



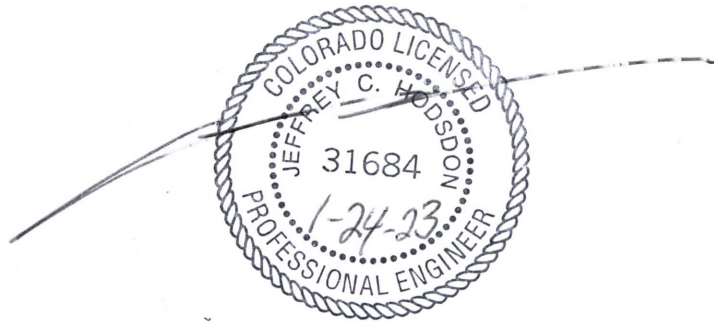
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EPC Department of Public Works

Villas at Claremont Ranch
Traffic Impact Analysis
PCD File No. SF2228
(LSC #204130)
January 24, 2023

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.



1/25/2023

Date

Villas at Claremont Ranch Traffic Impact Analysis

Prepared for:

Phi Real Estate Services, LLC
200 W. City Center Dr. Ste 200
Pueblo, CO 81003

Contact: Mr. Paul Broussard

JANUARY 24, 2023

LSC Transportation Consultants
Project Manager: Jeffrey C. Hodsdon, P.E.

PCD File No. SF2228
LSC #204130



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January 24, 2023

Mr. Paul Broussard
Phi Real Estate Services, LLC
200 W. City Center Dr. Ste 200
Pueblo, CO 81003

RE: Villas at Claremont Ranch
El Paso County, Colorado
Traffic Impact Analysis
PCD File No. SF2228
LSC #204130

Dear Mr. Broussard,

In response to your request, we have prepared this traffic impact analysis for the proposed Villas at Claremont Ranch. The proposed 83-dwelling unit townhome development is located northeast of the intersection of Marksheffel Road/Meadowbrook Parkway in El Paso County, Colorado. Two site-access points to Meadowbrook Parkway are proposed at approximately 600 and 895 feet east of the intersection of Marksheffel Road/Meadowbrook Parkway (centerline distance between proposed accesses and Marksheffel Road). The proposed location and vicinity are shown in Figure 1.

REPORT CONTENTS

The report contains the following:

- Existing street and traffic conditions in the vicinity of the site, including the intersection lane geometries, traffic controls, posted speed limits, functional classifications, intersection spacing and alignment, sight distances, etc.;
- Existing peak-hour turning movement traffic counts and estimates of future background traffic volumes at the intersections of:
 - Marksheffel Road/Meadowbrook Parkway
 - Marksheffel Road/US Highway 24
 - Meadowbrook Parkway/Greengate View
 - Meadowbrook Parkway/Fieldside View
- Description of the proposed land use and access points;
- Estimates of the average weekday and peak-hour vehicle-trips to be generated by the site;
- Assignment of projected peak-hour site-generated traffic volumes to the study-area intersections, including the site-access point intersections;

- 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 at study intersections as necessary;
- 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.

RECENT TRAFFIC STUDIES

The following traffic studies have been completed in the past few years in the vicinity of the site:

- Mountain View Academy, April 16, 2020
- Claremont Business Park, Filing 2, April 15, 2020
- The Sand Industrial, LSC, November 5, 2019
- Claremont Commercial Filing No. 2, LSC, April 15, 2020
- Meadowbrook Parkway, LSC, June 8, 2017
- Meadowbrook Crossing, LSC, May 5, 2017
- The Sands, LSC, May 17, 2016

All of these studies were considered when developing background traffic projections.

LAND USE AND ACCESS

The Villas at Claremont Ranch is a proposed residential townhome development. Figure 2 shows the site plan for the development. Full-movement access is proposed at two proposed private street intersections with Meadowbrook Parkway, located approximately 600 and 895 feet east of the intersection of Marksheffel Road/Meadowbrook Parkway (between the centerline of proposed accesses and Marksheffel Road). Street names will be Greengate View and Fieldside View, respectively.

Adjacent and Nearby Future Development Parcels

Anticipated future land uses for adjacent and nearby development parcels have been identified and projected trip generation/future traffic volumes have been included in this report for these parcels. Claremont Commercial Subdivision Filing No. 2 is a resubmission of Tract C, Claremont Business Park Filing No. 2. This proposed 8-lot commercial/industrial development is located southwest of the intersection of Meadowbrook Parkway and Marksheffel Road. Also included in the short-term analysis are trips to be generated by Meadowbrook Crossing and Circle K development to the southwest. Long-term analysis also assumes commercial development southeast of Meadowbrook/Marksheffel, buildout of Claremont Business Park to the west of Marksheffel, and the Mountain View Academy charter school located to the east.

INTERSECTION SIGHT DISTANCE

The required access sight distance for the two site-access points on Meadowbrook Parkway is calculated per Tables 2-33 and 2-35. The line-of-sight triangles need to allow for 250 feet of entering sight distance and 150 feet of sight distance along the roadway. The access points will meet the minimum sight distance, provided that landscaping, site improvements, etc. are kept out of the line-of-sight “triangles.”

CURRENT ROADWAY AND TRAFFIC CONDITIONS

Study Area Roadway System

Major roadways in the vicinity of the site are summarized below:

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)*. At this location, US Hwy 24 is a four-lane urban highway with a depressed median and a speed limit of 65 mph. The 2040 *MTCP* shows US Hwy 24 to be upgraded to a 6-lane Expressway in the long term. The intersection with Marksheffel Road is signalized.

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 Major Transportation Corridors Plan Update (MTCP)* for 2060 corridor preservation.

Meadowbrook Parkway is a paved, Urban Non-Residential Collector that extends through the Claremont Business Park from the US Hwy 24/State Highway (SH) 94 intersection to Marksheffel Road (generally parallel to US Hwy 24). Meadowbrook Parkway continues east from Marksheffel Road into Claremont Ranch. Adjacent to the site, the posted speed limit is 25 mph.

Access Management Plans

The 2006 US Highway 24 Access Control Plan indicates that the RI/RO at US Highway 24/Brookings Drive may be closed when Constitution/Banning Lewis Parkway/US Highway 24 interchange is constructed. The recent *US Highway 24 PEL study* recommended revisions indicate the access “*may be closed with highway and/or Constitution or Marksheffel intersection improvements.*”

The date of a possible future closure of this access is not known, but a future closure would have an effect on the local jurisdiction intersections - most notably, the intersection of Marksheffel/Meadowbrook. The analysis scenario in this report representing potential long-term

future closure indicates the possible need for an additional westbound-to-southbound left-turn lane. The intersection of Marksheffel/Meadowbrook was recently widened and improved by El Paso County. Notable improvements included widening for dual lefts, one through, and one right-turn lane eastbound. The westbound approach was also upgraded to improve lane alignment across the intersection with the new eastbound laneage. The westbound laneage includes a left-turn lane, a lane separator (aligning with the No. 1 left-turn lane on the west side of the intersection), one through lane, and a right-turn lane. The intersection was also signalized.

Planned CDOT and County Projects

Based on the US Hwy 24 PEL study, US Hwy 24 is planned to be widened to a six-lane roadway in the future. The timings of these improvements are not known. Both improvements have been included in the long-term analysis.

Existing Traffic Volumes

Turning-movement counts were conducted on at the intersection of Marksheffel Road/ Meadowbrook Parkway at the following times:

- Tuesday, February 11, 2020 – 6:30 to 8:30 a.m.
- Tuesday, February 11, 2020 – 4:00 to 6:00 p.m.

Existing morning (7:00 a.m. - 8:00 a.m.) and evening (4:30 p.m. - 5:30 p.m.) weekday peak-hour traffic volumes at this intersection are shown in Figure 3. Raw count data are attached.

Existing Levels of Service

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 1 shows the level of service delay ranges for signalized and unsignalized intersections.

Table 1: 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) ⁽¹⁾ |
| A | 10.0 sec or less | 10.0 sec or less |
| B | 10.1-20.0 sec | 10.1-15.0 sec |
| C | 20.1-35.0 sec | 15.1-25.0 sec |
| D | 35.1-55.0 sec | 25.1-35.0 sec |
| E | 55.1-80.0 sec | 35.1-50.0 sec |
| F | 80.1 sec or more | 50.1 sec or more |

(1) For unsignalized intersections, if V/C ratio is greater than 1.0 the level of service is LOS F, regardless of the projected average control delay per vehicle.

The following existing intersections have been analyzed to determine existing, short-term, and long-term levels of service:

- Marksheffel/Meadowbrook
- US Highway 24/Marksheffel
- Meadowbrook/Greengate View (south access)
- Meadowbrook/Fieldside View (north access)

As shown in Figure 3, both existing signalized intersections currently operate at LOS D or better during the peak hours. Several movements at each intersection operate at LOS E, although all movements are still under capacity.

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, 5 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 number of broadside crashes at this intersection should be reduced.

The intersection of US Hwy 24/Marksheffel Road had 43 crashes recorded during the study period with 13 crashes resulting in injuries. Of the 43 crashes, 12 were approach-turn crashes between a westbound left-turning vehicle and an eastbound through vehicle. Six of these crashes resulted in injuries. All but one of the westbound left-approach-turn crashes occurred in the afternoon evening period when there is a high volume of westbound left-turning vehicles against a high volume of eastbound through vehicles. Due to the projected increase in traffic volumes at this intersection, it is anticipated that these crashes will continue to occur if no countermeasures are taken. It is recommended that the westbound left-turn be converted to protected-only to reduce the approach-turn crashes. 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 83-dwelling unit Villas at Claremont Ranch have been made using the nationally published trip-generation rates from *Trip Generation, 10th Edition, 2017* by the Institute of Transportation Engineers (ITE). Land use code "210 – Multifamily Housing" was categorized using the *Trip Generation Manual, 10th Edition,*

2017 by the Institute of Transportation Engineers (ITE) and has been used to estimate the trip generation estimate for the site.

Villas at Claremont Ranch is expected to generate about 608 vehicle-trips on the average weekday (one-half entering and one-half exiting in a 24-hour period). During the morning peak hour, 9 vehicles are projected to enter the site while 29 are projected to exit. Approximately 29 vehicles would enter and 17 vehicles would exit the site during the evening peak hour. The morning peak hour generally occurs for one hour between 6:30 and 8:30 a.m., and the afternoon peak hour occurs for one hour between 4:00 and 6:00 p.m. Table 2 shows a summary of the results of the trip-generation estimate.

Table 2: Estimated Vehicle-Trip Generation

| Analysis Period | In | Out | Total |
|---|-----------|------------|--------------|
| Morning Peak Hour (vehicle trips/hour) | 9 | 29 | 38 |
| Evening Peak Hour (vehicle trips/hour) | 29 | 17 | 46 |
| Weekday (vehicle trips/day) | 304 | 304 | 608 |
| * Please refer to Table 5 (attached) for detailed trip generation table | | | |

TRIP DISTRIBUTION AND ASSIGNMENT

Distribution of the site-generated trips to the adjacent streets and key off-site intersections is a necessary step in the process of determining the site's traffic impacts. Figure 4 shows the directional-distribution estimate for the site-generated trips. The distribution shown represents estimates of percentages of site-generated vehicle-trips oriented to and from the major roadway 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.

When the directional-distribution percentages (from Figure 4) were applied to the trip-generation estimates (from Table 2), the site-generated traffic volumes on the adjacent streets were determined. Figure 5 shows the projected site-generated traffic volumes.

PROJECTED FUTURE BASELINE ROADWAY NETWORK AND TRAFFIC VOLUMES

Background traffic is the traffic estimated to be on the adjacent roadways and at adjacent intersections without the proposed development's trip generation of site-generated traffic volumes. Background traffic includes the through traffic and the traffic generated by nearby developments but assumes zero traffic generated by the site.

Short-Term Traffic Volumes

Figure 6 shows the short-term background traffic volumes. The background volumes are estimates by LSC, based on the existing traffic volumes shown in Figure 3, with a yearly growth

rate of two percent per year. In addition, planned developments that are anticipated to be constructed in the near future have been included in the background traffic, including the Claremont Business Park and Mountain View Academy.

Long-Term Traffic Volumes

Figure 8 shows the projected 2040 background traffic volumes. The 2040 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. The Pikes Peak Area Council of Governments (PPACCG) travel-demand model was also used in projecting traffic volumes. Additionally, traffic generated by planned adjacent developments has been included.

The 2040 background traffic volumes assume that the right-in/right-out intersection of US Hwy 24/Brookings Drive has been closed. The traffic turning at the intersection was rerouted through the Claremont development.

US Hwy 24/Marksheffel

It is anticipated that US Hwy 24 will be widened from four through lanes to six through lanes in the long term. Additionally, once funding becomes available, the intersection of US Hwy 24/Marksheffel may be upgraded to a grade-separated interchange.

PROJECTED BASELINE PLUS SITE-GENERATED (TOTAL) TRAFFIC VOLUMES

Short-Term Background Plus Site-Generated Traffic Volumes

Figure 7 shows the existing-plus-site traffic volumes, which are the sum of the site-generated traffic volumes (from Figure 5) and the short-term background weekday traffic volumes (from Figure 6).

2040 Background Plus Site-Generated Traffic Volumes

Figure 9 shows the year 2040 total weekday traffic volumes, which are the sum of the site-generated traffic volumes (from Figure 5) and the 2040 background traffic volumes (from Figure 8).

INTERSECTION LEVELS OF SERVICE

The following intersections and access points were analyzed in Synchro and SimTraffic using procedures from the *Highway Capacity Manual, 2010 Edition*:

- Marksheffel Road/US Hwy 24
- Marksheffel Road/Meadowbrook Parkway
- Meadowbrook Parkway/Greengate View (south site access)
- Meadowbrook Parkway/Fieldside View (north site access)

Study-area intersections have been analyzed to determine the projected levels of service and control delay for the key turning movements. As the site-access intersections will be stop-sign-controlled, volumes on the southbound (as well as northbound in the future) approaches will incur delay given the stop-sign control. The eastbound (and westbound in the future) left turns also incur delay as motorists must yield to opposing through and right-turning traffic.

Marksheffel Road/Meadowbrook Parkway

Short-Term

Overall, the intersection of Marksheffel Road/Meadowbrook Parkway currently operates at and is projected to remain at LOS B during both peak hours, based on short-term and short-term background-plus-site-generated traffic conditions. All major- and minor-street left-turning movements are projected to operate at LOS E or better through the 20-year horizon, once all adjacent development projects have been completed.

Long-Term

Overall, this intersection is projected to operate at LOS C or better during the 2040 morning peak hour and evening peak hours, both before and after considering site-generated traffic. As in the short-term scenario, several movements are expected to operate at LOS E. In both the background and total traffic scenario, dual westbound left-turn lanes are required along with three southbound through lanes. The dual westbound left-turn lanes are required due to the planned closure of the Brookings Drive/US Hwy 24 intersection. It is anticipated that much of the traffic that uses this intersection would reroute through the Claremont development and make a westbound left-turn at the intersection of Marksheffel Road/Meadowbrook Parkway.

Meadowbrook Parkway/Greengate View (South Site Access Point)

All major and minor street approaches and turn lanes are projected to operate at LOS C or better during both the short- and long-term scenarios.

Meadowbrook Parkway/Fieldside View (North Site Access Point)

All major and minor street approaches and turn lanes are projected to operate at LOS B or better during both the short- and long-term scenarios.

Marksheffel Road/US Hwy 24

Short-Term

Both with and without the site-generated traffic, the intersection of Marksheffel Road/US Hwy 24 is projected to operate at LOS E and LOS D overall during the morning and evening short-term peak hours, respectively. Multiple turn movements are anticipated to operate at LOS E or LOS F with some volumes exceeding the capacity for the movement. It should be noted that these issues are forecast to exist even without the site-generated traffic. Note: **CDOT has indicated "No CDOT Access Permit will be required as the development is off system and has no impacts to State Highway facilities."** In response to the El Paso County comment "**Address mitigation options in general,**" for short-term mitigation for level of service, the following are ideas/possibilities for consideration for a future public project: a westbound dual left-turn lane as shown in the US Highway 24 PEL study. Also, there may be right-turn "treatments" that could be considered to potentially reduce southbound right-turn delay. Slopes on the north side of US Highway 24 appear difficult, but perhaps an eastbound partial Continuous Flow Intersection (CFI) or indirect left-turn design could be investigated or widening of US Highway 24 to provide triple eastbound left-turn lanes.

Long-Term

The intersection of Marksheffel Road/US Hwy 24 is projected to operate at LOS F overall during the 2040 morning peak hour and evening peak hours, with and without considering site-generated traffic. This is expected to occur even with US Hwy 24 widened to 6-lanes. The volume of traffic at the intersections is very close to the available capacity in existing conditions. Traffic volume growth on US Hwy 24 and Marksheffel Road will cause the volumes to exceed capacity in the near future. These poor levels of service are expected to occur with or without the site-generated traffic. The long-term plan for mitigation in the US Highway 24 PEL study is for upgrade to six through lanes on US Highway 24 (at-grade intersection) then ultimately conversion to a grade-separated interchange.

VEHICLE QUEUING ANALYSIS

A queuing analysis was performed for the westbound approach at the intersection of Meadowbrook Road/Marksheffel Road and for the eastbound left turn at Greengate View. Table 3 and Table 4 present the results of the analysis. These analyses have been run utilizing the projected existing plus site-generated and 2040 background plus site-generated traffic volumes. Queuing reports are attached.

Short-Term Background Plus Site-Generated

Table 3 summarizes queuing analysis results, assuming short-term total traffic volumes.

Table 3: Queuing Analysis Results (Short-Term Total Traffic Volumes)

| Intersection | Lane | Storage | 95 th Percentile Queue (ft) | |
|-----------------------------|-------------|-------------|--|------|
| | | Length (ft) | AM | PM |
| Marksheffel/ Meadowbrook | EBL (duals) | 220' | 39' | 128' |
| | EBT | --- | 14' | 55' |
| | EBR | 200' | 0' | 54' |
| | WBL | 300' | 156' | 60' |
| | WBT | --- | 38' | 27' |
| | WBR | 190' | 58' | 0' |
| | SBR | 335' | 26' | 24' |
| | SBT | --- | 476' | 193' |
| | SBL | 340' | 22' | 24' |
| | NBL | 405' | 24' | 30' |
| Meadowbrook/ Greengate View | EBL | 85' | 0' | 0' |
| Rev. 01/24/2023 | | | | |

The southbound left-turn queue on Marksheffel Road approaching Meadowbrook Parkway is projected to be 24 feet long during the short-term evening peak hour, based on the projected short-term total traffic volumes. During the morning peak hour, the southbound through-lane queue is longer than the left-turn auxiliary lane. As a result, the southbound through lane will occasionally block left-turning vehicles from getting into the left-turn lane. This is not a significant problem as the southbound left-turning traffic is relatively light and safety is not affected. The southbound left-turn auxiliary lane cannot be lengthened due to the existing bridge structure. In the future, El Paso County may decide to utilize the southbound Marksheffel width to implement three southbound through lanes at the Marksheffel/Meadowbrook intersection and potentially at intersections to the north as well.

The proposed westbound left-turn queue at Marksheffel/Meadowbrook is projected to be less than 190 feet. This available stacking distance would provide adequate storage capacity for projected volumes for the westbound approach, while the eastbound right-turn at Fieldside View (the west site access) is expected to have a queue of less than one vehicle.

2040 Background Plus Site-Generated Condition

The table below shows the anticipated available left-turn stacking lengths and the available stacking distance between the two intersections for the westbound through lane. The latter distance is a function of the intersection spacing. These left-turn stacking lengths have been determined based on this queuing analysis and access spacing.

The long-term analysis assumes dual westbound left-turn lanes on the Meadowbrook Parkway westbound approach to Marksheffel Road and the addition of a third southbound through lane.

Table 4: Queuing Analysis Results (2040 Background Plus Site-generated Traffic)

| Intersection | Lane | Storage | 95 th Percentile Queue (ft) | |
|--|--------------|-------------|--|------|
| | | Length (ft) | AM | PM |
| Marksheffel/ Meadowbrook | EBL (duals) | 220' | 99' | 259' |
| | EBT | --- | 19' | 67' |
| | EBR | 200' | 0' | 69' |
| | WBL (duals)* | 300' | 228' | 130' |
| | WBT | --- | 39' | 57' |
| | WBR | 190' | 61' | 22' |
| | SBR | 335' | 32' | 40' |
| | SBT | --- | 471' | 245' |
| | SBL | 340' | 50' | 138' |
| | NBL | 405' | 47' | 12' |
| Meadowbrook/ Greengate View | EBL | 85' | 0' | 0' |
| * Assuming dual left turn lanes Rev. 01/24/2023 | | | | |

The queuing analysis indicates the projected 95th percentile queue for the westbound left-turn movement on Meadowbrook at Marksheffel would reach a maximum length of 228 feet. The projected 95th percentile queue for the eastbound left-turn lane onto Fieldside View (the west site access on Meadowbrook Parkway) is projected to reach a length of less than one vehicle.

The projected southbound left-turn queue on Marksheffel Road approaching Meadowbrook Parkway is projected to be about 138 feet long during the 2040 evening peak hour. During the morning peak hour, the southbound through 95th percentile queue length is anticipated to be 471 feet, which during highest volume period of the AM peak hour would occasionally (and for a short period of time until the queue dissipates with the start of the southbound green phase) block the left-turning vehicles from getting into the turn lane. The full-width lane length not including taper is about 375 feet (but striped for about 340 feet) for the southbound left movement.

ECM ACCESS CRITERIA

The two site access points, Greengate View and Fieldside View, are planned to be private streets and as such, criteria in *ECM* section 2.4.1 applies. Corner clearance to intersections would be satisfied and the access points would be separated by a distance exceeding the sight-distance requirement. The access points would have adequate intersection sight distance (provided landscaping, site improvements, etc. are kept out of the line of sight “triangles”).

PEDESTRIAN AND BICYCLE ACCOMMODATION

There are currently sidewalks along Marksheffel Road adjacent to the site. Additionally, sidewalks will be constructed on Meadowbrook Parkway adjacent to the site, which will connect to the existing sidewalk to the east. 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 buses are furnished with bicycle racks. Transit service may expand to the east as growth continues to the east.

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.

The applicant intends to join the 10 mil PID and pay the associated upfront fee amount at a rate of \$1,458 per dwelling unit. The total upfront fee under this option would be \$121,014 based on a planned 83 dwelling units.

CONCLUSIONS AND RECOMMENDATIONS

Trip Generation

The site is projected to generate about 608 vehicle-trips on the average weekday, with about half entering and half exiting the site. Projected morning **peak-hour** trip generation for the site is 9 entering and 29 exiting trips. Projected evening **peak-hour** trip generation for the site is 29 entering and 17 exiting trips.

Level of Service Analysis

Please refer to the "Level of Service" section above for detailed intersection LOS analysis results:

- Marksheffel/Meadowbrook – With dual westbound left-turn lanes in the long-term, this intersection is projected to operate at LOS C or better during both peak hours. Some movements are anticipated to operate at LOS E.
- Marksheffel/US Hwy 24 – This intersection currently operates at LOS D during the peak hours, with many movements operating at LOS E. The intersection of Marksheffel Road/US Hwy 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 Hwy 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.

- Meadowbrook/site accesses – all approaches and individual turning movements are projected to operate at satisfactory levels of service through 2040 at the site access points.

Traffic-Control Recommendations – Site-Access Points

Both site-access points (Greengate View and Fieldside View) should be stop-sign-controlled for the southeast-bound (exiting the site) approaches. It is recommended that future access to the parcel south of Meadowbrook Parkway be aligned with Greengate View.

Queuing Analysis

A queuing analysis was performed for the Meadowbrook/Marksheffel intersection. Short-term and long-term scenario simulations indicate the queue would not exceed the stacking lengths between Marksheffel and the west site access, during the morning or evening peak hours.

Please refer to the Queuing Analysis section above for the complete queuing analysis and queue length results.

Auxiliary Turn-Lane Recommendations

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. Neither site access is anticipated to exceed this amount. However, LSC recommends restriping/new striping to define the laneage in the vicinity of the access points, especially at the west access, due to the proximity of the start of the westbound left-turn lane on the approach to Marksheffel. Figure 10 shows the proposed lane and restriping concept for Meadowbrook Parkway, which includes eastbound left-turn storage bays at both access points.

Westbound right-turn deceleration lanes would not be needed at either of the two site-access points.

Lane Configurations/Striping Recommendations

- LSC recommends restriping Meadowbrook adjacent to the site for a 75- to 100-foot-long eastbound left-turn bay for left turns onto Greengate View (the west access point). A 75- to 100-foot-long reverse curve bay taper would precede this turn bay and this bay taper would be shared with the existing westbound left-turn bay extending back from the Meadowbrook/Marksheffel intersection (resulting in back-to-back turn bays). This left-turn

bay would accommodate the projected queuing for left turns onto Greengate View. Please refer to Figure 10.

- The section between the access points should be striped for a 120-foot-long left-turn bay preceded by an approximately 70-foot-long bay taper. Redirect taper stripes would be needed east of Fieldside View (the east site access) to transition the new striping to the existing striping. The taper ratio would need to be at least 20:1. Figure 10 shows the redirect taper striping extending to the west side of the existing intersection to the east.

Potential Future Dual Left-Turn Lanes at the Marksheffel/Meadowbrook Intersection

- A second westbound left-turn lane on Meadowbrook Parkway (to create dual westbound left-turn lanes) may need to be added with future development and the closure of US Hwy 24/Brookings Drive.
- LSC has prepared a preliminary concept for potential future dual left-turn lanes, if needed in the future. Please refer to Exhibit 1 in the report appendix. Based on this concept, the existing north curb line of Meadowbrook would not need to be relocated.

* * * * *

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

Sincerely,

LSC TRANSPORTATION CONSULTANTS, INC.

By Jeffrey C. Hodsdon, P.E.
Principal

JCH/JAB:jas

Enclosures: Table 5
Figures 1-10
Exhibit 1
Traffic Count Reports
Synchro Level of Service Reports
Queuing Reports
Final Plat

Table 5



Table 5: Detailed Trip Generation Estimate

| ITE | | Value | Units ² | Trip Generation Rates ¹ | | | | Total Trips Generated | | | | | |
|------|----------------------|-------|--------------------|------------------------------------|------|------|------|-----------------------|-----------------|------|-----|------|----|
| Code | Description | | | Average Weekday | A.M. | | P.M. | | Average Weekday | A.M. | | P.M. | |
| | | | | In | Out | In | Out | In | Out | In | Out | | |
| 210 | Multi-Family Housing | 83 | DU | 7.32 | 0.11 | 0.35 | 0.35 | 0.21 | 608 | 9 | 29 | 29 | 17 |

¹ Source: "Trip Generation, 10th Edition, 2017" by the Institute of Transportation Engineers (ITE)

² DU = dwelling unit

Figures 1-10





Colorado Tech Ave.

Marksheffel Rd.

SITE

Dewhirst Dr.

Meadowbrook Pkwy.

Riverwalk Pkwy.

24



Approximate Scale
Scale: 1" = 600'

Figure 1

Vicinity Map

Villas at Claremont Ranch (LSC #204130)

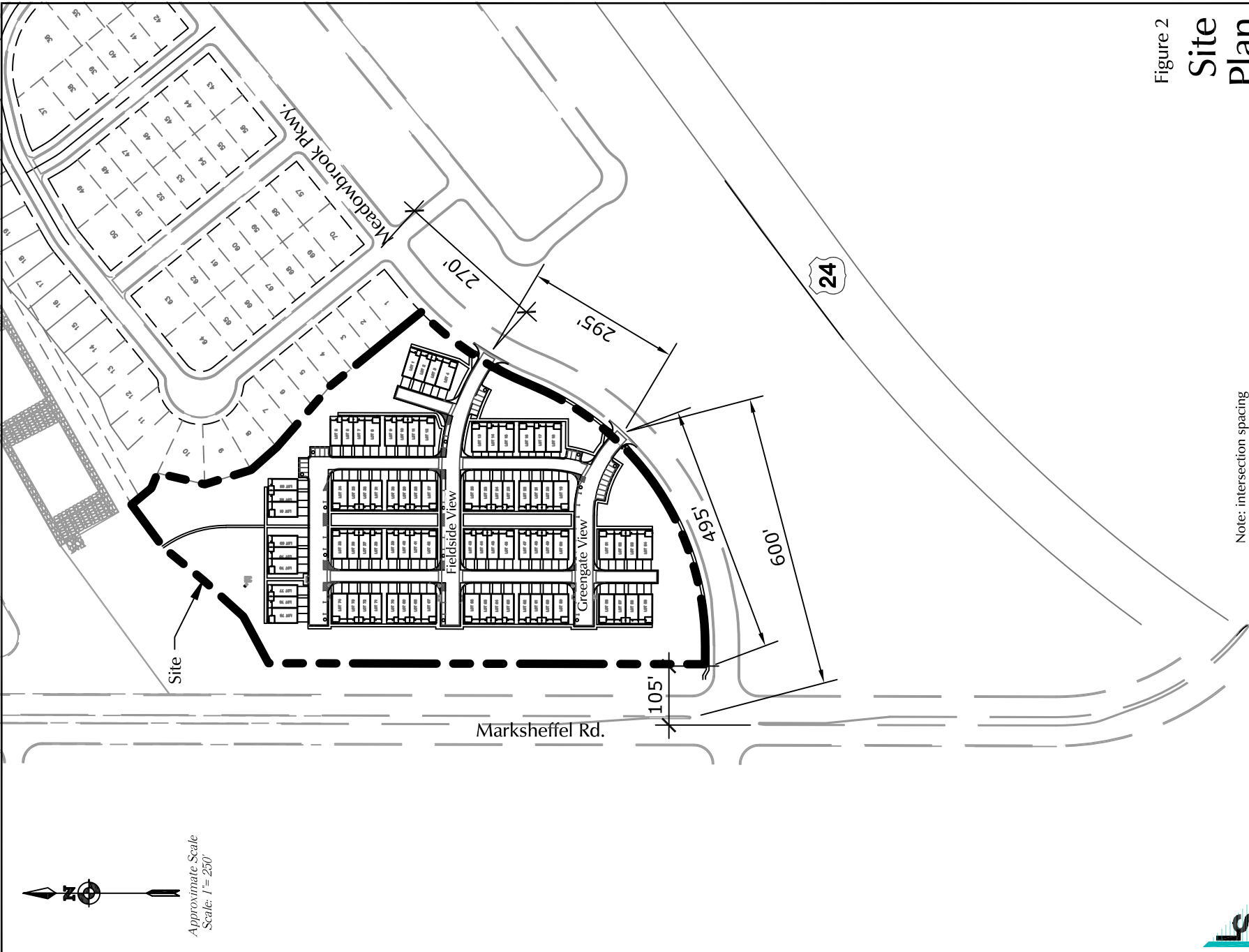


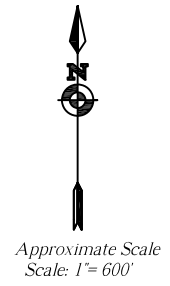
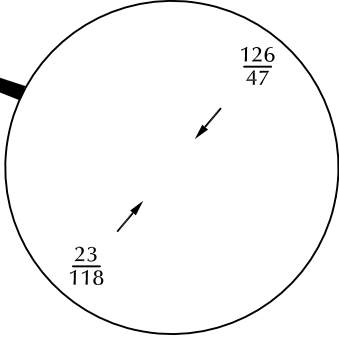
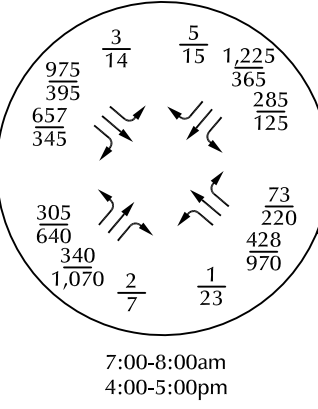
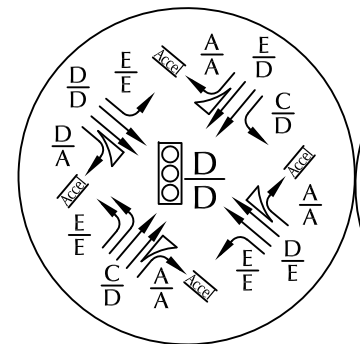
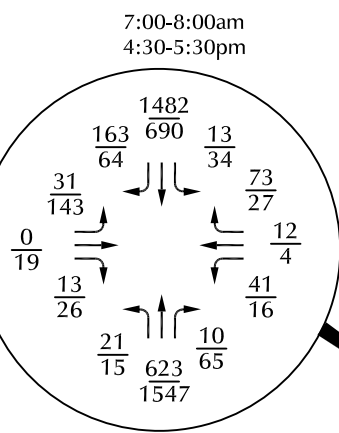
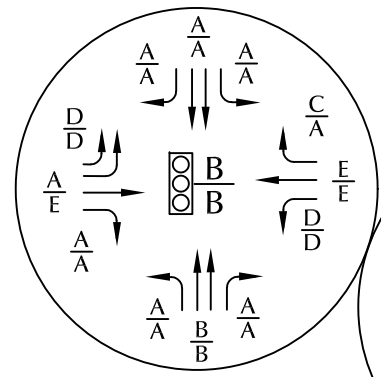
Figure 2

Site Plan

Villas at Claremont Ranch (LSC #204130)

Note: intersection spacing dimensions reflect the centerline spacing.





LEGEND:

- ⊥ = Stop Sign
- $\frac{XX}{XX}$ = AM Weekday Peak-Hour Traffic (vehicles per hour) / PM Weekday Peak-Hour Traffic (vehicles per hour) Counts by LSC February 2020
- XX,XXX = Average Weekday Traffic (vehicles per day)
- $\frac{A}{B}$ = AM Individual Movement Peak-Hour Level of Service / PM Individual Movement Peak-Hour Level of Service
- $\frac{C}{D}$ = AM Entire Intersection Peak-Hour Level of Service / PM Entire Intersection Peak-Hour Level of Service
- = Traffic Signal

*Estimated by LSC
**CDOT 2018


Existing Traffic, Lane Geometry, Traffic Control and Level of Service

Villas at Claremont Ranch (LSC #204130)

Figure 3






 Approximate Scale
 Scale: 1" = 600'

LEGEND:

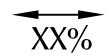

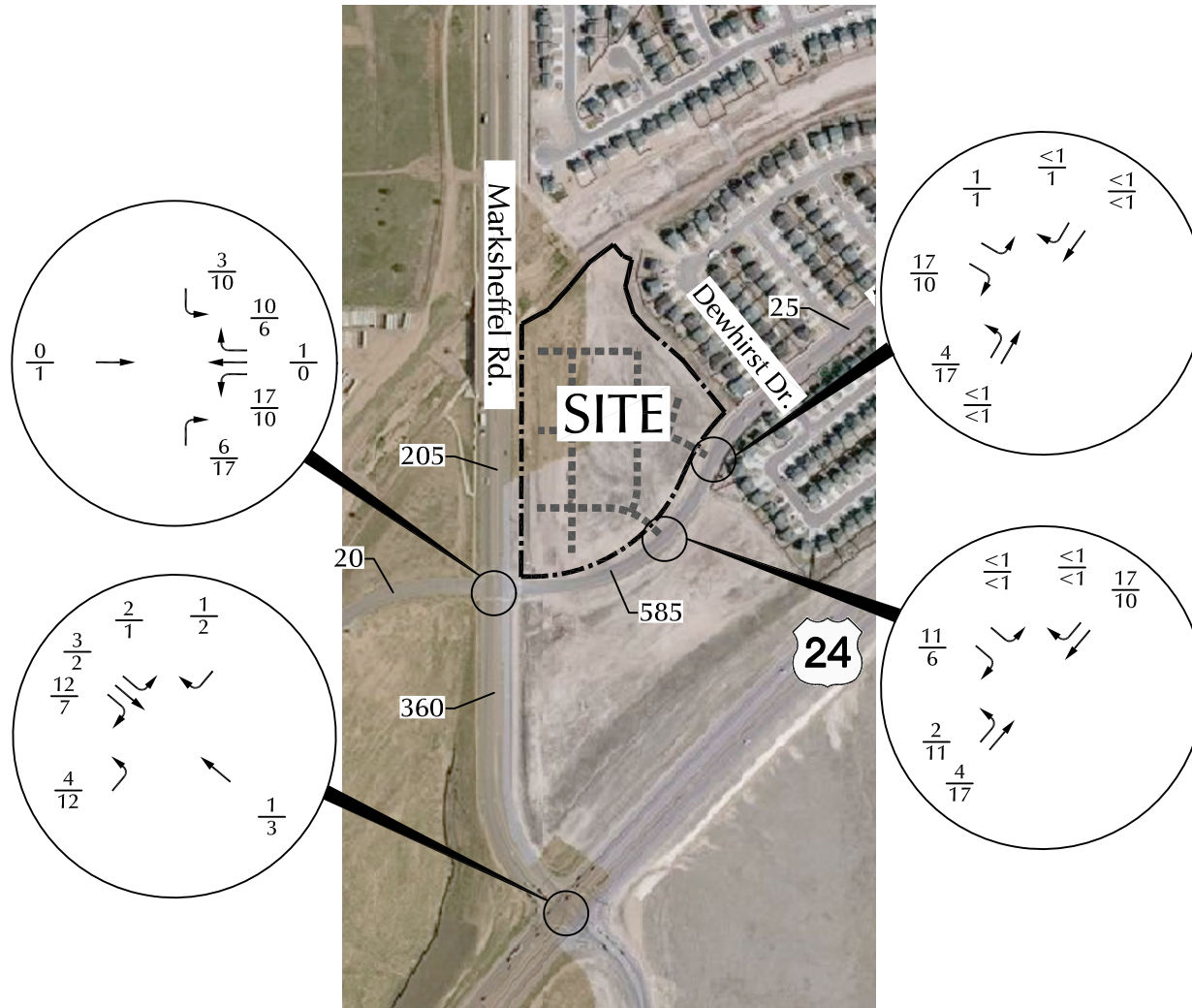

 = Percent Directional Distribution
 TRANSPORTATION CONSULTANTS, INC.

Figure 4

Directional Distribution of Site-Generated Trips

Villas at Claremont Ranch (LSC #204130)




 Approximate Scale
 Scale: 1" = 600'

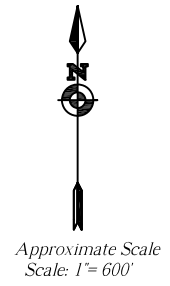
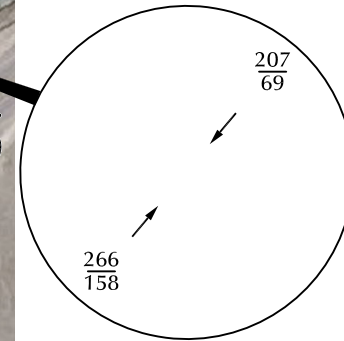
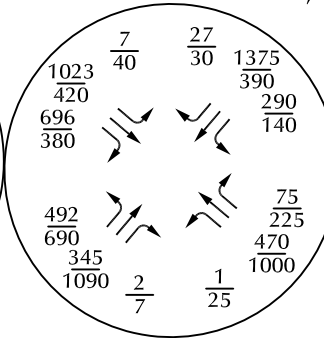
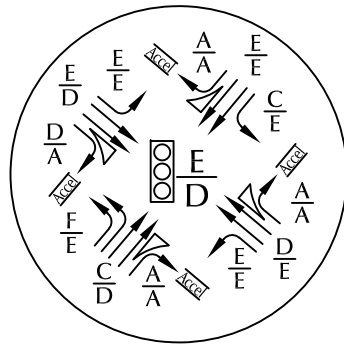
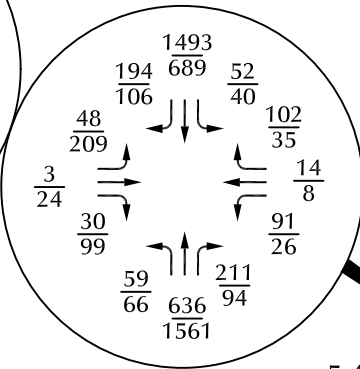
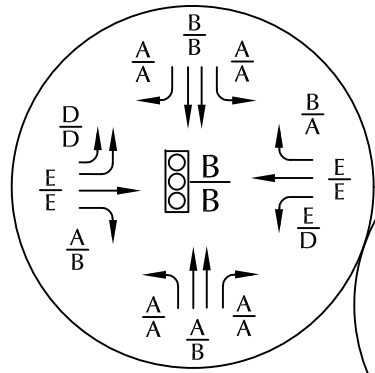
LEGEND:

$\frac{XX}{XX} = \frac{\text{AM Weekday Peak-Hour Traffic (vehicles per hour)}}{\text{PM Weekday Peak-Hour Traffic (vehicles per hour)}}$

$XX,XXX = \text{Average Weekday Traffic (vehicles per day)}$



Figure 5
Assignment of Site-Generated Trips
 Villas at Claremont Ranch (LSC #204130)



LEGEND:

⊥ = Stop Sign

$\frac{XX}{XX}$ = AM Weekday Peak-Hour Traffic (vehicles per hour)

$\frac{XX}{XX}$ = PM Weekday Peak-Hour Traffic (vehicles per hour)

XX,XXX = Average Weekday Traffic (vehicles per day)

$\frac{A}{B}$ = AM Individual Movement Peak-Hour Level of Service

$\frac{C}{D}$ = PM Individual Movement Peak-Hour Level of Service

$\frac{C}{D}$ = AM Entire Intersection Peak-Hour Level of Service

$\frac{D}{D}$ = PM Entire Intersection Peak-Hour Level of Service

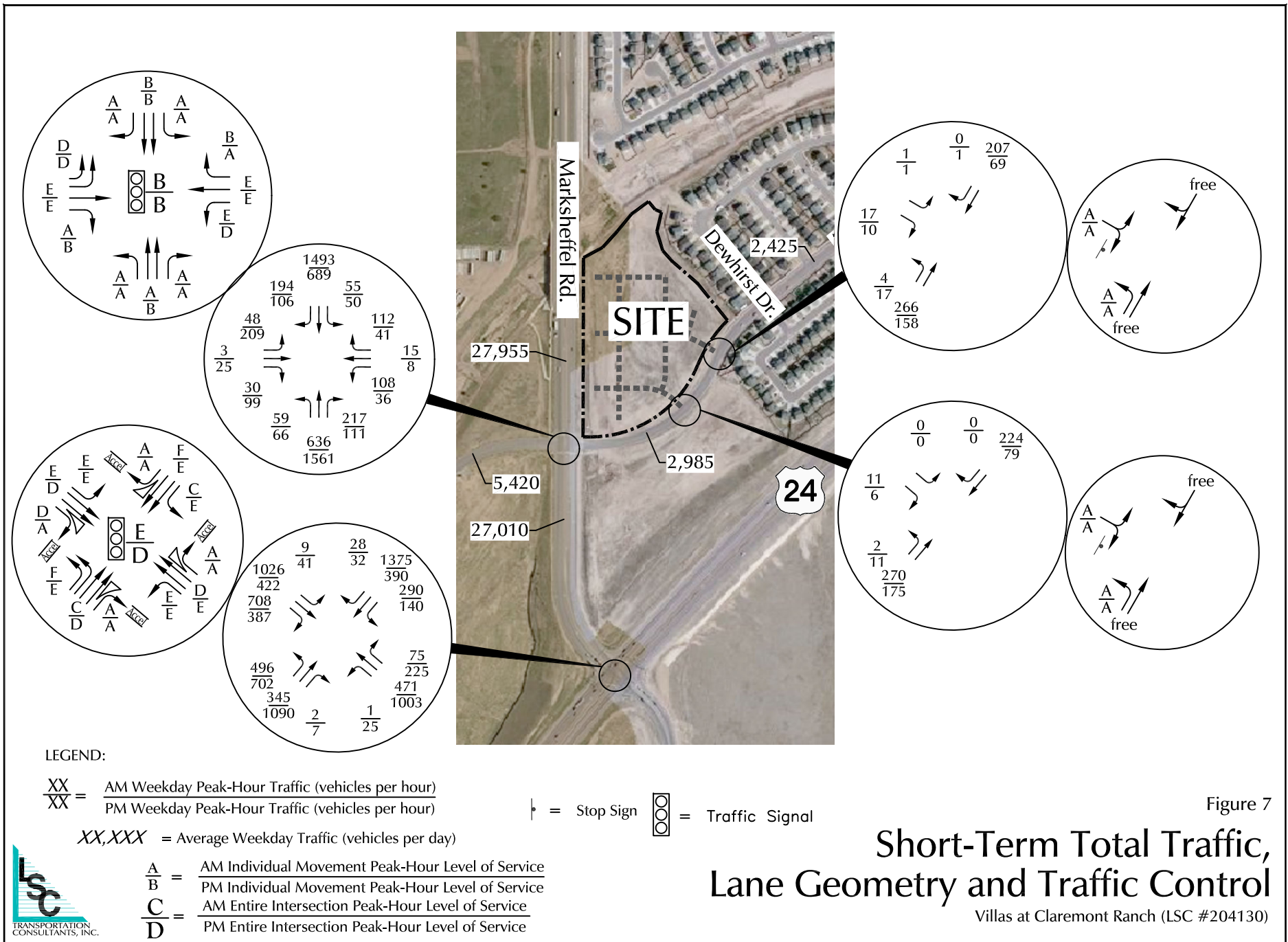
= Traffic Signal

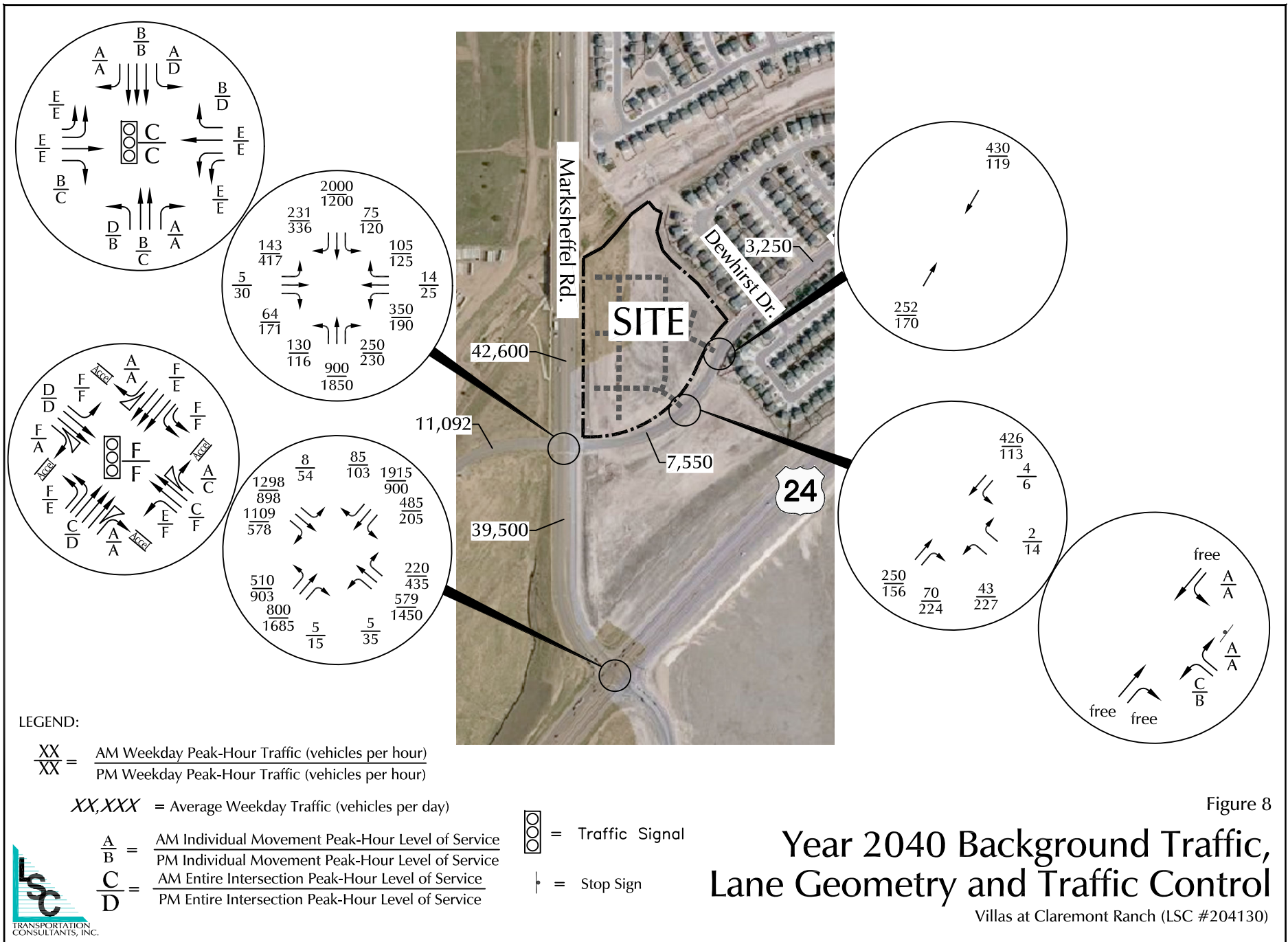
Short-Term Background Traffic, Lane Geometry, Traffic Control, and Level of Service

Figure 6

Villas at Claremont Ranch (LSC #204130)







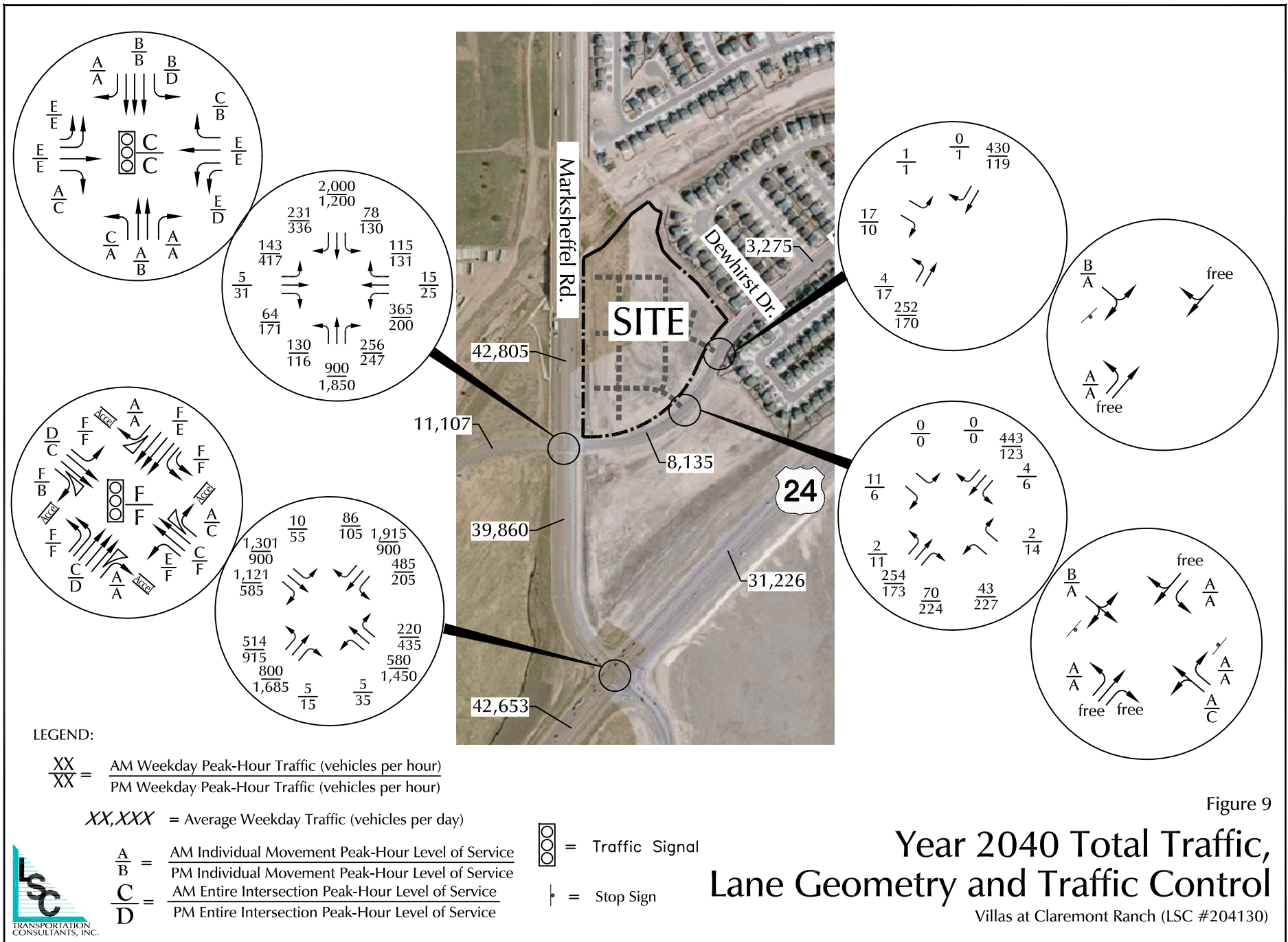


Figure 9

Approximate Scale
Scale: 1" = 100'

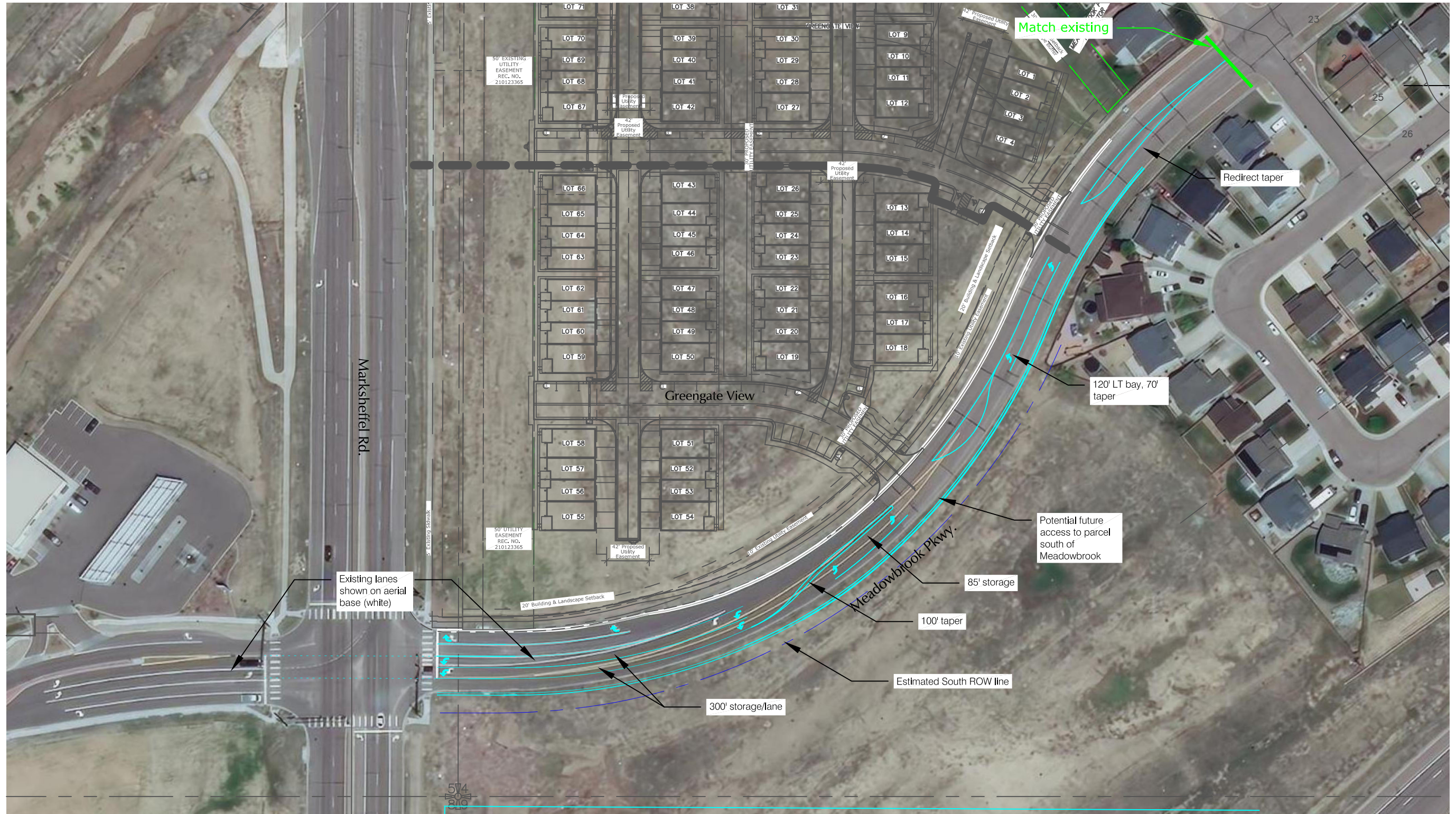


Figure 10
Conceptual Restriping Plan
Meadowbrook Parkway
Villas at Claremont Ranch (LSC #204130)

Exhibit 1



Approximate Scale
Scale: 1" = 100'



*On the westbound approach to the Marksheffel/Meadowbrook intersection.

Lane Concept with Potential Future Dual Left Turn Lanes* Meadowbrook Parkway

Villas at Claremont Ranch (LSC #204130)

Exhibit 1



Traffic Counts



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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

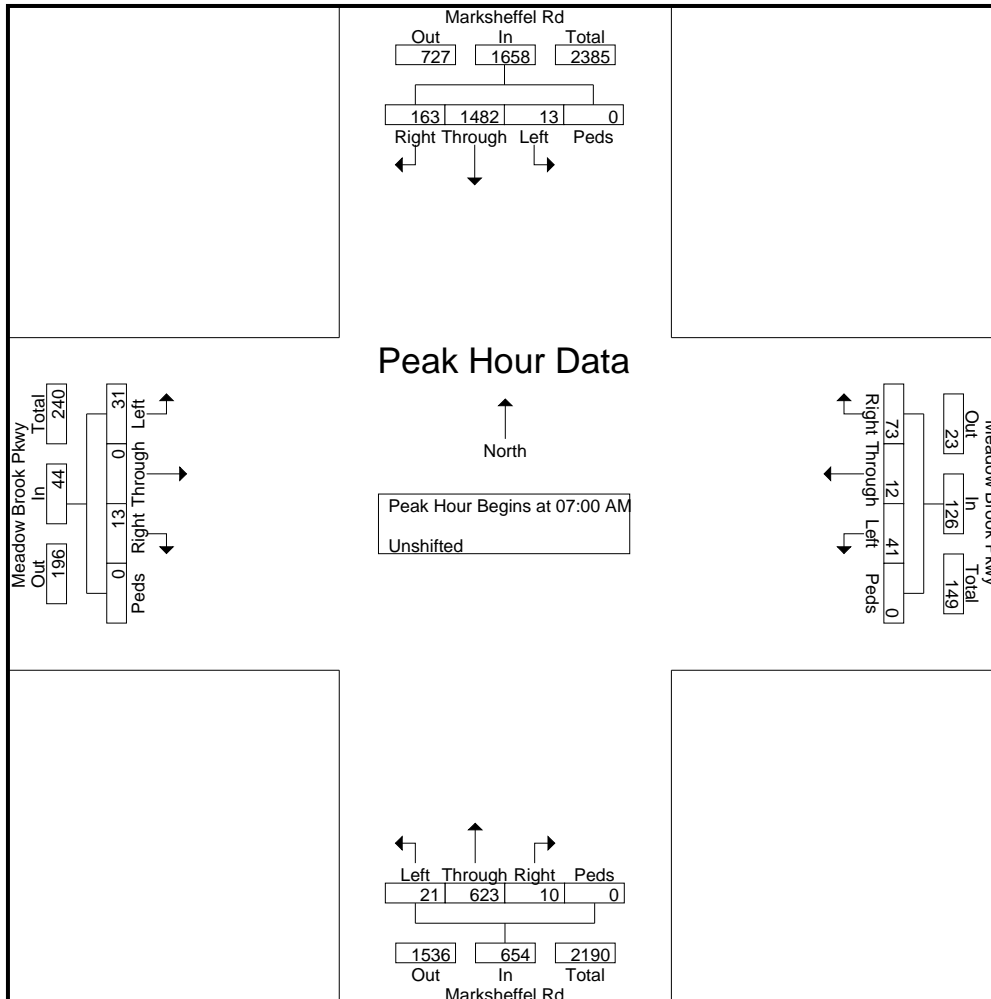
| Start Time | Marksheffel Rd Southbound | | | | | Meadow Brook Pkwy Westbound | | | | | Marksheffel Rd Northbound | | | | | Meadow Brook Pkwy Eastbound | | | | | Int. Total |
|-------------|---------------------------|---------|-------|------|------------|-----------------------------|---------|-------|------|------------|---------------------------|---------|-------|------|------------|-----------------------------|---------|-------|------|------------|------------|
| | Left | Through | Right | Peds | App. Total | Left | Through | Right | Peds | App. Total | Left | Through | Right | Peds | App. Total | Left | Through | Right | Peds | App. 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

| Start Time | Marksheffel Rd Southbound | | | | | Meadow Brook Pkwy Westbound | | | | | Marksheffel Rd Northbound | | | | | Meadow Brook Pkwy Eastbound | | | | | Int. Total |
|---|---------------------------|---------|-------|------|------------|-----------------------------|---------|-------|------|------------|---------------------------|---------|-------|------|------------|-----------------------------|---------|-------|------|------------|------------|
| | Left | Through | Right | Peds | App. Total | Left | Through | Right | Peds | App. Total | Left | Through | Right | Peds | App. Total | Left | Through | Right | Peds | App. Total | |
| Peak Hour Analysis From 6:30:00 AM to 8:15:00 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | |
| 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 |

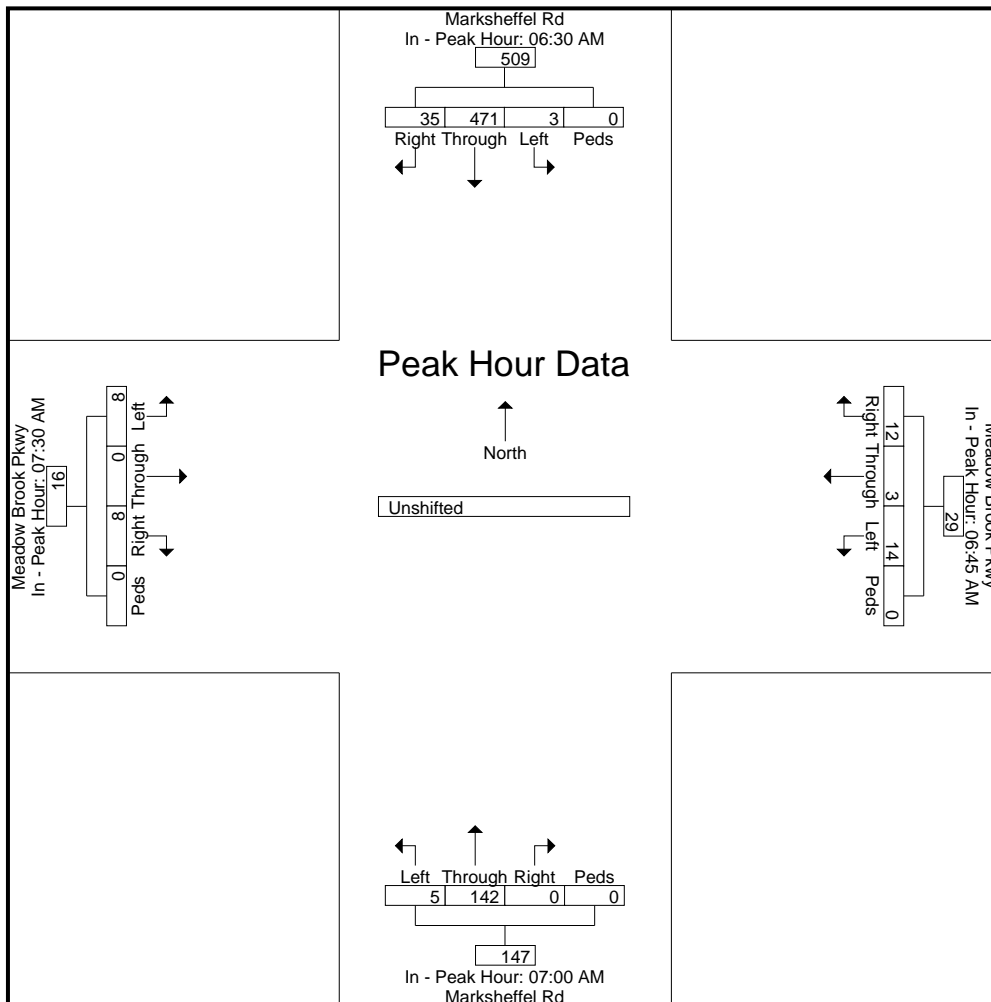


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File Name : Marksheffel Rd - Meadowbrook Pkwy AM
 Site Code : 174080
 Start Date : 2/11/2020
 Page No : 3

| Start Time | Marksheffel Rd Southbound | | | | | Meadow Brook Pkwy Westbound | | | | | Marksheffel Rd Northbound | | | | | Meadow Brook Pkwy Eastbound | | | | | Int. Total |
|---|---------------------------|---------|-------|------|------------|-----------------------------|---------|-------|------|------------|---------------------------|---------|-------|------|------------|-----------------------------|---------|-------|------|------------|------------|
| | Left | Through | Right | Peds | App. Total | Left | Through | Right | Peds | App. Total | Left | Through | Right | Peds | App. Total | Left | Through | Right | Peds | App. Total | |
| Peak Hour Analysis From 6:30:00 AM to 8:15:00 AM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | |
| 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 | |



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File Name : Marksheffel Rd - Meadowbrook Pkwy PM

Site Code : 174080

Start Date : 2/11/2020

Page No : 1

Groups Printed- Unshifted

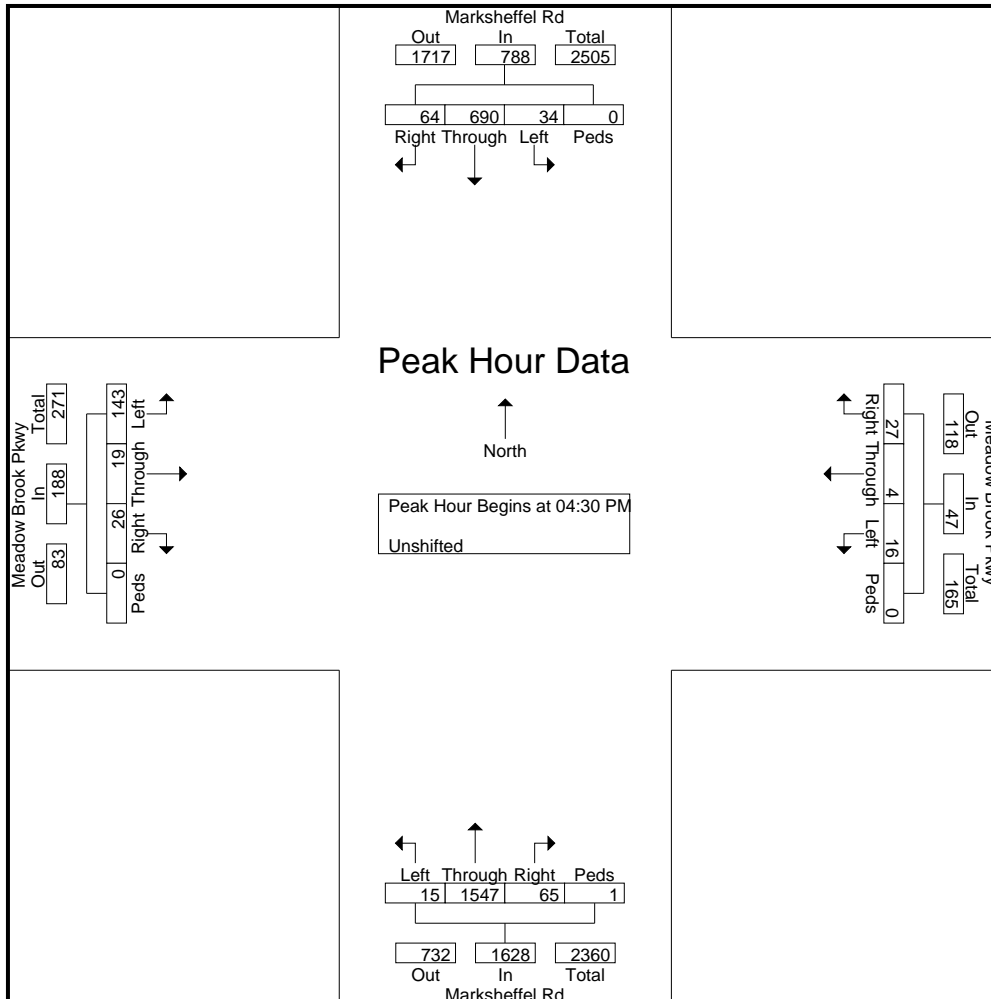
| Start Time | Marksheffel Rd Southbound | | | | | Meadow Brook Pkwy Westbound | | | | | Marksheffel Rd Northbound | | | | | Meadow Brook Pkwy Eastbound | | | | | Int. Total |
|-------------|---------------------------|---------|-------|------|------------|-----------------------------|---------|-------|------|------------|---------------------------|---------|-------|------|------------|-----------------------------|---------|-------|------|------------|------------|
| | Left | Through | Right | Peds | App. Total | Left | Through | Right | Peds | App. Total | Left | Through | Right | Peds | App. Total | Left | Through | Right | Peds | App. 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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 Site Code : 174080
 Start Date : 2/11/2020
 Page No : 2

| Start Time | Marksheffel Rd Southbound | | | | | Meadow Brook Pkwy Westbound | | | | | Marksheffel Rd Northbound | | | | | Meadow Brook Pkwy Eastbound | | | | | Int. Total |
|---|---------------------------|---------|-------|------|------------|-----------------------------|---------|-------|------|------------|---------------------------|---------|-------|------|------------|-----------------------------|---------|-------|------|------------|------------|
| | Left | Through | Right | Peds | App. Total | Left | Through | Right | Peds | App. Total | Left | Through | Right | Peds | App. Total | Left | Through | Right | Peds | App. Total | |
| Peak Hour Analysis From 4:00:00 PM to 5:45:00 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | |
| 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 |

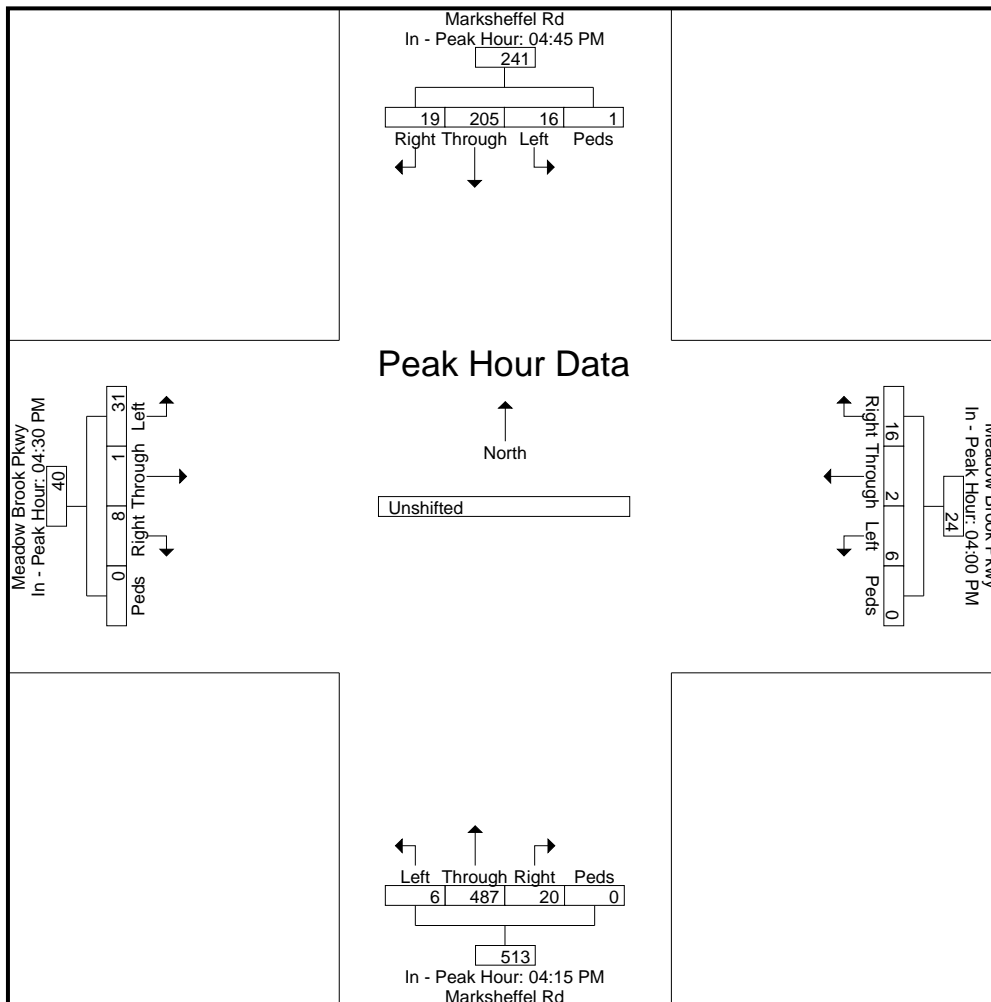


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File Name : Marksheffel Rd - Meadowbrook Pkwy PM
 Site Code : 174080
 Start Date : 2/11/2020
 Page No : 3

| Start Time | Marksheffel Rd Southbound | | | | | Meadow Brook Pkwy Westbound | | | | | Marksheffel Rd Northbound | | | | | Meadow Brook Pkwy Eastbound | | | | | Int. Total |
|---|---------------------------|---------|-------|------|------------|-----------------------------|---------|-------|------|------------|---------------------------|---------|-------|------|------------|-----------------------------|---------|-------|------|------------|------------|
| | Left | Through | Right | Peds | App. Total | Left | Through | Right | Peds | App. Total | Left | Through | Right | Peds | App. Total | Left | Through | Right | Peds | App. Total | |
| Peak Hour Analysis From 4:00:00 PM to 5:45:00 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | |
| 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 | |



QUALITY COUNTS REPORT

=====

Intersectio Marksheffel Rc Hwy 24

City/State: Colorado Sprin CO

QCJobNo: 15171515

ClientID:

Date: 1/28/2020

Comments:

Latitude/Lr 38.85214378 -104.682

PEAK HOU 7:00 AM

PEAK HOU 8:00 AM

PEAK 15-M 7:15 AM

PEAK 15-M 7:30 AM

PHF 0.91

Lane Configuration:

| | | | | | | | | |
|---------|---------|---------|---------|---------|---------|---------|---------|--------|
| SIGNAL | SBLane1 | SBLane2 | SBLane3 | SBLane4 | SBLane5 | SBLane6 | SBLane7 | SIGNAL |
| | R | T | T | L | | | | |
| EBLane7 | | | | | | | | R |
| EBLane6 | | | | | | | | T |
| EBLane5 | L | | | | | | | T |
| EBLane4 | L | | | | | | | L |
| EBLane3 | T | | | | | | | |
| EBLane2 | T | | | | | | | |
| EBLane1 | R | | | | | | | |
| SIGNAL | | | | L | T | T | R | |
| | NBLane7 | NBLane6 | NBLane5 | NBLane4 | NBLane3 | NBLane2 | NBLane1 | SIGNAL |

PEAK-HOUR VOLUMES

| NBLeft | NBThru | NBRight | SBLeft | SBThru | SBRight | EBLeft | EBThru | EBRight | WBLeft | WBThru | WBRight | NBEntering | SBEntering | EBEntering | WBEnterin | NBLeaving | SBLeaving | EBLeaving | WBLeaving |
|--------|--------|---------|--------|--------|---------|--------|--------|---------|--------|--------|---------|------------|------------|------------|-----------|-----------|-----------|-----------|-----------|
| 1 | 428 | 73 | 3 | 975 | 657 | 305 | 340 | 2 | 285 | 1225 | 15 | 502 | 1635 | 647 | 1525 | 748 | 1262 | 416 | 1883 |

PERCENT HEAVY VEHICLES

| NBLeft | NBThru | NBRight | SBLeft | SBThru | SBRight | EBLeft | EBThru | EBRight | WBLeft | WBThru | WBRight | NBEntering | SBEntering | EBEntering | WBEnterin | NBLeaving | SBLeaving | EBLeaving | WBLeaving |
|--------|--------|---------|--------|--------|---------|--------|--------|---------|--------|--------|---------|------------|------------|------------|-----------|-----------|-----------|-----------|-----------|
| 0 | 2.8 | 4.1 | 66.7 | 2.3 | 3.8 | 8.9 | 11.8 | 0 | 1.1 | 3 | 13.3 | 3 | 3 | 10.4 | 2.8 | 5.5 | 2 | 10.8 | 3.3 |

HEAVY VEHICLES

PEAK-HOUR VOLUMES - PEDESTRIANS

| Leg/Crossv | South | North | West | East |
|------------|-------|-------|------|------|
| | 0 | 0 | 0 | 0 |

PEAK-HOUR VOLUMES - MICROMOBILITY

| NBLeft | NBThru | NBRight | SBLeft | SBThru | SBRight | EBLeft | EBThru | EBRight | WBLeft | WBThru | WBRight |
|--------|--------|---------|--------|--------|---------|--------|--------|---------|--------|--------|---------|
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Bicycles
Scooters

PEAK 15-MIN FLOWRATES

| VehicleTyp | NBLeft | NBThru | NBRight | NBU-Turn | NBRTOR | SBLeft | SBThru | SBRight | SBU-Turn | SBRTOR | EBLeft | EBThru | EBRight | EBU-Turn | EBRTOR | WBLeft | WBThru | WBRight | WBU-Turn | WBRTOR | Total |
|--------------|--------|--------|---------|----------|--------|--------|--------|---------|----------|--------|--------|--------|---------|----------|--------|--------|--------|---------|----------|--------|-------|
| All Vehicle: | 0 | 444 | 92 | 0 | 0 | 0 | 1020 | 748 | 0 | 0 | 324 | 360 | 4 | 0 | 0 | 292 | 1420 | 8 | 0 | 0 | 4712 |
| Heavy Truc | 0 | 8 | 0 | | | 0 | 24 | 36 | | | 20 | 40 | 0 | | | 8 | 24 | 0 | | | 160 |
| Buses | | | | | | | | | | | | | | | | | | | | | |
| Pedestrians | | | 0 | | | | | 0 | | | | | 0 | | | | | | | | 0 |
| Bicycles | 0 | 0 | 0 | | | 0 | 0 | 0 | | | | | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| Scooters | | | | | | | | | | | | | | | | | | | | | |

ALL-VEHICLE VOLUMES

| Time Perio | NB Left | NB Thru | NB Right | NB U-Turn | NB RTOR | SB Left | SB Thru | SB Right | SB U-Turn | SB RTOR | EB Left | EB Thru | EB Right | EB U-Turn | EB RTOR | WB Left | WB Thru | WB Right | WB U-Turn | WB RTOR | Total | Hourly Tot |
|------------|---------|---------|----------|-----------|---------|---------|---------|----------|-----------|---------|---------|---------|----------|-----------|---------|---------|---------|----------|-----------|---------|-------|------------|
| 7:00 AM | 1 | 103 | 19 | 0 | | 1 | 286 | 190 | 0 | | 75 | 96 | 0 | 0 | | 87 | 312 | 4 | 0 | | 1174 | |
| 7:15 AM | 0 | 111 | 23 | 0 | | 0 | 255 | 187 | 0 | | 81 | 90 | 1 | 0 | | 73 | 355 | 2 | 0 | | 1178 | |
| 7:30 AM | 0 | 111 | 14 | 0 | | 1 | 240 | 151 | 0 | | 78 | 77 | 0 | 0 | | 58 | 281 | 5 | 0 | | 1016 | |
| 7:45 AM | 0 | 103 | 17 | 0 | | 1 | 194 | 129 | 0 | | 71 | 77 | 1 | 0 | | 67 | 277 | 4 | 0 | | 941 | 4309 |
| 8:00 AM | 0 | 70 | 6 | 0 | | 0 | 162 | 165 | 0 | | 57 | 94 | 1 | 0 | | 57 | 222 | 3 | 1 | | 838 | 3973 |
| 8:15 AM | 2 | 75 | 12 | 0 | | 2 | 135 | 130 | 0 | | 43 | 75 | 0 | 0 | | 32 | 193 | 2 | 1 | | 702 | 3497 |
| 8:30 AM | 0 | 80 | 11 | 0 | | 0 | 100 | 130 | 0 | | 51 | 83 | 1 | 0 | | 30 | 191 | 4 | 0 | | 681 | 3162 |
| 8:45 AM | 3 | 47 | 7 | 0 | | 1 | 104 | 91 | 0 | | 50 | 64 | 2 | 0 | | 17 | 144 | 4 | 0 | | 534 | 2755 |

QUALITY COUNTS REPORT

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Intersection Marksheffe Hwy 24

City/State: Colorado S CO

QCJobNo: 15171516

ClientID:

Date: 1/28/2020

Comments:

Latitude/Lo 38.85214 -104.682

PEAK HOUR 3:00 PM

PEAK HOUR 4:00 PM

PEAK 15-M 3:45 PM

PEAK 15-M 4:00 PM

PHF 0.85

Lane Configuration:

| | | | | | | | | | |
|-----------|---------|---------|---------|---------|---------|---------|---------|--------|---------|
| SIGNAL | SBLane1 | SBLane2 | SBLane3 | SBLane4 | SBLane5 | SBLane6 | SBLane7 | | SIGNAL |
| | R | T | T | L | | | | | |
| EBLane7 | | | | | | | | R | WBLane1 |
| EBLane6 | | | | | | | | T | WBLane2 |
| EBLane5 L | | | | | | | | T | WBLane3 |
| EBLane4 L | | | | | | | | L | WBLane4 |
| EBLane3 T | | | | | | | | | WBLane5 |
| EBLane2 T | | | | | | | | | WBLane6 |
| EBLane1 R | | | | | | | | | WBLane7 |
| SIGNAL | | | | L | T | T | R | | |
| | NBLane7 | NBLane6 | NBLane5 | NBLane4 | NBLane3 | NBLane2 | NBLane1 | SIGNAL | |

PEAK-HOUR VOLUMES

| | | | | | | | | | | | | | | | | | | | |
|--------|--------|---------|--------|--------|---------|--------|--------|---------|--------|--------|---------|------------|------------|------------|------------|-----------|-----------|-----------|-----------|
| NBLeft | NBThru | NBRight | SBLeft | SBThru | SBRight | EBLeft | EBThru | EBRight | WBLeft | WBThru | WBRight | NBEntering | SBEntering | EBEntering | WBEntering | NBLeaving | SBLeaving | EBLeaving | WBLeaving |
| 13 | 736 | 156 | 8 | 343 | 312 | 487 | 707 | 4 | 78 | 361 | 8 | 905 | 663 | 1198 | 447 | 1228 | 425 | 871 | 689 |

PERCENT HEAVY VEHICLES

| | | | | | | | | | | | | | | | | | | | |
|--------|--------|---------|--------|--------|---------|--------|--------|---------|--------|--------|---------|------------|------------|------------|------------|-----------|-----------|-----------|-----------|
| NBLeft | NBThru | NBRight | SBLeft | SBThru | SBRight | EBLeft | EBThru | EBRight | WBLeft | WBThru | WBRight | NBEntering | SBEntering | EBEntering | WBEntering | NBLeaving | SBLeaving | EBLeaving | WBLeaving |
| 0 | 1.4 | 5.8 | 0 | 3.5 | 16 | 7 | 6.5 | 0 | 3.8 | 8.9 | 25 | 2.1 | 9.4 | 6.7 | 8.3 | 3.7 | 3.5 | 6.3 | 11.9 |

HEAVY VEH
BUSES

PEAK-HOUR VOLUMES - PEDESTRIANS

| | | | | |
|-------------|-------|-------|------|------|
| Leg/Crossw. | South | North | West | East |
| | 1 | 1 | 1 | 1 |

PEAK-HOUR VOLUMES - MICROMOBILITY

| | | | | | | | | | | | |
|--------|--------|---------|--------|--------|---------|--------|--------|---------|--------|--------|---------|
| NBLeft | NBThru | NBRight | SBLeft | SBThru | SBRight | EBLeft | EBThru | EBRight | WBLeft | WBThru | WBRight |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Bicycles
Scooters

PEAK 15-MIN FLOWRATES

| | | | | | | | | | | | | | | | | | | | | | |
|--------------|--------|--------|---------|----------|--------|--------|--------|---------|----------|--------|--------|--------|---------|----------|--------|--------|--------|---------|----------|--------|-------|
| VehicleTyp | NBLeft | NBThru | NBRight | NBU-Turn | NBRTOR | SBLeft | SBThru | SBRight | SBU-Turn | SBRTOR | EBLeft | EBThru | EBRight | EBU-Turn | EBRTOR | WBLeft | WBThru | WBRight | WBU-Turn | WBRTOR | Total |
| All Vehicles | 20 | 864 | 176 | 0 | 0 | 8 | 396 | 392 | 0 | 0 | 592 | 824 | 4 | 0 | 0 | 84 | 424 | 4 | 0 | 0 | 3788 |
| Heavy Truc | 0 | 12 | 12 | | | 0 | 20 | 68 | | | 32 | 32 | 0 | | | 0 | 52 | 0 | | | 228 |
| Buses | | | | | | | | | | | | | | | | | | | | | |
| Pedestrians | | 4 | | | | 4 | | | | | 4 | | | | | | 4 | | | | 16 |
| Bicycles | 0 | 0 | 0 | | | 0 | 0 | 0 | | | 0 | 0 | 0 | | | 0 | 0 | 0 | | | 0 |
| Scooters | | | | | | | | | | | | | | | | | | | | | |

ALL-VEHICLE VOLUMES

| | | | | | | | | | | | | | | | | | | | | | | |
|-------------|---------|---------|----------|-----------|---------|---------|---------|----------|-----------|---------|---------|---------|----------|-----------|---------|---------|---------|----------|-----------|---------|-------|-------------|
| Time Period | NB Left | NB Thru | NB Right | NB U-Turn | NB RTOR | SB Left | SB Thru | SB Right | SB U-Turn | SB RTOR | EB Left | EB Thru | EB Right | EB U-Turn | EB RTOR | WB Left | WB Thru | WB Right | WB U-Turn | WB RTOR | Total | Hourly Tot: |
| 2:00 PM | 1 | 59 | 18 | 0 | 0 | 1 | 54 | 45 | 0 | 0 | 53 | 117 | 0 | 0 | 0 | 18 | 77 | 4 | 0 | 0 | 447 | |
| 2:15 PM | 1 | 118 | 22 | 0 | 0 | 3 | 66 | 73 | 0 | 0 | 76 | 111 | 0 | 0 | 0 | 25 | 87 | 3 | 0 | 0 | 585 | |
| 2:30 PM | 1 | 98 | 25 | 0 | 0 | 1 | 65 | 68 | 0 | 0 | 65 | 124 | 0 | 0 | 0 | 15 | 83 | 1 | 0 | 0 | 546 | |
| 2:45 PM | 1 | 119 | 18 | 0 | 0 | 0 | 74 | 76 | 0 | 0 | 92 | 147 | 2 | 0 | 0 | 19 | 89 | 2 | 0 | 0 | 639 | 2217 |
| 3:00 PM | 1 | 128 | 31 | 0 | 0 | 1 | 71 | 73 | 0 | 0 | 111 | 155 | 1 | 3 | 0 | 18 | 77 | 2 | 0 | 0 | 672 | 2442 |
| 3:15 PM | 2 | 177 | 38 | 0 | 0 | 3 | 81 | 73 | 0 | 0 | 120 | 160 | 1 | 0 | 0 | 17 | 97 | 2 | 0 | 0 | 771 | 2628 |
| 3:30 PM | 5 | 215 | 43 | 0 | 0 | 2 | 92 | 68 | 0 | 0 | 105 | 186 | 1 | 0 | 0 | 22 | 81 | 3 | 0 | 0 | 823 | 2905 |
| 3:45 PM | 5 | 216 | 44 | 0 | 0 | 2 | 99 | 98 | 0 | 0 | 148 | 206 | 1 | 0 | 0 | 21 | 106 | 1 | 0 | 0 | 947 | 3213 |

Levels of Service















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) | 220 | | 200 | 300 | | 190 | 405 | | 0 | 340 | | 335 |
| Storage Lanes | 2 | | 1 | 1 | | 1 | 1 | | 1 | 1 | | 1 |
| Taper Length (ft) | 55 | | | 155 | | | 130 | | | 110 | | |
| 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 | | | 736 | |
| Travel Time (s) | | 9.6 | | | 25.3 | | | 15.1 | | | 10.0 | |
| 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 | L NA | Left | R NA | L NA | Left | R NA | Left | L NA | Right | Left | L NA | 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 Effct 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 | 4.3 | 5.5 | 0.0 | 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 | 4.3 | 5.5 | 0.0 | 3.7 | 9.8 | 1.3 |
| LOS | D | | A | D | E | C | A | A | A | A | A | A |
| Approach Delay | | 37.8 | | | 35.5 | | | 5.4 | | | 8.9 | |
| Approach LOS | | D | | | D | | | A | | | A | |
| Queue Length 50th (ft) | 17 | | 0 | 37 | 12 | 0 | 4 | 64 | 0 | 2 | 328 | 0 |
| Queue Length 95th (ft) | 28 | | 0 | 70 | 34 | 44 | 11 | 140 | 0 | 8 | 459 | 23 |
| Internal Link Dist (ft) | | 415 | | | 846 | | | 1025 | | | 656 | |
| Turn Bay Length (ft) | 220 | | 200 | 300 | | 190 | 405 | | | 340 | | 335 |
| Base Capacity (vph) | 435 | | 239 | 231 | 99 | 168 | 253 | 2740 | 1246 | 607 | 2677 | 1239 |
| Starvation Cap Reductn | 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 |
| Storage Cap Reductn | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.09 | | 0.07 | 0.20 | 0.14 | 0.50 | 0.09 | 0.24 | 0.01 | 0.02 | 0.58 | 0.14 |

























| 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: | 10.1 |
| 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

| | | | |
|--|---|---|--|
|  Ø4 Ø1 10 s |  Ø2 (R) 97 s |  Ø3 19 s |  Ø9 9 s |
|  Ø8 Ø5 12 s |  Ø6 (R) 95 s |  Ø7 18 s |  Ø10 10 s |

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

2020 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 | 285 | 1225 | 15 |
| Future Volume (vph) | 3 | 975 | 657 | 1 | 428 | 73 | 305 | 340 | 2 | 285 | 1225 | 15 |
| 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 | | | 0.488 | | |
| Satd. Flow (perm) | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 | 3433 | 3539 | 1583 | 909 | 3539 | 1583 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 397 | | | 102 | | | 95 | | | 95 |
| 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 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 3 | 1060 | 714 | 1 | 465 | 79 | 332 | 370 | 2 | 310 | 1332 | 16 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 3 | 1060 | 714 | 1 | 465 | 79 | 332 | 370 | 2 | 310 | 1332 | 16 |
| 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 | pm+pt | NA | Prot |
| Protected Phases | 1 | 6 | | 5 | 2 | | 7 | 4 | 4 | 3 | 8 | 8 |
| Permitted Phases | | | 6 | | | 2 | | | | 8 | | |

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

2020 Existing
AM



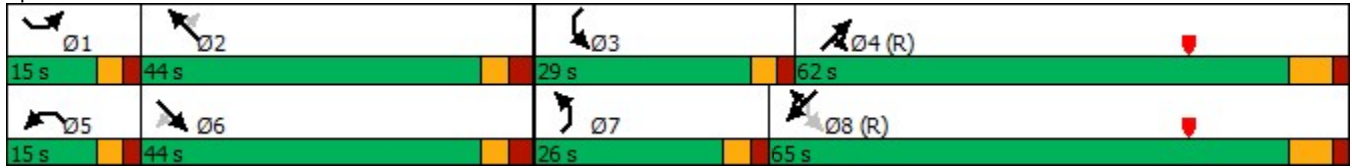
| Lane Group | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|-------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Detector Phase | 1 | 6 | 6 | 5 | 2 | 2 | 7 | 4 | 4 | 3 | 8 | 8 |
| Switch Phase | | | | | | | | | | | | |
| 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 | 44.0 | 44.0 | 15.0 | 44.0 | 44.0 | 26.0 | 62.0 | 62.0 | 29.0 | 65.0 | 65.0 |
| Total Split (%) | 10.0% | 29.3% | 29.3% | 10.0% | 29.3% | 29.3% | 17.3% | 41.3% | 41.3% | 19.3% | 43.3% | 43.3% |
| Maximum Green (s) | 10.0 | 38.0 | 38.0 | 10.0 | 38.0 | 38.0 | 21.0 | 55.0 | 55.0 | 24.0 | 58.0 | 58.0 |
| 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 Effct Green (s) | 6.1 | 51.8 | 49.8 | 6.0 | 51.7 | 49.7 | 18.8 | 60.0 | 60.0 | 81.1 | 60.2 | 60.2 |
| Actuated g/C Ratio | 0.04 | 0.35 | 0.33 | 0.04 | 0.34 | 0.33 | 0.13 | 0.40 | 0.40 | 0.54 | 0.40 | 0.40 |
| v/c Ratio | 0.04 | 0.87 | 0.90 | 0.01 | 0.38 | 0.13 | 0.77 | 0.26 | 0.00 | 0.52 | 0.94 | 0.02 |
| Control Delay | 70.3 | 54.4 | 36.6 | 70.0 | 38.9 | 3.9 | 75.9 | 31.4 | 0.0 | 20.1 | 56.5 | 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 | 70.3 | 54.4 | 36.6 | 70.0 | 38.9 | 3.9 | 75.9 | 31.4 | 0.0 | 20.1 | 56.5 | 0.1 |
| LOS | E | D | D | E | D | A | E | C | A | C | E | A |
| Approach Delay | | 47.3 | | | 33.9 | | | 52.3 | | | 49.1 | |
| Approach LOS | | D | | | C | | | D | | | D | |
| Queue Length 50th (ft) | 3 | 497 | 339 | 1 | 176 | 0 | 163 | 126 | 0 | 151 | 661 | 0 |
| Queue Length 95th (ft) | 15 | #728 | #667 | 8 | 254 | 25 | 217 | 177 | 0 | 213 | #831 | 0 |
| Internal Link Dist (ft) | | 1025 | | | 826 | | | 1958 | | | 1407 | |
| Turn Bay Length (ft) | 375 | | | 300 | | 315 | 1000 | | 890 | 1000 | | 670 |
| Base Capacity (vph) | 118 | 1222 | 791 | 118 | 1219 | 592 | 480 | 1416 | 690 | 652 | 1419 | 691 |
| 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 | 0.03 | 0.87 | 0.90 | 0.01 | 0.38 | 0.13 | 0.69 | 0.26 | 0.00 | 0.48 | 0.94 | 0.02 |

Intersection Summary

| | |
|---|--|
| Area Type: | Other |
| Cycle Length: | 150 |
| Actuated Cycle Length: | 150 |
| Offset: | 0 (0%), Referenced to phase 4:NET and 8:SWTL, Start of FDW or yellow |
| Natural Cycle: | 135 |
| Control Type: | Actuated-Coordinated |
| Maximum v/c Ratio: | 0.94 |
| Intersection Signal Delay: | 47.1 |
| Intersection LOS: | D |
| Intersection Capacity Utilization: | 95.4% |
| ICU Level of Service: | F |
| Analysis Period (min): | 15 |
| # 95th percentile volume exceeds capacity, queue may be longer. | |


































Queue shown is maximum after two cycles.

Splits and Phases: 4: US 24 & Marksheffel Rd



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) | 220 | | 200 | 300 | | 190 | 405 | | 0 | 340 | | 335 |
| Storage Lanes | 2 | | 1 | 1 | | 1 | 1 | | 1 | 1 | | 1 |
| Taper Length (ft) | 50 | | | 155 | | | 130 | | | 110 | | |
| 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 | | | 726 | |
| Travel Time (s) | | 9.6 | | | 25.3 | | | 15.1 | | | 9.9 | |
| 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 | L NA | Left | R NA | L NA | Left | R NA | Left | L NA | Right | Left | L NA | Right |
| Median Width(ft) | | 24 | | | 24 | | | 12 | | | 12 | |
| Link Offset(ft) | | 0 | | | 0 | | | 0 | | | 0 | |
| Crosswalk Width(ft) | | 30 | | | 30 | | | 30 | | | 30 | |
| 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 Effct 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 | 4.6 | 13.6 | 0.8 | 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 | 4.6 | 13.6 | 0.8 | 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 | | | 13.0 | | | | 6.3 |
| Approach LOS | | D | | | C | | | B | | | | A |
| Queue Length 50th (ft) | 64 | 17 | 0 | 14 | 4 | 0 | 3 | 433 | 0 | 7 | 92 | 0 |
| Queue Length 95th (ft) | 93 | 45 | 0 | 33 | 17 | 0 | 10 | 568 | 8 | 18 | 178 | 9 |
| Internal Link Dist (ft) | | 415 | | | 846 | | | 1025 | | | 646 | |
| Turn Bay Length (ft) | 220 | | 200 | 300 | | 190 | 405 | | | 340 | | 335 |
| Base Capacity (vph) | 464 | 185 | 248 | 265 | 151 | 221 | 584 | 2531 | 1160 | 217 | 2679 | 1221 |
| 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 | 0.12 | 0.12 | 0.07 | 0.03 | 0.15 | 0.03 | 0.64 | 0.06 | 0.17 | 0.28 | 0.06 |









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: | 13.8 |
| Intersection LOS: | B |
| Intersection Capacity Utilization: | 63.9% |
| ICU Level of Service: | B |
| Analysis Period (min): | 15 |

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

























2020 Existing
 PM

Splits and Phases: 1: Marksheffel Rd & Meadowbrook Pkwy

| | | | |
|--|--|--|--|
|  Ø1 11 s |  Ø2 (R) 88 s |  Ø3 19 s |  Ø4 17 s |
|  Ø5 13 s |  Ø6 (R) 86 s |  Ø7 19 s |  Ø8 17 s |

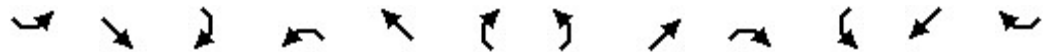
Lanes, Volumes, Timings
4: US 24 & Marksheffel Rd

2020 Existing
PM

| |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Lane Group | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
| Lane Configurations |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph) | 14 | 395 | 345 | 23 | 970 | 220 | 640 | 1070 | 7 | 125 | 365 | 15 |
| Future Volume (vph) | 14 | 395 | 345 | 23 | 970 | 220 | 640 | 1070 | 7 | 125 | 365 | 15 |
| 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 | | | 0.153 | | |
| Satd. Flow (perm) | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 | 3433 | 3539 | 1583 | 285 | 3539 | 1583 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 375 | | | 211 | | | 95 | | | 131 |
| 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 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 15 | 429 | 375 | 25 | 1054 | 239 | 696 | 1163 | 8 | 136 | 397 | 16 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 15 | 429 | 375 | 25 | 1054 | 239 | 696 | 1163 | 8 | 136 | 397 | 16 |
| 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) | | 30 | | | 30 | | | 30 | | | 30 | |
| 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 | Perm | pm+pt | NA | Perm |
| Protected Phases | 1 | 6 | | 5 | 2 | | 7 | 4 | | 3 | 8 | |
| Permitted Phases | | | 6 | | | 2 | | | 4 | 8 | | 8 |

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

2020 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 | 56.0 | 56.0 | 15.0 | 56.0 | 56.0 | 39.0 | 64.0 | 64.0 | 15.0 | 40.0 | 40.0 |
| Total Split (%) | 10.0% | 37.3% | 37.3% | 10.0% | 37.3% | 37.3% | 26.0% | 42.7% | 42.7% | 10.0% | 26.7% | 26.7% |
| Maximum Green (s) | 10.0 | 50.0 | 50.0 | 10.0 | 50.0 | 50.0 | 34.0 | 57.0 | 57.0 | 10.0 | 33.0 | 33.0 |
| 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 | 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) | 5.0 | 6.0 | 6.0 | 5.0 | 6.0 | 6.0 | 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? | | | | | | | 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 Effct Green (s) | 7.0 | 47.2 | 47.2 | 7.7 | 50.2 | 50.2 | 33.4 | 66.1 | 66.1 | 55.7 | 43.2 | 43.2 |
| Actuated g/C Ratio | 0.05 | 0.31 | 0.31 | 0.05 | 0.33 | 0.33 | 0.22 | 0.44 | 0.44 | 0.37 | 0.29 | 0.29 |
| v/c Ratio | 0.18 | 0.39 | 0.50 | 0.28 | 0.89 | 0.36 | 0.91 | 0.75 | 0.01 | 0.65 | 0.39 | 0.03 |
| Control Delay | 73.4 | 41.1 | 5.6 | 75.5 | 57.5 | 7.9 | 73.7 | 40.2 | 0.0 | 41.2 | 46.3 | 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 | 73.4 | 41.1 | 5.6 | 75.5 | 57.5 | 7.9 | 73.7 | 40.2 | 0.0 | 41.2 | 46.3 | 0.1 |
| LOS | E | D | A | E | E | A | E | D | A | D | D | A |
| Approach Delay | | 25.4 | | | 48.9 | | | 52.5 | | | 43.7 | |
| Approach LOS | | C | | | D | | | D | | | D | |
| Queue Length 50th (ft) | 14 | 184 | 0 | 24 | 499 | 18 | 337 | 495 | 0 | 59 | 165 | 0 |
| Queue Length 95th (ft) | 40 | 216 | 74 | 57 | 603 | 84 | #448 | 648 | 0 | #162 | 237 | 0 |
| Internal Link Dist (ft) | | 1025 | | | 826 | | | 1958 | | | 1407 | |
| Turn Bay Length (ft) | 375 | | | 300 | | 315 | 1000 | | 890 | 1000 | | 670 |
| Base Capacity (vph) | 118 | 1186 | 779 | 118 | 1211 | 680 | 788 | 1558 | 750 | 213 | 1019 | 549 |
| 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 | 0.13 | 0.36 | 0.48 | 0.21 | 0.87 | 0.35 | 0.88 | 0.75 | 0.01 | 0.64 | 0.39 | 0.03 |

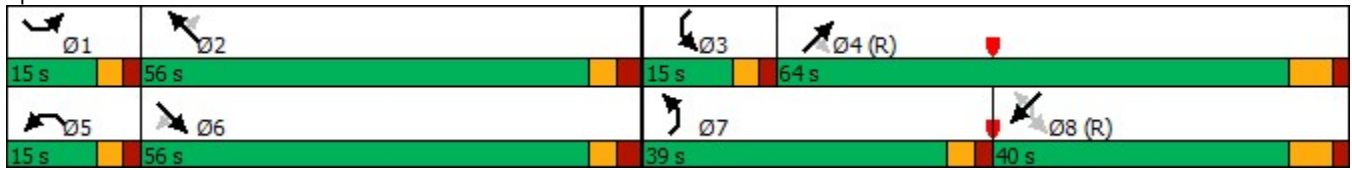
Intersection Summary

Area Type: Other
 Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 0 (0%), Referenced to phase 4:NET and 8:SWTL, Start of Green
 Natural Cycle: 115
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.91
 Intersection Signal Delay: 45.5 Intersection LOS: D
 Intersection Capacity Utilization 83.4% ICU Level of Service E
 Analysis Period (min) 15

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

























Queue shown is maximum after two cycles.

Splits and Phases: 4: US 24 & Marksheffel Rd



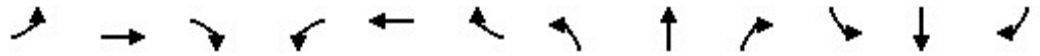
Lanes, Volumes, Timings
1: Marksheffel Rd & Meadowbrook Pkwy

2023 Background
AM

| |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph) | 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) | 220 | | 200 | 300 | | 190 | 405 | | 0 | 340 | | 335 |
| Storage Lanes | 2 | | 1 | 1 | | 1 | 1 | | 1 | 1 | | 1 |
| Taper Length (ft) | 50 | | | 155 | | | 130 | | | 110 | | |
| 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 | | | 745 | |
| Travel Time (s) | | 9.6 | | | 25.3 | | | 15.1 | | | 10.2 | |
| 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) | 62 | 4 | 38 | 105 | 16 | 117 | 63 | 684 | 227 | 55 | 1572 | 204 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 62 | 4 | 38 | 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 | L NA | Left | R NA | L NA | Left | R NA | Left | L NA | Right | Left | L NA | 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 Effct Green (s) | 12.3 | 5.0 | 5.0 | 20.1 | 9.5 | 9.5 | 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 | 0.19 | 0.06 | 0.26 | 0.49 | 0.12 | 0.53 | 0.27 | 0.27 | 0.19 | 0.10 | 0.62 | 0.17 |
| Control Delay | 49.4 | 65.3 | 4.4 | 58.5 | 60.6 | 19.3 | 7.0 | 7.7 | 1.3 | 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 | 49.4 | 65.3 | 4.4 | 58.5 | 60.6 | 19.3 | 7.0 | 7.7 | 1.3 | 4.5 | 12.7 | 1.4 |
| LOS | D | E | A | E | E | B | A | A | A | A | B | A |
| Approach Delay | | 33.6 | | | 39.4 | | | 6.1 | | | 11.2 | |
| Approach LOS | | C | | | D | | | A | | | B | |
| Queue Length 50th (ft) | 23 | 3 | 0 | 82 | 13 | 0 | 12 | 114 | 0 | 10 | 391 | 0 |
| Queue Length 95th (ft) | 39 | 14 | 0 | 134 | 37 | 56 | 24 | 143 | 25 | 21 | 476 | 26 |
| Internal Link Dist (ft) | | 415 | | | 846 | | | 1025 | | | 665 | |
| Turn Bay Length (ft) | 220 | | 200 | 300 | | 190 | 405 | | | 340 | | 335 |
| Base Capacity (vph) | 483 | 69 | 144 | 241 | 131 | 220 | 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 | 0.13 | 0.06 | 0.26 | 0.44 | 0.12 | 0.53 | 0.27 | 0.27 | 0.19 | 0.10 | 0.62 | 0.17 |

























| 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: | 12.5 |
| 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

| | | | |
|--|---|---|---|
|  Ø4 Ø1 10 s |  Ø2 (R) 97 s |  Ø3 19 s |  Ø7 9 s |
|  Ø8 Ø5 12 s |  Ø6 (R) 95 s |  Ø7 18 s |  Ø7 10 s |

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

2023 Background
AM

| |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Group | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
| Lane Configurations |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph) | 7 | 1023 | 696 | 1 | 490 | 75 | 492 | 345 | 2 | 290 | 1375 | 25 |
| Future Volume (vph) | 7 | 1023 | 696 | 1 | 490 | 75 | 492 | 345 | 2 | 290 | 1375 | 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 | | | 0.508 | | |
| Satd. Flow (perm) | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 | 3433 | 3539 | 1583 | 946 | 3539 | 1583 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 385 | | | 102 | | | 95 | | | 95 |
| 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 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 8 | 1112 | 757 | 1 | 533 | 82 | 535 | 375 | 2 | 315 | 1495 | 27 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 8 | 1112 | 757 | 1 | 533 | 82 | 535 | 375 | 2 | 315 | 1495 | 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 | pm+pt | NA | Prot |
| Protected Phases | 1 | 6 | | 5 | 2 | | 7 | 4 | 4 | 3 | 8 | 8 |
| Permitted Phases | | | 6 | | | 2 | | | | 8 | | |

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

2023 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 | 45.0 | 45.0 | 15.0 | 45.0 | 45.0 | 26.0 | 64.0 | 64.0 | 26.0 | 64.0 | 64.0 |
| Total Split (%) | 10.0% | 30.0% | 30.0% | 10.0% | 30.0% | 30.0% | 17.3% | 42.7% | 42.7% | 17.3% | 42.7% | 42.7% |
| Maximum Green (s) | 10.0 | 39.0 | 39.0 | 10.0 | 39.0 | 39.0 | 21.0 | 57.0 | 57.0 | 21.0 | 57.0 | 57.0 |
| 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 Effct Green (s) | 6.5 | 52.8 | 50.8 | 6.0 | 52.5 | 50.5 | 21.0 | 59.5 | 59.5 | 77.5 | 57.0 | 57.0 |
| Actuated g/C Ratio | 0.04 | 0.35 | 0.34 | 0.04 | 0.35 | 0.34 | 0.14 | 0.40 | 0.40 | 0.52 | 0.38 | 0.38 |
| v/c Ratio | 0.11 | 0.89 | 0.96 | 0.01 | 0.43 | 0.14 | 1.11 | 0.27 | 0.00 | 0.53 | 1.11 | 0.04 |
| Control Delay | 71.6 | 55.9 | 46.8 | 70.0 | 39.4 | 4.4 | 133.3 | 31.6 | 0.0 | 21.1 | 104.3 | 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 | 71.6 | 55.9 | 46.8 | 70.0 | 39.4 | 4.4 | 133.3 | 31.6 | 0.0 | 21.1 | 104.3 | 0.1 |
| LOS | E | E | D | E | D | A | F | C | A | C | F | A |
| Approach Delay | | 52.3 | | | 34.8 | | | 91.2 | | | 88.5 | |
| Approach LOS | | D | | | C | | | F | | | F | |
| Queue Length 50th (ft) | 8 | 527 | 420 | 1 | 204 | 0 | ~308 | 131 | 0 | 157 | ~878 | 0 |
| Queue Length 95th (ft) | 27 | #773 | #772 | 8 | 294 | 28 | #427 | 175 | 0 | 220 | #1017 | 0 |
| Internal Link Dist (ft) | | 1025 | | | 826 | | | 1958 | | | 1407 | |
| Turn Bay Length (ft) | 375 | | | 300 | | 315 | 1000 | | 890 | 1000 | | 670 |
| Base Capacity (vph) | 118 | 1245 | 790 | 118 | 1238 | 600 | 480 | 1403 | 685 | 619 | 1344 | 660 |
| 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 | 0.07 | 0.89 | 0.96 | 0.01 | 0.43 | 0.14 | 1.11 | 0.27 | 0.00 | 0.51 | 1.11 | 0.04 |

Intersection Summary

| | |
|------------------------------------|--|
| Area Type: | Other |
| Cycle Length: | 150 |
| Actuated Cycle Length: | 150 |
| Offset: | 0 (0%), Referenced to phase 4:NET and 8:SWTL, Start of FDW or yellow |
| Natural Cycle: | 145 |
| Control Type: | Actuated-Coordinated |
| Maximum v/c Ratio: | 1.11 |
| Intersection Signal Delay: | 69.7 |
| Intersection LOS: | E |
| Intersection Capacity Utilization: | 101.9% |
| ICU Level of Service: | G |
| Analysis Period (min): | 15 |









~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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




























Queue shown is maximum after two cycles.

Splits and Phases: 4: US 24 & Marksheffel Rd

| | | | |
|--|--|--|--|
|  Ø1 |  Ø2 |  Ø3 |  Ø4 (R) |
| 15 s | 45 s | 26 s | 64 s |
|  Ø5 |  Ø6 |  Ø7 |  Ø8 (R) |
| 15 s | 45 s | 26 s | 64 s |













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) | 209 | 24 | 99 | 26 | 8 | 35 | 66 | 1561 | 94 | 40 | 689 | 106 |
| Future Volume (vph) | 209 | 24 | 99 | 26 | 8 | 35 | 66 | 1561 | 94 | 40 | 689 | 106 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (ft) | 220 | | 200 | 300 | | 490 | 405 | | 0 | 340 | | 335 |
| Storage Lanes | 2 | | 1 | 1 | | 1 | 1 | | 1 | 1 | | 1 |
| Taper Length (ft) | 50 | | | 155 | | | 130 | | | 110 | | |
| 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 | 0.438 | | | 0.739 | | | 0.339 | | | 0.090 | | |
| Satd. Flow (perm) | 1583 | 1863 | 1583 | 1377 | 1863 | 1583 | 631 | 3539 | 1583 | 168 | 3539 | 1583 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 114 | | | 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 | 0.87 | 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) | 240 | 28 | 114 | 31 | 10 | 42 | 69 | 1643 | 99 | 43 | 741 | 114 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 240 | 28 | 114 | 31 | 10 | 42 | 69 | 1643 | 99 | 43 | 741 | 114 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | L NA | Left | R NA | L NA | Left | R NA | Left | L NA | Right | Left | L NA | Right |
| Median Width(ft) | | 24 | | | 24 | | | 12 | | | | 12 |
| Link Offset(ft) | | 0 | | | 0 | | | 0 | | | | 0 |
| Crosswalk Width(ft) | | 30 | | | 30 | | | 30 | | | | 30 |
| 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 Effct Green (s) | 23.6 | 14.1 | 14.1 | 14.3 | 6.3 | 6.3 | 98.9 | 91.6 | 91.6 | 97.9 | 92.1 | 92.1 |
| Actuated g/C Ratio | 0.17 | 0.10 | 0.10 | 0.11 | 0.05 | 0.05 | 0.73 | 0.68 | 0.68 | 0.73 | 0.68 | 0.68 |
| v/c Ratio | 0.52 | 0.14 | 0.43 | 0.19 | 0.12 | 0.25 | 0.13 | 0.68 | 0.09 | 0.22 | 0.31 | 0.10 |
| Control Delay | 52.5 | 57.2 | 15.0 | 46.8 | 64.0 | 3.4 | 5.6 | 16.7 | 2.2 | 7.8 | 10.3 | 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 | 52.5 | 57.2 | 15.0 | 46.8 | 64.0 | 3.4 | 5.6 | 16.7 | 2.2 | 7.8 | 10.3 | 1.9 |
| LOS | D | E | B | D | E | A | A | B | A | A | B | A |
| Approach Delay | | 41.6 | | | 26.9 | | | 15.5 | | | 9.1 | |
| Approach LOS | | D | | | C | | | B | | | A | |
| Queue Length 50th (ft) | 94 | 23 | 0 | 23 | 9 | 0 | 15 | 471 | 1 | 9 | 142 | 0 |
| Queue Length 95th (ft) | 128 | 53 | 54 | 47 | 27 | 0 | 30 | 601 | 23 | 21 | 193 | 23 |
| Internal Link Dist (ft) | | 415 | | | 846 | | | 1025 | | | 885 | |
| Turn Bay Length (ft) | 220 | | 200 | 300 | | 490 | 405 | | | 340 | | 335 |
| Base Capacity (vph) | 492 | 200 | 272 | 266 | 151 | 221 | 533 | 2402 | 1105 | 198 | 2414 | 1116 |
| 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 | 0.49 | 0.14 | 0.42 | 0.12 | 0.07 | 0.19 | 0.13 | 0.68 | 0.09 | 0.22 | 0.31 | 0.10 |





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: | 17.1 |
| Intersection LOS: | B |
| Intersection Capacity Utilization: | 73.7% |
| ICU Level of Service: | D |
| Analysis Period (min): | 15 |

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

























2023 Background
 PM

Splits and Phases: 1: Marksheffel Rd & Meadowbrook Pkwy

| | | | |
|--|--|--|--|
|  Ø1 11 s |  Ø2 (R) 88 s |  Ø3 19 s |  Ø4 17 s |
|  Ø5 13 s |  Ø6 (R) 86 s |  Ø7 19 s |  Ø8 17 s |

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

2023 Background
PM

| |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Lane Group | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
| Lane Configurations |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph) | 40 | 420 | 380 | 25 | 1000 | 225 | 690 | 1090 | 7 | 140 | 390 | 30 |
| Future Volume (vph) | 40 | 420 | 380 | 25 | 1000 | 225 | 690 | 1090 | 7 | 140 | 390 | 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 | | | 0.125 | | |
| Satd. Flow (perm) | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 | 3433 | 3539 | 1583 | 233 | 3539 | 1583 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 413 | | | 206 | | | 95 | | | 131 |
| 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 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 43 | 457 | 413 | 27 | 1087 | 245 | 750 | 1185 | 8 | 152 | 424 | 33 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 43 | 457 | 413 | 27 | 1087 | 245 | 750 | 1185 | 8 | 152 | 424 | 33 |
| 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) | | 30 | | | 30 | | | 30 | | | 30 | |
| 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 | Perm | pm+pt | NA | Perm |
| Protected Phases | 1 | 6 | | 5 | 2 | | 7 | 4 | | 3 | 8 | |
| Permitted Phases | | | 6 | | | 2 | | | 4 | 8 | | 8 |

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

2023 Background
PM



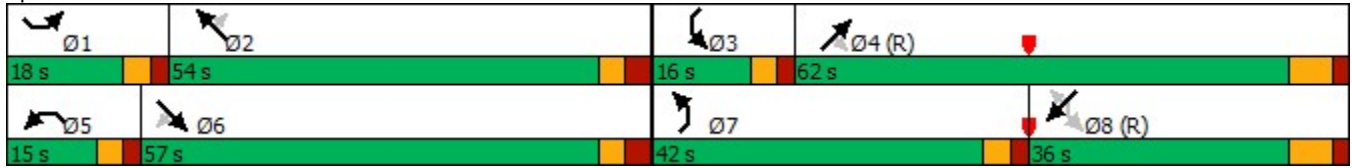
| Lane Group | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
|-------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Detector Phase | 1 | 6 | 6 | 5 | 2 | 2 | 7 | 4 | 4 | 3 | 8 | 8 |
| Switch Phase | | | | | | | | | | | | |
| 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) | 18.0 | 57.0 | 57.0 | 15.0 | 54.0 | 54.0 | 42.0 | 62.0 | 62.0 | 16.0 | 36.0 | 36.0 |
| Total Split (%) | 12.0% | 38.0% | 38.0% | 10.0% | 36.0% | 36.0% | 28.0% | 41.3% | 41.3% | 10.7% | 24.0% | 24.0% |
| Maximum Green (s) | 13.0 | 51.0 | 51.0 | 10.0 | 48.0 | 48.0 | 37.0 | 55.0 | 55.0 | 11.0 | 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 | 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) | 5.0 | 6.0 | 6.0 | 5.0 | 6.0 | 6.0 | 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? | | | | | | | 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 Effct Green (s) | 9.1 | 54.0 | 54.0 | 7.8 | 50.4 | 50.4 | 35.6 | 59.0 | 59.0 | 46.9 | 34.2 | 34.2 |
| Actuated g/C Ratio | 0.06 | 0.36 | 0.36 | 0.05 | 0.34 | 0.34 | 0.24 | 0.39 | 0.39 | 0.31 | 0.23 | 0.23 |
| v/c Ratio | 0.40 | 0.36 | 0.50 | 0.29 | 0.91 | 0.37 | 0.92 | 0.85 | 0.01 | 0.84 | 0.53 | 0.07 |
| Control Delay | 78.1 | 36.6 | 5.2 | 76.0 | 60.0 | 9.1 | 73.1 | 49.6 | 0.0 | 72.2 | 55.3 | 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 | 78.1 | 36.6 | 5.2 | 76.0 | 60.0 | 9.1 | 73.1 | 49.6 | 0.0 | 72.2 | 55.3 | 0.3 |
| LOS | E | D | A | E | E | A | E | D | A | E | E | A |
| Approach Delay | | 24.3 | | | 51.2 | | | 58.5 | | | 56.6 | |
| Approach LOS | | C | | | D | | | E | | | E | |
| Queue Length 50th (ft) | 41 | 174 | 0 | 26 | 527 | 26 | 367 | 580 | 0 | 97 | 202 | 0 |
| Queue Length 95th (ft) | 83 | 228 | 76 | 60 | #688 | 97 | #471 | #712 | 0 | #225 | 262 | 0 |
| Internal Link Dist (ft) | | 1025 | | | 826 | | | 1958 | | | 1407 | |
| Turn Bay Length (ft) | 375 | | | 300 | | 315 | 1000 | | 890 | 1000 | | 670 |
| Base Capacity (vph) | 153 | 1289 | 839 | 118 | 1190 | 669 | 846 | 1391 | 680 | 186 | 806 | 461 |
| 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 | 0.28 | 0.35 | 0.49 | 0.23 | 0.91 | 0.37 | 0.89 | 0.85 | 0.01 | 0.82 | 0.53 | 0.07 |

Intersection Summary

Area Type: Other
 Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 0 (0%), Referenced to phase 4:NET and 8:SWTL, Start of Green
 Natural Cycle: 125
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.92
 Intersection Signal Delay: 49.7 Intersection LOS: D
 Intersection Capacity Utilization 91.3% ICU Level of Service F
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.

























Queue shown is maximum after two cycles.

Splits and Phases: 4: US 24 & Marksheffel Rd



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

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| |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph) | 48 | 3 | 30 | 108 | 15 | 112 | 59 | 636 | 217 | 55 | 1493 | 194 |
| Future Volume (vph) | 48 | 3 | 30 | 108 | 15 | 112 | 59 | 636 | 217 | 55 | 1493 | 194 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (ft) | 220 | | 200 | 300 | | 190 | 405 | | 0 | 340 | | 335 |
| Storage Lanes | 2 | | 1 | 1 | | 1 | 1 | | 1 | 1 | | 1 |
| Taper Length (ft) | 50 | | | 155 | | | 130 | | | 110 | | |
| 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 | | | | 0.519 | | | 0.109 | | | 0.376 | | |
| Satd. Flow (perm) | 3614 | 1863 | 1583 | 967 | 1863 | 1583 | 203 | 3539 | 1583 | 700 | 3539 | 1583 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 89 | | | 129 | | | 233 | | | 204 |
| Link Speed (mph) | | 35 | | | 25 | | | 50 | | | 50 | |
| Link Distance (ft) | | 495 | | | 650 | | | 1105 | | | 616 | |
| Travel Time (s) | | 9.6 | | | 17.7 | | | 15.1 | | | 8.4 | |
| 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) | 62 | 4 | 38 | 124 | 17 | 129 | 63 | 684 | 233 | 58 | 1572 | 204 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 62 | 4 | 38 | 124 | 17 | 129 | 63 | 684 | 233 | 58 | 1572 | 204 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | L NA | Left | R NA | L NA | Left | R NA | Left | L NA | Right | Left | L NA | Right |
| Median Width(ft) | | 24 | | | 24 | | | 12 | | | 12 | |
| Link Offset(ft) | | 0 | | | 0 | | | 0 | | | 0 | |
| Crosswalk Width(ft) | | 30 | | | 30 | | | 30 | | | 30 | |
| 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









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| 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 Effct Green (s) | 12.1 | 4.8 | 4.8 | 20.7 | 10.1 | 10.1 | 102.5 | 97.1 | 97.1 | 100.2 | 95.9 | 95.9 |
| Actuated g/C Ratio | 0.09 | 0.04 | 0.04 | 0.15 | 0.07 | 0.07 | 0.76 | 0.72 | 0.72 | 0.74 | 0.71 | 0.71 |
| v/c Ratio | 0.20 | 0.06 | 0.27 | 0.55 | 0.12 | 0.54 | 0.28 | 0.27 | 0.19 | 0.10 | 0.63 | 0.17 |
| Control Delay | 49.2 | 65.7 | 4.6 | 60.5 | 60.3 | 18.6 | 7.1 | 7.8 | 1.2 | 4.6 | 13.0 | 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 | 65.7 | 4.6 | 60.5 | 60.3 | 18.6 | 7.1 | 7.8 | 1.2 | 4.6 | 13.0 | 1.4 |
| LOS | D | E | A | E | E | B | A | A | A | A | B | A |
| Approach Delay | | 33.6 | | | 40.4 | | | 6.2 | | | 11.4 | |
| Approach LOS | | C | | | D | | | A | | | B | |
| Queue Length 50th (ft) | 23 | 3 | 0 | 97 | 14 | 0 | 12 | 114 | 0 | 11 | 400 | 0 |
| Queue Length 95th (ft) | 39 | 14 | 0 | 156 | 38 | 58 | 24 | 143 | 26 | 22 | 476 | 26 |
| Internal Link Dist (ft) | | 415 | | | 570 | | | 1025 | | | 536 | |
| Turn Bay Length (ft) | 220 | | 200 | 300 | | 190 | 405 | | | 340 | | 335 |
| Base Capacity (vph) | 477 | 66 | 142 | 245 | 139 | 238 | 236 | 2545 | 1204 | 561 | 2515 | 1184 |
| 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 | 0.13 | 0.06 | 0.27 | 0.51 | 0.12 | 0.54 | 0.27 | 0.27 | 0.19 | 0.10 | 0.63 | 0.17 |

























| 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: | 0.63 |
| Intersection Signal Delay: | 13.0 |
| Intersection LOS: | B |
| Intersection Capacity Utilization: | 69.8% |
| ICU Level of Service: | C |
| Analysis Period (min): | 15 |

Splits and Phases: 1: Marksheffel Rd & Meadowbrook Pkwy

| | | | |
|--|---|---|---|
|  Ø4 Ø1 10 s |  Ø2 (R) 97 s |  Ø3 19 s |  Ø8 Ø5 9 s |
|  Ø8 Ø5 12 s |  Ø6 (R) 95 s |  Ø7 18 s |  Ø2 (R) 10 s |

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

2023 Background + Site
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| |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Lane Group | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
| Lane Configurations |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph) | 9 | 1026 | 708 | 1 | 471 | 75 | 492 | 345 | 2 | 290 | 1375 | 28 |
| Future Volume (vph) | 9 | 1026 | 708 | 1 | 471 | 75 | 492 | 345 | 2 | 290 | 1375 | 28 |
| 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 | | | 0.508 | | |
| Satd. Flow (perm) | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 | 3433 | 3539 | 1583 | 946 | 3539 | 1583 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 385 | | | 102 | | | 95 | | | 95 |
| 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 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 10 | 1115 | 770 | 1 | 512 | 82 | 535 | 375 | 2 | 315 | 1495 | 30 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 10 | 1115 | 770 | 1 | 512 | 82 | 535 | 375 | 2 | 315 | 1495 | 30 |
| 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) | | 30 | | | 30 | | | 30 | | | 30 | |
| 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 | pm+pt | NA | Prot |
| Protected Phases | 1 | 6 | | 5 | 2 | | 7 | 4 | 4 | 3 | 8 | 8 |
| Permitted Phases | | | 6 | | | 2 | | | | 8 | | |

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

2023 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 | 45.0 | 45.0 | 15.0 | 45.0 | 45.0 | 26.0 | 64.0 | 64.0 | 26.0 | 64.0 | 64.0 |
| Total Split (%) | 10.0% | 30.0% | 30.0% | 10.0% | 30.0% | 30.0% | 17.3% | 42.7% | 42.7% | 17.3% | 42.7% | 42.7% |
| Maximum Green (s) | 10.0 | 39.0 | 39.0 | 10.0 | 39.0 | 39.0 | 21.0 | 57.0 | 57.0 | 21.0 | 57.0 | 57.0 |
| 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 Effct Green (s) | 6.6 | 52.8 | 50.8 | 6.0 | 50.0 | 48.0 | 21.0 | 59.5 | 59.5 | 77.5 | 57.0 | 57.0 |
| Actuated g/C Ratio | 0.04 | 0.35 | 0.34 | 0.04 | 0.33 | 0.32 | 0.14 | 0.40 | 0.40 | 0.52 | 0.38 | 0.38 |
| v/c Ratio | 0.13 | 0.90 | 0.97 | 0.01 | 0.43 | 0.14 | 1.11 | 0.27 | 0.00 | 0.53 | 1.11 | 0.05 |
| Control Delay | 72.1 | 56.1 | 50.5 | 70.0 | 41.4 | 4.5 | 133.3 | 31.6 | 0.0 | 21.1 | 104.3 | 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 | 72.1 | 56.1 | 50.5 | 70.0 | 41.4 | 4.5 | 133.3 | 31.6 | 0.0 | 21.1 | 104.3 | 0.1 |
| LOS | E | E | D | E | D | A | F | C | A | C | F | A |
| Approach Delay | | 53.9 | | | 36.4 | | | 91.2 | | | 88.4 | |
| Approach LOS | | D | | | D | | | F | | | F | |
| Queue Length 50th (ft) | 10 | 529 | 443 | 1 | 194 | 0 | ~308 | 131 | 0 | 157 | ~878 | 0 |
| Queue Length 95th (ft) | 31 | #776 | #801 | 8 | 282 | 28 | #427 | 175 | 0 | 220 | #1017 | 0 |
| Internal Link Dist (ft) | | 1025 | | | 826 | | | 1958 | | | 1407 | |
| Turn Bay Length (ft) | 375 | | | 300 | | 315 | 1000 | | 890 | 1000 | | 670 |
| Base Capacity (vph) | 118 | 1245 | 790 | 118 | 1180 | 576 | 480 | 1403 | 685 | 619 | 1344 | 660 |
| 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 | 0.08 | 0.90 | 0.97 | 0.01 | 0.43 | 0.14 | 1.11 | 0.27 | 0.00 | 0.51 | 1.11 | 0.05 |

Intersection Summary

| | |
|------------------------------------|--|
| Area Type: | Other |
| Cycle Length: | 150 |
| Actuated Cycle Length: | 150 |
| Offset: | 0 (0%), Referenced to phase 4:NET and 8:SWTL, Start of FDW or yellow |
| Natural Cycle: | 145 |
| Control Type: | Actuated-Coordinated |
| Maximum v/c Ratio: | 1.11 |
| Intersection Signal Delay: | 70.5 |
| Intersection LOS: | E |
| Intersection Capacity Utilization: | 102.7% |
| ICU Level of Service: | G |
| Analysis Period (min): | 15 |




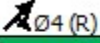



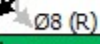
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 4: US 24 & Marksheffel Rd

| | | | |
|--|--|--|---|
|  Ø1 |  Ø2 |  Ø3 |  Ø4 (R) |
| 15 s | 45 s | 26 s | 64 s |
|  Ø5 |  Ø6 |  Ø7 |  Ø8 (R) |
| 15 s | 45 s | 26 s | 64 s |

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 0.3 | | | | | |
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 11 | 2 | 270 | 224 | 0 |
| Future Vol, veh/h | 0 | 11 | 2 | 270 | 224 | 0 |
| 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 | - | 85 | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 12 | 2 | 293 | 243 | 0 |

| Major/Minor | Minor2 | Major1 | | Major2 | |
|----------------------|--------|--------|-------|--------|---|
| Conflicting Flow All | 540 | 243 | 243 | 0 | - |
| Stage 1 | 243 | - | - | - | - |
| Stage 2 | 297 | - | - | - | - |
| 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 | 503 | 796 | 1323 | - | - |
| Stage 1 | 797 | - | - | - | - |
| Stage 2 | 754 | - | - | - | - |
| Platoon blocked, % | | | | - | - |
| Mov Cap-1 Maneuver | 502 | 796 | 1323 | - | - |
| Mov Cap-2 Maneuver | 502 | - | - | - | - |
| Stage 1 | 795 | - | - | - | - |
| Stage 2 | 754 | - | - | - | - |

| Approach | EB | NB | SB |
|----------------------|-----|-----|----|
| HCM Control Delay, s | 9.6 | 0.1 | 0 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h) | 1323 | - | 796 | - | - |
| HCM Lane V/C Ratio | 0.002 | - | 0.015 | - | - |
| HCM Control Delay (s) | 7.7 | - | 9.6 | - | - |
| HCM Lane LOS | A | - | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0 | - | - |

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 0.4 | | | | | |
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 1 | 17 | 4 | 266 | 207 | 0 |
| Future Vol, veh/h | 1 | 17 | 4 | 266 | 207 | 0 |
| 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 | - | 120 | - | - | - |
| 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 | 1 | 18 | 4 | 289 | 225 | 0 |

























| Major/Minor | Minor2 | Major1 | Major2 | | | |
|----------------------|--------|--------|--------|---|---|---|
| Conflicting Flow All | 522 | 225 | 225 | 0 | - | 0 |
| Stage 1 | 225 | - | - | - | - | - |
| Stage 2 | 297 | - | - | - | - | - |
| 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 | 515 | 814 | 1344 | - | - | - |
| Stage 1 | 812 | - | - | - | - | - |
| Stage 2 | 754 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 513 | 814 | 1344 | - | - | - |
| Mov Cap-2 Maneuver | 513 | - | - | - | - | - |
| Stage 1 | 810 | - | - | - | - | - |
| Stage 2 | 754 | - | - | - | - | - |

| Approach | EB | NB | SB |
|----------------------|-----|-----|----|
| HCM Control Delay, s | 9.7 | 0.1 | 0 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h) | 1344 | - | 788 | - | - |
| HCM Lane V/C Ratio | 0.003 | - | 0.025 | - | - |
| HCM Control Delay (s) | 7.7 | - | 9.7 | - | - |
| HCM Lane LOS | 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 | 25 | 99 | 36 | 8 | 41 | 66 | 1561 | 111 | 50 | 689 | 106 |
| Future Volume (vph) | 209 | 25 | 99 | 36 | 8 | 41 | 66 | 1561 | 111 | 50 | 689 | 106 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (ft) | 220 | | 200 | 300 | | 190 | 405 | | 0 | 340 | | 335 |
| Storage Lanes | 2 | | 1 | 1 | | 1 | 1 | | 1 | 1 | | 1 |
| Taper Length (ft) | 50 | | | 155 | | | 130 | | | 110 | | |
| 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 | 0.435 | | | 0.769 | | | 0.340 | | | 0.091 | | |
| Satd. Flow (perm) | 1572 | 1863 | 1583 | 1432 | 1863 | 1583 | 633 | 3539 | 1583 | 170 | 3539 | 1583 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 114 | | | 101 | | | 100 | | | 114 |
| Link Speed (mph) | | 35 | | | 25 | | | 50 | | | | 50 |
| Link Distance (ft) | | 495 | | | 571 | | | 1105 | | | | 676 |
| Travel Time (s) | | 9.6 | | | 15.6 | | | 15.1 | | | | 9.2 |
| 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) | 240 | 29 | 114 | 43 | 10 | 49 | 69 | 1643 | 117 | 54 | 741 | 114 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 240 | 29 | 114 | 43 | 10 | 49 | 69 | 1643 | 117 | 54 | 741 | 114 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | L NA | Left | R NA | L NA | Left | R NA | Left | L NA | Right | Left | L NA | Right |
| Median Width(ft) | | 24 | | | 24 | | | 12 | | | | 12 |
| Link Offset(ft) | | 0 | | | 0 | | | 0 | | | | 0 |
| Crosswalk Width(ft) | | 30 | | | 30 | | | 30 | | | | 30 |
| 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 Effct Green (s) | 23.5 | 11.2 | 11.2 | 15.0 | 6.3 | 6.3 | 98.8 | 91.5 | 91.5 | 98.2 | 92.2 | 92.2 |
| Actuated g/C Ratio | 0.17 | 0.08 | 0.08 | 0.11 | 0.05 | 0.05 | 0.73 | 0.68 | 0.68 | 0.73 | 0.68 | 0.68 |
| v/c Ratio | 0.52 | 0.19 | 0.49 | 0.24 | 0.11 | 0.29 | 0.13 | 0.69 | 0.11 | 0.27 | 0.31 | 0.10 |
| Control Delay | 52.6 | 60.2 | 17.2 | 47.9 | 64.0 | 4.2 | 5.6 | 16.9 | 2.8 | 8.5 | 10.3 | 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 | 52.6 | 60.2 | 17.2 | 47.9 | 64.0 | 4.2 | 5.6 | 16.9 | 2.8 | 8.5 | 10.3 | 1.9 |
| LOS | D | E | B | D | E | A | A | B | A | A | B | A |
| Approach Delay | | 42.7 | | | 28.5 | | | 15.5 | | | | 9.1 |
| Approach LOS | | D | | | C | | | B | | | | A |
| Queue Length 50th (ft) | 94 | 24 | 0 | 31 | 9 | 0 | 15 | 474 | 5 | 11 | 142 | 0 |
| Queue Length 95th (ft) | 128 | 55 | 54 | 60 | 27 | 0 | 30 | 607 | 30 | 24 | 193 | 24 |
| Internal Link Dist (ft) | | 415 | | | 491 | | | 1025 | | | | 596 |
| Turn Bay Length (ft) | 220 | | 200 | 300 | | 190 | 405 | | | 340 | | 335 |
| Base Capacity (vph) | 490 | 160 | 240 | 269 | 151 | 221 | 534 | 2398 | 1105 | 203 | 2417 | 1117 |
| 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 | 0.49 | 0.18 | 0.47 | 0.16 | 0.07 | 0.22 | 0.13 | 0.69 | 0.11 | 0.27 | 0.31 | 0.10 |

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: | 0.69 |
| Intersection Signal Delay: | 17.4 |
| Intersection Capacity Utilization | 73.7% |
| Analysis Period (min) | 15 |
| Intersection LOS: | B |
| ICU Level of Service | D |

Splits and Phases: 0:

| | | | |
|--|--|--|--|
|  Ø1 |  Ø2 (R) |  Ø3 |  Ø4 |
| 11 s | 88 s | 19 s | 17 s |
|  Ø5 |  Ø6 (R) |  Ø7 |  Ø8 |
| 13 s | 86 s | 19 s | 17 s |

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

2023 Background + Site
PM

| |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Group | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
| Lane Configurations |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph) | 9 | 1026 | 708 | 1 | 471 | 75 | 492 | 345 | 2 | 290 | 1375 | 28 |
| Future Volume (vph) | 9 | 1026 | 708 | 1 | 471 | 75 | 492 | 345 | 2 | 290 | 1375 | 28 |
| 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 | | | 0.508 | | |
| Satd. Flow (perm) | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 | 3433 | 3539 | 1583 | 946 | 3539 | 1583 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 385 | | | 102 | | | 95 | | | 95 |
| 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 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 10 | 1115 | 770 | 1 | 512 | 82 | 535 | 375 | 2 | 315 | 1495 | 30 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 10 | 1115 | 770 | 1 | 512 | 82 | 535 | 375 | 2 | 315 | 1495 | 30 |
| 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) | | 30 | | | 30 | | | 30 | | | 30 | |
| 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 | pm+pt | NA | Prot |
| Protected Phases | 1 | 6 | | 5 | 2 | | 7 | 4 | 4 | 3 | 8 | 8 |
| Permitted Phases | | | 6 | | | 2 | | | | 8 | | |

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

2023 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 | 45.0 | 45.0 | 15.0 | 45.0 | 45.0 | 26.0 | 64.0 | 64.0 | 26.0 | 64.0 | 64.0 |
| Total Split (%) | 10.0% | 30.0% | 30.0% | 10.0% | 30.0% | 30.0% | 17.3% | 42.7% | 42.7% | 17.3% | 42.7% | 42.7% |
| Maximum Green (s) | 10.0 | 39.0 | 39.0 | 10.0 | 39.0 | 39.0 | 21.0 | 57.0 | 57.0 | 21.0 | 57.0 | 57.0 |
| 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 Effct Green (s) | 6.6 | 52.8 | 50.8 | 6.0 | 50.0 | 48.0 | 21.0 | 59.5 | 59.5 | 77.5 | 57.0 | 57.0 |
| Actuated g/C Ratio | 0.04 | 0.35 | 0.34 | 0.04 | 0.33 | 0.32 | 0.14 | 0.40 | 0.40 | 0.52 | 0.38 | 0.38 |
| v/c Ratio | 0.13 | 0.90 | 0.97 | 0.01 | 0.43 | 0.14 | 1.11 | 0.27 | 0.00 | 0.53 | 1.11 | 0.05 |
| Control Delay | 72.1 | 56.1 | 50.5 | 70.0 | 41.4 | 4.5 | 133.3 | 31.6 | 0.0 | 21.1 | 104.3 | 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 | 72.1 | 56.1 | 50.5 | 70.0 | 41.4 | 4.5 | 133.3 | 31.6 | 0.0 | 21.1 | 104.3 | 0.1 |
| LOS | E | E | D | E | D | A | F | C | A | C | F | A |
| Approach Delay | | 53.9 | | | 36.4 | | | 91.2 | | | 88.4 | |
| Approach LOS | | D | | | D | | | F | | | F | |
| Queue Length 50th (ft) | 10 | 529 | 443 | 1 | 194 | 0 | ~308 | 131 | 0 | 157 | ~878 | 0 |
| Queue Length 95th (ft) | 31 | #776 | #801 | 8 | 282 | 28 | #427 | 175 | 0 | 220 | #1017 | 0 |
| Internal Link Dist (ft) | | 1025 | | | 826 | | | 1958 | | | 1407 | |
| Turn Bay Length (ft) | 375 | | | 300 | | 315 | 1000 | | 890 | 1000 | | 670 |
| Base Capacity (vph) | 118 | 1245 | 790 | 118 | 1180 | 576 | 480 | 1403 | 685 | 619 | 1344 | 660 |
| 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 | 0.08 | 0.90 | 0.97 | 0.01 | 0.43 | 0.14 | 1.11 | 0.27 | 0.00 | 0.51 | 1.11 | 0.05 |

Intersection Summary

| | |
|------------------------------------|--|
| Area Type: | Other |
| Cycle Length: | 150 |
| Actuated Cycle Length: | 150 |
| Offset: | 0 (0%), Referenced to phase 4:NET and 8:SWTL, Start of FDW or yellow |
| Natural Cycle: | 145 |
| Control Type: | Actuated-Coordinated |
| Maximum v/c Ratio: | 1.11 |
| Intersection Signal Delay: | 70.5 |
| Intersection LOS: | E |
| Intersection Capacity Utilization: | 102.7% |
| ICU Level of Service: | G |
| Analysis Period (min): | 15 |









~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 4: US 24 & Marksheffel Rd

| | | | |
|--|--|--|--|
|  Ø1 |  Ø2 |  Ø3 |  Ø4 (R) |
| 15 s | 45 s | 26 s | 64 s |
|  Ø5 |  Ø6 |  Ø7 |  Ø8 (R) |
| 15 s | 45 s | 26 s | 64 s |

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 0.5 | | | | | |
| Movement | SEL | SER | NEL | NET | SWT | SWR |
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 6 | 11 | 175 | 79 | 0 |
| Future Vol, veh/h | 0 | 6 | 11 | 175 | 79 | 0 |
| 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 | - | 85 | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 7 | 12 | 190 | 86 | 0 |

| Major/Minor | Minor2 | Major1 | Major2 | | | |
|----------------------|--------|--------|--------|---|---|---|
| Conflicting Flow All | 300 | 86 | 86 | 0 | - | 0 |
| Stage 1 | 86 | - | - | - | - | - |
| Stage 2 | 214 | - | - | - | - | - |
| 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 | 691 | 973 | 1510 | - | - | - |
| Stage 1 | 937 | - | - | - | - | - |
| Stage 2 | 822 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 685 | 973 | 1510 | - | - | - |
| Mov Cap-2 Maneuver | 685 | - | - | - | - | - |
| Stage 1 | 930 | - | - | - | - | - |
| Stage 2 | 822 | - | - | - | - | - |

| Approach | SE | NE | SW |
|----------------------|-----|-----|----|
| HCM Control Delay, s | 8.7 | 0.4 | 0 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NEL | NET | SELn1 | SWT | SWR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h) | 1510 | - | 973 | - | - |
| HCM Lane V/C Ratio | 0.008 | - | 0.007 | - | - |
| HCM Control Delay (s) | 7.4 | - | 8.7 | - | - |
| HCM Lane LOS | A | - | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0 | - | - |

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 0.9 | | | | | |
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 1 | 10 | 17 | 158 | 69 | 1 |
| Future Vol, veh/h | 1 | 10 | 17 | 158 | 69 | 1 |
| 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 | - | 120 | - | - | - |
| 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 | 1 | 11 | 18 | 172 | 75 | 1 |






























| Major/Minor | Minor2 | Major1 | | Major2 | |
|----------------------|--------|--------|-------|--------|---|
| Conflicting Flow All | 284 | 76 | 76 | 0 | 0 |
| Stage 1 | 76 | - | - | - | - |
| Stage 2 | 208 | - | - | - | - |
| 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 | 706 | 985 | 1523 | - | - |
| Stage 1 | 947 | - | - | - | - |
| Stage 2 | 827 | - | - | - | - |
| Platoon blocked, % | | | | - | - |
| Mov Cap-1 Maneuver | 698 | 985 | 1523 | - | - |
| Mov Cap-2 Maneuver | 698 | - | - | - | - |
| Stage 1 | 936 | - | - | - | - |
| Stage 2 | 827 | - | - | - | - |

| Approach | EB | NB | SB |
|----------------------|-----|-----|----|
| HCM Control Delay, s | 8.8 | 0.7 | 0 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h) | 1523 | - | 950 | - | - |
| HCM Lane V/C Ratio | 0.012 | - | 0.013 | - | - |
| HCM Control Delay (s) | 7.4 | - | 8.8 | - | - |
| HCM Lane LOS | A | - | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 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) | 143 | 5 | 64 | 350 | 14 | 105 | 130 | 900 | 250 | 75 | 2000 | 231 |
| Future Volume (vph) | 143 | 5 | 64 | 350 | 14 | 105 | 130 | 900 | 250 | 75 | 2000 | 231 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (ft) | 220 | | 200 | 300 | | 190 | 405 | | 0 | 340 | | 335 |
| Storage Lanes | 2 | | 1 | 2 | | 1 | 1 | | 1 | 1 | | 1 |
| Taper Length (ft) | 50 | | | 155 | | | 130 | | | 110 | | |
| Lane Util. Factor | 0.97 | 1.00 | 1.00 | 0.97 | 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 | 3433 | 1863 | 1583 | 1770 | 3539 | 1583 | 1770 | 5085 | 1583 |
| Flt Permitted | 0.950 | | | 0.950 | | | 0.052 | | | 0.264 | | |
| Satd. Flow (perm) | 3433 | 1863 | 1583 | 3433 | 1863 | 1583 | 97 | 3539 | 1583 | 492 | 5085 | 1583 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 89 | | | 114 | | | 263 | | | 243 |
| Link Speed (mph) | | 35 | | | 25 | | | 50 | | | | 50 |
| Link Distance (ft) | | 495 | | | 472 | | | 1105 | | | | 786 |
| Travel Time (s) | | 9.6 | | | 12.9 | | | 15.1 | | | | 10.7 |
| 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) | 155 | 5 | 70 | 380 | 15 | 114 | 137 | 947 | 263 | 79 | 2105 | 243 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 155 | 5 | 70 | 380 | 15 | 114 | 137 | 947 | 263 | 79 | 2105 | 243 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | L NA | Left | R NA | L NA | Left | R NA | Left | L NA | Right | Left | L NA | Right |
| Median Width(ft) | | 24 | | | 24 | | | 12 | | | | 12 |
| Link Offset(ft) | | 0 | | | 0 | | | 0 | | | | 0 |
| Crosswalk Width(ft) | | 30 | | | 30 | | | 30 | | | | 30 |
| 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 | pm+pt | NA | Perm | pm+pt | NA | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | 4 | | | 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) | 23.0 | 10.0 | 10.0 | 23.0 | 10.0 | 10.0 | 12.0 | 92.0 | 92.0 | 10.0 | 90.0 | 90.0 |
| Total Split (%) | 17.0% | 7.4% | 7.4% | 17.0% | 7.4% | 7.4% | 8.9% | 68.1% | 68.1% | 7.4% | 66.7% | 66.7% |
| Maximum Green (s) | 19.0 | 5.0 | 5.0 | 19.0 | 5.0 | 5.0 | 7.0 | 87.0 | 87.0 | 5.0 | 85.0 | 85.0 |
| 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 Effct Green (s) | 11.4 | 5.2 | 5.2 | 18.9 | 10.6 | 10.6 | 96.2 | 88.8 | 88.8 | 91.8 | 86.6 | 86.6 |
| Actuated g/C Ratio | 0.08 | 0.04 | 0.04 | 0.14 | 0.08 | 0.08 | 0.71 | 0.66 | 0.66 | 0.68 | 0.64 | 0.64 |
| v/c Ratio | 0.53 | 0.07 | 0.48 | 0.79 | 0.10 | 0.50 | 0.86 | 0.41 | 0.23 | 0.21 | 0.65 | 0.22 |
| Control Delay | 65.8 | 65.0 | 18.2 | 69.0 | 59.5 | 18.2 | 51.9 | 19.7 | 9.8 | 7.0 | 16.2 | 1.6 |
| 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 | 65.8 | 65.0 | 18.2 | 69.0 | 59.5 | 18.2 | 51.9 | 19.7 | 9.8 | 7.0 | 16.2 | 1.6 |
| LOS | E | E | B | E | E | B | D | B | A | A | B | A |
| Approach Delay | | 51.3 | | | 57.3 | | | 21.0 | | | 14.5 | |
| Approach LOS | | D | | | E | | | C | | | B | |
| Queue Length 50th (ft) | 68 | 4 | 0 | 168 | 12 | 0 | 85 | 219 | 83 | 18 | 402 | 0 |
| Queue Length 95th (ft) | 103 | 19 | 34 | #234 | 37 | 62 | m#107 | m201 | m87 | 34 | 450 | 31 |
| Internal Link Dist (ft) | | 415 | | | 392 | | | 1025 | | | 706 | |
| Turn Bay Length (ft) | 220 | | 200 | 300 | | 190 | 405 | | | 340 | | 335 |
| Base Capacity (vph) | 483 | 71 | 146 | 483 | 145 | 229 | 160 | 2328 | 1131 | 383 | 3262 | 1102 |
| 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 | 0.32 | 0.07 | 0.48 | 0.79 | 0.10 | 0.50 | 0.86 | 0.41 | 0.23 | 0.21 | 0.65 | 0.22 |

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: 0.86
 Intersection Signal Delay: 23.1
 Intersection LOS: C
 Intersection Capacity Utilization 75.0%
 ICU Level of Service D
 Analysis Period (min) 15
 # 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.

Splits and Phases: 1: Marksheffel Rd & 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) | 8 | 1298 | 1109 | 5 | 579 | 220 | 510 | 800 | 5 | 485 | 1915 | 85 |
| Future Volume (vph) | 8 | 1298 | 1109 | 5 | 579 | 220 | 510 | 800 | 5 | 485 | 1915 | 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 | 2 | | 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 | 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) | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 | 3433 | 5085 | 1583 | 3433 | 5085 | 1583 |
| Flt Permitted | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (perm) | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 | 3433 | 5085 | 1583 | 3433 | 5085 | 1583 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 247 | | | 239 | | | 105 | | | 105 |
| 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 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 9 | 1411 | 1205 | 5 | 629 | 239 | 554 | 870 | 5 | 527 | 2082 | 92 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 9 | 1411 | 1205 | 5 | 629 | 239 | 554 | 870 | 5 | 527 | 2082 | 92 |
| 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) | | 30 | | 30 | | | 30 | | | 30 | | |
| 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) | 8.0 | 55.0 | 55.0 | 8.0 | 55.0 | 55.0 | 17.0 | 55.0 | 55.0 | 17.0 | 55.0 | 55.0 |
| Total Split (%) | 5.9% | 40.7% | 40.7% | 5.9% | 40.7% | 40.7% | 12.6% | 40.7% | 40.7% | 12.6% | 40.7% | 40.7% |
| Maximum Green (s) | 3.0 | 49.0 | 49.0 | 3.0 | 49.0 | 49.0 | 12.0 | 48.0 | 48.0 | 12.0 | 48.0 | 48.0 |
| 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 Effct Green (s) | 3.0 | 56.4 | 54.4 | 3.0 | 56.4 | 54.4 | 12.0 | 48.0 | 48.0 | 12.0 | 48.0 | 48.0 |
| Actuated g/C Ratio | 0.02 | 0.42 | 0.40 | 0.02 | 0.42 | 0.40 | 0.09 | 0.36 | 0.36 | 0.09 | 0.36 | 0.36 |
| v/c Ratio | 0.23 | 0.95 | 1.54 | 0.13 | 0.43 | 0.31 | 1.82 | 0.48 | 0.01 | 1.73 | 1.15 | 0.15 |
| Control Delay | 98.6 | 42.4 | 267.2 | 71.8 | 29.4 | 4.4 | 413.5 | 34.9 | 0.0 | 376.2 | 114.7 | 4.4 |
| 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 | 98.6 | 42.4 | 267.2 | 71.8 | 29.4 | 4.4 | 413.5 | 34.9 | 0.0 | 376.2 | 114.7 | 4.4 |
| LOS | F | D | F | E | C | A | F | C | A | F | F | A |
| Approach Delay | | 145.8 | | | 22.8 | | | 181.6 | | | 162.0 | |
| Approach LOS | | F | | | C | | | F | | | F | |
| Queue Length 50th (ft) | 8 | 628 | ~1427 | 4 | 198 | 0 | ~376 | 216 | 0 | ~351 | ~785 | 0 |
| Queue Length 95th (ft) | m13 | #873 | #1772 | 20 | 278 | 56 | #493 | 259 | 0 | #466 | #879 | 30 |
| Internal Link Dist (ft) | | 1025 | | | 826 | | | 1958 | | | 1407 | |
| Turn Bay Length (ft) | 375 | | | 300 | | 315 | 1000 | | 890 | 1000 | | 670 |
| Base Capacity (vph) | 39 | 1478 | 785 | 39 | 1478 | 780 | 305 | 1808 | 630 | 305 | 1808 | 630 |
| 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 | 0.23 | 0.95 | 1.54 | 0.13 | 0.43 | 0.31 | 1.82 | 0.48 | 0.01 | 1.73 | 1.15 | 0.15 |

Intersection Summary

Area Type: Other
 Cycle Length: 135
 Actuated Cycle Length: 135
 Offset: 32 (24%), Referenced to phase 4:NET and 8:SWT, Start of FDW or yellow
 Natural Cycle: 145
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.82
 Intersection Signal Delay: 144.2
 Intersection Capacity Utilization 126.5%
 Analysis Period (min) 15
 Intersection LOS: F
 ICU Level of Service H

~ Volume exceeds capacity, queue is theoretically infinite.

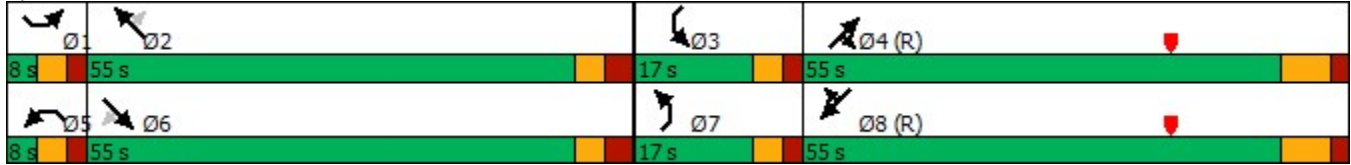
Queue shown is maximum after two cycles.

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.

Splits and Phases: 4: US 24 & Marksheffel Rd



| 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 |

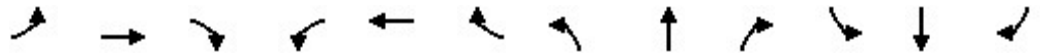
Lanes, Volumes, Timings
1: Marksheffel Rd & Meadowbrook Pkwy

2040 Background
PM

| |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |   |  |   |    |  |   |   |   |   |     |    | |
| Traffic Volume (vph) | 417 | 30 | 171 | 190 | 25 | 125 | 116 | 1850 | 230 | 120 | 1200 | 336 |
| Future Volume (vph) | 417 | 30 | 171 | 190 | 25 | 125 | 116 | 1850 | 230 | 120 | 1200 | 336 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (ft) | 220 | | 200 | 300 | | 190 | 405 | | 0 | 340 | | 335 |
| Storage Lanes | 2 | | 1 | 2 | | 1 | 1 | | 1 | 1 | | 1 |
| Taper Length (ft) | 50 | | | 155 | | | 130 | | | 110 | | |
| Lane Util. Factor | 0.97 | 1.00 | 1.00 | 0.97 | 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 | 3433 | 1863 | 1583 | 1770 | 3539 | 1583 | 1770 | 5085 | 1583 |
| Flt Permitted | 0.950 | | | 0.950 | | | 0.178 | | | 0.050 | | |
| Satd. Flow (perm) | 3433 | 1863 | 1583 | 3433 | 1863 | 1583 | 332 | 3539 | 1583 | 93 | 5085 | 1583 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 149 | | | 101 | | | 157 | | | 354 |
| Link Speed (mph) | | 35 | | | 25 | | | 50 | | | 50 | |
| Link Distance (ft) | | 495 | | | 482 | | | 1105 | | | 728 | |
| Travel Time (s) | | 9.6 | | | 13.1 | | | 15.1 | | | 9.9 | |
| 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) | 453 | 33 | 186 | 207 | 27 | 136 | 122 | 1947 | 242 | 126 | 1263 | 354 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 453 | 33 | 186 | 207 | 27 | 136 | 122 | 1947 | 242 | 126 | 1263 | 354 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | L NA | Left | R NA | L NA | Left | R NA | Left | L NA | Right | Left | L NA | Right |
| Median Width(ft) | | 24 | | | 24 | | | 12 | | | 12 | |
| Link Offset(ft) | | 0 | | | 0 | | | 0 | | | 0 | |
| Crosswalk Width(ft) | | 30 | | | 30 | | | 30 | | | 30 | |
| 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 | pm+pt | NA | Perm | pm+pt | NA | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | 4 | | | 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) | 26.0 | 14.0 | 14.0 | 25.0 | 13.0 | 13.0 | 11.0 | 82.0 | 82.0 | 14.0 | 85.0 | 85.0 |
| Total Split (%) | 19.3% | 10.4% | 10.4% | 18.5% | 9.6% | 9.6% | 8.1% | 60.7% | 60.7% | 10.4% | 63.0% | 63.0% |
| Maximum Green (s) | 22.0 | 8.0 | 8.0 | 21.0 | 7.0 | 7.0 | 6.0 | 75.5 | 75.5 | 9.0 | 79.5 | 79.5 |
| 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 Effct Green (s) | 21.0 | 14.3 | 14.3 | 13.4 | 6.7 | 6.7 | 85.1 | 77.2 | 77.2 | 89.5 | 80.4 | 80.4 |
| Actuated g/C Ratio | 0.16 | 0.11 | 0.11 | 0.10 | 0.05 | 0.05 | 0.63 | 0.57 | 0.57 | 0.66 | 0.60 | 0.60 |
| v/c Ratio | 0.85 | 0.17 | 0.62 | 0.61 | 0.29 | 0.78 | 0.44 | 0.96 | 0.25 | 0.75 | 0.42 | 0.33 |
| Control Delay | 71.1 | 58.0 | 24.4 | 65.6 | 70.0 | 48.5 | 10.8 | 25.3 | 7.3 | 52.7 | 15.3 | 2.0 |
| 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 | 71.1 | 58.0 | 24.4 | 65.6 | 70.0 | 48.5 | 10.8 | 25.3 | 7.3 | 52.7 | 15.3 | 2.0 |
| LOS | E | E | C | E | E | D | B | C | A | D | B | A |
| Approach Delay | | 57.5 | | | 59.6 | | | 22.6 | | | 15.3 | |
| Approach LOS | | E | | | E | | | C | | | B | |
| Queue Length 50th (ft) | 200 | 27 | 30 | 91 | 23 | 30 | 38 | 527 | 42 | 57 | 211 | 0 |
| Queue Length 95th (ft) | #273 | 63 | 113 | 129 | 56 | #135 | m33 | m286 | m28 | #154 | 245 | 40 |
| Internal Link Dist (ft) | | 415 | | | 402 | | | 1025 | | | 648 | |
| Turn Bay Length (ft) | 220 | | 200 | 300 | | 190 | 405 | | | 340 | | 335 |
| Base Capacity (vph) | 559 | 196 | 300 | 534 | 96 | 177 | 277 | 2023 | 972 | 174 | 3027 | 1085 |
| 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 | 0.81 | 0.17 | 0.62 | 0.39 | 0.28 | 0.77 | 0.44 | 0.96 | 0.25 | 0.72 | 0.42 | 0.33 |

Intersection Summary

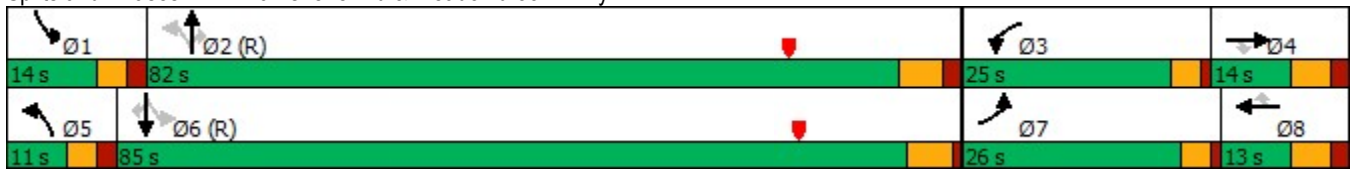
Area Type: Other
 Cycle Length: 135
 Actuated Cycle Length: 135
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of FDW or yellow
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.96
 Intersection Signal Delay: 27.4
 Intersection LOS: C
 Intersection Capacity Utilization 90.9%
 ICU Level of Service E
 Analysis Period (min) 15

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.

Splits and Phases: 1: Marksheffel Rd & Meadowbrook Pkwy



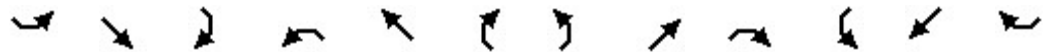
Lanes, Volumes, Timings
4: US 24 & Marksheffel Rd

2040 Background
PM

| |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Lane Group | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
| Lane Configurations |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph) | 54 | 898 | 578 | 35 | 1450 | 435 | 903 | 1685 | 15 | 205 | 900 | 103 |
| Future Volume (vph) | 54 | 898 | 578 | 35 | 1450 | 435 | 903 | 1685 | 15 | 205 | 900 | 103 |
| 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) | | | 538 | | | 155 | | | 105 | | | 145 |
| 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 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 59 | 976 | 628 | 38 | 1576 | 473 | 982 | 1832 | 16 | 223 | 978 | 112 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 59 | 976 | 628 | 38 | 1576 | 473 | 982 | 1832 | 16 | 223 | 978 | 112 |
| 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) | | 30 | | | 30 | | | 30 | | | 30 | |
| 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 | Perm | Prot | NA | Perm |
| Protected Phases | 1 | 6 | | 5 | 2 | | 7 | 4 | | 3 | 8 | |
| Permitted Phases | | | 6 | | | 2 | | | 4 | | | 8 |

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) | 10.0 | 51.0 | 51.0 | 11.0 | 52.0 | 52.0 | 39.0 | 60.0 | 60.0 | 13.0 | 34.0 | 34.0 |
| Total Split (%) | 7.4% | 37.8% | 37.8% | 8.1% | 38.5% | 38.5% | 28.9% | 44.4% | 44.4% | 9.6% | 25.2% | 25.2% |
| Maximum Green (s) | 5.0 | 45.0 | 45.0 | 6.0 | 46.0 | 46.0 | 34.0 | 53.0 | 53.0 | 8.0 | 27.0 | 27.0 |
| 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 | 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) | 5.0 | 6.0 | 6.0 | 5.0 | 6.0 | 6.0 | 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? | | | | | | | 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 Effct Green (s) | 5.0 | 47.2 | 47.2 | 6.0 | 46.0 | 46.0 | 34.0 | 53.0 | 53.0 | 8.0 | 27.0 | 27.0 |
| Actuated g/C Ratio | 0.04 | 0.35 | 0.35 | 0.04 | 0.34 | 0.34 | 0.25 | 0.39 | 0.39 | 0.06 | 0.20 | 0.20 |
| v/c Ratio | 0.91 | 0.79 | 0.70 | 0.49 | 1.31 | 0.74 | 1.14 | 0.92 | 0.02 | 2.14 | 0.96 | 0.26 |
| Control Delay | 160.2 | 36.0 | 6.8 | 83.8 | 181.4 | 33.7 | 120.9 | 47.4 | 0.1 | 574.2 | 73.7 | 4.4 |
| 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 | 160.2 | 36.0 | 6.8 | 83.8 | 181.4 | 33.7 | 120.9 | 47.4 | 0.1 | 574.2 | 73.7 | 4.4 |
| LOS | F | D | A | F | F | C | F | D | A | F | E | A |
| Approach Delay | | 29.4 | | | 146.2 | | | 72.6 | | | 152.8 | |
| Approach LOS | | C | | | F | | | E | | | F | |
| Queue Length 50th (ft) | 55 | 427 | 46 | 33 | ~932 | 252 | ~515 | 553 | 0 | ~310 | 314 | 0 |
| Queue Length 95th (ft) | m#145 | 513 | 69 | #76 | #1072 | 392 | #647 | 624 | 0 | #478 | #407 | 27 |
| Internal Link Dist (ft) | | 1025 | | | 826 | | | 1958 | | | 1407 | |
| Turn Bay Length (ft) | 375 | | | 300 | | 315 | 1000 | | 890 | 1000 | | 670 |
| Base Capacity (vph) | 65 | 1237 | 903 | 78 | 1205 | 641 | 864 | 1996 | 685 | 104 | 1017 | 432 |
| 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 | 0.91 | 0.79 | 0.70 | 0.49 | 1.31 | 0.74 | 1.14 | 0.92 | 0.02 | 2.14 | 0.96 | 0.26 |

Intersection Summary

| | |
|------------------------------------|---|
| Area Type: | Other |
| Cycle Length: | 135 |
| Actuated Cycle Length: | 135 |
| Offset: | 32 (24%), Referenced to phase 4:NET and 8:SWT, Start of Green |
| Natural Cycle: | 145 |
| Control Type: | Actuated-Coordinated |
| Maximum v/c Ratio: | 2.14 |
| Intersection Signal Delay: | 96.3 |
| Intersection LOS: | F |
| Intersection Capacity Utilization: | 109.0% |
| ICU Level of Service: | G |
| Analysis Period (min): | 15 |

~ Volume exceeds capacity, queue is theoretically infinite.

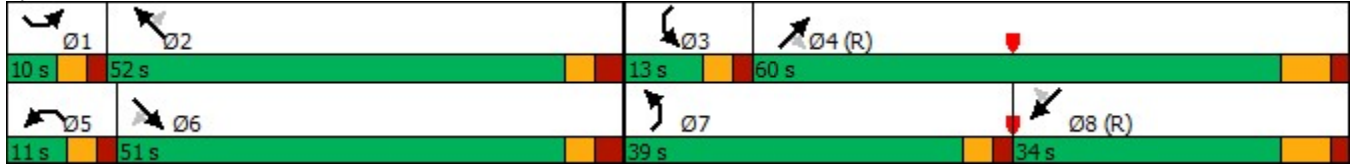
Queue shown is maximum after two cycles.

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.

Splits and Phases: 4: US 24 & Marksheffel Rd



| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 4.3 | | | | | |
| Movement | EBT | EBR | WBL | WBT | NWL | NWR |
| Lane Configurations | ↑ | ↗ | ↘ | ↑ | ↘ | ↗ |
| Traffic Vol, veh/h | 156 | 224 | 6 | 113 | 227 | 14 |
| Future Vol, veh/h | 156 | 224 | 6 | 113 | 227 | 14 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 120 | 70 | - | 0 | 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 | 170 | 243 | 7 | 123 | 247 | 15 |

| Major/Minor | Major1 | Major2 | Minor1 | Minor2 | Minor3 |
|----------------------|--------|--------|--------|--------|--------|
| Conflicting Flow All | 0 | 0 | 413 | 0 | 307 |
| Stage 1 | - | - | - | - | 170 |
| Stage 2 | - | - | - | - | 137 |
| Critical Hdwy | - | - | 4.12 | - | 6.42 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 |
| Pot Cap-1 Maneuver | - | - | 1146 | - | 685 |
| Stage 1 | - | - | - | - | 860 |
| Stage 2 | - | - | - | - | 890 |
| Platoon blocked, % | - | - | - | - | - |
| Mov Cap-1 Maneuver | - | - | 1146 | - | 681 |
| Mov Cap-2 Maneuver | - | - | - | - | 681 |
| Stage 1 | - | - | - | - | 860 |
| Stage 2 | - | - | - | - | 885 |

| Approach | EB | WB | NW |
|----------------------|----|-----|------|
| HCM Control Delay, s | 0 | 0.4 | 13.1 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NWLn1 | NWLn2 | EBT | EBR | WBL | WBT |
|-----------------------|-------|-------|-----|-----|-------|-----|
| Capacity (veh/h) | 681 | 874 | - | - | 1146 | - |
| HCM Lane V/C Ratio | 0.362 | 0.017 | - | - | 0.006 | - |
| HCM Control Delay (s) | 13.3 | 9.2 | - | - | 8.2 | - |
| HCM Lane LOS | B | A | - | - | A | - |
| HCM 95th %tile Q(veh) | 1.7 | 0.1 | - | - | 0 | - |

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 | 365 | 15 | 115 | 130 | 900 | 256 | 78 | 2000 | 231 |
| Future Volume (vph) | 143 | 5 | 64 | 365 | 15 | 115 | 130 | 900 | 256 | 78 | 2000 | 231 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (ft) | 220 | | 200 | 300 | | 190 | 405 | | 0 | 340 | | 335 |
| Storage Lanes | 2 | | 1 | 2 | | 1 | 1 | | 1 | 1 | | 1 |
| Taper Length (ft) | 50 | | | 155 | | | 130 | | | 110 | | |
| Lane Util. Factor | 0.97 | 1.00 | 1.00 | 0.97 | 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 | 3433 | 1863 | 1583 | 1770 | 3539 | 1583 | 1770 | 5085 | 1583 |
| Flt Permitted | 0.950 | | | 0.950 | | | 0.062 | | | 0.232 | | |
| Satd. Flow (perm) | 3433 | 1863 | 1583 | 3433 | 1863 | 1583 | 115 | 3539 | 1583 | 432 | 5085 | 1583 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 129 | | | 129 | | | 269 | | | 243 |
| Link Speed (mph) | | 35 | | | 25 | | | 50 | | | 50 | |
| Link Distance (ft) | | 495 | | | 582 | | | 1105 | | | 696 | |
| Travel Time (s) | | 9.6 | | | 15.9 | | | 15.1 | | | 9.5 | |
| 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) | 155 | 5 | 70 | 397 | 16 | 125 | 137 | 947 | 269 | 82 | 2105 | 243 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 155 | 5 | 70 | 397 | 16 | 125 | 137 | 947 | 269 | 82 | 2105 | 243 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | L NA | Left | R NA | L NA | Left | R NA | Left | L NA | Right | Left | L NA | Right |
| Median Width(ft) | | 24 | | | 24 | | | 12 | | | 12 | |
| Link Offset(ft) | | 0 | | | 0 | | | 0 | | | 0 | |
| Crosswalk Width(ft) | | 30 | | | 30 | | | 30 | | | 30 | |
| 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 | pm+pt | NA | Perm | pm+pt | NA | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | 4 | | | 8 | 2 | | 2 | 6 | | 6 |

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

2040 Background + Site
AM

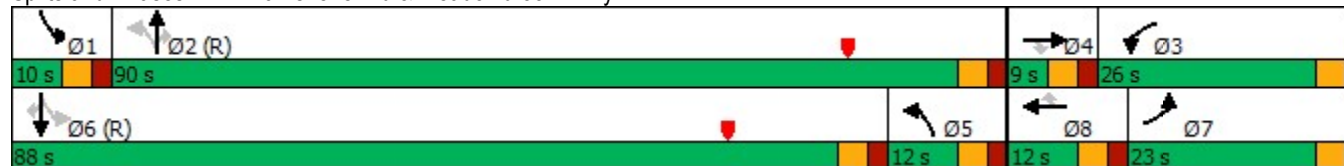


| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|------|------|-------|------|------|------|-------|-------|------|-------|-------|
| Detector Phase | 7 | 4 | 4 | 3 | 8 | 8 | 5 | 2 | 2 | 1 | 6 | 6 |
| Switch Phase | | | | | | | | | | | | |
| 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) | 23.0 | 9.0 | 9.0 | 26.0 | 12.0 | 12.0 | 12.0 | 90.0 | 90.0 | 10.0 | 88.0 | 88.0 |
| Total Split (%) | 17.0% | 6.7% | 6.7% | 19.3% | 8.9% | 8.9% | 8.9% | 66.7% | 66.7% | 7.4% | 65.2% | 65.2% |
| Maximum Green (s) | 19.0 | 4.0 | 4.0 | 22.0 | 7.0 | 7.0 | 7.0 | 85.0 | 85.0 | 5.0 | 83.0 | 83.0 |
| 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 | Lag | Lead | Lead | Lag | Lead | Lead | Lag | Lag | Lag | Lead | Lead | Lead |
| 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 Effct Green (s) | 16.3 | 4.0 | 4.0 | 20.4 | 6.4 | 6.4 | 87.5 | 87.5 | 87.5 | 86.4 | 86.4 | 86.4 |
| Actuated g/C Ratio | 0.12 | 0.03 | 0.03 | 0.15 | 0.05 | 0.05 | 0.65 | 0.65 | 0.65 | 0.64 | 0.64 | 0.64 |
| v/c Ratio | 0.38 | 0.09 | 0.41 | 0.76 | 0.18 | 0.63 | 0.86 | 0.41 | 0.24 | 0.25 | 0.65 | 0.22 |
| Control Delay | 56.5 | 67.4 | 7.0 | 65.3 | 66.3 | 24.2 | 34.5 | 4.0 | 0.2 | 11.9 | 16.6 | 1.7 |
| 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 | 56.5 | 67.4 | 7.0 | 65.3 | 66.3 | 24.2 | 34.5 | 4.0 | 0.2 | 11.9 | 16.6 | 1.7 |
| LOS | E | E | A | E | E | C | C | A | A | B | B | A |
| Approach Delay | | 41.7 | | | 55.8 | | | 6.4 | | | 15.0 | |
| Approach LOS | | D | | | E | | | A | | | B | |
| Queue Length 50th (ft) | 64 | 4 | 0 | 174 | 14 | 0 | 23 | 31 | 0 | 27 | 408 | 0 |
| Queue Length 95th (ft) | 99 | 19 | 0 | 228 | 39 | 61 | m47 | m23 | m0 | 50 | 471 | 32 |
| Internal Link Dist (ft) | | 415 | | | 502 | | | 1025 | | | 616 | |
| Turn Bay Length (ft) | 220 | | 200 | 300 | | 190 | 405 | | | 340 | | 335 |
| Base Capacity (vph) | 483 | 55 | 172 | 559 | 96 | 204 | 160 | 2293 | 1120 | 334 | 3252 | 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 | 0.32 | 0.09 | 0.41 | 0.71 | 0.17 | 0.61 | 0.86 | 0.41 | 0.24 | 0.25 | 0.65 | 0.22 |

Intersection Summary

Area Type: Other
 Cycle Length: 135
 Actuated Cycle Length: 135
 Offset: 120 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of FDW or yellow
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.86
 Intersection Signal Delay: 18.6
 Intersection LOS: B
 Intersection Capacity Utilization 75.4%
 ICU Level of Service D
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Marksheffel Rd & Meadowbrook Pkwy



| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 1.2 | | | | | | | | | | | |
| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
| Lane Configurations | | ↔ | | | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| Traffic Vol, veh/h | 0 | 0 | 11 | 43 | 0 | 2 | 2 | 254 | 70 | 4 | 443 | 0 |
| Future Vol, veh/h | 0 | 0 | 11 | 43 | 0 | 2 | 2 | 254 | 70 | 4 | 443 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | 0 | 85 | - | 120 | 70 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 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 | 0 | 0 | 12 | 47 | 0 | 2 | 2 | 276 | 76 | 4 | 482 | 0 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | | Major2 | | | | |
|----------------------|--------|-------|--------|-------|--------|-------|-------|--------|---|-------|---|---|
| Conflicting Flow All | 809 | 846 | 482 | 776 | 770 | 276 | 482 | 0 | 0 | 352 | 0 | 0 |
| Stage 1 | 490 | 490 | - | 280 | 280 | - | - | - | - | - | - | - |
| Stage 2 | 319 | 356 | - | 496 | 490 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.12 | - | - | 4.12 | - | - |
| 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 | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 299 | 299 | 584 | 315 | 331 | 763 | 1081 | - | - | 1207 | - | - |
| Stage 1 | 560 | 549 | - | 727 | 679 | - | - | - | - | - | - | - |
| Stage 2 | 693 | 629 | - | 556 | 549 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 297 | 298 | 584 | 307 | 329 | 763 | 1081 | - | - | 1207 | - | - |
| Mov Cap-2 Maneuver | 297 | 298 | - | 307 | 329 | - | - | - | - | - | - | - |
| Stage 1 | 559 | 547 | - | 726 | 678 | - | - | - | - | - | - | - |
| Stage 2 | 690 | 628 | - | 543 | 547 | - | - | - | - | - | - | - |

| Approach | SE | | NW | | NE | | SW | |
|----------------------|------|--|------|--|-----|--|-----|--|
| HCM Control Delay, s | 11.3 | | 18.4 | | 0.1 | | 0.1 | |
| HCM LOS | B | | C | | | | | |

| Minor Lane/Major Mvmt | NEL | NET | NERNWLn1 | NWLn2 | SELn1 | SWL | SWT | SWR |
|-----------------------|-------|-----|----------|-------|-------|------|-------|-----|
| Capacity (veh/h) | 1081 | - | - | 307 | 763 | 584 | 1207 | - |
| HCM Lane V/C Ratio | 0.002 | - | - | 0.152 | 0.003 | 0.02 | 0.004 | - |
| HCM Control Delay (s) | 8.3 | - | - | 18.8 | 9.7 | 11.3 | 8 | - |
| HCM Lane LOS | A | - | - | C | A | B | A | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.5 | 0 | 0.1 | 0 | - |

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 0.3 | | | | | |
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 1 | 17 | 4 | 252 | 430 | 0 |
| Future Vol, veh/h | 1 | 17 | 4 | 252 | 430 | 0 |
| 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 | - | 120 | - | - | - |
| 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 | 1 | 18 | 4 | 274 | 467 | 0 |






























| Major/Minor | Minor2 | Major1 | Major2 | | | |
|----------------------|--------|--------|--------|---|---|---|
| Conflicting Flow All | 749 | 467 | 467 | 0 | - | 0 |
| Stage 1 | 467 | - | - | - | - | - |
| Stage 2 | 282 | - | - | - | - | - |
| 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 | 379 | 596 | 1094 | - | - | - |
| Stage 1 | 631 | - | - | - | - | - |
| Stage 2 | 766 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 377 | 596 | 1094 | - | - | - |
| Mov Cap-2 Maneuver | 377 | - | - | - | - | - |
| Stage 1 | 628 | - | - | - | - | - |
| Stage 2 | 766 | - | - | - | - | - |

| Approach | EB | NB | SB |
|----------------------|------|-----|----|
| HCM Control Delay, s | 11.5 | 0.1 | 0 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h) | 1094 | - | 577 | - | - |
| HCM Lane V/C Ratio | 0.004 | - | 0.034 | - | - |
| HCM Control Delay (s) | 8.3 | - | 11.5 | - | - |
| HCM Lane LOS | A | - | B | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0.1 | - | - |

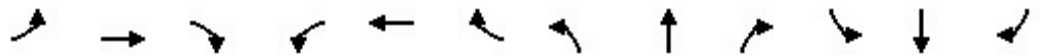
Lanes, Volumes, Timings
1: Marksheffel Rd & Meadowbrook Pkwy

2040 Background + Site
PM

| |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |   |  |  |   |  |  |  |   |  |  |    |  |
| Traffic Volume (vph) | 417 | 31 | 171 | 200 | 25 | 131 | 116 | 1850 | 247 | 130 | 1200 | 336 |
| Future Volume (vph) | 417 | 31 | 171 | 200 | 25 | 131 | 116 | 1850 | 247 | 130 | 1200 | 336 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (ft) | 220 | | 200 | 300 | | 190 | 405 | | 0 | 340 | | 335 |
| Storage Lanes | 2 | | 1 | 2 | | 1 | 1 | | 1 | 1 | | 1 |
| Taper Length (ft) | 50 | | | 155 | | | 130 | | | 110 | | |
| Lane Util. Factor | 0.97 | 1.00 | 1.00 | 0.97 | 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 | 3433 | 1863 | 1583 | 1770 | 3539 | 1583 | 1770 | 5085 | 1583 |
| Flt Permitted | 0.950 | | | 0.950 | | | 0.208 | | | 0.057 | | |
| Satd. Flow (perm) | 3433 | 1863 | 1583 | 3433 | 1863 | 1583 | 387 | 3539 | 1583 | 106 | 5085 | 1583 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 194 | | | 194 | | | 158 | | | 354 |
| Link Speed (mph) | | 35 | | | 25 | | | 50 | | | | 50 |
| Link Distance (ft) | | 495 | | | 585 | | | 1105 | | | | 756 |
| Travel Time (s) | | 9.6 | | | 16.0 | | | 15.1 | | | | 10.3 |
| 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) | 453 | 34 | 186 | 217 | 27 | 142 | 122 | 1947 | 260 | 137 | 1263 | 354 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 453 | 34 | 186 | 217 | 27 | 142 | 122 | 1947 | 260 | 137 | 1263 | 354 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | L NA | Left | R NA | L NA | Left | R NA | Left | L NA | Right | Left | L NA | Right |
| Median Width(ft) | | 24 | | | 24 | | | 12 | | | | 12 |
| Link Offset(ft) | | 0 | | | 0 | | | 0 | | | | 0 |
| Crosswalk Width(ft) | | 30 | | | 30 | | | 30 | | | | 30 |
| 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 | pm+pt | NA | Perm | pm+pt | NA | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | 4 | | | 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) | 27.0 | 14.0 | 14.0 | 25.0 | 12.0 | 12.0 | 11.0 | 78.0 | 78.0 | 18.0 | 85.0 | 85.0 |
| Total Split (%) | 20.0% | 10.4% | 10.4% | 18.5% | 8.9% | 8.9% | 8.1% | 57.8% | 57.8% | 13.3% | 63.0% | 63.0% |
| Maximum Green (s) | 23.0 | 8.0 | 8.0 | 21.0 | 6.0 | 6.0 | 6.0 | 71.5 | 71.5 | 13.0 | 79.5 | 79.5 |
| 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 | Lead | Lead | Lag | Lag | Lag | Lag | Lag | Lag | Lead | Lead | Lead |
| 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 Effct Green (s) | 21.5 | 7.2 | 7.2 | 20.2 | 6.0 | 6.0 | 76.9 | 75.4 | 75.4 | 81.5 | 81.0 | 81.0 |
| Actuated g/C Ratio | 0.16 | 0.05 | 0.05 | 0.15 | 0.04 | 0.04 | 0.57 | 0.56 | 0.56 | 0.60 | 0.60 | 0.60 |
| v/c Ratio | 0.83 | 0.34 | 0.69 | 0.42 | 0.33 | 0.56 | 0.43 | 0.99 | 0.27 | 0.70 | 0.41 | 0.32 |
| Control Delay | 68.7 | 70.8 | 21.4 | 54.6 | 73.6 | 10.9 | 5.7 | 15.5 | 0.7 | 45.4 | 15.0 | 2.0 |
| 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 | 68.7 | 70.8 | 21.4 | 54.6 | 73.6 | 10.9 | 5.7 | 15.5 | 0.7 | 45.4 | 15.0 | 2.0 |
| LOS | E | E | C | D | E | B | A | B | A | D | B | A |
| Approach Delay | | 55.7 | | | 39.9 | | | 13.3 | | | 14.8 | |
| Approach LOS | | E | | | D | | | B | | | B | |
| Queue Length 50th (ft) | 197 | 29 | 0 | 89 | 23 | 0 | 10 | ~726 | 9 | 67 | 211 | 0 |
| Queue Length 95th (ft) | 259 | 67 | 69 | 130 | 57 | 22 | m12 | m470 | m10 | 138 | 245 | 40 |
| Internal Link Dist (ft) | | 415 | | | 505 | | | 1025 | | | 676 | |
| Turn Bay Length (ft) | 220 | | 200 | 300 | | 190 | 405 | | | 340 | | 335 |
| Base Capacity (vph) | 584 | 110 | 276 | 534 | 83 | 256 | 281 | 1976 | 953 | 224 | 3052 | 1091 |
| 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 | 0.78 | 0.31 | 0.67 | 0.41 | 0.33 | 0.55 | 0.43 | 0.99 | 0.27 | 0.61 | 0.41 | 0.32 |

Intersection Summary

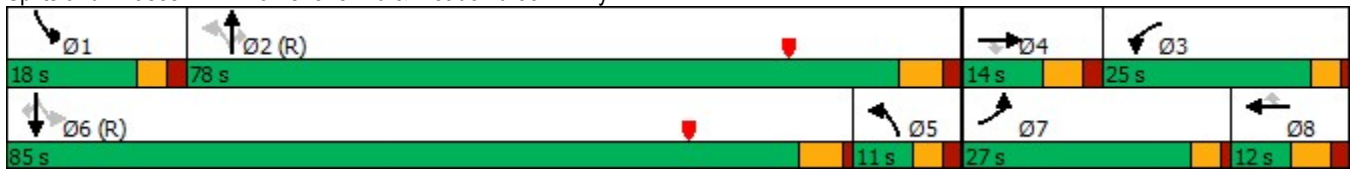
Area Type: Other
 Cycle Length: 135
 Actuated Cycle Length: 135
 Offset: 18 (13%), Referenced to phase 2:NBTL and 6:SBTL, Start of FDW or yellow
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.99
 Intersection Signal Delay: 21.4
 Intersection LOS: C
 Intersection Capacity Utilization 91.5%
 ICU Level of Service F
 Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Splits and Phases: 1: Marksheffel Rd & Meadowbrook Pkwy



| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 4.9 | | | | | | | | | | | |
| Movement | SEL | SET | SER | NWL | NWT | NWR | NEL | NET | NER | SWL | SWT | SWR |
| Lane Configurations | | ↕ | | | ↕ | ↕ | ↕ | ↕ | ↕ | ↕ | ↕ | ↕ |
| Traffic Vol, veh/h | 0 | 0 | 6 | 227 | 0 | 14 | 11 | 173 | 224 | 6 | 123 | 0 |
| Future Vol, veh/h | 0 | 0 | 6 | 227 | 0 | 14 | 11 | 173 | 224 | 6 | 123 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | 0 | 85 | - | 120 | 70 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 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 | 0 | 0 | 7 | 247 | 0 | 15 | 12 | 188 | 243 | 7 | 134 | 0 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | Major2 | | | | | |
|----------------------|--------|-------|--------|-------|--------|-------|--------|---|---|-------|---|---|
| Conflicting Flow All | 489 | 603 | 134 | 364 | 360 | 188 | 134 | 0 | 0 | 431 | 0 | 0 |
| Stage 1 | 148 | 148 | - | 212 | 212 | - | - | - | - | - | - | - |
| Stage 2 | 341 | 455 | - | 152 | 148 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.12 | 6.52 | 6.22 | 7.12 | 6.52 | 6.22 | 4.12 | - | - | 4.12 | - | - |
| 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 | 3.518 | 4.018 | 3.318 | 3.518 | 4.018 | 3.318 | 2.218 | - | - | 2.218 | - | - |
| Pot Cap-1 Maneuver | 489 | 413 | 915 | 592 | 567 | 854 | 1451 | - | - | 1129 | - | - |
| Stage 1 | 855 | 775 | - | 790 | 727 | - | - | - | - | - | - | - |
| Stage 2 | 674 | 569 | - | 850 | 775 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 475 | 407 | 915 | 581 | 559 | 854 | 1451 | - | - | 1129 | - | - |
| Mov Cap-2 Maneuver | 475 | 407 | - | 581 | 559 | - | - | - | - | - | - | - |
| Stage 1 | 848 | 770 | - | 784 | 721 | - | - | - | - | - | - | - |
| Stage 2 | 657 | 564 | - | 839 | 770 | - | - | - | - | - | - | - |

| Approach | SE | NW | NE | SW |
|----------------------|----|------|-----|-----|
| HCM Control Delay, s | 9 | 15.3 | 0.2 | 0.4 |
| HCM LOS | A | C | | |

| Minor Lane/Major Mvmt | NEL | NET | NERNWLn1 | NWLn2 | SELn1 | SWL | SWT | SWR |
|-----------------------|-------|-----|----------|-------|-------|-------|-------|-----|
| Capacity (veh/h) | 1451 | - | - | 581 | 854 | 915 | 1129 | - |
| HCM Lane V/C Ratio | 0.008 | - | - | 0.425 | 0.018 | 0.007 | 0.006 | - |
| HCM Control Delay (s) | 7.5 | - | - | 15.7 | 9.3 | 9 | 8.2 | - |
| HCM Lane LOS | A | - | - | C | A | A | A | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 2.1 | 0.1 | 0 | 0 | - |

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 0.7 | | | | | |
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 1 | 10 | 17 | 170 | 119 | 1 |
| Future Vol, veh/h | 1 | 10 | 17 | 170 | 119 | 1 |
| 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 | - | 120 | - | - | - |
| 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 | 1 | 11 | 18 | 185 | 129 | 1 |

| Major/Minor | Minor2 | Major1 | Major2 | | | |
|----------------------|--------|--------|--------|---|---|---|
| Conflicting Flow All | 351 | 130 | 130 | 0 | - | 0 |
| Stage 1 | 130 | - | - | - | - | - |
| Stage 2 | 221 | - | - | - | - | - |
| 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 | 646 | 920 | 1455 | - | - | - |
| Stage 1 | 896 | - | - | - | - | - |
| Stage 2 | 816 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 638 | 920 | 1455 | - | - | - |
| Mov Cap-2 Maneuver | 638 | - | - | - | - | - |
| Stage 1 | 885 | - | - | - | - | - |
| Stage 2 | 816 | - | - | - | - | - |

| Approach | EB | NB | SB |
|----------------------|-----|-----|----|
| HCM Control Delay, s | 9.1 | 0.7 | 0 |
| HCM LOS | A | | |













| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h) | 1455 | - | 884 | - | - |
| HCM Lane V/C Ratio | 0.013 | - | 0.014 | - | - |
| HCM Control Delay (s) | 7.5 | - | 9.1 | - | - |
| HCM Lane LOS | A | - | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0 | - | - |

Queuing Reports















Queues
1: Marksheffel Rd & Meadowbrook Pkwy

2023 Background + Site
AM

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Group Flow (vph) | 62 | 4 | 38 | 124 | 17 | 129 | 63 | 684 | 233 | 58 | 1572 | 204 |
| v/c Ratio | 0.20 | 0.06 | 0.27 | 0.55 | 0.12 | 0.54 | 0.28 | 0.27 | 0.19 | 0.10 | 0.63 | 0.17 |
| Control Delay | 49.2 | 65.7 | 4.6 | 60.5 | 60.3 | 18.6 | 7.1 | 7.8 | 1.2 | 4.6 | 13.0 | 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 | 65.7 | 4.6 | 60.5 | 60.3 | 18.6 | 7.1 | 7.8 | 1.2 | 4.6 | 13.0 | 1.4 |
| Queue Length 50th (ft) | 23 | 3 | 0 | 97 | 14 | 0 | 12 | 114 | 0 | 11 | 400 | 0 |
| Queue Length 95th (ft) | 39 | 14 | 0 | 156 | 38 | 58 | 24 | 143 | 26 | 22 | 476 | 26 |
| Internal Link Dist (ft) | | 415 | | | 570 | | | 1025 | | | 536 | |
| Turn Bay Length (ft) | 220 | | 200 | 300 | | 190 | 405 | | | 340 | | 335 |
| Base Capacity (vph) | 477 | 66 | 142 | 245 | 139 | 238 | 236 | 2545 | 1204 | 561 | 2515 | 1184 |
| 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 | 0.13 | 0.06 | 0.27 | 0.51 | 0.12 | 0.54 | 0.27 | 0.27 | 0.19 | 0.10 | 0.63 | 0.17 |
| Intersection Summary | | | | | | | | | | | | |

Queues
1: Marksheffel Rd & Meadowbrook Pkwy

2023 Background + Site
PM

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Group Flow (vph) | 240 | 29 | 114 | 43 | 10 | 49 | 69 | 1643 | 117 | 54 | 741 | 114 |
| v/c Ratio | 0.52 | 0.19 | 0.49 | 0.24 | 0.11 | 0.29 | 0.13 | 0.69 | 0.11 | 0.27 | 0.31 | 0.10 |
| Control Delay | 52.6 | 60.2 | 17.2 | 47.9 | 64.0 | 4.2 | 5.6 | 16.9 | 2.8 | 8.5 | 10.3 | 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 | 52.6 | 60.2 | 17.2 | 47.9 | 64.0 | 4.2 | 5.6 | 16.9 | 2.8 | 8.5 | 10.3 | 1.9 |
| Queue Length 50th (ft) | 94 | 24 | 0 | 31 | 9 | 0 | 15 | 474 | 5 | 11 | 142 | 0 |
| Queue Length 95th (ft) | 128 | 55 | 54 | 60 | 27 | 0 | 30 | 607 | 30 | 24 | 193 | 24 |
| Internal Link Dist (ft) | | 415 | | | 491 | | | 1025 | | | 596 | |
| Turn Bay Length (ft) | 220 | | 200 | 300 | | 190 | 405 | | | 340 | | 335 |
| Base Capacity (vph) | 490 | 160 | 240 | 269 | 151 | 221 | 534 | 2398 | 1105 | 203 | 2417 | 1117 |
| 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 | 0.49 | 0.18 | 0.47 | 0.16 | 0.07 | 0.22 | 0.13 | 0.69 | 0.11 | 0.27 | 0.31 | 0.10 |
| Intersection Summary | | | | | | | | | | | | |

Queues
1: Marksheffel Rd & Meadowbrook Pkwy

2040 Background + Site
AM















| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph) | 155 | 5 | 70 | 397 | 16 | 125 | 137 | 947 | 269 | 82 | 2105 | 243 |
| v/c Ratio | 0.38 | 0.09 | 0.41 | 0.76 | 0.18 | 0.63 | 0.86 | 0.41 | 0.24 | 0.25 | 0.65 | 0.22 |
| Control Delay | 56.5 | 67.4 | 7.0 | 65.3 | 66.3 | 24.2 | 34.5 | 4.0 | 0.2 | 11.9 | 16.6 | 1.7 |
| 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 | 56.5 | 67.4 | 7.0 | 65.3 | 66.3 | 24.2 | 34.5 | 4.0 | 0.2 | 11.9 | 16.6 | 1.7 |
| Queue Length 50th (ft) | 64 | 4 | 0 | 174 | 14 | 0 | 23 | 31 | 0 | 27 | 408 | 0 |
| Queue Length 95th (ft) | 99 | 19 | 0 | 228 | 39 | 61 | m47 | m23 | m0 | 50 | 471 | 32 |
| Internal Link Dist (ft) | | 415 | | | 502 | | | 1025 | | | 616 | |
| Turn Bay Length (ft) | 220 | | 200 | 300 | | 190 | 405 | | | 340 | | 335 |
| Base Capacity (vph) | 483 | 55 | 172 | 559 | 96 | 204 | 160 | 2293 | 1120 | 334 | 3252 | 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 | 0.32 | 0.09 | 0.41 | 0.71 | 0.17 | 0.61 | 0.86 | 0.41 | 0.24 | 0.25 | 0.65 | 0.22 |

Intersection Summary

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

Queues
1: Marksheffel Rd & Meadowbrook Pkwy

2040 Background + Site
PM

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Group Flow (vph) | 453 | 34 | 186 | 217 | 27 | 142 | 122 | 1947 | 260 | 137 | 1263 | 354 |
| v/c Ratio | 0.83 | 0.34 | 0.69 | 0.42 | 0.33 | 0.56 | 0.43 | 0.99 | 0.27 | 0.70 | 0.41 | 0.32 |
| Control Delay | 68.7 | 70.8 | 21.4 | 54.6 | 73.6 | 10.9 | 5.7 | 15.5 | 0.7 | 45.4 | 15.0 | 2.0 |
| 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 | 68.7 | 70.8 | 21.4 | 54.6 | 73.6 | 10.9 | 5.7 | 15.5 | 0.7 | 45.4 | 15.0 | 2.0 |
| Queue Length 50th (ft) | 197 | 29 | 0 | 89 | 23 | 0 | 10 | ~726 | 9 | 67 | 211 | 0 |
| Queue Length 95th (ft) | 259 | 67 | 69 | 130 | 57 | 22 | m12 | m470 | m10 | 138 | 245 | 40 |
| Internal Link Dist (ft) | | 415 | | | 505 | | | 1025 | | | 676 | |
| Turn Bay Length (ft) | 220 | | 200 | 300 | | 190 | 405 | | | 340 | | 335 |
| Base Capacity (vph) | 584 | 110 | 276 | 534 | 83 | 256 | 281 | 1976 | 953 | 224 | 3052 | 1091 |
| 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 | 0.78 | 0.31 | 0.67 | 0.41 | 0.33 | 0.55 | 0.43 | 0.99 | 0.27 | 0.61 | 0.41 | 0.32 |

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Final Plat



VILLAS AT CLAREMONT RANCH

A REPLAT OF TRACTS A, AND G OF "CLAREMONT RANCH FILING NO. 7", BEING A PARCEL OF LAND IN A PORTION OF THE SOUTHWEST (SW 1/4) OF SECTION 4, TOWNSHIP 14 SOUTH, RANGE 65 WEST OF THE SIXTH PRINCIPAL MERIDIAN, EL PASO COUNTY, COLORADO

KNOW ALL BY THESE PRESENTS:

THAT CHEROKEE METROPOLITAN DISTRICT (PARCEL A), AND PHI REAL ESTATE SERVICES, LLC, A COLORADO LIMITED LIABILITY COMPANY, (PARCEL B), BEING ALL THE OWNERS OF THE FOLLOWING DESCRIBED TRACTS;

LEGAL DESCRIPTION:

PARCEL A
TRACT A, "CLAREMONT RANCH FILING NO. 7" AS RECORDED UNDER RECEPTION NO. 205071100 IN THE EL PASO COUNTY RECORDS.

PARCEL B
TRACT G, "CLAREMONT RANCH FILING NO. 7" AS RECORDED UNDER RECEPTION NO. 205071100 IN THE EL PASO COUNTY RECORDS.

SAID PARCELS CONTAINING A COMBINED CALCULATED AREA OF 442,943 SQUARE FEET (10.169 ACRES, MORE OR LESS).

DEDICATION:

THE UNDERSIGNED, BEING ALL THE OWNERS, MORTGAGEES, BENEFICIARIES OF DEEDS OF TRUST AND HOLDERS OF OTHER INTERESTS IN THE LAND DESCRIBED HEREIN, HAVE LAID OUT, SUBDIVIDED, AND PLATTED SAID LANDS INTO LOTS, TRACTS, STREETS, AND EASEMENTS AS SHOWN HEREON UNDER THE NAME AND SUBDIVISION OF "VILLAS AT CLAREMONT RANCH". ALL PUBLIC IMPROVEMENTS SO PLATTED ARE HEREBY DEDICATED TO PUBLIC USE AND SAID OWNERS DO HEREBY COVENANT AND AGREE THAT THE PUBLIC IMPROVEMENTS WILL BE CONSTRUCTED TO EL PASO COUNTY STANDARDS AND THAT PROPER DRAINAGE AND EROSION CONTROL FOR SAME WILL BE PROVIDED AT SAID OWNERS' EXPENSE, ALL TO THE SATISFACTION OF THE BOARD OF COUNTY COMMISSIONERS OF EL PASO COUNTY, COLORADO. UPON ACCEPTANCE BY RESOLUTION, ALL PUBLIC IMPROVEMENTS SO DEDICATED WILL BECOME MATTERS OF MAINTENANCE BY EL PASO COUNTY, COLORADO. THE UTILITY EASEMENTS SHOWN HEREON ARE HEREBY DEDICATED FOR PUBLIC UTILITIES AND COMMUNICATION SYSTEMS AND OTHER PURPOSES AS SHOWN HEREON. THE ENTITIES RESPONSIBLE FOR PROVIDING THE SERVICES FOR WHICH THE EASEMENTS ARE ESTABLISHED ARE HEREBY GRANTED THE PERPETUAL RIGHT OF INGRESS AND EGRESS FROM AND TO ADJACENT PROPERTIES FOR INSTALLATION, MAINTENANCE, AND REPLACEMENT OF UTILITY LINES AND RELATED FACILITIES.

BY: AMY LATHEN DATE _____
TITLE: GENERAL MANAGER, CHEROKEE METROPOLITAN DISTRICT

STATE OF COLORADO }
COUNTY OF _____ } SS

ACKNOWLEDGED BEFORE ME THIS THIS ____ DAY OF _____, 2022,
BY AMY LATHEN, GENERAL MANAGER OF CHEROKEE METROPOLITAN DISTRICT.

WITNESS MY HAND AND OFFICIAL SEAL:

MY COMMISSION EXPIRES: _____
NOTARY PUBLIC: _____

BY: PAUL BROUSSARD DATE _____
TITLE: DIRECTOR OF OPERATIONS, PHI REAL ESTATE SERVICES, LLC
A COLORADO LIMITED LIABILITY COMPANY

STATE OF COLORADO }
COUNTY OF _____ } SS

ACKNOWLEDGED BEFORE ME THIS THIS ____ DAY OF _____, 2022,
BY PAUL BROUSSARD, DIRECTOR OF OPERATIONS, PHI REAL ESTATE SERVICES, LLC, A COLORADO LIMITED LIABILITY COMPANY.

WITNESS MY HAND AND OFFICIAL SEAL:

MY COMMISSION EXPIRES: _____
NOTARY PUBLIC: _____

EASEMENTS:

FORMER TRACT A, "CLAREMONT RANCH FILING NO. 7" IS DEDICATED AS A PUBLIC UTILITY EASEMENT AND DRAINAGE EASEMENT IN ITS ENTIRETY. ADDITIONAL PUBLIC UTILITY AND DRAINAGE EASEMENTS ARE AS SHOWN ON SHEET 5 OF 5.

| TRACT TABLE | | | | |
|-------------|--------------|--|--------|--------|
| TRACT | SIZE (ACRES) | USE | OWNER | MAINT. |
| A | 1.572 | PRIVATE ROADS/PUBLIC UTILITY EASEMENTS/ DRAINAGE EASEMENTS | VCRHOA | VCRHOA |
| B | 0.426 | COMMON AREAS/OPEN SPACE/ EASEMENTS | VCRHOA | VCRHOA |
| C | 0.441 | COMMON AREAS/OPEN SPACE/ EASEMENTS | VCRHOA | VCRHOA |
| D | 0.513 | COMMON AREAS/OPEN SPACE/ EASEMENTS | VCRHOA | VCRHOA |
| E | 3.930 | OPEN SPACE/EASEMENTS | VCRHOA | VCRHOA |
| F | 0.695 | DETENTION POND/EASEMENTS | VCRHOA | VCRHOA |
| TOTAL | 7.577 | (TOTAL ACREAGE OF ALL TRACTS) | | |

*VCRHOA = VILLAS AT CLAREMONT RANCH HOMEOWNERS ASSOCIATION
ALL TRACTS ARE TO BE CONVEYED BY SEPARATE INSTRUMENT.

GENERAL NOTES:

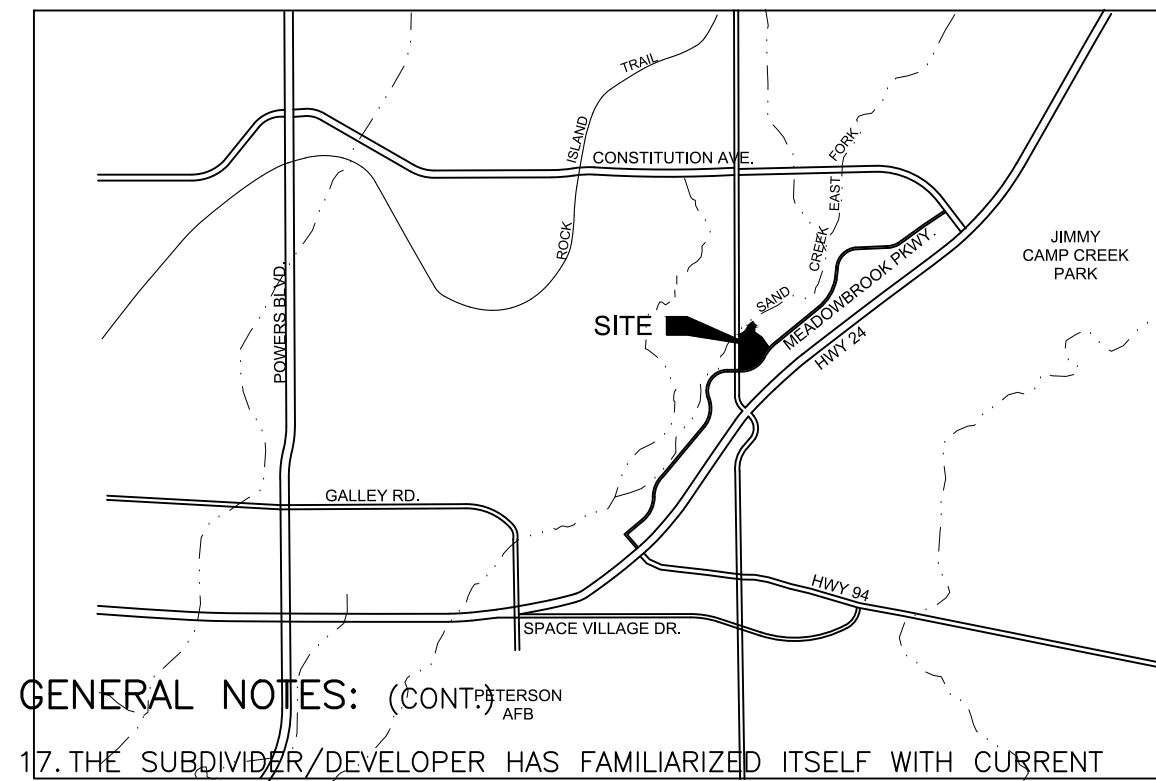
- THIS PLAT WAS PREPARED BASED ON A FIELD SURVEY OF THE PROPERTY SHOWN HEREON BY M&S CIVIL CONSULTANTS, INC. ON SEPTEMBER 29, 2017. THE BASIS OF BEARINGS IS THE EASTERLY LINE OF TRACT I, "CLAREMONT RANCH FILING NO. 7" AS RECORDED UNDER RECEPTION NO. 2005071100 IN THE EL PASO COUNTY, COLORADO RECORDS. SAID LINE WAS FOUND TO BE MONUMENTED AS SHOWN HEREON AND IS ASSUMED TO BEAR N00°07'48"E, 814.58 FEET. THE UNIT OF MEASUREMENT FOR ALL DISTANCES IS THE U.S. SURVEY FOOT.
- THE CURRENT FLOOD INSURANCE RATE MAP (FIRM) FOR THE AREA SHOWN BY THIS PLAT HAS BEEN REVIEWED. A SMALL AREA IN THE NORTHWEST CORNER LIES WITHIN ZONE AE (FLOODWAY) AS SHOWN HEREON. THE REMAINDER OF THE PROPERTY LIES WITHIN ZONE X (AREA SUBJECT TO MINIMAL FLOOD RISK)
- A TITLE REPORT ISSUED BY COMMONWEALTH LAND TITLE INSURANCE COMPANY, NUMBER H0670271-071-APL-SSC DATED JULY 30, 2022 AT 8:00 A.M. HAS BEEN EXAMINED. THE FOLLOWING EXCEPTIONS AS THEY RELATE TO THE PROPERTY BEING REPLATTED HEREON, AS NUMBERED THEREIN, ARE HEREBY NOTED.
1-7. NOT SURVEY RELATED, NOTHING TO SHOW
- THE RIGHT OF PROPRIETOR OF A VEIN OR LODE TO EXTRACT OR REMOVE HIS ORE SHOULD THE SAME BE FOUND TO PENETRATE OR INTERSECT THE PREMISES THEREBY GRANTED AS RESERVED IN UNITED STATES PATENT RECORDED NOVEMBER 16, 1886 IN BOOK 72 AT PAGE 90; AND ANY AND ALL ASSIGNMENTS THEREOF OR INTEREST THEREIN. (NOTHING TO SHOW)
- ANY ASSESSMENT OR LIEN OF CHEROKEE METROPOLITAN DISTRICT, AS DISCLOSED BY THE INSTRUMENT RECORDED AUGUST 11, 1986 IN BOOK 5216 AT PAGE 353 AND RECORDED MAY 27, 1992 IN BOOK 5983 AT PAGE 83. (NOT SURVEY RELATED, NOTHING TO SHOW)
- ANY ASSESSMENT OR LIEN OF CENTRAL MARKSHEFFEL METROPOLITAN DISTRICT, AS DISCLOSED BY THE INSTRUMENT RECORDED OCTOBER 3, 2002 AT RECEPTION NO. 202169647 AND RECORDED DECEMBER 12, 2002 AT RECEPTION NO. 202221165. (NOT SURVEY RELATED, NOTHING TO SHOW)
- TERMS, CONDITIONS, PROVISIONS, AGREEMENTS AND OBLIGATIONS CONTAINED IN THE RESOLUTION NO. 03-127 OF THE BOARD OF COUNTY COMMISSIONERS, EL PASO COUNTY RECORDED MAY 8, 2003 AT RECEPTION NO. 203099698. (NOT SURVEY RELATED, NOTHING TO SHOW)
- AN AVIGATION AND HAZARD EASEMENT GRANTED TO THE CITY OF COLORADO SPRINGS, BY THE INSTRUMENT RECORDED NOVEMBER 18, 2004 AT RECEPTION NO. 204190786 AND RECORDED NOVEMBER 18, 2004 AT RECEPTION NO. 204190787, UPON THE TERMS AND CONDITIONS SET FORTH IN THE INSTRUMENT, OVER SUBJECT PROPERTY. (AFFECTS ENTIRE SITE, NOTHING TO SHOW)
- TERMS, CONDITIONS, PROVISIONS, AGREEMENTS AND OBLIGATIONS CONTAINED IN THE CLAREMONT RANCH FILING NO. 7 DEVELOPMENT PLAN RECORDED JANUARY 18, 2005 AT RECEPTION NO. 205007124. (AFFECTS ENTIRE SITE, NOTHING TO SHOW)
- TERMS, CONDITIONS, PROVISIONS, AGREEMENTS AND OBLIGATIONS CONTAINED IN THE SUBDIVISION IMPROVEMENTS AGREEMENT, RECORDED MAY 17, 2005 AT RECEPTION NO. 205071099. (NOT SURVEY RELATED, NOTHING TO SHOW)
- TERMS, CONDITIONS, RESTRICTIONS, PROVISIONS, NOTES AND EASEMENTS BUT OMITTING ANY COVENANTS OR RESTRICTIONS, IF ANY, INCLUDING BUT NOT LIMITED TO THOSE BASED UPON RACE, COLOR, RELIGION, SEX, SEXUAL ORIENTATION, MARITAL STATUS, DISABILITY, HANDICAP, NATIONAL ORIGIN, ANCESTRY, SOURCE OF INCOME, GENDER, GENDER IDENTITY, GENDER EXPRESSION, MEDICAL CONDITION OR GENETIC INFORMATION, AS SET FORTH IN APPLICABLE STATE OR FEDERAL LAWS, EXCEPT TO THE EXTENT THAT SAID COVENANT OR RESTRICTION IS PERMITTED BY APPLICABLE LAW, AS SET FORTH ON THE PLAT(S) OF SAID SUBDIVISION SET FORTH BELOW:
RECORDING DATE: MAY 17, 2005
RECORDING NO.: 205071100 (AS SHOWN)
- TERMS, CONDITIONS, PROVISIONS, AGREEMENTS AND OBLIGATIONS CONTAINED IN THE RESOLUTION NO. 04-496 AS SET FORTH BELOW:
RECORDING DATE: JANUARY 31, 2005
RECORDING NO.: 205015064 (NOT SURVEY RELATED, NOTHING TO SHOW)
- TERMS, CONDITIONS, PROVISIONS, AGREEMENTS, EASEMENTS AND OBLIGATIONS CONTAINED IN THE RIGHT OF ENTRY AS SET FORTH BELOW:
RECORDING DATE: OCTOBER 14, 2008
RECORDING NO.: 208112358 (NOT SURVEY RELATED, NOTHING TO SHOW)
- TERMS, CONDITIONS, PROVISIONS, AGREEMENTS, EASEMENTS AND OBLIGATIONS CONTAINED IN THE AMENDMENT TO RIGHT OF ENTRY AS SET FORTH BELOW:
RECORDING DATE: MARCH 22, 2010
RECORDING NO.: 210025995. (NOT SURVEY RELATED, NOTHING TO SHOW)
- TERMS, CONDITIONS, PROVISIONS, AGREEMENTS, EASEMENTS AND OBLIGATIONS CONTAINED IN THE RIGHT OF ENTRY EASEMENT AS SET FORTH BELOW:
RECORDING DATE: NOVEMBER 9, 2010
RECORDING NO.: 210113781 (NOT SURVEY RELATED, NOTHING TO SHOW)
- TERMS, CONDITIONS, PROVISIONS, AGREEMENTS, EASEMENTS AND OBLIGATIONS CONTAINED IN THE PERMANENT EASEMENT AGREEMENT AS SET FORTH BELOW:
RECORDING DATE: DECEMBER 3, 2010
RECORDING NO.: 210123365 (AS SHOWN)

GENERAL NOTES: (CONT.)

- SOUTHERN DELIVERY SYSTEM LAND SURVEY DIAGRAM PHASE 2A RECORDED FEBRUARY 27, 2013 AT RECEPTION NO. 213025835. (NOTHING TO SHOW)
- TERMS, CONDITIONS, PROVISIONS, AGREEMENTS AND OBLIGATIONS CONTAINED IN THE AMENDED AND RESTATED RESOLUTION OF THE BOARD

OF DIRECTORS OF THE CENTRAL MARKSHEFFEL METROPOLITAN DISTRICT CONCERNING THE IMPOSITION OF CAPITAL FACILITIES FEE AS SET FORTH BELOW:
RECORDING DATE: NOVEMBER 14, 2017
RECORDING NO.: 217138355 (NOT SURVEY RELATED, NOTHING TO SHOW)

- THE PROPERTY IS THE SUBJECT OF A SUBDIVISION IMPROVEMENTS AGREEMENT RECORDED UNDER RECEPTION NO. _____ IN THE RECORDS OF EL PASO COUNTY, COLORADO.
- WATER AND WASTEWATER SERVICES FOR THIS SUBDIVISION ARE PROVIDED BY THE CHEROKEE METROPOLITAN DISTRICT SUBJECT TO THE DISTRICTS RULES REGULATIONS AND SPECIFICATIONS. (BOOK 5893, PAGE 83)
- ALL STRUCTURAL FOUNDATIONS SHALL BE LOCATED AND DESIGNED BY A PROFESSIONAL ENGINEER CURRENTLY REGISTERED IN THE STATE OF COLORADO.
- THE ADDRESSES EXHIBITED ON THIS PLAT ARE FOR INFORMATIONAL PURPOSES ONLY. THEY ARE NOT THE LEGAL DESCRIPTION AND ARE SUBJECT TO CHANGE.
- MAILBOXES SHALL BE INSTALLED IN ACCORDANCE WITH ALL EL PASO COUNTY, COLORADO DEPARTMENT OF TRANSPORTATION AND UNITED STATES POSTAL SERVICE REGULATIONS.
- NOTICE: THIS PROPERTY MAY BE IMPACTED BY NOISE CAUSED BY AIRCRAFT OPERATING INTO AND OUT OF THE COLORADO SPRINGS AIRPORT. THE BUYER SHOULD FAMILIARIZE HIMSELF/HERSELF WITH POTENTIALITY AND RAMIFICATIONS THEREOF. (REC. NOS. 97151716 AND 98009638)
- ALL PROPERTY WITHIN THIS SUBDIVISION IS SUBJECT TO AVIGATION EASEMENTS AS RECORDED UNDER RECEPTION NO. 204190786 AND RECEPTION NO. 204190787 IN THE RECORDS OF EL PASO COUNTY, COLORADO. AS SUCH:
A. NO MAN-MADE OR NON MAN-MADE OBSTRUCTIONS ARE ALLOWED TO PENETRATE THE 40:1 APPROACH SURFACE.
B. ALL EXTERIOR LIGHTING PLANS ARE TO BE APPROVED BY THE DIRECTOR OF AVIATION TO PREVENT A HAZARD TO AIRCRAFT.
C. NO ELECTROMAGNETIC, LIGHT, OR ANY PHYSICAL EMISSIONS WHICH MAY INTERFERE WITH AIRCRAFT, AVIGATION, COMMUNICATIONS OR NAVIGATIONAL AIDS ARE ALLOWED.
D. IF A CRANE IS TO BE USED DURING THE CONSTRUCTION PERIOD, AN FAA FORM 7460-1 WILL NEED TO BE FILED THROUGH THE AIRPORT OPERATIONS OFFICE AND APPROVED BY THE FEDERAL AVIATION ADMINISTRATION BEFORE ANY BUILDING PERMIT IS ISSUED BY THE COUNTY. NORMAL TIME REQUIRED FOR APPROVAL IS 30 - 60 WORKING DAYS.
- THE APPROVAL OF THIS PLAT VACATES ALL PRIOR PLATS FOR THE AREA PLATTED AS SHOWN HEREON.
- THERE SHALL BE NO DIRECT VEHICULAR ACCESS TO MEADOWBROOK PARKWAY FROM ANY LOT PLATTED HEREIN. THERE SHALL BE NO DIRECT VEHICULAR ACCESS TO MARKSHEFFEL ROAD FROM ANY LOT PLATTED HEREIN.
- THE FOLLOWING REPORTS HAVE BEEN FILED AT THE COUNTY PLANNING DEPARTMENT; SOILS AND GEOLOGICAL STUDY, WATER AVAILABILITY STUDY, DRAINAGE REPORT, WILDFIRE HAZARD REPORT, NATURAL FEATURES REPORT EROSION CONTROL REPORT. (FILE SF--22-028).
- A "GEOLOGY AND SOILS STUDY" FOR VILLAS AT CLAREMONT RANCH, EL PASO COUNTY, COLORADO WAS COMPLETED BY ENTECH ENGINEERING, INC. ON SEPTEMBER 22, 2017 (REVISED APRIL 16, 2020). THE FOLLOWING LOTS HAVE BEEN FOUND TO BE IMPACTED BY GEOLOGIC HAZARDS, LOTS: 3,4,5,6,19,20,21,42,59,60,61. MITIGATION MEASURES AND A MAP OF THE HAZARD AREA CAN BE FOUND IN THE SOIL, GEOLOGY, AND GEOLOGIC HAZARD STUDY BY ENTECH ENGINEERING INC. ON SEPTEMBER 22, 2017 (REVISED APRIL 16, 2020) IN FILE PUDSP211 AVAILABLE AT THE EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT DEPARTMENT:
• ARTIFICIAL FILL: ACROSS THE SITE
• COLLAPSIBLE SOILS: POTENTIALLY ACROSS THE SITE
• AREAS OF EROSION: ACROSS THE SITE
• POTENTIALLY SEASONALLY HIGH GROUNDWATER: (NORTHWESTERN PORTION OF THE SITE)
THE PROPERTY IS LOCATED ON FIRM PANEL NO. 08041C0756G, DATED 12.07.2018, SAID PROPERTY, AS SHOWN HERON, IS THE SUBJECT OF LETTER OF MAP REVISION (LOMR), CASE NO. 08-08-0630P WITH AN EFFECTIVE DATE OF SEPTEMBER, 24, 2008. THE PROPOSED DEVELOPMENT WILL AVOID THIS AREA.
GROUNDWATER & FLOODPLAIN AREAS:
THE NORTHERN PORTION OF THE SITE IS MAPPED WITHIN FLOODPLAIN ZONES ACCORDING TO FEMA MAP NO. 08041C0756G, FIGURE 8 (REFERENCE 7). THE FLOODPLAIN IS ALONG THE EAST FORK OF SAND CREEK, AND THE PROPOSED DEVELOPMENT WILL AVOID THIS AREA. ENTECH ENGINEERING INC. CONCLUDES IN THEIR REPORT THAT DEVELOPMENT OF THE SITE CAN BE ACHIEVED IF THE ITEMS MENTIONED ABOVE ARE MITIGATED. THESE ITEMS CAN BE MITIGATED THROUGH PROPER DESIGN AND CONSTRUCTION OR THROUGH AVOIDANCE. INVESTIGATION ON EACH LOT IS RECOMMENDED PRIOR TO CONSTRUCTION.
- NO DRIVEWAY SHALL BE ESTABLISHED UNLESS AN ACCESS PERMIT HAS BEEN GRANTED BY EL PASO COUNTY.
- INDIVIDUAL LOT PURCHASERS ARE RESPONSIBLE FOR CONSTRUCTING DRIVEWAYS, INCLUDING NECESSARY DRAINAGE CULVERTS PER LAND DEVELOPMENT CODE SECTION 6.3.3.C.2 AND 6.3.3.C.3.



GENERAL NOTES: (CONT.)

- THE SUBDIVIDER/DEVELOPER HAS FAMILIARIZED ITSELF WITH CURRENT AMERICANS WITH DISABILITIES ACT (ADA) LAWS AND ACCESSIBILITY STANDARDS AND HAS LAID OUT THE PLAT AND ASSOCIATED GRADING AND CONSTRUCTION PLANS SO THAT ALL SITE ELEMENTS MEET THE APPLICABLE ADA DESIGN STANDARDS AS PUBLISHED BY THE UNITED STATES DEPARTMENT OF JUSTICE. APPROVAL OF THIS PLAT AND ASSOCIATED CONSTRUCTION DOCUMENTS BY EL PASO COUNTY DOES NOT ASSURE COMPLIANCE WITH THE ADA OR ANY REGULATIONS OR GUIDELINES ENACTED OR PROMULGATED UNDER OR WITH RESPECT TO SUCH LAWS. IT IS THE RESPONSIBILITY OF THE DEVELOPER/HOME BUILDER TO ENSURE ADA ACCESSIBILITY DURING CONSTRUCTION OF THE PRIVATE SIDEWALKS.
- ANY PERSON WHO KNOWINGLY REMOVES, ALTERS OR DEFACTES ANY PUBLIC LAND SURVEY MONUMENT OR LAND BOUNDARY MONUMENT OR ACCESSORY COMMITS A CLASS TWO (2) MISDEMEANOR PURSUANT TO C.R.S. § 18-4-508.
- DEVELOPER SHALL COMPLY WITH FEDERAL AND STATE LAWS, REGULATIONS, ORDINANCES, REVIEW AND PERMIT REQUIREMENTS, AND OTHER AGENCY REQUIREMENTS, IF ANY, OF APPLICABLE AGENCIES INCLUDING, BUT NOT LIMITED TO, THE COLORADO DIVISION OF WILDLIFE, COLORADO DEPARTMENT OF TRANSPORTATION, U.S. ARMY CORPS OF ENGINEERS AND THE U.S. FISH AND WILDLIFE SERVICE REGARDING THE ENDANGERED SPECIES ACT.
- THE INDIVIDUAL LOT PURCHASER(S) SHALL BE RESPONSIBLE FOR FINAL DESIGN, CONSTRUCTION, AND MAINTENANCE OF PRIVATE DETENTION POND/WATER QUALITY BMP(S) AS DESCRIBED IN THE APPROVED PRELIMINARY/FINAL DRAINAGE REPORT FOR THIS SUBDIVISION. FINAL DESIGN, CONSTRUCTION DRAWINGS AND DRAINAGE REPORT UPDATES FOR THE DETENTION POND/WATER QUALITY BMP(S) SERVING EACH LOT SHALL BE PROVIDED WITH SITE DEVELOPMENT PLAN SUBMITTALS. THE DETENTION POND/WATER QUALITY BMP(S) SHALL BE CONSTRUCTED AND COMPLETED PRIOR TO THE ISSUANCE OF ANY BUILDING PERMITS FOR THE SUBJECT LOTS. THE SUBDIVISION DEVELOPER IS RESPONSIBLE FOR PROVIDING FINANCIAL ASSURANCES AS INDICATED IN THE SUBDIVISION IMPROVEMENTS AGREEMENT AND ESTIMATE OF GUARANTEED FUNDS FOR ALL DETENTION PONDS/WATER QUALITY BMPS. ALL DETENTION PONDS/WATER QUALITY BMPS SHALL BE CONSTRUCTED PRIOR TO THE RELEASE OF SAID FINANCIAL ASSURANCES.
INDIVIDUAL LOT PURCHASERS SHALL ENTER INTO A PRIVATE DETENTION BASIN / STORMWATER QUALITY BMP MAINTENANCE AGREEMENT AND EASEMENT ("AGREEMENT") PRIOR TO THE ISSUANCE OF ANY BUILDING PERMITS FOR THE SUBJECT LOTS. IN THE CASE THAT THE DEVELOPER CONSTRUCTS THE DETENTION POND(S), THE DEVELOPER SHALL ENTER INTO AN AGREEMENT FOR EACH POND CONSTRUCTED.
- ALL PROPERTY OWNERS ARE RESPONSIBLE FOR MAINTAINING PROPER STORM WATER DRAINAGE IN AND THROUGH THEIR PROPERTY. PUBLIC DRAINAGE EASEMENTS AS SPECIFICALLY NOTED ON THE PLAT SHALL BE MAINTAINED BY THE INDIVIDUAL LOT OWNERS UNLESS OTHERWISE INDICATED. STRUCTURES, FENCES, MATERIALS OR LANDSCAPING THAT COULD IMPEDE THE FLOW OF RUNOFF SHALL NOT BE PLACED IN DRAINAGE EASEMENTS.
- THE PRIVATE ROADS AS SHOWN ON THIS PLAT WILL NOT BE MAINTAINED BY EL PASO COUNTY UNTIL AND UNLESS THE STREETS ARE CONSTRUCTED IN CONFORMANCE WITH EL PASO COUNTY STANDARDS IN EFFECT AT THE DATE OF THE REQUEST FOR DEDICATION AND MAINTENANCE.
- ALL PROPERTY WITHIN THIS SUBDIVISION IS SUBJECT TO A DECLARATION OF COVENANTS AS RECORDED AT RECEPTION NO. _____ OF THE RECORDS OF THE EL PASO COUNTY CLERK AND RECORDER.
- THE PROPERTY IS WITHIN THE SERVICE AREA OF THE CENTRAL MARKSHEFFEL METROPOLITAN DISTRICT AND, AS SUCH, IS SUBJECT TO AN ASSESSMENT FOR THE CONSTRUCTION OF MARKSHEFFEL ROAD.
- THE SUBDIVIDER(S) AGREES ON BEHALF OF HIM/HERSELF AND ANY DEVELOPER OR BUILDER SUCCESSORS AND ASSIGNEES THAT SUBDIVIDER AND/OR SAID SUCCESSORS AND ASSIGNS SHALL BE REQUIRED TO PAY TRAFFIC IMPACT FEES IN ACCORDANCE WITH THE EL PASO COUNTY ROAD IMPACT FEE PROGRAM RESOLUTION (RESOLUTION NO. 19-471), OR ANY AMENDMENTS THERETO, AT OR PRIOR TO THE TIME OF BUILDING PERMIT SUBMITTALS. THE FEE OBLIGATION, IF NOT PAID AT FINAL PLAT RECORDING, SHALL BE DOCUMENTED ON ALL SALES DOCUMENTS AND ON PLAT NOTES TO ENSURE THAT A TITLE SEARCH WOULD FIND THE FEE OBLIGATION BEFORE SALE OF THE PROPERTY.

PLANNING AND COMMUNITY DEVELOPMENT DEPARTMENT DIRECTOR CERTIFICATE:

THIS PLAT FOR "VILLAS AT CLAREMONT RANCH" WAS APPROVED FOR FILING BY THE EL PASO COUNTY, COLORADO PLANNING AND COMMUNITY DEVELOPMENT DIRECTOR ON THE ____ DAY OF _____, 2022, SUBJECT TO ANY NOTES SPECIFIED HEREON AND ANY CONDITIONS SPECIFIED HEREON.

PLANNING AND COMMUNITY DEVELOPMENT DIRECTOR _____ DATE _____

CLERK AND RECORDER:

STATE OF COLORADO }
COUNTY OF _____ } SS

I HEREBY CERTIFY THAT THIS INSTRUMENT WAS FILED FOR RECORD IN MY OFFICE AT _____ O'CLOCK _____, THIS ____ DAY OF _____, 2022, A.D., AND DULY RECORDED UNDER RECEPTION NO. _____ OF THE RECORDS OF EL PASO COUNTY, COLORADO.

FEE: _____ CHUCK BROERMAN, RECORDER

SURCHARGE: _____ BY: _____
DEPUTY

SURVEYORS CERTIFICATE

I VERNON P. TAYLOR, A DULY REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF COLORADO, DO HEREBY CERTIFY THAT THIS PLAT TRULY AND CORRECTLY REPRESENTS THE RESULTS OF A SURVEY MADE ON DATE OF SURVEY, BY ME OR UNDER MY DIRECT SUPERVISION AND THAT ALL MONUMENTS EXIST AS SHOWN HEREON; THAT MATHEMATICAL CLOSURE ERRORS ARE LESS THAN 1:10,000; AND THAT SAID PLAT HAS BEEN PREPARED IN FULL COMPLIANCE WITH ALL APPLICABLE LAWS OF THE STATE OF COLORADO DEALING WITH MONUMENTS, SUBDIVISION, OR SURVEYING OF LAND AND ALL APPLICABLE PROVISIONS OF THE EL PASO COUNTY LAND DEVELOPMENT CODE.

I ATTEST THE ABOVE ON THIS ____ DAY OF _____, 2022.

VERNON P. TAYLOR
COLORADO PLS NO. 25966, FOR AND
ON BEHALF OF M&S CIVIL CONSULTANTS, INC

NOTICE:
ACCORDING TO COLORADO LAW, YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT, MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON.

FEES:

DRAINAGE FEE: _____
BRIDGE FEE: _____
SCHOOL FEE: _____
REGIONAL PARK FEE: _____ \$ 38,180.00
URBAN PARK FEE: _____ \$ 24,070.00

SUMMARY:

| | | |
|---------------|---------------------|----------------|
| 83 LOTS | 2.507 ACRES | 24.65% |
| 6 TRACTS | 7.577 ACRES | 74.51% |
| RIGHTS-OF-WAY | 0.085 ACRES | 0.84% |
| TOTAL | 10.169 ACRES | 100.00% |

CHEROKEE METROPOLITAN DISTRICT
6250 PALMER PARK BOULEVARD
COLORADO SPRINGS, CO 80915
PHONE: 719-597-5080

PHI REAL ESTATE SERVICES, LLC
200 W CITY CENTER DRIVE #200
PUEBLO, CO 81003
PHONE: 719-584-2800

FINAL PLAT

VILLAS AT CLAREMONT RANCH

JOB NO.: 70-107
DATE PREPARED: 09/15/2017
DATE REVISED: 02/18/2020
DATE REVISED: 07/29/2022
DATE REVISED: 10/17/2022
DATE REVISED: 12/09/2022
FILE NO.: SF--22-028



CIVIL CONSULTANTS, INC.

PREPARED BY:
ERIC L. YOKOM
FOR AND ON
BEHALF OF

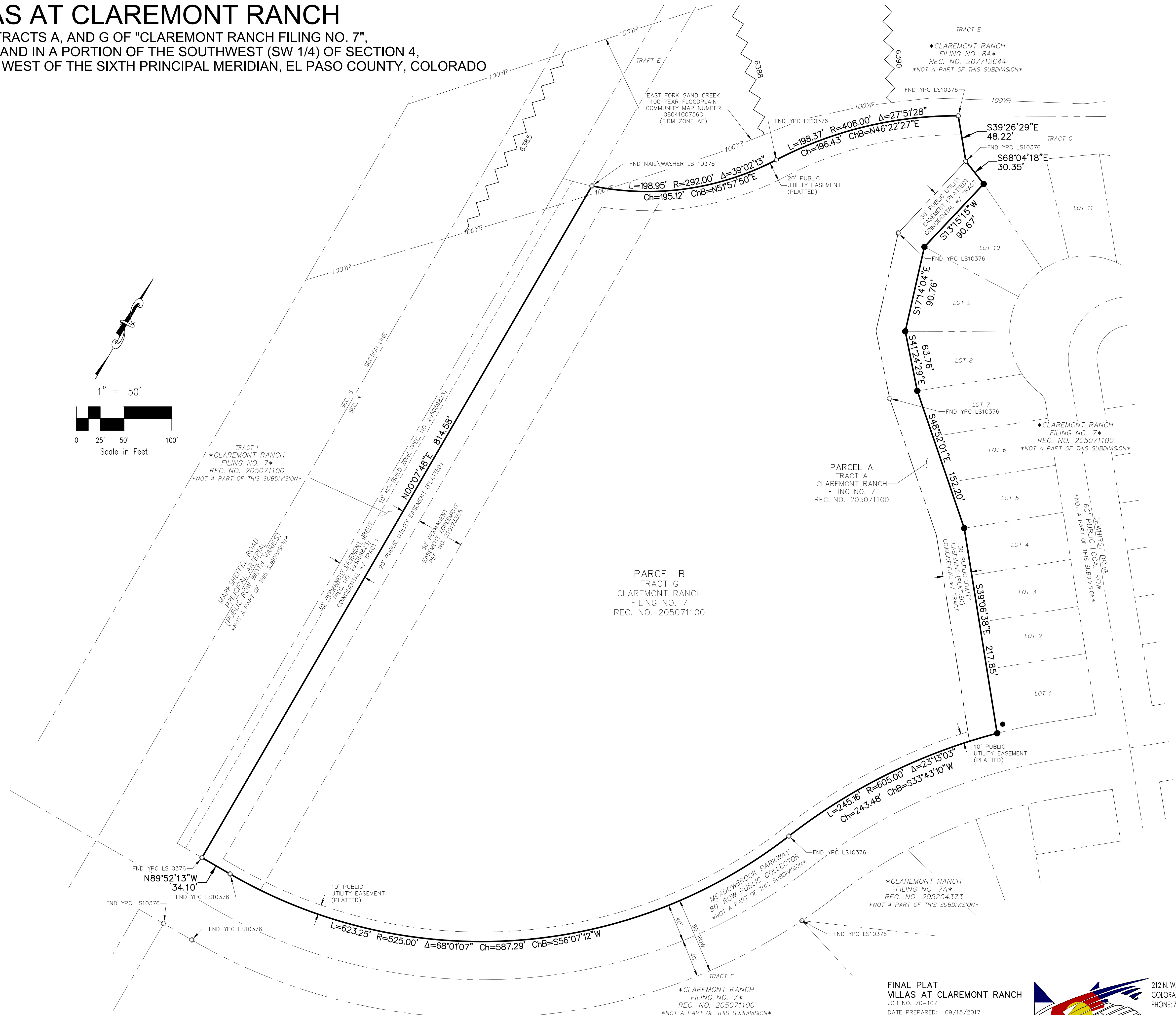
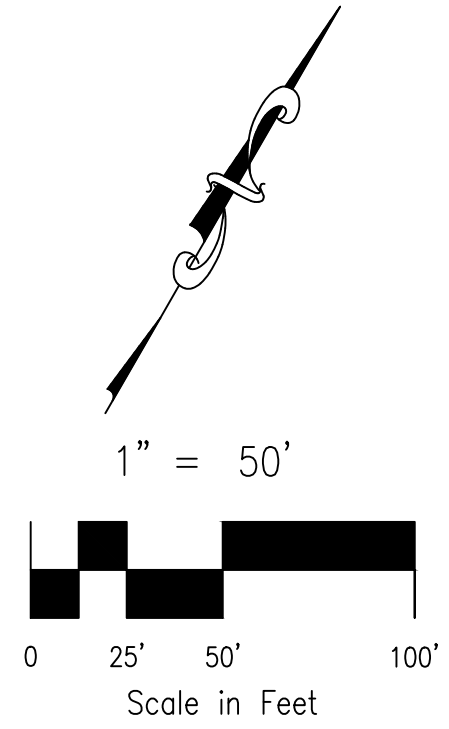
212 N. WAHSATCH AVE., STE 305
COLORADO SPRINGS, CO 80903
PHONE: 719.955.5485

SHEET 1 OF 5

VILLAS AT CLAREMONT RANCH

A REPLAT OF TRACTS A, AND G OF "CLAREMONT RANCH FILING NO. 7",
BEING A PARCEL OF LAND IN A PORTION OF THE SOUTHWEST (SW 1/4) OF SECTION 4,
TOWNSHIP 14 SOUTH, RANGE 65 WEST OF THE SIXTH PRINCIPAL MERIDIAN, EL PASO COUNTY, COLORADO

- LEGEND:**
- SF SQUARE FEET
 - (xxxx) ADDRESS
 - Ch CHORD
 - ChB CHORD BEARING
 - SET No 5 REBAR AND 1.25" ORANGE CAP STAMPED "M&S CIVIL PLS 25966" FLUSH W/ EXISTING GRADE UNLESS NOTED OTHERWISE
 - FOUND MONUMENT AS LABELED, FLUSH W/ EXISTING GRADE UNLESS NOTED OTHERWISE
 - BOUNDARY LINE
 - PROPERTY LINE
 - - - - EASEMENT LINE
 - - - - ADJACENT SUBDIVISION, PROPERTY, AND RIGHTS-OF-WAY LINES
 - - - - EXISTING CENTERLINES
 - - - - EXISTING EASEMENT LINES



FINAL PLAT
VILLAS AT CLAREMONT RANCH
JOB NO. 70-107
DATE PREPARED: 09/15/2017
DATE REVISED: 02/18/2020
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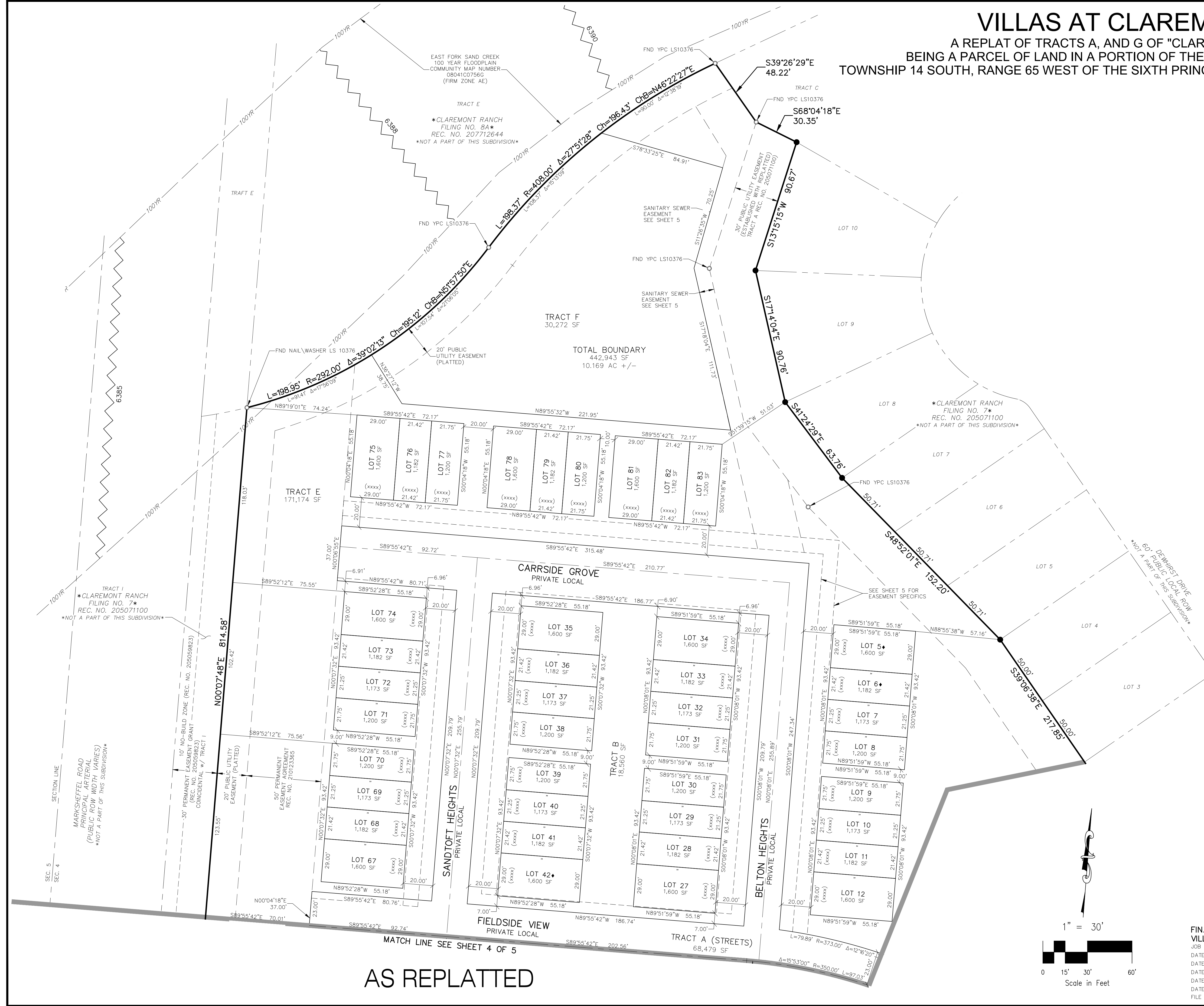


212 N. WAHSATCH AVE., STE. 305
COLORADO SPRINGS, CO 80903
PHONE: 719.955.5485

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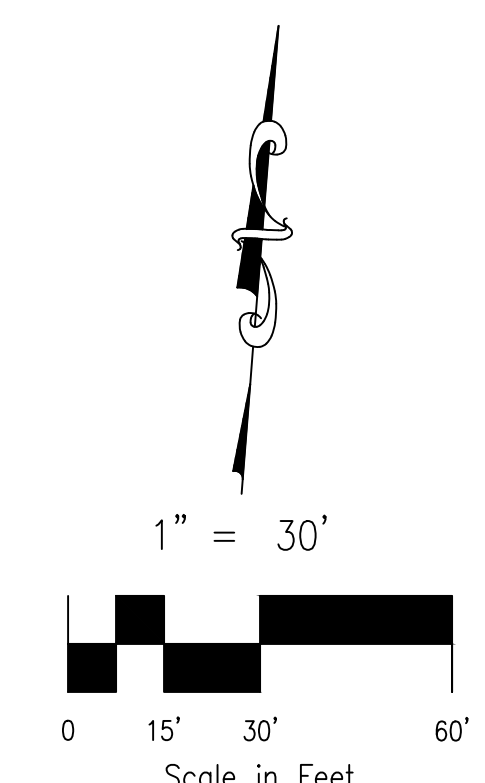
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- ◆ DENOTES LOTS REQUIRING SPECIAL STUDIES OR THAT PRESENT SIGNIFICANT CONSTRAINTS AND/OR HAZARDS TO DEVELOPMENT SEE GENERAL NOTE 14



FINAL PLAT
VILLAS AT CLAREMONT RANCH
JOB NO. 79-107
DATE PREPARED: 09/15/2017
DATE REVISED: 02/18/2020
DATE REVISED: 07/29/2022
DATE REVISED: 10/17/2022
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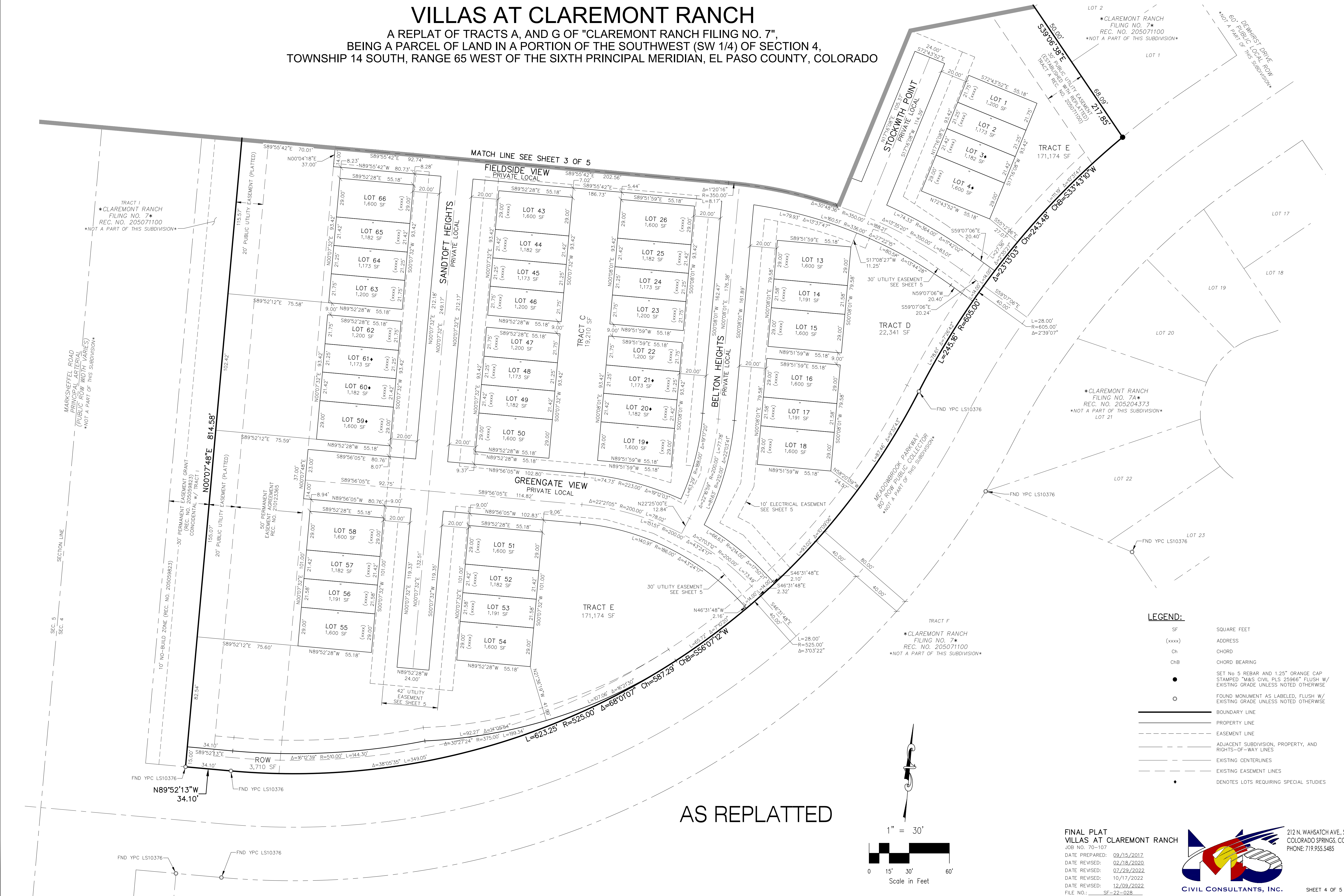
CIVIL CONSULTANTS, INC.
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COLORADO SPRINGS, CO 80903
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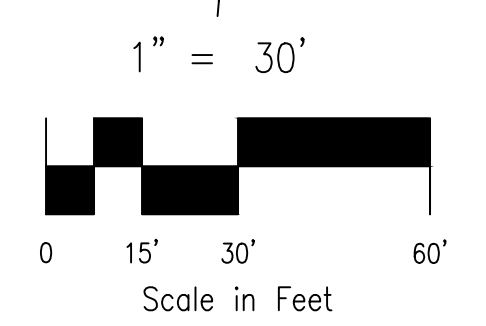
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LEGEND:

| | |
|-----------|--|
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| (xxxx) | ADDRESS |
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| ChB | CHORD BEARING |
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| • | DENOTES LOTS REQUIRING SPECIAL STUDIES |



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VILLAS AT CLAREMONT RANCH
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SHEET 4 OF 5

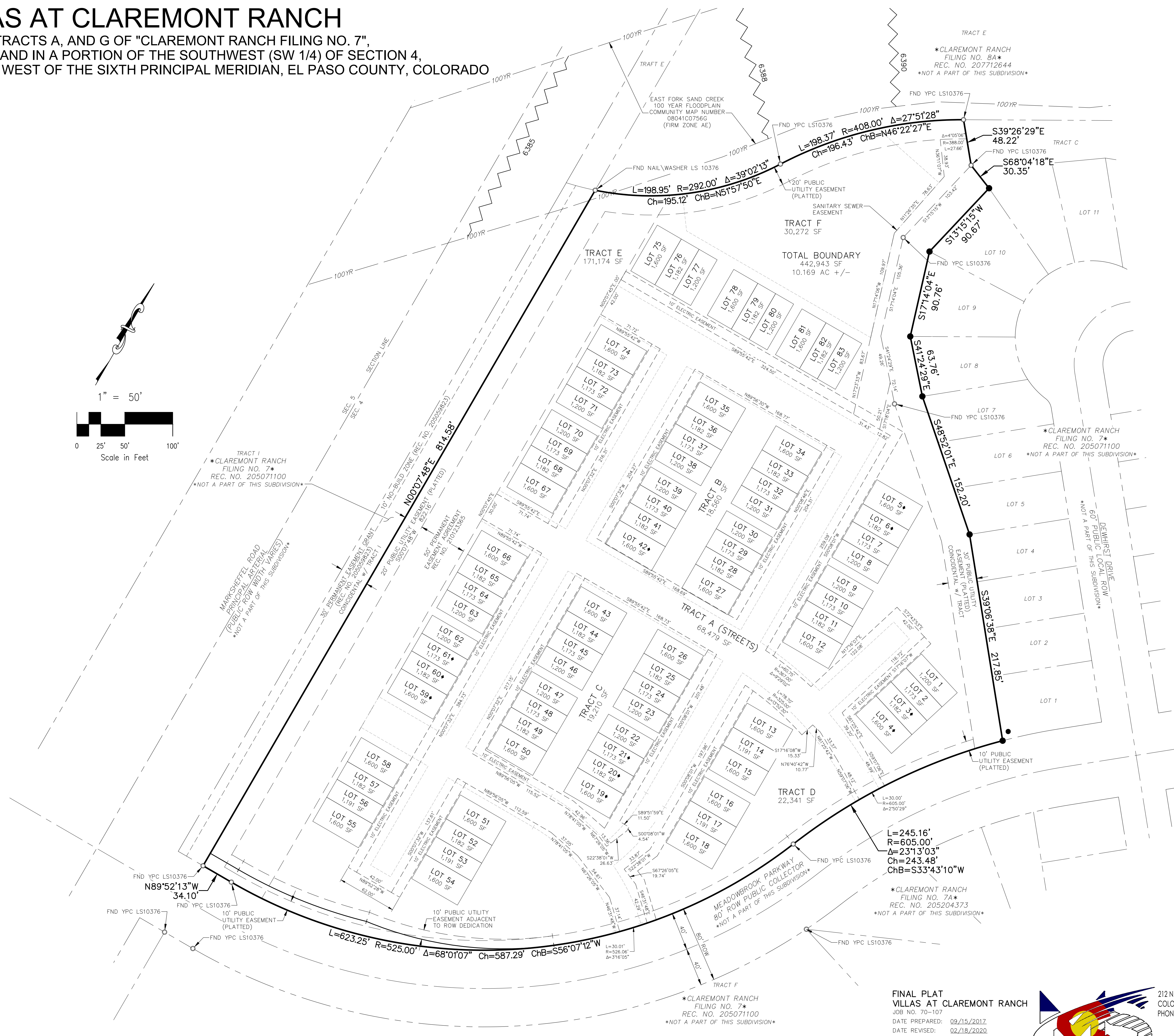
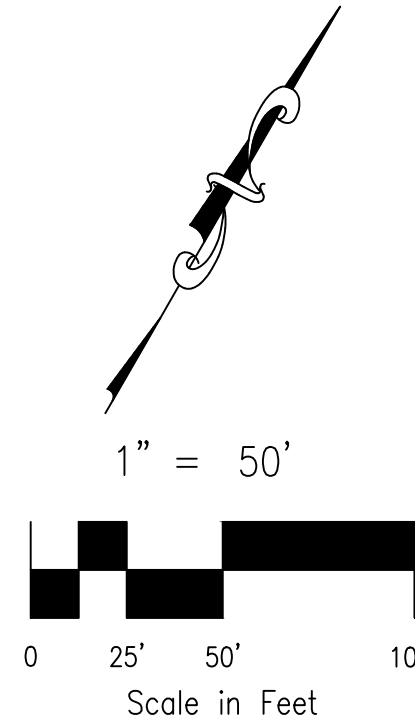
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VILLAS AT CLAREMONT RANCH

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EASEMENT EXHIBIT

FINAL PLAT
VILLAS AT CLAREMONT RANCH
JOB NO. 70-101
DATE PREPARED: 09/15/2017
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SHEET 5 OF 5

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