
Capacity (veh/h)	1259	-	-	-	724
HCM Lane V/C Ratio	0.003	-	-	-	0.048
HCM Control Delay (s)	7.9	-	-	-	10.2
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1













Lanes, Volumes, Timings  
1: Marksheffel Rd & Meadowbrook Pkwy

2020 Existing  
PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	143	19	26	16	4	27	15	1547	65	34	690	64
Future Volume (vph)	143	19	26	16	4	27	15	1547	65	34	690	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	210		195	300		190	420		0	350		350
Storage Lanes	2		1	1		1	1		1	1		1
Taper Length (ft)	55			165			115			115		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1863	1583	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.513						0.360			0.098		
Satd. Flow (perm)	1854	1863	1583	1863	1863	1583	671	3539	1583	183	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			101			101			97			97
Link Speed (mph)		35			25			50			50	
Link Distance (ft)		495			926			1105			965	
Travel Time (s)		9.6			25.3			15.1			13.2	
Peak Hour Factor	0.87	0.87	0.87	0.83	0.83	0.83	0.95	0.95	0.95	0.93	0.93	0.93
Adj. Flow (vph)	164	22	30	19	5	33	16	1628	68	37	742	69
Shared Lane Traffic (%)												
Lane Group Flow (vph)	164	22	30	19	5	33	16	1628	68	37	742	69
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lanes, Volumes, Timings  
1: Marksheffel Rd & Meadowbrook Pkwy

2020 Existing  
PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	11.5	11.5	10.0	11.5	11.5
Total Split (s)	19.0	17.0	17.0	19.0	17.0	17.0	13.0	88.0	88.0	11.0	86.0	86.0
Total Split (%)	14.1%	12.6%	12.6%	14.1%	12.6%	12.6%	9.6%	65.2%	65.2%	8.1%	63.7%	63.7%
Maximum Green (s)	15.0	11.0	11.0	15.0	11.0	11.0	8.0	81.5	81.5	6.0	80.5	80.5
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	5.0	6.5	6.5	5.0	5.5	5.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effect Green (s)	18.8	12.1	12.1	11.8	6.0	6.0	102.8	96.6	96.6	105.4	102.2	102.2
Actuated g/C Ratio	0.14	0.09	0.09	0.09	0.04	0.04	0.76	0.72	0.72	0.78	0.76	0.76
v/c Ratio	0.42	0.13	0.13	0.12	0.06	0.20	0.03	0.64	0.06	0.17	0.28	0.06
Control Delay	53.9	57.5	1.2	48.2	63.0	2.7	5.0	11.4	1.9	6.0	6.8	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.9	57.5	1.2	48.2	63.0	2.7	5.0	11.4	1.9	6.0	6.8	0.8
LOS	D	E	A	D	E	A	A	B	A	A	A	A
Approach Delay		46.9			23.1			10.9			6.3	
Approach LOS		D			C			B			A	

Intersection Summary

Area Type: Other

Cycle Length: 135

Actuated Cycle Length: 135

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of FDW or yellow

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 12.5

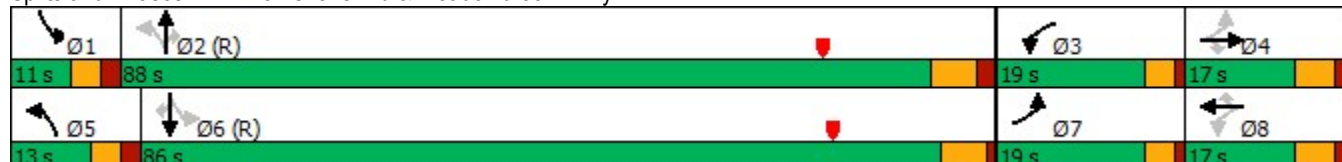
Intersection LOS: B

Intersection Capacity Utilization 63.9%

ICU Level of Service B





Analysis Period (min) 15

Splits and Phases: 1: Marksheffel Rd & Meadowbrook Pkwy



























HCM 6th TWSC  
2: Meadowbrook Pkwy & Mobil

2020 Existing  
PM

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Traffic Vol, veh/h	10	133	41	0	0	0
Future Vol, veh/h	10	133	41	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	153	53	0	0	0
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	53	0	-	0	228	53
Stage 1	-	-	-	-	53	-
Stage 2	-	-	-	-	175	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1553	-	-	-	760	1014
Stage 1	-	-	-	-	970	-
Stage 2	-	-	-	-	855	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1553	-	-	-	755	1014
Mov Cap-2 Maneuver	-	-	-	-	755	-
Stage 1	-	-	-	-	963	-
Stage 2	-	-	-	-	855	-
Approach	EB	WB		SE		
HCM Control Delay, s	0.5	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SELn1	
Capacity (veh/h)	1553	-	-	-	-	
HCM Lane V/C Ratio	0.007	-	-	-	-	
HCM Control Delay (s)	7.3	-	-	-	0	
HCM Lane LOS	A	-	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	-	













Lanes, Volumes, Timings  
1: Marksheffel Rd & Meadowbrook Pkwy

2023 Background  
AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	2	15	43	13	75	25	640	12	15	1500	165
Future Volume (vph)	35	2	15	43	13	75	25	640	12	15	1500	165
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	210		195	300		190	420		0	350		350
Storage Lanes	2		1	1		1	1		1	1		1
Taper Length (ft)	55			165			115			115		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1863	1583	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.816			0.471			0.114			0.380		
Satd. Flow (perm)	2949	1863	1583	877	1863	1583	212	3539	1583	708	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			89			89			89			174
Link Speed (mph)		35			25			50			50	
Link Distance (ft)		495			926			1105			965	
Travel Time (s)		9.6			25.3			15.1			13.2	
Peak Hour Factor	0.78	0.78	0.78	0.87	0.87	0.87	0.93	0.93	0.93	0.95	0.95	0.95
Adj. Flow (vph)	45	3	19	49	15	86	27	688	13	16	1579	174
Shared Lane Traffic (%)												
Lane Group Flow (vph)	45	3	19	49	15	86	27	688	13	16	1579	174
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lanes, Volumes, Timings  
1: Marksheffel Rd & Meadowbrook Pkwy

2023 Background  
AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	9.0	9.0	10.0	9.0	9.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	18.0	9.0	9.0	19.0	10.0	10.0	12.0	97.0	97.0	10.0	95.0	95.0
Total Split (%)	13.3%	6.7%	6.7%	14.1%	7.4%	7.4%	8.9%	71.9%	71.9%	7.4%	70.4%	70.4%
Maximum Green (s)	14.0	4.0	4.0	15.0	5.0	5.0	7.0	92.0	92.0	5.0	90.0	90.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effect Green (s)	11.6	6.0	6.0	16.7	7.5	7.5	106.7	104.2	104.2	104.9	101.6	101.6
Actuated g/C Ratio	0.09	0.04	0.04	0.12	0.06	0.06	0.79	0.77	0.77	0.78	0.75	0.75
v/c Ratio	0.16	0.04	0.12	0.27	0.14	0.50	0.11	0.25	0.01	0.03	0.59	0.14
Control Delay	51.3	62.0	1.6	53.7	62.5	21.2	9.8	12.7	1.6	3.9	10.2	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.3	62.0	1.6	53.7	62.5	21.2	9.8	12.7	1.6	3.9	10.2	1.3
LOS	D	E	A	D	E	C	A	B	A	A	B	A
Approach Delay		37.7			35.9			12.4			9.3	
Approach LOS		D			D			B			A	

Intersection Summary

Area Type: Other

Cycle Length: 135

Actuated Cycle Length: 135

Offset: 111 (82%), Referenced to phase 2:NBTL and 6:SBTL, Start of FDW or yellow

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 12.3

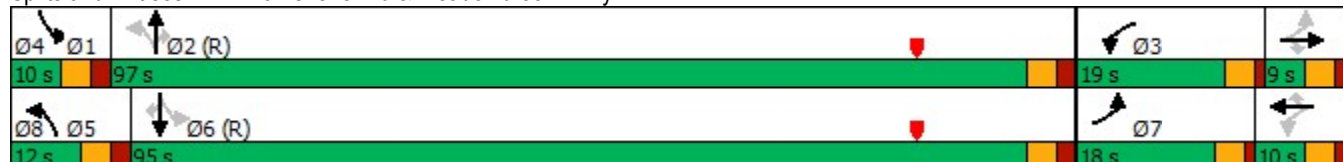
Intersection LOS: B

Intersection Capacity Utilization 59.8%






ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Marksheffel Rd & Meadowbrook Pkwy





























Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Traffic Vol, veh/h	3	39	172	1	13	5
Future Vol, veh/h	3	39	172	1	13	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	92	92	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	47	187	1	17	6
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	188	0	-	0	243	188
Stage 1	-	-	-	-	188	-
Stage 2	-	-	-	-	55	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1386	-	-	-	745	854
Stage 1	-	-	-	-	844	-
Stage 2	-	-	-	-	968	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1386	-	-	-	743	854
Mov Cap-2 Maneuver	-	-	-	-	743	-
Stage 1	-	-	-	-	841	-
Stage 2	-	-	-	-	968	-
Approach	EB	WB		SE		
HCM Control Delay, s	0.5	0		9.8		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SELn1	
Capacity (veh/h)	1386	-	-	-	771	
HCM Lane V/C Ratio	0.003	-	-	-	0.03	
HCM Control Delay (s)	7.6	-	-	-	9.8	
HCM Lane LOS	A	-	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0.1	

Lanes, Volumes, Timings  
1: Marksheffel Rd & Meadowbrook Pkwy













2023 Background

PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	150	20	28	18	5	30	17	1575	70	35	700	65
Future Volume (vph)	150	20	28	18	5	30	17	1575	70	35	700	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	210		195	300		190	420		0	350		350
Storage Lanes	2		1	1		1	1		1	1		1
Taper Length (ft)	55			165			115			115		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1863	1583	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.433			0.742			0.353			0.090		
Satd. Flow (perm)	1565	1863	1583	1382	1863	1583	658	3539	1583	168	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			101			101			97			97
Link Speed (mph)		35			25			50			50	
Link Distance (ft)		495			926			1105			965	
Travel Time (s)		9.6			25.3			15.1			13.2	
Peak Hour Factor	0.87	0.87	0.87	0.83	0.83	0.83	0.95	0.95	0.95	0.93	0.93	0.93
Adj. Flow (vph)	172	23	32	22	6	36	18	1658	74	38	753	70
Shared Lane Traffic (%)												
Lane Group Flow (vph)	172	23	32	22	6	36	18	1658	74	38	753	70
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lanes, Volumes, Timings  
1: Marksheffel Rd & Meadowbrook Pkwy

2023 Background  
PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	11.5	11.5	10.0	11.5	11.5
Total Split (s)	19.0	17.0	17.0	19.0	17.0	17.0	13.0	88.0	88.0	11.0	86.0	86.0
Total Split (%)	14.1%	12.6%	12.6%	14.1%	12.6%	12.6%	9.6%	65.2%	65.2%	8.1%	63.7%	63.7%
Maximum Green (s)	15.0	11.0	11.0	15.0	11.0	11.0	8.0	81.5	81.5	6.0	80.5	80.5
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	5.0	6.5	6.5	5.0	5.5	5.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effect Green (s)	21.4	12.3	12.3	13.5	6.1	6.1	100.2	94.0	94.0	102.9	99.6	99.6
Actuated g/C Ratio	0.16	0.09	0.09	0.10	0.05	0.05	0.74	0.70	0.70	0.76	0.74	0.74
v/c Ratio	0.42	0.14	0.14	0.14	0.07	0.22	0.03	0.67	0.07	0.19	0.29	0.06
Control Delay	52.0	58.5	1.2	47.4	63.2	2.9	5.1	12.6	2.0	6.7	7.5	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.0	58.5	1.2	47.4	63.2	2.9	5.1	12.6	2.0	6.7	7.5	0.8
LOS	D	E	A	D	E	A	A	B	A	A	A	A
Approach Delay		45.5			23.9			12.1			6.9	
Approach LOS		D			C			B			A	

Intersection Summary

Area Type: Other

Cycle Length: 135

Actuated Cycle Length: 135

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of FDW or yellow

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 13.4

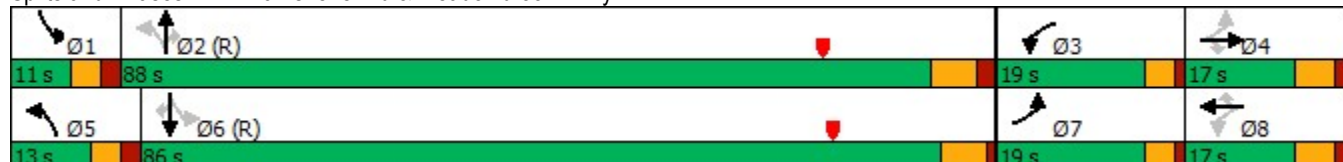
Intersection LOS: B





Intersection Capacity Utilization 64.9%

ICU Level of Service C

Analysis Period (min) 15

























Splits and Phases: 1: Marksheffel Rd & Meadowbrook Pkwy



Intersection						
Int Delay, s/veh	2.9					
Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Traffic Vol, veh/h	10	143	45	0	55	6
Future Vol, veh/h	10	143	45	0	55	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	164	58	0	71	8
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	58	0	-	0	244	58
Stage 1	-	-	-	-	58	-
Stage 2	-	-	-	-	186	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1546	-	-	-	744	1008
Stage 1	-	-	-	-	965	-
Stage 2	-	-	-	-	846	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1546	-	-	-	739	1008
Mov Cap-2 Maneuver	-	-	-	-	739	-
Stage 1	-	-	-	-	958	-
Stage 2	-	-	-	-	846	-
Approach	EB	WB		SE		
HCM Control Delay, s	0.5	0		10.3		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SELn1	
Capacity (veh/h)	1546	-	-	-	759	
HCM Lane V/C Ratio	0.007	-	-	-	0.103	
HCM Control Delay (s)	7.3	-	-	-	10.3	
HCM Lane LOS	A	-	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.3	













Lanes, Volumes, Timings  
1: Marksheffel Rd & Meadowbrook Pkwy

2023 Background + Site  
AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	3	30	91	14	102	59	636	211	52	1493	194
Future Volume (vph)	48	3	30	91	14	102	59	636	211	52	1493	194
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		225	300		190	420		0	350		350
Storage Lanes	2		1	1		1	1		1	1		1
Taper Length (ft)	50			165			115			115		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1863	1583	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted				0.506			0.110			0.376		
Satd. Flow (perm)	3614	1863	1583	943	1863	1583	205	3539	1583	700	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			89			117			227			204
Link Speed (mph)		35			25			50			50	
Link Distance (ft)		495			926			1105			965	
Travel Time (s)		9.6			25.3			15.1			13.2	
Peak Hour Factor	0.83	0.83	0.83	0.87	0.87	0.87	0.93	0.93	0.93	0.95	0.95	0.95
Adj. Flow (vph)	58	4	36	105	16	117	63	684	227	55	1572	204
Shared Lane Traffic (%)												
Lane Group Flow (vph)	58	4	36	105	16	117	63	684	227	55	1572	204
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lanes, Volumes, Timings  
1: Marksheffel Rd & Meadowbrook Pkwy

2023 Background + Site  
AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	9.0	9.0	10.0	9.0	9.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	18.0	9.0	9.0	19.0	10.0	10.0	12.0	97.0	97.0	10.0	95.0	95.0
Total Split (%)	13.3%	6.7%	6.7%	14.1%	7.4%	7.4%	8.9%	71.9%	71.9%	7.4%	70.4%	70.4%
Maximum Green (s)	14.0	4.0	4.0	15.0	5.0	5.0	7.0	92.0	92.0	5.0	90.0	90.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effect Green (s)	12.2	5.0	5.0	20.1	9.6	9.6	102.9	97.5	97.5	100.9	96.5	96.5
Actuated g/C Ratio	0.09	0.04	0.04	0.15	0.07	0.07	0.76	0.72	0.72	0.75	0.71	0.71
v/c Ratio	0.18	0.06	0.25	0.49	0.12	0.53	0.27	0.27	0.19	0.10	0.62	0.17
Control Delay	49.2	65.3	4.1	58.5	60.4	19.1	11.7	13.6	7.1	4.5	12.7	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.2	65.3	4.1	58.5	60.4	19.1	11.7	13.6	7.1	4.5	12.7	1.4
LOS	D	E	A	E	E	B	B	B	A	A	B	A
Approach Delay		33.3			39.3			12.0			11.2	
Approach LOS		C			D			B			B	

Intersection Summary

Area Type: Other

Cycle Length: 135

Actuated Cycle Length: 135

Offset: 111 (82%), Referenced to phase 2:NBTL and 6:SBTL, Start of FDW or yellow

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 14.2

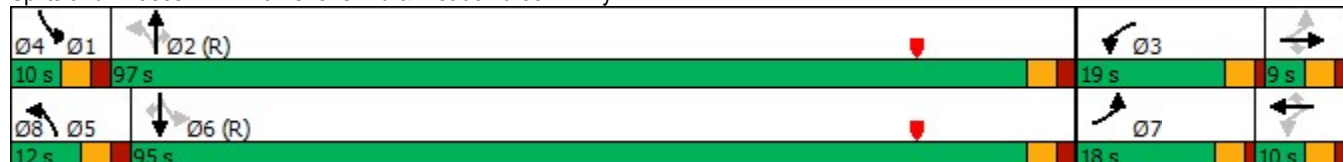
Intersection LOS: B








Intersection Capacity Utilization 68.8%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: Marksheffel Rd & Meadowbrook Pkwy



Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Vol, veh/h	3	43	11	39	197	1	2	0	25	13	0	5
Future Vol, veh/h	3	43	11	39	197	1	2	0	25	13	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	75	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	92	92	92	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	52	13	42	214	1	3	0	32	17	0	6




Major/Minor	Major1			Major2			Minor2			Minor1		
Conflicting Flow All	215	0	0	65	0	0	369	372	215	382	366	59
Stage 1	-	-	-	-	-	-	299	299	-	67	67	-
Stage 2	-	-	-	-	-	-	70	73	-	315	299	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1355	-	-	1537	-	-	588	558	825	576	562	1007
Stage 1	-	-	-	-	-	-	710	666	-	943	839	-
Stage 2	-	-	-	-	-	-	940	834	-	696	666	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1355	-	-	1537	-	-	571	541	825	541	545	1007
Mov Cap-2 Maneuver	-	-	-	-	-	-	571	541	-	541	545	-
Stage 1	-	-	-	-	-	-	708	648	-	940	836	-
Stage 2	-	-	-	-	-	-	931	831	-	651	648	-

Approach	EB			WB			SE			NW		
HCM Control Delay, s	0.4			1.2			9.7			11		
HCM LOS							A			B		

























Minor Lane/Major Mvmt	NWLn1NWLn2		EBL	EBT	EBR	WBL	WBT	WBR	SELn1
Capacity (veh/h)	541	1007	1355	-	-	1537	-	-	799
HCM Lane V/C Ratio	0.031	0.006	0.003	-	-	0.028	-	-	0.043
HCM Control Delay (s)	11.9	8.6	7.7	-	-	7.4	-	-	9.7
HCM Lane LOS	B	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	0	-	-	0.1	-	-	0.1

Intersection						
Int Delay, s/veh	0.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	6	54	7	23	179
Future Vol, veh/h	3	6	54	7	23	179
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	78	78	83	83	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	8	65	8	25	195
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	314	69	0	0	73	0
Stage 1	69	-	-	-	-	-
Stage 2	245	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	679	994	-	-	1527	-
Stage 1	954	-	-	-	-	-
Stage 2	796	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	667	994	-	-	1527	-
Mov Cap-2 Maneuver	667	-	-	-	-	-
Stage 1	937	-	-	-	-	-
Stage 2	796	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	9.3	0		0.8		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	854		1527	-	
HCM Lane V/C Ratio	-	0.014		0.016	-	
HCM Control Delay (s)	-	9.3		7.4	0	
HCM Lane LOS	-	A		A	A	
HCM 95th %tile Q(veh)	-	0		0.1	-	















Lanes, Volumes, Timings  
1: Marksheffel Rd & Meadowbrook Pkwy

2023 Background + Site  
PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	209	24	99	18	8	30	66	1561	70	35	689	106
Future Volume (vph)	209	24	99	18	8	30	66	1561	70	35	689	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		225	300		190	420		0	350		350
Storage Lanes	2		1	1		1	1		1	1		1
Taper Length (ft)	50			165			115			115		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1863	1583	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.439			0.740			0.339			0.091		
Satd. Flow (perm)	1586	1863	1583	1378	1863	1583	631	3539	1583	170	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			108			101			97			114
Link Speed (mph)		35			25			50			50	
Link Distance (ft)		495			926			1105			965	
Travel Time (s)		9.6			25.3			15.1			13.2	
Peak Hour Factor	0.92	0.92	0.92	0.87	0.87	0.87	0.95	0.95	0.95	0.93	0.93	0.93
Adj. Flow (vph)	227	26	108	21	9	34	69	1643	74	38	741	114
Shared Lane Traffic (%)												
Lane Group Flow (vph)	227	26	108	21	9	34	69	1643	74	38	741	114
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lanes, Volumes, Timings  
1: Marksheffel Rd & Meadowbrook Pkwy

2023 Background + Site  
PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	11.5	11.5	10.0	11.5	11.5
Total Split (s)	19.0	17.0	17.0	19.0	17.0	17.0	13.0	88.0	88.0	11.0	86.0	86.0
Total Split (%)	14.1%	12.6%	12.6%	14.1%	12.6%	12.6%	9.6%	65.2%	65.2%	8.1%	63.7%	63.7%
Maximum Green (s)	15.0	11.0	11.0	15.0	11.0	11.0	8.0	81.5	81.5	6.0	80.5	80.5
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	5.0	6.5	6.5	5.0	5.5	5.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effect Green (s)	23.3	14.3	14.3	13.7	6.3	6.3	99.4	92.1	92.1	98.1	92.4	92.4
Actuated g/C Ratio	0.17	0.11	0.11	0.10	0.05	0.05	0.74	0.68	0.68	0.73	0.68	0.68
v/c Ratio	0.50	0.13	0.41	0.13	0.10	0.20	0.13	0.68	0.07	0.19	0.31	0.10
Control Delay	52.2	56.5	14.8	45.9	63.8	2.7	5.4	13.3	2.1	7.4	10.2	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.2	56.5	14.8	45.9	63.8	2.7	5.4	13.3	2.1	7.4	10.2	1.9
LOS	D	E	B	D	E	A	A	B	A	A	B	A
Approach Delay		41.3			25.5			12.5			9.0	
Approach LOS		D			C			B			A	

Intersection Summary

Area Type: Other

Cycle Length: 135

Actuated Cycle Length: 135

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of FDW or yellow

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 15.1

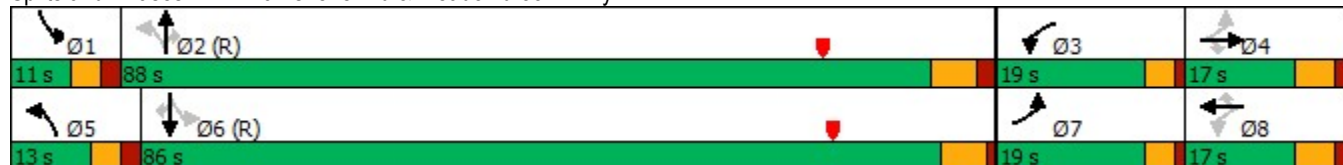
Intersection LOS: B








Intersection Capacity Utilization 73.7%




ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: Marksheffel Rd & Meadowbrook Pkwy



























Intersection												
Int Delay, s/veh	6.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Vol, veh/h	10	167	23	89	49	0	55	0	6	12	0	110
Future Vol, veh/h	10	167	23	89	49	0	55	0	6	12	0	110
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	75	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	78	78	78	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	182	25	97	53	0	71	0	8	14	0	133
Major/Minor	Major1			Major2			Minor2			Minor1		
Conflicting Flow All	53	0	0	207	0	0	530	476	53	468	464	195
Stage 1	-	-	-	-	-	-	247	247	-	217	217	-
Stage 2	-	-	-	-	-	-	283	229	-	251	247	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1553	-	-	1364	-	-	460	488	1014	505	495	846
Stage 1	-	-	-	-	-	-	757	702	-	785	723	-
Stage 2	-	-	-	-	-	-	724	715	-	753	702	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1553	-	-	1364	-	-	365	450	1014	471	456	846
Mov Cap-2 Maneuver	-	-	-	-	-	-	365	450	-	471	456	-
Stage 1	-	-	-	-	-	-	752	652	-	780	718	-
Stage 2	-	-	-	-	-	-	606	710	-	694	652	-
Approach	EB			WB			SE			NW		
HCM Control Delay, s	0.4			5.1			16.5			10.3		
HCM LOS							C			B		
Minor Lane/Major Mvmt	NWLn1NWLn2		EBL	EBT	EBR	WBL	WBT	WBR	SELn1			
Capacity (veh/h)	471	846	1553	-	-	1364	-	-	390			
HCM Lane V/C Ratio	0.031	0.157	0.007	-	-	0.071	-	-	0.201			
HCM Control Delay (s)	12.9	10	7.3	-	-	7.8	-	-	16.5			
HCM Lane LOS	B	B	A	-	-	A	-	-	C			
HCM 95th %tile Q(veh)	0.1	0.6	0	-	-	0.2	-	-	0.7			

Intersection						
Int Delay, s/veh	1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	23	176	1	3	64
Future Vol, veh/h	4	23	176	1	3	64
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	-	-	-	-	-
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	4	25	191	1	3	70
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	268	192	0	0	192	0
Stage 1	192	-	-	-	-	-
Stage 2	76	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	721	850	-	-	1381	-
Stage 1	841	-	-	-	-	-
Stage 2	947	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	720	850	-	-	1381	-
Mov Cap-2 Maneuver	720	-	-	-	-	-
Stage 1	839	-	-	-	-	-
Stage 2	947	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	9.5	0		0.3		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	828	1381	-	
HCM Lane V/C Ratio	-	-	0.035	0.002	-	
HCM Control Delay (s)	-	-	9.5	7.6	0	
HCM Lane LOS	-	-	A	A	A	
HCM 95th %tile Q(veh)	-	-	0.1	0	-	













Lanes, Volumes, Timings  
1: Marksheffel Rd & Meadowbrook Pkwy

2040 Background  
AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	4	49	195	13	75	96	904	58	41	2007	202
Future Volume (vph)	130	4	49	195	13	75	96	904	58	41	2007	202
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		225	300		190	420		0	350		350
Storage Lanes	2		1	1		1	1		1	1		1
Taper Length (ft)	50			165			115			115		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1863	1583	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted				0.556			0.043			0.269		
Satd. Flow (perm)	3614	1863	1583	1036	1863	1583	80	3539	1583	501	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			89			89			89			213
Link Speed (mph)		35			25			50			50	
Link Distance (ft)		495			926			1105			965	
Travel Time (s)		9.6			25.3			15.1			13.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	141	4	53	212	14	82	101	952	61	43	2113	213
Shared Lane Traffic (%)												
Lane Group Flow (vph)	141	4	53	212	14	82	101	952	61	43	2113	213
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lanes, Volumes, Timings  
1: Marksheffel Rd & Meadowbrook Pkwy

2040 Background  
AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	9.0	9.0	10.0	9.0	9.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	18.0	9.0	9.0	19.0	10.0	10.0	10.0	97.0	97.0	10.0	97.0	97.0
Total Split (%)	13.3%	6.7%	6.7%	14.1%	7.4%	7.4%	7.4%	71.9%	71.9%	7.4%	71.9%	71.9%
Maximum Green (s)	14.0	4.0	4.0	15.0	5.0	5.0	5.0	92.0	92.0	5.0	92.0	92.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effect Green (s)	14.3	4.1	4.1	22.4	7.6	7.6	99.1	95.1	95.1	97.8	92.7	92.7
Actuated g/C Ratio	0.11	0.03	0.03	0.17	0.06	0.06	0.73	0.70	0.70	0.72	0.69	0.69
v/c Ratio	0.38	0.07	0.40	0.83	0.13	0.48	0.80	0.38	0.05	0.10	0.87	0.18
Control Delay	52.4	66.5	11.4	78.5	64.2	20.1	62.5	14.8	4.9	4.8	21.9	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.4	66.5	11.4	78.5	64.2	20.1	62.5	14.8	4.9	4.8	21.9	1.3
LOS	D	E	B	E	E	C	E	B	A	A	C	A
Approach Delay		41.7			62.3			18.6			19.7	
Approach LOS		D			E			B			B	

Intersection Summary

Area Type: Other

Cycle Length: 135

Actuated Cycle Length: 135

Offset: 111 (82%), Referenced to phase 2:NBTL and 6:SBTL, Start of FDW or yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 23.8



























Intersection LOS: C






Intersection Capacity Utilization 90.8%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: Marksheffel Rd & Meadowbrook Pkwy

 Ø4	 Ø1	 Ø2 (R)										
10 s	97 s	19 s	9 s	10 s	97 s	18 s	10 s	10 s	97 s	18 s	10 s	10 s
 Ø8	 Ø5	 Ø6 (R)										

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Traffic Vol, veh/h	7	157	344	2	26	25
Future Vol, veh/h	7	157	344	2	26	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	92	92	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	180	374	2	33	32

























Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	376	0	0	571	375
Stage 1	-	-	-	375	-
Stage 2	-	-	-	196	-
Critical Hdwy	4.12	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	3.518	3.318
Pot Cap-1 Maneuver	1182	-	-	482	671
Stage 1	-	-	-	695	-
Stage 2	-	-	-	837	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1182	-	-	479	671
Mov Cap-2 Maneuver	-	-	-	479	-
Stage 1	-	-	-	690	-
Stage 2	-	-	-	837	-

Approach	EB	WB	SE
HCM Control Delay, s	0.3	0	12.3
HCM LOS	B		

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SELn1
Capacity (veh/h)	1182	-	-	-	557
HCM Lane V/C Ratio	0.007	-	-	-	0.117
HCM Control Delay (s)	8.1	-	-	-	12.3
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.4

Lanes, Volumes, Timings  
1: Marksheffel Rd & Meadowbrook Pkwy













2040 Background  
PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	358	26	100	170	22	115	67	1864	260	90	1211	295
Future Volume (vph)	358	26	100	170	22	115	67	1864	260	90	1211	295
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		225	300		190	420		0	350		350
Storage Lanes	2		1	1		1	1		1	1		1
Taper Length (ft)	50			165			115			115		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1863	1583	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.612			0.739			0.163			0.046		
Satd. Flow (perm)	2212	1863	1583	1377	1863	1583	304	3539	1583	86	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109			101			208			311
Link Speed (mph)		35			25			50			50	
Link Distance (ft)		495			926			1105			965	
Travel Time (s)		9.6			25.3			15.1			13.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	389	28	109	185	24	125	71	1962	274	95	1275	311
Shared Lane Traffic (%)												
Lane Group Flow (vph)	389	28	109	185	24	125	71	1962	274	95	1275	311
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6



Lanes, Volumes, Timings  
1: Marksheffel Rd & Meadowbrook Pkwy

2040 Background  
PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	11.5	11.5	10.0	11.5	11.5
Total Split (s)	20.0	14.0	14.0	19.0	13.0	13.0	11.0	91.0	91.0	11.0	91.0	91.0
Total Split (%)	14.8%	10.4%	10.4%	14.1%	9.6%	9.6%	8.1%	67.4%	67.4%	8.1%	67.4%	67.4%
Maximum Green (s)	16.0	8.0	8.0	15.0	7.0	7.0	6.0	84.5	84.5	6.0	85.5	85.5
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	5.0	6.5	6.5	5.0	5.5	5.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effect Green (s)	25.7	8.0	8.0	22.9	6.6	6.6	92.5	84.9	84.9	93.7	88.3	88.3
Actuated g/C Ratio	0.19	0.06	0.06	0.17	0.05	0.05	0.69	0.63	0.63	0.69	0.65	0.65
v/c Ratio	0.69	0.25	0.56	0.67	0.26	0.72	0.26	0.88	0.26	0.69	0.55	0.27
Control Delay	54.7	66.8	22.0	60.4	69.0	40.6	7.7	23.0	2.9	47.4	14.3	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	54.7	66.8	22.0	60.4	69.0	40.6	7.7	23.1	2.9	47.4	14.3	1.6
LOS	D	E	C	E	E	D	A	C	A	D	B	A
Approach Delay		48.6			53.6			20.2			13.8	
Approach LOS		D			D			C			B	

Intersection Summary

Area Type: Other

Cycle Length: 135

Actuated Cycle Length: 135

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of FDW or yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 23.4

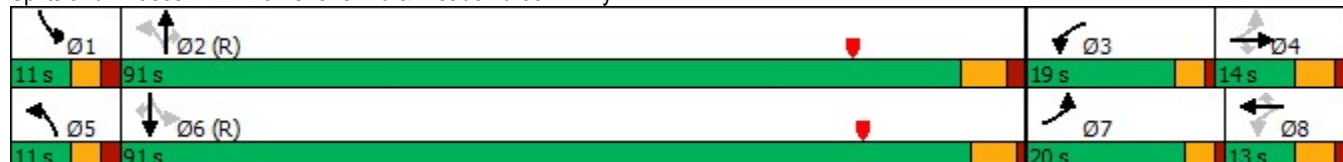
Intersection LOS: C





Intersection Capacity Utilization 88.0%

ICU Level of Service E

Analysis Period (min) 15

























Splits and Phases: 1: Marksheffel Rd & Meadowbrook Pkwy



Intersection						
Int Delay, s/veh	2.5					
Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Traffic Vol, veh/h	10	414	312	0	70	27
Future Vol, veh/h	10	414	312	0	70	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	450	339	0	90	35
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	339	0	-	0	811	339
Stage 1	-	-	-	-	339	-
Stage 2	-	-	-	-	472	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1220	-	-	-	349	703
Stage 1	-	-	-	-	722	-
Stage 2	-	-	-	-	628	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1220	-	-	-	346	703
Mov Cap-2 Maneuver	-	-	-	-	346	-
Stage 1	-	-	-	-	716	-
Stage 2	-	-	-	-	628	-
Approach	EB	WB		SE		
HCM Control Delay, s	0.2	0		17.9		
HCM LOS	C					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SELn1	
Capacity (veh/h)	1220	-	-	-	403	
HCM Lane V/C Ratio	0.009	-	-	-	0.309	
HCM Control Delay (s)	8	-	-	-	17.9	
HCM Lane LOS	A	-	-	-	C	
HCM 95th %tile Q(veh)	0	-	-	-	1.3	













Lanes, Volumes, Timings  
1: Marksheffel Rd & Meadowbrook Pkwy

2040 Background + Site  
AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	143	5	64	195	14	75	130	900	58	41	2000	231
Future Volume (vph)	143	5	64	195	14	75	130	900	58	41	2000	231
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		0	300		190	420		0	350		350
Storage Lanes	2		1	1		1	1		1	1		1
Taper Length (ft)	50			165			115			115		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.91	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1863	1583	1770	1863	1583	1770	3539	1583	1770	5085	1583
Flt Permitted				0.556			0.055			0.276		
Satd. Flow (perm)	3614	1863	1583	1036	1863	1583	102	3539	1583	514	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			89			89			89			243
Link Speed (mph)		35			25			50			50	
Link Distance (ft)		495			926			1105			965	
Travel Time (s)		9.6			25.3			15.1			13.2	
Peak Hour Factor	0.87	0.87	0.87	0.92	0.92	0.92	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	164	6	74	212	15	82	137	947	61	43	2105	243
Shared Lane Traffic (%)												
Lane Group Flow (vph)	164	6	74	212	15	82	137	947	61	43	2105	243
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lanes, Volumes, Timings  
1: Marksheffel Rd & Meadowbrook Pkwy

2040 Background + Site  
AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	9.0	9.0	10.0	9.0	9.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	18.0	9.0	9.0	19.0	10.0	10.0	12.0	97.0	97.0	10.0	95.0	95.0
Total Split (%)	13.3%	6.7%	6.7%	14.1%	7.4%	7.4%	8.9%	71.9%	71.9%	7.4%	70.4%	70.4%
Maximum Green (s)	14.0	4.0	4.0	15.0	5.0	5.0	7.0	92.0	92.0	5.0	90.0	90.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effect Green (s)	15.1	4.1	4.1	22.1	6.9	6.9	100.6	95.0	95.0	95.9	90.8	90.8
Actuated g/C Ratio	0.11	0.03	0.03	0.16	0.05	0.05	0.75	0.70	0.70	0.71	0.67	0.67
v/c Ratio	0.42	0.11	0.55	0.83	0.16	0.50	0.83	0.38	0.05	0.10	0.62	0.21
Control Delay	53.1	68.0	24.3	79.0	65.9	21.5	60.6	14.7	4.8	4.9	13.4	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.1	68.0	24.3	79.0	65.9	21.5	60.6	14.7	4.8	4.9	13.4	1.4
LOS	D	E	C	E	E	C	E	B	A	A	B	A
Approach Delay		44.7			63.1			19.7			12.1	
Approach LOS		D			E			B			B	

Intersection Summary

Area Type: Other

Cycle Length: 135

Actuated Cycle Length: 135

Offset: 111 (82%), Referenced to phase 2:NBTL and 6:SBTL, Start of FDW or yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 20.0

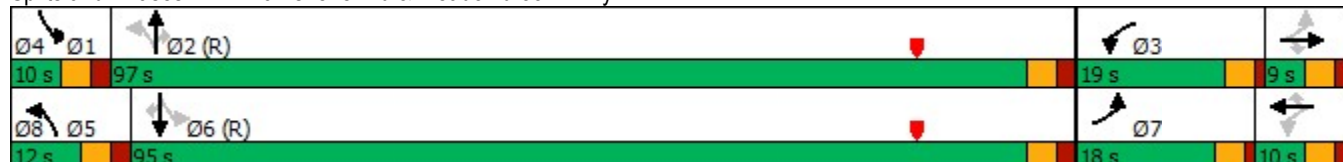
Intersection LOS: B








Intersection Capacity Utilization 75.8%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: Marksheffel Rd & Meadowbrook Pkwy



Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Vol, veh/h	7	161	11	39	290	2	26	0	25	2	0	25
Future Vol, veh/h	7	161	11	39	290	2	26	0	25	2	0	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	75	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	92	92	92	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	185	13	42	315	2	33	0	32	3	0	32




Major/Minor	Major1			Major2			Minor2			Minor1		
Conflicting Flow All	317	0	0	198	0	0	624	614	316	624	609	192
Stage 1	-	-	-	-	-	-	400	400	-	208	208	-
Stage 2	-	-	-	-	-	-	224	214	-	416	401	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1243	-	-	1375	-	-	398	407	724	398	410	850
Stage 1	-	-	-	-	-	-	626	602	-	794	730	-
Stage 2	-	-	-	-	-	-	779	725	-	614	601	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1243	-	-	1375	-	-	372	392	724	370	395	850
Mov Cap-2 Maneuver	-	-	-	-	-	-	372	392	-	370	395	-
Stage 1	-	-	-	-	-	-	622	583	-	789	726	-
Stage 2	-	-	-	-	-	-	745	721	-	569	582	-

Approach	EB			WB			SE			NW		
HCM Control Delay, s	0.3			0.9			13.5			9.8		
HCM LOS							B			A		

























  

Minor Lane/Major Mvmt	NWLn1NWLn2		EBL	EBT	EBR	WBL	WBT	WBR	SELn1
Capacity (veh/h)	370	850	1243	-	-	1375	-	-	488
HCM Lane V/C Ratio	0.007	0.038	0.006	-	-	0.031	-	-	0.134
HCM Control Delay (s)	14.8	9.4	7.9	-	-	7.7	-	-	13.5
HCM Lane LOS	B	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0	0.1	0	-	-	0.1	-	-	0.5

Intersection						
Int Delay, s/veh	0.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	6	179	7	23	292
Future Vol, veh/h	2	6	179	7	23	292
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	78	78	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	8	195	8	25	317
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	566	199	0	0	203	0
Stage 1	199	-	-	-	-	-
Stage 2	367	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	486	842	-	-	1369	-
Stage 1	835	-	-	-	-	-
Stage 2	701	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	475	842	-	-	1369	-
Mov Cap-2 Maneuver	475	-	-	-	-	-
Stage 1	817	-	-	-	-	-
Stage 2	701	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	10.2	0		0.6		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	-	706	1369	-	
HCM Lane V/C Ratio	-	-	0.015	0.018	-	
HCM Control Delay (s)	-	-	10.2	7.7	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	0	0.1	-	













Lanes, Volumes, Timings  
1: Marksheffel Rd & Meadowbrook Pkwy

2040 Background + Site  
PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	417	5	171	170	25	115	116	1850	260	90	1200	336
Future Volume (vph)	417	5	171	170	25	115	116	1850	260	90	1200	336
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		0	300		190	420		0	350		350
Storage Lanes	2		1	1		1	1		1	1		1
Taper Length (ft)	50			165			115			115		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.91	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1863	1583	1770	1863	1583	1770	3539	1583	1770	5085	1583
Flt Permitted	0.487			0.754			0.174			0.049		
Satd. Flow (perm)	1760	1863	1583	1405	1863	1583	324	3539	1583	91	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			143			133			191			354
Link Speed (mph)		35			25			50			50	
Link Distance (ft)		495			926			1105			965	
Travel Time (s)		9.6			25.3			15.1			13.2	
Peak Hour Factor	0.98	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	426	5	180	179	26	121	122	1947	274	95	1263	354
Shared Lane Traffic (%)												
Lane Group Flow (vph)	426	5	180	179	26	121	122	1947	274	95	1263	354
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6

Lanes, Volumes, Timings  
1: Marksheffel Rd & Meadowbrook Pkwy

2040 Background + Site  
PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	11.5	11.5	10.0	11.5	11.5
Total Split (s)	21.0	24.0	24.0	14.0	17.0	17.0	14.0	86.0	86.0	11.0	83.0	83.0
Total Split (%)	15.6%	17.8%	17.8%	10.4%	12.6%	12.6%	10.4%	63.7%	63.7%	8.1%	61.5%	61.5%
Maximum Green (s)	17.0	18.0	18.0	10.0	11.0	11.0	9.0	79.5	79.5	6.0	77.5	77.5
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.5	4.5	3.0	4.5	4.5
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	5.0	6.5	6.5	5.0	5.5	5.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effect Green (s)	30.5	14.5	14.5	19.7	7.7	7.7	91.1	81.5	81.5	89.9	81.9	81.9
Actuated g/C Ratio	0.23	0.11	0.11	0.15	0.06	0.06	0.67	0.60	0.60	0.67	0.61	0.61
v/c Ratio	0.71	0.03	0.61	0.77	0.25	0.56	0.40	0.91	0.27	0.62	0.41	0.32
Control Delay	52.9	52.4	23.5	69.9	65.6	18.0	10.1	27.4	3.7	39.1	14.7	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.9	52.4	23.5	69.9	65.6	18.0	10.1	27.4	3.7	39.1	14.7	2.1
LOS	D	D	C	E	E	B	B	C	A	D	B	A
Approach Delay		44.3			50.3			23.7			13.4	
Approach LOS		D			D			C			B	

Intersection Summary

Area Type: Other

Cycle Length: 135

Actuated Cycle Length: 135

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of FDW or yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 24.4

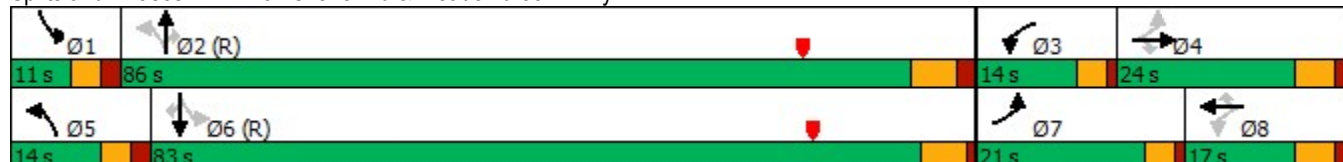
Intersection LOS: C

Intersection Capacity Utilization 89.3%








ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: Marksheffel Rd & Meadowbrook Pkwy





Intersection												
Int Delay, s/veh	6.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Vol, veh/h	23	438	23	89	316	0	12	0	110	70	0	27
Future Vol, veh/h	23	438	23	89	316	0	12	0	110	70	0	27
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	75	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	461	24	97	343	0	13	0	120	76	0	29




Major/Minor	Major1			Major2			Minor2			Minor1		
Conflicting Flow All	343	0	0	485	0	0	1073	1070	343	1118	1058	473
Stage 1	-	-	-	-	-	-	537	537	-	521	521	-
Stage 2	-	-	-	-	-	-	536	533	-	597	537	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1216	-	-	1078	-	-	198	221	700	184	225	591
Stage 1	-	-	-	-	-	-	528	523	-	539	532	-
Stage 2	-	-	-	-	-	-	529	525	-	490	523	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1216	-	-	1078	-	-	173	197	700	140	201	591
Mov Cap-2 Maneuver	-	-	-	-	-	-	173	197	-	140	201	-
Stage 1	-	-	-	-	-	-	517	476	-	528	521	-
Stage 2	-	-	-	-	-	-	493	515	-	370	476	-

Approach	EB			WB			SE			NW		
HCM Control Delay, s	0.4			1.9			13.8			44.9		
HCM LOS							B			E		

























  

Minor Lane/Major Mvmt	NWLn1NWLn2		EBL	EBT	EBR	WBL	WBT	WBR	SELn1
Capacity (veh/h)	140	591	1216	-	-	1078	-	-	539
HCM Lane V/C Ratio	0.543	0.05	0.02	-	-	0.09	-	-	0.246
HCM Control Delay (s)	57.8	11.4	8	-	-	8.7	-	-	13.8
HCM Lane LOS	F	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	2.7	0.2	0.1	-	-	0.3	-	-	1

Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	23	460	1	3	352
Future Vol, veh/h	4	23	460	1	3	352
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	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	78	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	25	500	1	3	383
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	890	501	0	0	501	0
Stage 1	501	-	-	-	-	-
Stage 2	389	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	313	570	-	-	1063	-
Stage 1	609	-	-	-	-	-
Stage 2	685	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	312	570	-	-	1063	-
Mov Cap-2 Maneuver	312	-	-	-	-	-
Stage 1	607	-	-	-	-	-
Stage 2	685	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	12.7	0		0.1		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	500		1063	-	
HCM Lane V/C Ratio	-	0.06		0.003	-	
HCM Control Delay (s)	-	12.7		8.4	0	
HCM Lane LOS	-	B		A	A	
HCM 95th %tile Q(veh)	-	0.2		0	-	













Lanes, Volumes, Timings  
4: US 24 & Marksheffel Rd

2019 Existing  
AM

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	3	975	657	1	428	73	305	340	2	15	1225	30
Future Volume (vph)	3	975	657	1	428	73	305	340	2	15	1225	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	375		0	300		315	1000		890	1000		670
Storage Lanes	1		1	1		1	2		1	1		1
Taper Length (ft)	75			95			300			300		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3433	3539	1583	1770	3539	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	3433	3539	1583	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			365			133			123			123
Link Speed (mph)		50			50			55			55	
Link Distance (ft)		1105			906			2038			1487	
Travel Time (s)		15.1			12.4			25.3			18.4	
Peak Hour Factor	0.95	0.95	0.95	0.92	0.92	0.92	0.93	0.93	0.93	0.95	0.95	0.95
Adj. Flow (vph)	3	1026	692	1	465	79	328	366	2	16	1289	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	1026	692	1	465	79	328	366	2	16	1289	32
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			44			44	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Prot	Prot	NA	Prot
Protected Phases	1	6		5	2		7	4	4	3	8	8
Permitted Phases			6			2						

Lanes, Volumes, Timings  
4: US 24 & Marksheffel Rd

2019 Existing  
AM

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Detector Phase	1	6	6	5	2	2	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	28.0	28.0	6.0	28.0	28.0
Minimum Split (s)	15.0	16.0	16.0	15.0	16.0	16.0	15.0	35.0	35.0	15.0	35.0	35.0
Total Split (s)	15.0	37.0	37.0	15.0	37.0	37.0	16.0	48.0	48.0	15.0	47.0	47.0
Total Split (%)	13.0%	32.2%	32.2%	13.0%	32.2%	32.2%	13.9%	41.7%	41.7%	13.0%	40.9%	40.9%
Maximum Green (s)	10.0	31.0	31.0	10.0	31.0	31.0	11.0	41.0	41.0	10.0	40.0	40.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
All-Red Time (s)	2.0	3.0	3.0	2.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-1.0	1.0	0.0	-1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	7.0	5.0	5.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effect Green (s)	6.1	44.8	42.8	6.0	44.7	42.7	11.0	50.9	50.9	6.8	40.0	40.0
Actuated g/C Ratio	0.05	0.39	0.37	0.05	0.39	0.37	0.10	0.44	0.44	0.06	0.35	0.35
v/c Ratio	0.03	0.74	0.85	0.01	0.34	0.12	1.00	0.23	0.00	0.15	1.05	0.05
Control Delay	52.3	35.0	26.8	52.0	26.4	1.1	102.2	21.6	0.0	54.2	76.2	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.3	35.0	26.8	52.0	26.4	1.1	102.2	21.6	0.0	54.2	76.2	0.2
LOS	D	D	C	D	C	A	F	C	A	D	E	A
Approach Delay		31.7			22.8			59.5			74.1	
Approach LOS		C			C			E			E	

Intersection Summary

Area Type: Other

Cycle Length: 115

Actuated Cycle Length: 115

Offset: 0 (0%), Referenced to phase 4:NET and 8:SWT, Start of FDW or yellow

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.05

Intersection Signal Delay: 48.3









Intersection LOS: D

Intersection Capacity Utilization 95.4%

ICU Level of Service F

























Analysis Period (min) 15

Splits and Phases: 4: US 24 & Marksheffel Rd

 Ø1	 Ø2	 Ø3	 Ø4 (R)
15 s	37 s	15 s	48 s
 Ø5	 Ø6	 Ø7	 Ø8 (R)
15 s	37 s	16 s	47 s













Lanes, Volumes, Timings  
10: US 24 & SH 94/Meadowbrook Pkwy

2019 Existing  
AM

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	40	25	175	350	10	5	125	600	450	10	1800	75
Future Volume (vph)	40	25	175	350	10	5	125	600	450	10	1800	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	500		500	1000		1000	800		800
Storage Lanes	1		1	2		1	1		1	1		1
Taper Length (ft)	100			300			300			300		
Lane Util. Factor	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	3433	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.950			0.950			0.061			0.377		
Satd. Flow (perm)	1770	1863	1583	3433	3539	1583	114	3539	1583	702	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			201			136			474			136
Link Speed (mph)		40			40			55			55	
Link Distance (ft)		1096			1726			1444			1216	
Travel Time (s)		18.7			29.4			17.9			15.1	
Peak Hour Factor	0.87	0.87	0.87	0.92	0.92	0.92	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	46	29	201	380	11	5	132	632	474	11	1895	79
Shared Lane Traffic (%)												
Lane Group Flow (vph)	46	29	201	380	11	5	132	632	474	11	1895	79
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			52			52	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Free	Split	NA	Free	D.P+P	NA	Free	D.P+P	NA	Free
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			Free			Free	6		Free	2		Free

Lanes, Volumes, Timings  
10: US 24 & SH 94/Meadowbrook Pkwy

2019 Existing  
AM

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	16.0	16.0		21.0	21.0		13.0	70.0		13.0	70.0	
Total Split (%)	13.3%	13.3%		17.5%	17.5%		10.8%	58.3%		10.8%	58.3%	
Maximum Green (s)	11.5	11.5		16.5	16.5		8.5	65.5		8.5	65.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0			11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effect Green (s)	11.5	11.5	120.0	16.5	16.5	120.0	74.0	76.3	120.0	77.6	65.8	120.0
Actuated g/C Ratio	0.10	0.10	1.00	0.14	0.14	1.00	0.62	0.64	1.00	0.65	0.55	1.00
v/c Ratio	0.27	0.16	0.13	0.81	0.02	0.00	0.72	0.28	0.30	0.02	0.98	0.05
Control Delay	55.0	52.3	0.2	64.2	45.0	0.0	44.2	10.5	0.5	7.4	42.5	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.0	52.3	0.2	64.2	45.0	0.0	44.2	10.5	0.5	7.4	42.5	0.1
LOS	D	D	A	E	D	A	D	B	A	A	D	A
Approach Delay		14.8			62.9			10.3			40.7	
Approach LOS		B			E			B			D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NESW and 6:NESW, Start of Green

Natural Cycle: 130

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.98

Intersection Signal Delay: 31.4

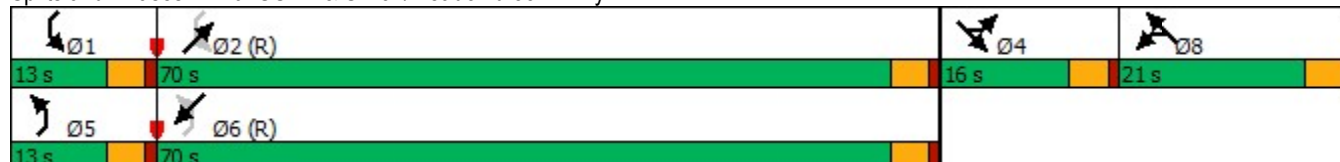
Intersection LOS: C

Intersection Capacity Utilization 84.6%

ICU Level of Service E

























Analysis Period (min) 15

Splits and Phases: 10: US 24 & SH 94/Meadowbrook Pkwy















Lanes, Volumes, Timings  
4: US 24 & Marksheffel Rd

2019 Existing  
PM

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	10	375	350	20	900	176	700	1175	5	74	390	4
Future Volume (vph)	10	375	350	20	900	176	700	1175	5	74	390	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	375		0	300		315	1000		890	1000		670
Storage Lanes	1		1	1		1	2		1	1		1
Taper Length (ft)	75			95			300			300		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3433	3539	1583	1770	3539	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	3433	3539	1583	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			376			185			123			123
Link Speed (mph)		50			50			55			55	
Link Distance (ft)		1105			906			2038			1487	
Travel Time (s)		15.1			12.4			25.3			18.4	
Peak Hour Factor	0.93	0.93	0.93	0.95	0.95	0.95	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	11	403	376	21	947	185	737	1237	5	80	424	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	403	376	21	947	185	737	1237	5	80	424	4
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			44			44	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Prot	Prot	NA	Prot
Protected Phases	1	6		5	2		7	4	4	3	8	8
Permitted Phases			6			2						

Lanes, Volumes, Timings  
4: US 24 & Marksheffel Rd

2019 Existing  
PM

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Detector Phase	1	6	6	5	2	2	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	28.0	28.0	6.0	28.0	28.0
Minimum Split (s)	15.0	16.0	16.0	15.0	16.0	16.0	15.0	35.0	35.0	15.0	35.0	35.0
Total Split (s)	15.0	37.0	37.0	15.0	37.0	37.0	16.0	48.0	48.0	15.0	47.0	47.0
Total Split (%)	13.0%	32.2%	32.2%	13.0%	32.2%	32.2%	13.9%	41.7%	41.7%	13.0%	40.9%	40.9%
Maximum Green (s)	10.0	31.0	31.0	10.0	31.0	31.0	11.0	41.0	41.0	10.0	40.0	40.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
All-Red Time (s)	2.0	3.0	3.0	2.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-1.0	1.0	0.0	-1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	7.0	5.0	5.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effect Green (s)	6.5	35.4	33.4	7.1	38.1	36.1	17.3	50.0	50.0	9.6	40.0	40.0
Actuated g/C Ratio	0.06	0.31	0.29	0.06	0.33	0.31	0.15	0.43	0.43	0.08	0.35	0.35
v/c Ratio	0.11	0.37	0.52	0.19	0.81	0.30	1.43	0.80	0.01	0.54	0.34	0.01
Control Delay	53.5	32.7	6.2	54.9	41.5	5.7	238.8	35.4	0.0	64.0	28.8	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.5	32.7	6.2	54.9	41.5	5.7	238.8	35.4	0.0	64.0	28.8	0.0
LOS	D	C	A	D	D	A	F	D	A	E	C	A
Approach Delay		20.4			36.0			111.0			34.1	
Approach LOS		C			D			F			C	

Intersection Summary

Area Type: Other

Cycle Length: 115

Actuated Cycle Length: 115

Offset: 0 (0%), Referenced to phase 4:NET and 8:SWT, Start of FDW or yellow

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.43

Intersection Signal Delay: 66.5









Intersection LOS: E

Intersection Capacity Utilization 82.3%

ICU Level of Service E

Analysis Period (min) 15

























Splits and Phases: 4: US 24 & Marksheffel Rd

 Ø1	 Ø2	 Ø3	 Ø4 (R)
15 s	37 s	15 s	48 s
 Ø5	 Ø6	 Ø7	 Ø8 (R)
15 s	37 s	16 s	47 s















Lanes, Volumes, Timings  
10: US 24 & SH 94/Meadowbrook Pkwy

2019 Existing  
PM

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	55	25	150	625	50	25	200	1825	300	5	700	55
Future Volume (vph)	55	25	150	625	50	25	200	1825	300	5	700	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	500		500	1000		1000	800		800
Storage Lanes	1		1	2		1	1		1	1		1
Taper Length (ft)	100			300			300			300		
Lane Util. Factor	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	3433	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.950			0.950			0.305			0.055		
Satd. Flow (perm)	1770	1863	1583	3433	3539	1583	568	3539	1583	102	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			172			136			316			136
Link Speed (mph)		40			40			55			55	
Link Distance (ft)		1096			1726			1444			1216	
Travel Time (s)		18.7			29.4			17.9			15.1	
Peak Hour Factor	0.87	0.87	0.87	0.93	0.93	0.93	0.95	0.95	0.95	0.93	0.93	0.93
Adj. Flow (vph)	63	29	172	672	54	27	211	1921	316	5	753	59
Shared Lane Traffic (%)												
Lane Group Flow (vph)	63	29	172	672	54	27	211	1921	316	5	753	59
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			52			52	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Free	Split	NA	Free	D.P+P	NA	Free	D.P+P	NA	Free
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			Free			Free	6		Free	2		Free

Lanes, Volumes, Timings  
10: US 24 & SH 94/Meadowbrook Pkwy

2019 Existing  
PM

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	16.0	16.0		21.0	21.0		13.0	70.0		13.0	70.0	
Total Split (%)	13.3%	13.3%		17.5%	17.5%		10.8%	58.3%		10.8%	58.3%	
Maximum Green (s)	11.5	11.5		16.5	16.5		8.5	65.5		8.5	65.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0			11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effect Green (s)	11.5	11.5	120.0	16.5	16.5	120.0	74.0	76.4	120.0	77.6	65.6	120.0
Actuated g/C Ratio	0.10	0.10	1.00	0.14	0.14	1.00	0.62	0.64	1.00	0.65	0.55	1.00
v/c Ratio	0.37	0.16	0.11	1.42	0.11	0.02	0.49	0.85	0.20	0.03	0.39	0.04
Control Delay	57.8	52.3	0.1	240.8	46.1	0.0	12.3	22.8	0.3	7.8	16.4	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.8	52.3	0.1	240.8	46.1	0.0	12.3	22.8	0.3	7.8	16.4	0.0
LOS	E	D	A	F	D	A	B	C	A	A	B	A
Approach Delay		19.6			218.2			19.0			15.2	
Approach LOS		B			F			B			B	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NESW and 6:NESW, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.42

Intersection Signal Delay: 53.3

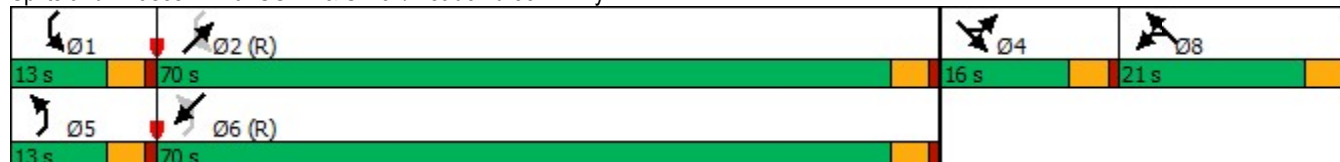
Intersection LOS: D

Intersection Capacity Utilization 90.4%

ICU Level of Service E

























Analysis Period (min) 15

Splits and Phases: 10: US 24 & SH 94/Meadowbrook Pkwy















Lanes, Volumes, Timings  
4: US 24 & Marksheffel Rd

Short-Term Background  
AM

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	6	982	744	3	442	75	308	350	2	225	1250	31
Future Volume (vph)	6	982	744	3	442	75	308	350	2	225	1250	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	375		0	300		315	1000		890	1000		670
Storage Lanes	1		1	1		1	2		1	1		1
Taper Length (ft)	75			95			300			300		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3433	3539	1583	1770	3539	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	3433	3539	1583	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			391			180			171			123
Link Speed (mph)		50			50			55			55	
Link Distance (ft)		1105			906			2038			1487	
Travel Time (s)		15.1			12.4			25.3			18.4	
Peak Hour Factor	0.93	0.93	0.93	0.95	0.95	0.95	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	6	1056	800	3	465	79	324	368	2	245	1359	34
Shared Lane Traffic (%)												
Lane Group Flow (vph)	6	1056	800	3	465	79	324	368	2	245	1359	34
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			44			44	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Prot	Prot	NA	Prot
Protected Phases	1	6		5	2		7	4	4	3	8	8
Permitted Phases			6			2						

Lanes, Volumes, Timings  
4: US 24 & Marksheffel Rd

Short-Term Background  
AM

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Detector Phase	1	6	6	5	2	2	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	28.0	28.0	6.0	28.0	28.0
Minimum Split (s)	15.0	16.0	16.0	15.0	16.0	16.0	15.0	35.0	35.0	15.0	35.0	35.0
Total Split (s)	15.0	38.0	38.0	15.0	38.0	38.0	15.0	37.0	37.0	25.0	47.0	47.0
Total Split (%)	13.0%	33.0%	33.0%	13.0%	33.0%	33.0%	13.0%	32.2%	32.2%	21.7%	40.9%	40.9%
Maximum Green (s)	10.0	32.0	32.0	10.0	32.0	32.0	10.0	30.0	30.0	20.0	40.0	40.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
All-Red Time (s)	2.0	3.0	3.0	2.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-1.0	1.0	0.0	-1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	7.0	5.0	5.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effect Green (s)	6.3	45.7	43.7	6.1	45.6	43.6	10.0	31.3	31.3	18.7	40.0	40.0
Actuated g/C Ratio	0.05	0.40	0.38	0.05	0.40	0.38	0.09	0.27	0.27	0.16	0.35	0.35
v/c Ratio	0.06	0.75	0.95	0.03	0.33	0.11	1.09	0.38	0.00	0.85	1.10	0.05
Control Delay	52.8	34.6	39.3	52.3	25.8	0.3	126.5	35.8	0.0	73.1	95.4	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.8	34.6	39.3	52.3	25.8	0.3	126.5	35.8	0.0	73.1	95.4	0.2
LOS	D	C	D	D	C	A	F	D	A	E	F	A
Approach Delay		36.7			22.2			78.1			90.1	
Approach LOS		D			C			E			F	

Intersection Summary

Area Type: Other

Cycle Length: 115

Actuated Cycle Length: 115

Offset: 0 (0%), Referenced to phase 4:NET and 8:SWT, Start of FDW or yellow

Natural Cycle: 145

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.10

Intersection Signal Delay: 59.5









Intersection LOS: E

Intersection Capacity Utilization 101.5%

ICU Level of Service G

























Analysis Period (min) 15

Splits and Phases: 4: US 24 & Marksheffel Rd

 Ø1	 Ø2	 Ø3	 Ø4 (R)
15 s	38 s	25 s	37 s
 Ø5	 Ø6	 Ø7	 Ø8 (R)
15 s	38 s	15 s	47 s













Lanes, Volumes, Timings  
10: US 24 & SH 94/Meadowbrook Pkwy

Short-Term Background  
AM

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	40	25	176	350	25	10	129	613	450	35	1894	80
Future Volume (vph)	40	25	176	350	25	10	129	613	450	35	1894	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	500		500	1000		1000	800		800
Storage Lanes	1		1	2		1	1		1	1		1
Taper Length (ft)	100			300			300			300		
Lane Util. Factor	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	3433	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.950			0.950			0.061			0.365		
Satd. Flow (perm)	1770	1863	1583	3433	3539	1583	114	3539	1583	680	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			202			136			474			136
Link Speed (mph)		40			40			55			55	
Link Distance (ft)		1096			1726			1444			1216	
Travel Time (s)		18.7			29.4			17.9			15.1	
Peak Hour Factor	0.87	0.87	0.87	0.93	0.93	0.93	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	46	29	202	376	27	11	136	645	474	37	1994	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	46	29	202	376	27	11	136	645	474	37	1994	84
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			52			52	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Free	Split	NA	Free	D.P+P	NA	Free	D.P+P	NA	Free
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			Free			Free	6		Free	2		Free

Lanes, Volumes, Timings  
10: US 24 & SH 94/Meadowbrook Pkwy

Short-Term Background  
AM

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	16.0	16.0		21.0	21.0		13.0	70.0		13.0	70.0	
Total Split (%)	13.3%	13.3%		17.5%	17.5%		10.8%	58.3%		10.8%	58.3%	
Maximum Green (s)	11.5	11.5		16.5	16.5		8.5	65.5		8.5	65.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0			11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effect Green (s)	11.5	11.5	120.0	16.5	16.5	120.0	74.0	71.7	120.0	75.8	65.7	120.0
Actuated g/C Ratio	0.10	0.10	1.00	0.14	0.14	1.00	0.62	0.60	1.00	0.63	0.55	1.00
v/c Ratio	0.27	0.16	0.13	0.80	0.06	0.01	0.74	0.31	0.30	0.08	1.03	0.05
Control Delay	55.0	52.3	0.2	63.6	45.4	0.0	46.4	13.1	0.5	7.8	55.7	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.0	52.3	0.2	63.6	45.4	0.0	46.4	13.1	0.5	7.8	55.7	0.1
LOS	D	D	A	E	D	A	D	B	A	A	E	A
Approach Delay		14.7			60.7			11.9			52.7	
Approach LOS		B			E			B			D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NESW and 6:NESW, Start of Green

Natural Cycle: 140

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.03

Intersection Signal Delay: 38.3

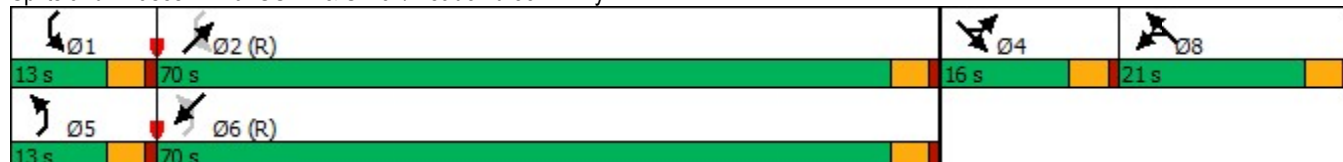
Intersection LOS: D

Intersection Capacity Utilization 87.4%

ICU Level of Service E

























Analysis Period (min) 15

Splits and Phases: 10: US 24 & SH 94/Meadowbrook Pkwy



Lanes, Volumes, Timings  
4: US 24 & Marksheffel Rd













Short-Term Background  
PM

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	3	975	657	1	428	73	305	340	2	15	1225	30
Future Volume (vph)	3	975	657	1	428	73	305	340	2	15	1225	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	375		0	300		315	1000		890	1000		670
Storage Lanes	1		1	1		1	2		1	1		1
Taper Length (ft)	75			95			300			300		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3433	3539	1583	1770	3539	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	3433	3539	1583	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			365			133			123			123
Link Speed (mph)		50			50			55			55	
Link Distance (ft)		1105			906			2038			1487	
Travel Time (s)		15.1			12.4			25.3			18.4	
Peak Hour Factor	0.95	0.95	0.95	0.92	0.92	0.92	0.93	0.93	0.93	0.95	0.95	0.95
Adj. Flow (vph)	3	1026	692	1	465	79	328	366	2	16	1289	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	1026	692	1	465	79	328	366	2	16	1289	32
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			44			44	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Prot	Prot	NA	Prot
Protected Phases	1	6		5	2		7	4	4	3	8	8
Permitted Phases			6			2						



Lanes, Volumes, Timings  
4: US 24 & Marksheffel Rd

Short-Term Background  
PM

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Detector Phase	1	6	6	5	2	2	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	28.0	28.0	6.0	28.0	28.0
Minimum Split (s)	15.0	16.0	16.0	15.0	16.0	16.0	15.0	35.0	35.0	15.0	35.0	35.0
Total Split (s)	15.0	37.0	37.0	15.0	37.0	37.0	16.0	48.0	48.0	15.0	47.0	47.0
Total Split (%)	13.0%	32.2%	32.2%	13.0%	32.2%	32.2%	13.9%	41.7%	41.7%	13.0%	40.9%	40.9%
Maximum Green (s)	10.0	31.0	31.0	10.0	31.0	31.0	11.0	41.0	41.0	10.0	40.0	40.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
All-Red Time (s)	2.0	3.0	3.0	2.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-1.0	1.0	0.0	-1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	7.0	5.0	5.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effect Green (s)	6.1	44.8	42.8	6.0	44.7	42.7	11.0	50.9	50.9	6.8	40.0	40.0
Actuated g/C Ratio	0.05	0.39	0.37	0.05	0.39	0.37	0.10	0.44	0.44	0.06	0.35	0.35
v/c Ratio	0.03	0.74	0.85	0.01	0.34	0.12	1.00	0.23	0.00	0.15	1.05	0.05
Control Delay	52.3	35.0	26.8	52.0	26.4	1.1	102.2	21.6	0.0	54.2	76.2	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.3	35.0	26.8	52.0	26.4	1.1	102.2	21.6	0.0	54.2	76.2	0.2
LOS	D	D	C	D	C	A	F	C	A	D	E	A
Approach Delay		31.7			22.8			59.5			74.1	
Approach LOS		C			C			E			E	

Intersection Summary

Area Type: Other

Cycle Length: 115

Actuated Cycle Length: 115

Offset: 0 (0%), Referenced to phase 4:NET and 8:SWT, Start of FDW or yellow

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.05

Intersection Signal Delay: 48.3









Intersection LOS: D

Intersection Capacity Utilization 95.4%

ICU Level of Service F

Analysis Period (min) 15

























Splits and Phases: 4: US 24 & Marksheffel Rd

 Ø1	 Ø2	 Ø3	 Ø4 (R)
15 s	37 s	15 s	48 s
 Ø5	 Ø6	 Ø7	 Ø8 (R)
15 s	37 s	16 s	47 s















Lanes, Volumes, Timings  
10: US 24 & SH 94/Meadowbrook Pkwy

Short-Term Background  
PM

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	40	25	175	350	10	5	125	600	450	10	1800	75
Future Volume (vph)	40	25	175	350	10	5	125	600	450	10	1800	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	500		500	1000		1000	800		800
Storage Lanes	1		1	2		1	1		1	1		1
Taper Length (ft)	100			300			300			300		
Lane Util. Factor	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	3433	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.950			0.950			0.061			0.377		
Satd. Flow (perm)	1770	1863	1583	3433	3539	1583	114	3539	1583	702	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			201			136			474			136
Link Speed (mph)		40			40			55			55	
Link Distance (ft)		1096			1726			1444			1216	
Travel Time (s)		18.7			29.4			17.9			15.1	
Peak Hour Factor	0.87	0.87	0.87	0.92	0.92	0.92	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	46	29	201	380	11	5	132	632	474	11	1895	79
Shared Lane Traffic (%)												
Lane Group Flow (vph)	46	29	201	380	11	5	132	632	474	11	1895	79
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			52			52	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Free	Split	NA	Free	D.P+P	NA	Free	D.P+P	NA	Free
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			Free			Free	6		Free	2		Free

Lanes, Volumes, Timings  
10: US 24 & SH 94/Meadowbrook Pkwy

Short-Term Background  
PM

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	16.0	16.0		21.0	21.0		13.0	70.0		13.0	70.0	
Total Split (%)	13.3%	13.3%		17.5%	17.5%		10.8%	58.3%		10.8%	58.3%	
Maximum Green (s)	11.5	11.5		16.5	16.5		8.5	65.5		8.5	65.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0			11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effect Green (s)	11.5	11.5	120.0	16.5	16.5	120.0	74.0	76.3	120.0	77.6	65.8	120.0
Actuated g/C Ratio	0.10	0.10	1.00	0.14	0.14	1.00	0.62	0.64	1.00	0.65	0.55	1.00
v/c Ratio	0.27	0.16	0.13	0.81	0.02	0.00	0.72	0.28	0.30	0.02	0.98	0.05
Control Delay	55.0	52.3	0.2	64.2	45.0	0.0	44.2	10.5	0.5	7.4	42.5	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.0	52.3	0.2	64.2	45.0	0.0	44.2	10.5	0.5	7.4	42.5	0.1
LOS	D	D	A	E	D	A	D	B	A	A	D	A
Approach Delay		14.8			62.9			10.3			40.7	
Approach LOS		B			E			B			D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NESW and 6:NESW, Start of Green

Natural Cycle: 130

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.98

Intersection Signal Delay: 31.4

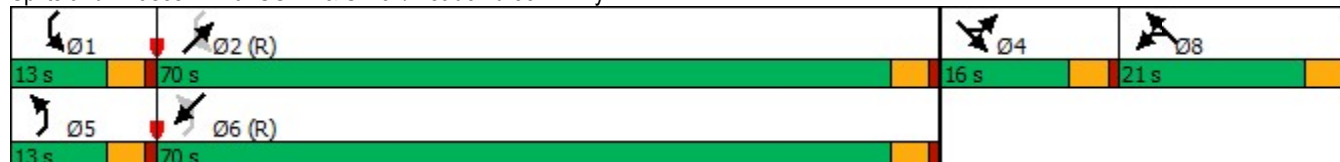
Intersection LOS: C

Intersection Capacity Utilization 84.6%

ICU Level of Service E

























Analysis Period (min) 15

Splits and Phases: 10: US 24 & SH 94/Meadowbrook Pkwy















Lanes, Volumes, Timings  
4: US 24 & Marksheffel Rd

Short-Term Background + Site  
AM

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	12	985	750	3	450	75	320	350	2	225	1250	45
Future Volume (vph)	12	985	750	3	450	75	320	350	2	225	1250	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	375		0	300		315	1000		890	1000		670
Storage Lanes	1		1	1		1	2		1	1		1
Taper Length (ft)	75			95			300			300		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3433	3539	1583	1770	3539	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	3433	3539	1583	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			391			180			171			123
Link Speed (mph)		50			50			55			55	
Link Distance (ft)		1105			906			2038			1487	
Travel Time (s)		15.1			12.4			25.3			18.4	
Peak Hour Factor	0.93	0.93	0.93	0.95	0.95	0.95	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	13	1059	806	3	474	79	337	368	2	245	1359	49
Shared Lane Traffic (%)												
Lane Group Flow (vph)	13	1059	806	3	474	79	337	368	2	245	1359	49
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			44			44	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Prot	Prot	NA	Prot
Protected Phases	1	6		5	2		7	4	4	3	8	8
Permitted Phases			6			2						

Lanes, Volumes, Timings  
4: US 24 & Marksheffel Rd

Short-Term Background + Site  
AM

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Detector Phase	1	6	6	5	2	2	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	28.0	28.0	6.0	28.0	28.0
Minimum Split (s)	15.0	16.0	16.0	15.0	16.0	16.0	15.0	35.0	35.0	15.0	35.0	35.0
Total Split (s)	15.0	38.0	38.0	15.0	38.0	38.0	15.0	37.0	37.0	25.0	47.0	47.0
Total Split (%)	13.0%	33.0%	33.0%	13.0%	33.0%	33.0%	13.0%	32.2%	32.2%	21.7%	40.9%	40.9%
Maximum Green (s)	10.0	32.0	32.0	10.0	32.0	32.0	10.0	30.0	30.0	20.0	40.0	40.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
All-Red Time (s)	2.0	3.0	3.0	2.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-1.0	1.0	0.0	-1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	7.0	5.0	5.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effect Green (s)	6.6	45.7	43.7	6.1	43.0	41.0	10.0	31.3	31.3	18.7	40.0	40.0
Actuated g/C Ratio	0.06	0.40	0.38	0.05	0.37	0.36	0.09	0.27	0.27	0.16	0.35	0.35
v/c Ratio	0.13	0.75	0.96	0.03	0.36	0.12	1.13	0.38	0.00	0.85	1.10	0.08
Control Delay	53.8	34.7	40.7	52.3	28.2	0.3	139.6	35.8	0.0	73.1	95.4	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.8	34.7	40.7	52.3	28.2	0.3	139.6	35.8	0.0	73.1	95.4	0.2
LOS	D	C	D	D	C	A	F	D	A	E	F	A
Approach Delay		37.4			24.4			85.2			89.3	
Approach LOS		D			C			F			F	

Intersection Summary

Area Type: Other

Cycle Length: 115

Actuated Cycle Length: 115

Offset: 0 (0%), Referenced to phase 4:NET and 8:SWT, Start of FDW or yellow

Natural Cycle: 145

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.13

Intersection Signal Delay: 60.8









Intersection LOS: E

Intersection Capacity Utilization 101.8%

ICU Level of Service G

























Analysis Period (min) 15

Splits and Phases: 4: US 24 & Marksheffel Rd

 Ø1	 Ø2	 Ø3	 Ø4 (R)
15 s	38 s	25 s	37 s
 Ø5	 Ø6	 Ø7	 Ø8 (R)
15 s	38 s	15 s	47 s













Lanes, Volumes, Timings  
10: US 24 & SH 94/Meadowbrook Pkwy

Short-Term Background + Site  
AM

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	40	25	180	350	25	10	140	625	450	35	1900	80
Future Volume (vph)	40	25	180	350	25	10	140	625	450	35	1900	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	500		500	1000		1000	800		800
Storage Lanes	1		1	2		1	1		1	1		1
Taper Length (ft)	100			300			300			300		
Lane Util. Factor	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	3433	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.950			0.950			0.061			0.359		
Satd. Flow (perm)	1770	1863	1583	3433	3539	1583	114	3539	1583	669	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			207			136			474			136
Link Speed (mph)		40			40			55			55	
Link Distance (ft)		1096			1726			1444			1216	
Travel Time (s)		18.7			29.4			17.9			15.1	
Peak Hour Factor	0.87	0.87	0.87	0.93	0.93	0.93	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	46	29	207	376	27	11	147	658	474	37	2000	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	46	29	207	376	27	11	147	658	474	37	2000	84
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			52			52	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Free	Split	NA	Free	D.P+P	NA	Free	D.P+P	NA	Free
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			Free			Free	6		Free	2		Free

Lanes, Volumes, Timings  
10: US 24 & SH 94/Meadowbrook Pkwy

Short-Term Background + Site  
AM

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	16.0	16.0		21.0	21.0		13.0	70.0		13.0	70.0	
Total Split (%)	13.3%	13.3%		17.5%	17.5%		10.8%	58.3%		10.8%	58.3%	
Maximum Green (s)	11.5	11.5		16.5	16.5		8.5	65.5		8.5	65.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0			11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effect Green (s)	11.5	11.5	120.0	16.5	16.5	120.0	74.0	71.7	120.0	75.8	65.6	120.0
Actuated g/C Ratio	0.10	0.10	1.00	0.14	0.14	1.00	0.62	0.60	1.00	0.63	0.55	1.00
v/c Ratio	0.27	0.16	0.13	0.80	0.06	0.01	0.79	0.31	0.30	0.08	1.03	0.05
Control Delay	55.0	52.3	0.2	63.6	45.4	0.0	53.5	13.1	0.5	7.8	57.3	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.0	52.3	0.2	63.6	45.4	0.0	53.5	13.1	0.5	7.8	57.3	0.1
LOS	D	D	A	E	D	A	D	B	A	A	E	A
Approach Delay		14.5			60.7			13.1			54.2	
Approach LOS		B			E			B			D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NESW and 6:NESW, Start of Green

Natural Cycle: 140

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.03

Intersection Signal Delay: 39.3

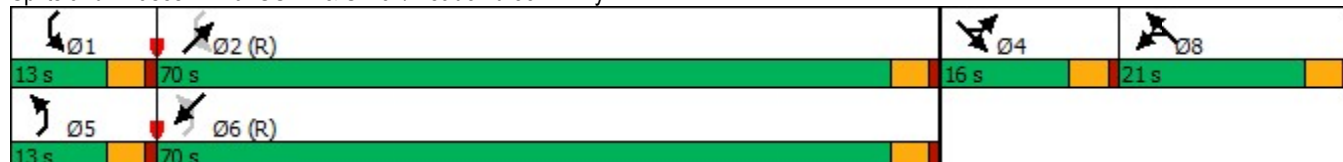
Intersection LOS: D

Intersection Capacity Utilization 88.2%

ICU Level of Service E

























Analysis Period (min) 15

Splits and Phases: 10: US 24 & SH 94/Meadowbrook Pkwy



Lanes, Volumes, Timings  
4: US 24 & Marksheffel Rd













Short-Term Background + Site  
PM

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	45	395	400	20	925	185	725	1200	5	75	400	25
Future Volume (vph)	45	395	400	20	925	185	725	1200	5	75	400	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	375		0	300		315	1000		890	1000		670
Storage Lanes	1		1	1		1	2		1	1		1
Taper Length (ft)	75			95			300			300		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3433	3539	1583	1770	3539	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	3433	3539	1583	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			404			195			123			171
Link Speed (mph)		50			50			55			55	
Link Distance (ft)		1105			906			2038			1487	
Travel Time (s)		15.1			12.4			25.3			18.4	
Peak Hour Factor	0.93	0.93	0.99	0.95	0.95	0.95	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	48	425	404	21	974	195	763	1263	5	82	435	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	425	404	21	974	195	763	1263	5	82	435	27
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			44			44	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Prot	Prot	NA	Prot
Protected Phases	1	6		5	2		7	4	4	3	8	8
Permitted Phases			6			2						



Lanes, Volumes, Timings  
4: US 24 & Marksheffel Rd

Short-Term Background + Site  
PM

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Detector Phase	1	6	6	5	2	2	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	28.0	28.0	6.0	28.0	28.0
Minimum Split (s)	15.0	16.0	16.0	15.0	16.0	16.0	15.0	35.0	35.0	15.0	35.0	35.0
Total Split (s)	15.0	35.0	35.0	15.0	35.0	35.0	29.0	50.0	50.0	15.0	36.0	36.0
Total Split (%)	13.0%	30.4%	30.4%	13.0%	30.4%	30.4%	25.2%	43.5%	43.5%	13.0%	31.3%	31.3%
Maximum Green (s)	10.0	29.0	29.0	10.0	29.0	29.0	24.0	43.0	43.0	10.0	29.0	29.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
All-Red Time (s)	2.0	3.0	3.0	2.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-1.0	1.0	0.0	-1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	7.0	5.0	5.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effect Green (s)	8.3	39.7	37.7	7.1	33.9	31.9	24.0	46.2	46.2	9.1	29.0	29.0
Actuated g/C Ratio	0.07	0.35	0.33	0.06	0.29	0.28	0.21	0.40	0.40	0.08	0.25	0.25
v/c Ratio	0.38	0.35	0.51	0.19	0.93	0.34	1.07	0.89	0.01	0.59	0.49	0.05
Control Delay	59.0	30.4	5.9	54.9	56.7	6.6	96.2	42.1	0.0	68.3	38.9	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.0	30.4	5.9	54.9	56.7	6.6	96.2	42.1	0.0	68.3	38.9	0.2
LOS	E	C	A	D	E	A	F	D	A	E	D	A
Approach Delay		20.7			48.5			62.3			41.4	
Approach LOS		C			D			E			D	

Intersection Summary

Area Type: Other

Cycle Length: 115

Actuated Cycle Length: 115

Offset: 0 (0%), Referenced to phase 4:NET and 8:SWT, Start of FDW or yellow

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.07

Intersection Signal Delay: 48.4









Intersection LOS: D

Intersection Capacity Utilization 92.9%

ICU Level of Service F

Analysis Period (min) 15

























Splits and Phases: 4: US 24 & Marksheffel Rd

 Ø1	 Ø2	 Ø3	 Ø4 (R)
15 s	35 s	15 s	50 s
 Ø5	 Ø6	 Ø7	 Ø8 (R)
15 s	35 s	29 s	36 s















Lanes, Volumes, Timings  
10: US 24 & SH 94/Meadowbrook Pkwy

Short-Term Background + Site  
PM

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	55	25	170	625	55	125	225	1850	300	7	750	60
Future Volume (vph)	55	25	170	625	55	125	225	1850	300	7	750	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	500		500	1000		1000	800		800
Storage Lanes	1		1	2		1	1		1	1		1
Taper Length (ft)	100			300			300			300		
Lane Util. Factor	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	3433	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.950			0.950			0.289			0.055		
Satd. Flow (perm)	1770	1863	1583	3433	3539	1583	538	3539	1583	102	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			195			136			316			136
Link Speed (mph)		40			40			55			55	
Link Distance (ft)		1096			1726			1444			1216	
Travel Time (s)		18.7			29.4			17.9			15.1	
Peak Hour Factor	0.87	0.87	0.87	0.93	0.93	0.93	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	63	29	195	672	59	134	237	1947	316	7	789	63
Shared Lane Traffic (%)												
Lane Group Flow (vph)	63	29	195	672	59	134	237	1947	316	7	789	63
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			52			52	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Free	Split	NA	Free	D.P+P	NA	Free	D.P+P	NA	Free
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			Free			Free	6		Free	2		Free

Lanes, Volumes, Timings  
10: US 24 & SH 94/Meadowbrook Pkwy

Short-Term Background + Site  
PM

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	16.0	16.0		21.0	21.0		13.0	70.0		13.0	70.0	
Total Split (%)	13.3%	13.3%		17.5%	17.5%		10.8%	58.3%		10.8%	58.3%	
Maximum Green (s)	11.5	11.5		16.5	16.5		8.5	65.5		8.5	65.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0			11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effect Green (s)	11.5	11.5	120.0	16.5	16.5	120.0	74.0	76.4	120.0	77.6	65.5	120.0
Actuated g/C Ratio	0.10	0.10	1.00	0.14	0.14	1.00	0.62	0.64	1.00	0.65	0.55	1.00
v/c Ratio	0.37	0.16	0.12	1.42	0.12	0.08	0.57	0.86	0.20	0.05	0.41	0.04
Control Delay	57.8	52.3	0.2	240.8	46.2	0.1	14.3	23.5	0.3	7.9	16.7	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.8	52.3	0.2	240.8	46.2	0.1	14.3	23.5	0.3	7.9	16.7	0.1
LOS	E	D	A	F	D	A	B	C	A	A	B	A
Approach Delay		18.1			190.2			19.7			15.4	
Approach LOS		B			F			B			B	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NESW and 6:NESW, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.42

Intersection Signal Delay: 51.5

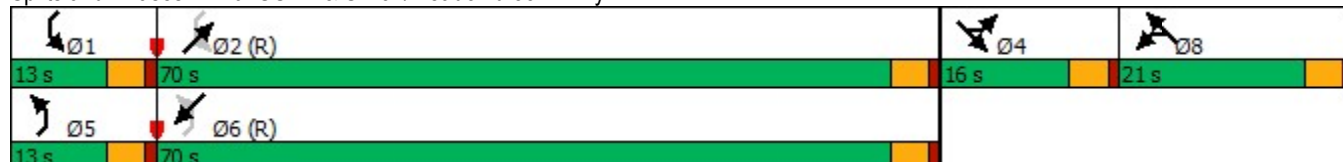
Intersection LOS: D

Intersection Capacity Utilization 91.1%

ICU Level of Service F
































Analysis Period (min) 15

Splits and Phases: 10: US 24 & SH 94/Meadowbrook Pkwy















Lanes, Volumes, Timings  
4: US 24 & Marksheffel Rd

2040 Background  
AM

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		 			 		 	  			  	
Traffic Volume (vph)	29	1272	944	5	552	220	468	800	25	100	2115	36
Future Volume (vph)	29	1272	944	5	552	220	468	800	25	100	2115	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	375		0	300		315	1000		890	1000		670
Storage Lanes	1		1	1		1	2		1	1		1
Taper Length (ft)	75			95			300			300		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.91	1.00	1.00	0.91	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3433	5085	1583	1770	5085	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	3433	5085	1583	1770	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			383			232			171			123
Link Speed (mph)		50			50			55			55	
Link Distance (ft)		1105			906			2038			1487	
Travel Time (s)		15.1			12.4			25.3			18.4	
Peak Hour Factor	0.93	0.93	0.93	0.95	0.95	0.95	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	31	1368	1015	5	581	232	493	842	26	109	2299	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	31	1368	1015	5	581	232	493	842	26	109	2299	39
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			44			44	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Prot	Prot	NA	Prot
Protected Phases	1	6		5	2		7	4	4	3	8	8
Permitted Phases			6			2						

Lanes, Volumes, Timings  
4: US 24 & Marksheffel Rd

2040 Background  
AM

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Detector Phase	1	6	6	5	2	2	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	28.0	28.0	6.0	28.0	28.0
Minimum Split (s)	15.0	16.0	16.0	15.0	16.0	16.0	15.0	35.0	35.0	15.0	35.0	35.0
Total Split (s)	15.0	38.0	38.0	15.0	38.0	38.0	15.0	37.0	37.0	25.0	47.0	47.0
Total Split (%)	13.0%	33.0%	33.0%	13.0%	33.0%	33.0%	13.0%	32.2%	32.2%	21.7%	40.9%	40.9%
Maximum Green (s)	10.0	32.0	32.0	10.0	32.0	32.0	10.0	30.0	30.0	20.0	40.0	40.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
All-Red Time (s)	2.0	3.0	3.0	2.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-1.0	1.0	0.0	-1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	7.0	5.0	5.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effect Green (s)	7.6	45.6	43.6	6.2	39.9	37.9	10.0	37.6	37.6	12.4	40.0	40.0
Actuated g/C Ratio	0.07	0.40	0.38	0.05	0.35	0.33	0.09	0.33	0.33	0.11	0.35	0.35
v/c Ratio	0.26	0.97	1.21	0.05	0.47	0.34	1.65	0.51	0.04	0.57	1.30	0.06
Control Delay	56.1	53.3	127.8	52.6	32.3	5.7	342.5	33.1	0.1	60.0	172.2	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.1	53.3	127.8	52.6	32.3	5.7	342.5	33.1	0.1	60.0	172.2	0.2
LOS	E	D	F	D	C	A	F	C	A	E	F	A
Approach Delay		84.6			24.9			144.5			164.5	
Approach LOS		F			C			F			F	

Intersection Summary

Area Type: Other

Cycle Length: 115

Actuated Cycle Length: 115

Offset: 0 (0%), Referenced to phase 4:NET and 8:SWT, Start of FDW or yellow

Natural Cycle: 145

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.65

Intersection Signal Delay: 117.0









Intersection LOS: F

Intersection Capacity Utilization 120.2%

ICU Level of Service H

























Analysis Period (min) 15

Splits and Phases: 4: US 24 & Marksheffel Rd

 Ø1	 Ø2	 Ø3	 Ø4 (R)
15 s	38 s	25 s	37 s
 Ø5	 Ø6	 Ø7	 Ø8 (R)
15 s	38 s	15 s	47 s













Lanes, Volumes, Timings  
10: US 24 & SH 94/Meadowbrook Pkwy

2040 Background  
AM

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	150	47	209	900	114	25	163	1118	933	50	2839	175
Future Volume (vph)	150	47	209	900	114	25	163	1118	933	50	2839	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	500		500	1000		1000	800		800
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	100			300			300			300		
Lane Util. Factor	0.97	1.00	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1863	1583	3433	3539	1583	3433	5085	1583	3433	5085	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	1863	1583	3433	3539	1583	3433	5085	1583	3433	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			240			177			952			177
Link Speed (mph)		40			40			55			55	
Link Distance (ft)		1096			1726			1444			1216	
Travel Time (s)		18.7			29.4			17.9			15.1	
Peak Hour Factor	0.87	0.87	0.87	0.93	0.93	0.93	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	172	54	240	968	123	27	172	1177	982	53	2988	184
Shared Lane Traffic (%)												
Lane Group Flow (vph)	172	54	240	968	123	27	172	1177	982	53	2988	184
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			52			52	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	1!	4		5!	8		5!	2!		1!	6!	
Permitted Phases			Free			Free			Free			Free

Lanes, Volumes, Timings  
10: US 24 & SH 94/Meadowbrook Pkwy

2040 Background  
AM

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Detector Phase	1	4		5	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	15.5	22.5		25.0	22.5		25.0	59.5		15.5	50.0	
Total Split (%)	12.9%	18.8%		20.8%	18.8%		20.8%	49.6%		12.9%	41.7%	
Maximum Green (s)	11.0	18.0		20.5	18.0		20.5	55.0		11.0	45.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lead			Lead			Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes			Yes			Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Max		None	Max		None	C-Max		None	C-Max	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effect Green (s)	10.2	18.0	120.0	20.5	18.0	120.0	20.5	55.8	120.0	10.2	45.5	120.0
Actuated g/C Ratio	0.08	0.15	1.00	0.17	0.15	1.00	0.17	0.46	1.00	0.08	0.38	1.00
v/c Ratio	0.59	0.19	0.15	1.65	0.23	0.02	0.29	0.50	0.62	0.18	1.55	0.12
Control Delay	61.3	46.8	0.2	333.5	46.2	0.0	45.0	23.4	1.8	52.1	279.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.3	46.8	0.2	333.5	46.2	0.0	45.0	23.4	1.8	52.1	279.2	0.1
LOS	E	D	A	F	D	A	D	C	A	D	F	A
Approach Delay		28.1			293.8			15.9			259.6	
Approach LOS		C			F			B			F	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NET and 6:SWT, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.65

Intersection Signal Delay: 170.3

Intersection LOS: F

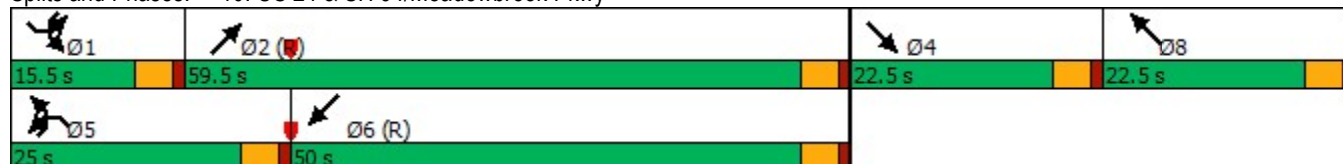
Intersection Capacity Utilization 103.1%

ICU Level of Service G

Analysis Period (min) 15

























! Phase conflict between lane groups.

Splits and Phases: 10: US 24 & SH 94/Meadowbrook Pkwy



Lanes, Volumes, Timings  
4: US 24 & Marksheffel Rd













2040 Background  
PM

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	45	838	585	10	1129	220	982	1899	10	100	650	65
Future Volume (vph)	45	838	585	10	1129	220	982	1899	10	100	650	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	375		0	300		315	1000		890	1000		670
Storage Lanes	1		1	1		1	2		1	1		1
Taper Length (ft)	75			95			300			300		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.91	1.00	1.00	0.91	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3433	5085	1583	1770	5085	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	3433	5085	1583	1770	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			549			204			123			171
Link Speed (mph)		50			50			55			55	
Link Distance (ft)		1105			906			2038			1487	
Travel Time (s)		15.1			12.4			25.3			18.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.93	0.93	0.93
Adj. Flow (vph)	47	882	616	11	1188	232	1034	1999	11	108	699	70
Shared Lane Traffic (%)												
Lane Group Flow (vph)	47	882	616	11	1188	232	1034	1999	11	108	699	70
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			44			44	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Prot	Prot	NA	Prot
Protected Phases	1	6		5	2		7	4	4	3	8	8
Permitted Phases			6			2						



Lanes, Volumes, Timings  
4: US 24 & Marksheffel Rd

2040 Background  
PM

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Detector Phase	1	6	6	5	2	2	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	28.0	28.0	6.0	28.0	28.0
Minimum Split (s)	15.0	16.0	16.0	15.0	16.0	16.0	15.0	35.0	35.0	15.0	35.0	35.0
Total Split (s)	15.0	33.0	33.0	15.0	33.0	33.0	31.0	52.0	52.0	15.0	36.0	36.0
Total Split (%)	13.0%	28.7%	28.7%	13.0%	28.7%	28.7%	27.0%	45.2%	45.2%	13.0%	31.3%	31.3%
Maximum Green (s)	10.0	27.0	27.0	10.0	27.0	27.0	26.0	45.0	45.0	10.0	29.0	29.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
All-Red Time (s)	2.0	3.0	3.0	2.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-1.0	1.0	0.0	-1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	7.0	5.0	5.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effect Green (s)	8.3	40.5	38.5	6.5	31.9	29.9	26.0	45.4	45.4	9.6	29.0	29.0
Actuated g/C Ratio	0.07	0.35	0.33	0.06	0.28	0.26	0.23	0.39	0.39	0.08	0.25	0.25
v/c Ratio	0.37	0.71	0.69	0.11	1.21	0.41	1.33	1.00	0.02	0.73	0.55	0.13
Control Delay	58.8	36.9	9.5	53.5	141.1	9.8	194.7	54.3	0.0	79.6	39.2	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.8	36.9	9.5	53.5	141.1	9.8	194.7	54.3	0.0	79.6	39.2	0.5
LOS	E	D	A	D	F	A	F	D	A	E	D	A
Approach Delay		26.6			119.1			101.8			41.1	
Approach LOS		C			F			F			D	

Intersection Summary

Area Type: Other

Cycle Length: 115

Actuated Cycle Length: 115

Offset: 0 (0%), Referenced to phase 4:NET and 8:SWT, Start of FDW or yellow

Natural Cycle: 145

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.33

Intersection Signal Delay: 80.8









Intersection LOS: F

Intersection Capacity Utilization 102.9%

ICU Level of Service G

Analysis Period (min) 15

























Splits and Phases: 4: US 24 & Marksheffel Rd

 Ø1	 Ø2	 Ø3	 Ø4 (R)
15 s	33 s	15 s	52 s
 Ø5	 Ø6	 Ø7	 Ø8 (R)
15 s	33 s	31 s	36 s















Lanes, Volumes, Timings  
10: US 24 & SH 94/Meadowbrook Pkwy

2040 Background  
PM

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	250	160	331	743	174	275	352	2367	1054	10	113	123
Future Volume (vph)	250	160	331	743	174	275	352	2367	1054	10	113	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	500		500	1000		1000	800		800
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	100			300			300			300		
Lane Util. Factor	0.97	1.00	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1863	1583	3433	3539	1583	3433	5085	1583	3433	5085	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	1863	1583	3433	3539	1583	3433	5085	1583	3433	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			356			296			917			177
Link Speed (mph)		40			40			55			55	
Link Distance (ft)		1096			1726			1444			1216	
Travel Time (s)		18.7			29.4			17.9			15.1	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	269	172	356	799	187	296	371	2492	1109	11	119	129
Shared Lane Traffic (%)												
Lane Group Flow (vph)	269	172	356	799	187	296	371	2492	1109	11	119	129
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			52			52	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	1!	4		5!	8		5!	2!		1!	6!	
Permitted Phases			Free			Free			Free			Free

Lanes, Volumes, Timings  
10: US 24 & SH 94/Meadowbrook Pkwy

2040 Background  
PM

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Detector Phase	1	4		5	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	14.5	22.5		42.2	22.5		42.2	60.5		14.5	32.8	
Total Split (%)	12.1%	18.8%		35.2%	18.8%		35.2%	50.4%		12.1%	27.3%	
Maximum Green (s)	10.0	18.0		37.7	18.0		37.7	56.0		10.0	28.3	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lead			Lead			Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes			Yes			Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Max		None	Max		None	C-Max		None	C-Max	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effect Green (s)	10.0	18.0	120.0	33.7	18.0	120.0	33.7	56.0	120.0	10.0	32.3	120.0
Actuated g/C Ratio	0.08	0.15	1.00	0.28	0.15	1.00	0.28	0.47	1.00	0.08	0.27	1.00
v/c Ratio	0.94	0.62	0.22	0.83	0.35	0.19	0.39	1.05	0.70	0.04	0.09	0.08
Control Delay	94.9	58.3	0.3	48.4	47.9	0.3	35.5	65.2	2.6	51.0	34.4	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	94.9	58.3	0.3	48.4	47.9	0.3	35.5	65.2	2.6	51.0	34.4	0.1
LOS	F	E	A	D	D	A	D	E	A	D	C	A
Approach Delay		44.8			37.2			44.9			18.0	
Approach LOS		D			D			D			B	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NET and 6:SWT, Start of Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.05

Intersection Signal Delay: 42.2

Intersection LOS: D

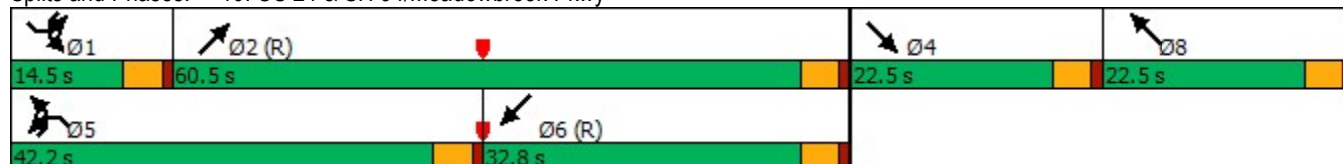
Intersection Capacity Utilization 86.6%

ICU Level of Service E

Analysis Period (min) 15

























! Phase conflict between lane groups.

Splits and Phases: 10: US 24 & SH 94/Meadowbrook Pkwy















Lanes, Volumes, Timings  
4: US 24 & Marksheffel Rd

2040 Background  
AM

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	35	1275	950	5	560	220	480	800	25	100	2115	50
Future Volume (vph)	35	1275	950	5	560	220	480	800	25	100	2115	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	375		0	300		315	1000		890	1000		670
Storage Lanes	1		1	1		1	2		1	1		1
Taper Length (ft)	75			95			300			300		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.91	1.00	1.00	0.91	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3433	5085	1583	1770	5085	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	3433	5085	1583	1770	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			383			232			171			123
Link Speed (mph)		50			50			55			55	
Link Distance (ft)		1105			906			2038			1487	
Travel Time (s)		15.1			12.4			25.3			18.4	
Peak Hour Factor	0.93	0.93	0.93	0.95	0.95	0.95	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	38	1371	1022	5	589	232	505	842	26	109	2299	54
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	1371	1022	5	589	232	505	842	26	109	2299	54
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			44			44	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Prot	Prot	NA	Prot
Protected Phases	1	6		5	2		7	4	4	3	8	8
Permitted Phases			6			2						

Lanes, Volumes, Timings  
4: US 24 & Marksheffel Rd

2040 Background  
AM

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Detector Phase	1	6	6	5	2	2	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	28.0	28.0	6.0	28.0	28.0
Minimum Split (s)	15.0	16.0	16.0	15.0	16.0	16.0	15.0	35.0	35.0	15.0	35.0	35.0
Total Split (s)	15.0	38.0	38.0	15.0	38.0	38.0	15.0	37.0	37.0	25.0	47.0	47.0
Total Split (%)	13.0%	33.0%	33.0%	13.0%	33.0%	33.0%	13.0%	32.2%	32.2%	21.7%	40.9%	40.9%
Maximum Green (s)	10.0	32.0	32.0	10.0	32.0	32.0	10.0	30.0	30.0	20.0	40.0	40.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
All-Red Time (s)	2.0	3.0	3.0	2.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-1.0	1.0	0.0	-1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	7.0	5.0	5.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effect Green (s)	7.9	45.6	43.6	6.2	39.6	37.6	10.0	37.6	37.6	12.4	40.0	40.0
Actuated g/C Ratio	0.07	0.40	0.38	0.05	0.34	0.33	0.09	0.33	0.33	0.11	0.35	0.35
v/c Ratio	0.31	0.98	1.22	0.05	0.48	0.34	1.69	0.51	0.04	0.57	1.30	0.09
Control Delay	57.2	53.7	131.3	52.6	32.7	5.7	359.5	33.1	0.1	60.0	172.2	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.2	53.7	131.3	52.6	32.7	5.7	359.5	33.1	0.1	60.0	172.2	0.3
LOS	E	D	F	D	C	A	F	C	A	E	F	A
Approach Delay		86.4			25.2			152.5			163.5	
Approach LOS		F			C			F			F	

Intersection Summary

Area Type: Other

Cycle Length: 115

Actuated Cycle Length: 115

Offset: 0 (0%), Referenced to phase 4:NET and 8:SWT, Start of FDW or yellow

Natural Cycle: 145

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.69

Intersection Signal Delay: 118.8









Intersection LOS: F

Intersection Capacity Utilization 120.5%

ICU Level of Service H

























Analysis Period (min) 15

Splits and Phases: 4: US 24 & Marksheffel Rd

 Ø1	 Ø2	 Ø3	 Ø4 (R)
15 s	38 s	25 s	37 s
 Ø5	 Ø6	 Ø7	 Ø8 (R)
15 s	38 s	15 s	47 s













Lanes, Volumes, Timings  
10: US 24 & SH 94/Meadowbrook Pkwy

2040 Background  
AM

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	150	47	213	900	114	25	174	1130	933	50	2845	175
Future Volume (vph)	150	47	213	900	114	25	174	1130	933	50	2845	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	500		500	1000		1000	800		800
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	100			300			300			300		
Lane Util. Factor	0.97	1.00	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1863	1583	3433	3539	1583	3433	5085	1583	3433	5085	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	1863	1583	3433	3539	1583	3433	5085	1583	3433	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			245			177			952			177
Link Speed (mph)		40			40			55			55	
Link Distance (ft)		1096			1726			1444			1216	
Travel Time (s)		18.7			29.4			17.9			15.1	
Peak Hour Factor	0.87	0.87	0.87	0.93	0.93	0.93	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	172	54	245	968	123	27	183	1189	982	53	2995	184
Shared Lane Traffic (%)												
Lane Group Flow (vph)	172	54	245	968	123	27	183	1189	982	53	2995	184
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			52			52	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	1!	4		5!	8		5!	2!		1!	6!	
Permitted Phases			Free			Free			Free			Free

Lanes, Volumes, Timings  
10: US 24 & SH 94/Meadowbrook Pkwy

2040 Background  
AM

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Detector Phase	1	4		5	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	15.5	22.5		25.0	22.5		25.0	59.5		15.5	50.0	
Total Split (%)	12.9%	18.8%		20.8%	18.8%		20.8%	49.6%		12.9%	41.7%	
Maximum Green (s)	11.0	18.0		20.5	18.0		20.5	55.0		11.0	45.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lead			Lead			Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes			Yes			Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Max		None	Max		None	C-Max		None	C-Max	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effect Green (s)	10.2	18.0	120.0	20.5	18.0	120.0	20.5	55.8	120.0	10.2	45.5	120.0
Actuated g/C Ratio	0.08	0.15	1.00	0.17	0.15	1.00	0.17	0.46	1.00	0.08	0.38	1.00
v/c Ratio	0.59	0.19	0.15	1.65	0.23	0.02	0.31	0.50	0.62	0.18	1.55	0.12
Control Delay	61.3	46.8	0.2	333.5	46.2	0.0	45.3	23.5	1.8	52.1	280.8	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.3	46.8	0.2	333.5	46.2	0.0	45.3	23.5	1.8	52.1	280.8	0.1
LOS	E	D	A	F	D	A	D	C	A	D	F	A
Approach Delay		27.8			293.8			16.2			261.1	
Approach LOS		C			F			B			F	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NET and 6:SWT, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.65

Intersection Signal Delay: 170.5

Intersection LOS: F

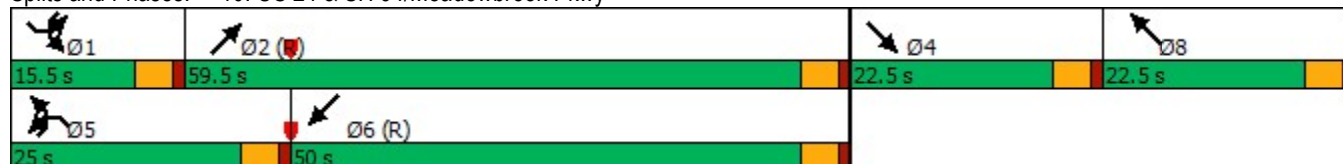
Intersection Capacity Utilization 103.5%

ICU Level of Service G

Analysis Period (min) 15

























! Phase conflict between lane groups.

Splits and Phases: 10: US 24 & SH 94/Meadowbrook Pkwy



Lanes, Volumes, Timings  
4: US 24 & Marksheffel Rd













2040 Background + Site  
PM

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	75	850	615	10	1140	220	1000	1899	10	100	650	85
Future Volume (vph)	75	850	615	10	1140	220	1000	1899	10	100	650	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	375		0	300		315	1000		890	1000		670
Storage Lanes	1		1	1		1	2		1	1		1
Taper Length (ft)	75			95			300			300		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.91	1.00	1.00	0.91	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3433	5085	1583	1770	5085	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	3433	5085	1583	1770	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			549			202			123			171
Link Speed (mph)		50			50			55			55	
Link Distance (ft)		1105			906			2038			1487	
Travel Time (s)		15.1			12.4			25.3			18.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.93	0.93	0.93
Adj. Flow (vph)	79	895	647	11	1200	232	1053	1999	11	108	699	91
Shared Lane Traffic (%)												
Lane Group Flow (vph)	79	895	647	11	1200	232	1053	1999	11	108	699	91
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			44			44	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Prot	Prot	NA	Prot
Protected Phases	1	6		5	2		7	4	4	3	8	8
Permitted Phases			6			2						



Lanes, Volumes, Timings  
4: US 24 & Marksheffel Rd

2040 Background + Site  
PM

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Detector Phase	1	6	6	5	2	2	7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	28.0	28.0	6.0	28.0	28.0
Minimum Split (s)	15.0	16.0	16.0	15.0	16.0	16.0	15.0	35.0	35.0	15.0	35.0	35.0
Total Split (s)	15.0	33.0	33.0	15.0	33.0	33.0	31.0	52.0	52.0	15.0	36.0	36.0
Total Split (%)	13.0%	28.7%	28.7%	13.0%	28.7%	28.7%	27.0%	45.2%	45.2%	13.0%	31.3%	31.3%
Maximum Green (s)	10.0	27.0	27.0	10.0	27.0	27.0	26.0	45.0	45.0	10.0	29.0	29.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
All-Red Time (s)	2.0	3.0	3.0	2.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-1.0	1.0	0.0	-1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	7.0	5.0	5.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effect Green (s)	9.0	40.5	38.5	6.5	31.2	29.2	26.0	45.4	45.4	9.6	29.0	29.0
Actuated g/C Ratio	0.08	0.35	0.33	0.06	0.27	0.25	0.23	0.39	0.39	0.08	0.25	0.25
v/c Ratio	0.57	0.72	0.72	0.11	1.25	0.42	1.36	1.00	0.02	0.73	0.55	0.17
Control Delay	67.2	37.2	11.4	53.5	157.3	10.2	204.8	54.3	0.0	79.6	39.2	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.2	37.2	11.4	53.5	157.3	10.2	204.8	54.3	0.0	79.6	39.2	0.7
LOS	E	D	B	D	F	B	F	D	A	E	D	A
Approach Delay		28.4			132.9			105.8			40.1	
Approach LOS		C			F			F			D	

Intersection Summary

Area Type: Other

Cycle Length: 115

Actuated Cycle Length: 115

Offset: 0 (0%), Referenced to phase 4:NET and 8:SWT, Start of FDW or yellow

Natural Cycle: 145

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.36

Intersection Signal Delay: 85.1









Intersection LOS: F

Intersection Capacity Utilization 106.7%

ICU Level of Service G

Analysis Period (min) 15

























Splits and Phases: 4: US 24 & Marksheffel Rd

 Ø1	 Ø2	 Ø3	 Ø4 (R)
15 s	33 s	15 s	52 s
 Ø5	 Ø6	 Ø7	 Ø8 (R)
15 s	33 s	31 s	36 s















Lanes, Volumes, Timings  
10: US 24 & SH 94/Meadowbrook Pkwy

2040 Background + Site  
PM

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	250	160	349	743	174	275	376	2385	1054	10	1143	123
Future Volume (vph)	250	160	349	743	174	275	376	2385	1054	10	1143	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	500		500	1000		1000	800		800
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	100			300			300			300		
Lane Util. Factor	0.97	1.00	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1863	1583	3433	3539	1583	3433	5085	1583	3433	5085	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	1863	1583	3433	3539	1583	3433	5085	1583	3433	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			375			289			917			177
Link Speed (mph)		40			40			55			55	
Link Distance (ft)		1096			1726			1444			1216	
Travel Time (s)		18.7			29.4			17.9			15.1	
Peak Hour Factor	0.93	0.93	0.93	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	269	172	375	782	183	289	396	2511	1109	11	1203	129
Shared Lane Traffic (%)												
Lane Group Flow (vph)	269	172	375	782	183	289	396	2511	1109	11	1203	129
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			52			52	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	1!	4		5!	8		5!	2!		1!	6!	
Permitted Phases			Free			Free			Free			Free

Lanes, Volumes, Timings  
10: US 24 & SH 94/Meadowbrook Pkwy

2040 Background + Site  
PM

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Detector Phase	1	4		5	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	14.5	22.5		42.2	22.5		42.2	60.5		14.5	32.8	
Total Split (%)	12.1%	18.8%		35.2%	18.8%		35.2%	50.4%		12.1%	27.3%	
Maximum Green (s)	10.0	18.0		37.7	18.0		37.7	56.0		10.0	28.3	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lead			Lead			Lead		Lag	Lead		Lag
Lead-Lag Optimize?	Yes			Yes			Yes		Yes	Yes		Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Max		None	Max		None	C-Max		None	C-Max	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effect Green (s)	10.0	18.0	120.0	33.2	18.0	120.0	33.2	56.0	120.0	10.0	32.8	120.0
Actuated g/C Ratio	0.08	0.15	1.00	0.28	0.15	1.00	0.28	0.47	1.00	0.08	0.27	1.00
v/c Ratio	0.94	0.62	0.24	0.82	0.35	0.18	0.42	1.06	0.70	0.04	0.87	0.08
Control Delay	94.9	58.3	0.4	48.3	47.8	0.3	36.3	67.9	2.6	51.0	49.9	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	94.9	58.3	0.4	48.3	47.8	0.3	36.3	67.9	2.6	51.0	49.9	0.1
LOS	F	E	A	D	D	A	D	E	A	D	D	A
Approach Delay		43.7			37.2			46.8			45.2	
Approach LOS		D			D			D			D	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NET and 6:SWT, Start of Green

Natural Cycle: 130

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.06

Intersection Signal Delay: 44.5

Intersection LOS: D

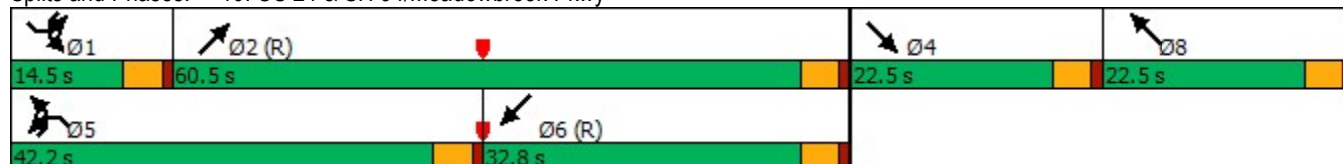
Intersection Capacity Utilization 94.9%

ICU Level of Service F

Analysis Period (min) 15

! Phase conflict between lane groups.

Splits and Phases: 10: US 24 & SH 94/Meadowbrook Pkwy















## Queues

2023 Background + Site

## 1: Marksheffel Rd &amp; Meadowbrook Pkwy

AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	58	4	36	105	16	117	63	684	227	55	1572	204
v/c Ratio	0.18	0.06	0.25	0.49	0.12	0.53	0.27	0.27	0.19	0.10	0.62	0.17
Control Delay	49.2	65.3	4.1	58.5	60.4	19.1	11.7	13.6	7.1	4.5	12.7	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.2	65.3	4.1	58.5	60.4	19.1	11.7	13.6	7.1	4.5	12.7	1.4
Queue Length 50th (ft)	22	3	0	82	13	0	23	151	45	10	391	0
Queue Length 95th (ft)	39	15	0	134	37	56	m38	m174	m76	21	476	26
Internal Link Dist (ft)		415			846			1025			885	
Turn Bay Length (ft)	225		225	300		190	420			350		350
Base Capacity (vph)	483	69	144	241	133	221	237	2556	1206	566	2530	1190
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.06	0.25	0.44	0.12	0.53	0.27	0.27	0.19	0.10	0.62	0.17

## Intersection Summary













m Volume for 95th percentile queue is metered by upstream signal.

## Queues

2023 Background + Site

## 1: Marksheffel Rd &amp; Meadowbrook Pkwy

PM













												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	227	26	108	21	9	34	69	1643	74	38	741	114
v/c Ratio	0.50	0.13	0.41	0.13	0.10	0.20	0.13	0.68	0.07	0.19	0.31	0.10
Control Delay	52.2	56.5	14.8	45.9	63.8	2.7	5.4	13.3	2.1	7.4	10.2	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.2	56.5	14.8	45.9	63.8	2.7	5.4	13.3	2.1	7.4	10.2	1.9
Queue Length 50th (ft)	89	21	0	15	8	0	9	239	0	8	140	0
Queue Length 95th (ft)	126	51	57	37	26	0	35	653	15	19	192	23
Internal Link Dist (ft)	415			846			1025			885		
Turn Bay Length (ft)	225		225	300		190	420			350		350
Base Capacity (vph)	489	204	270	265	151	221	535	2413	1110	199	2422	1119
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.13	0.40	0.08	0.06	0.15	0.13	0.68	0.07	0.19	0.31	0.10
Intersection Summary												

## Queues

2040 Background + Site

## 1: Marksheffel Rd &amp; Meadowbrook Pkwy

AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	164	6	74	212	15	82	137	947	61	43	2105	243
v/c Ratio	0.42	0.11	0.55	0.83	0.16	0.50	0.83	0.38	0.05	0.10	0.62	0.21
Control Delay	53.1	68.0	24.3	79.0	65.9	21.5	60.6	14.7	4.8	4.9	13.4	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.1	68.0	24.3	79.0	65.9	21.5	60.6	14.7	4.8	4.9	13.4	1.4
Queue Length 50th (ft)	64	5	0	176	13	0	67	211	5	8	356	0
Queue Length 95th (ft)	95	20	35	#286	38	48	m#142	m240	m13	18	399	27
Internal Link Dist (ft)		415			846			1025			885	
Turn Bay Length (ft)	225			300		190	420			350		350
Base Capacity (vph)	462	56	134	255	94	165	165	2490	1140	412	3420	1144
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.11	0.55	0.83	0.16	0.50	0.83	0.38	0.05	0.10	0.62	0.21

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.













m Volume for 95th percentile queue is metered by upstream signal.

## Queues

2040 Background + Site

## 1: Marksheffel Rd &amp; Meadowbrook Pkwy

PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	426	5	180	179	26	121	122	1947	274	95	1263	354
v/c Ratio	0.71	0.03	0.61	0.77	0.25	0.56	0.40	0.91	0.27	0.62	0.41	0.32
Control Delay	52.9	52.4	23.5	69.9	65.6	18.0	10.1	27.4	3.7	39.1	14.7	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.9	52.4	23.5	69.9	65.6	18.0	10.1	27.4	3.7	39.1	14.7	2.1
Queue Length 50th (ft)	172	4	30	137	22	0	22	623	4	29	201	0
Queue Length 95th (ft)	218	17	106	205	53	51	60	#928	71	#123	255	42
Internal Link Dist (ft)		415			846			1025			885	
Turn Bay Length (ft)	225			300		190	420			350		350
Base Capacity (vph)	607	248	335	231	151	251	317	2137	1031	154	3085	1099
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.02	0.54	0.77	0.17	0.48	0.38	0.91	0.27	0.62	0.41	0.32

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.