




LSC TRANSPORTATION CONSULTANTS, INC.
545 East Pikes Peak Avenue, Suite 210
Colorado Springs, CO 80903
(719) 633-2868
FAX (719) 633-5430
E-mail: lsc@lsctrans.com
Website: <http://www.lsctrans.com>

Meadowbrook Crossing Updated Traffic Impact Study (LSC #164430) May 5, 2017

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.

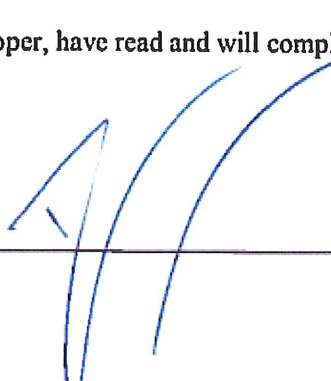
 Jeffrey C. Hodsdon, P.E., #31684



 5/5/17
Date

Developer's Statement

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



 5-5-17
Date

SF 17-002



LSC TRANSPORTATION CONSULTANTS, INC.
545 East Pikes Peak Avenue, Suite 210
Colorado Springs, CO 80903
(719) 633-2868
FAX (719) 633-5430
E-mail: lsc@lsctrans.com
Website: <http://www.lsctrans.com>

May 5, 2017

Mr. Danny Mientka
The Equity Group, LLC
90 South Cascade Avenue, Suite 1500
Colorado Springs, CO 80903

RE: Meadowbrook Crossing
El Paso County, Colorado
Updated Traffic Impact Study
LSC #164430

Dear Mr. Mientka:

In response to your request, LSC Transportation Consultants, Inc. has prepared this updated traffic impact analysis for the proposed Meadowbrook Crossing residential development to be located northwest of the State Highway 24/State Highway 94/Meadowbrook Parkway intersection in El Paso County, Colorado. The site location is shown in Figure 1. This report has been prepared to accompany the Preliminary Plan and Subdivision Plat submittals to the El Paso County Planning and Community Development Department.

LAND USE AND ACCESS

Land Use

The site is located north of where Meadowbrook Parkway currently makes a 90-degree turn. The site is planned to be developed with lots for 114 single-family homes. A gas station is currently proposed for the parcel south of the site and east of Meadowbrook Parkway. The parcel located south of the site and west of Meadowbrook Parkway is currently zoned for commercial uses, however there is potential that this site may be developed for residential uses similar to the currently proposed Meadowbrook Crossing.

Proposed Access Locations

Two access points to Meadowbrook Parkway are proposed. One access point would align with the segment of Meadowbrook Parkway that connects to the US Highway 24 intersection. The second access point would be located 765 feet to the northeast. Both access points are to Meadowbrook Parkway due to the site configuration and natural constraints.

The subdivision plat includes a 40-foot dedication to El Paso County along the southern boundary to be used for the right-of-way and extension of Meadowbrook Parkway to the west.

The site plan upon which this study is based is shown in Figure 2. The site plan shows how this development would convert this 90-degree turn into a three-leg intersection with a site access forming the northwest leg of the intersection. A second full-movement access point is proposed to Meadowbrook Parkway 765 feet to the east.

INTERSECTION SIGHT DISTANCE

Figure 3 shows the required intersection sight distance lines at the two proposed access points based on the criteria contained in Table 2-21 of the *El Paso County Engineering Criteria Manual (ECM)*. Landscaping, fencing, and all other obstructions should be kept outside of these intersection lines of sight.

ROADWAY AND TRAFFIC CONDITIONS

Area Roadways

The area roadways in the site's vicinity are shown on Figure 1 and are described below.

- **US Highway 24 (US 24)** is a state highway extending locally from the City of Colorado Springs to Peyton in a northeasterly direction and then continuing east. US 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)*.
- **State Highway 94 (US 94)** is a State Highway that extends east from the intersection of US 24 and Meadowbrook Parkway to State Highway 40. US 94 is classified as an Expressway by CDOT in the vicinity of the site and is shown as an Expressway on the El Paso County MTCP.
- **Meadowbrook Parkway** is a paved, 52-foot-wide Non-Residential Collector that extends through the Claremont Ranch Business Park development generally parallel to US 24.

Existing Traffic Volumes

Figure 4 shows the existing peak-hour traffic volumes and existing lane geometries and traffic control at the intersections of State Highway 24/State Highway 94/Meadowbrook Parkway and Marksheffel Road/Meadowbrook Parkway. The traffic volumes are from the attached raw peak-hour traffic counts conducted by LSC in June and October 2016.

Existing Levels of Service

Level of service (LOS) is a quantitative measure of the delay and level of congestion at an intersection. Level of service is indicated on a scale from "A" to "F." LOS A represents control delay of less than 10 seconds for unsignalized and signalized intersections. LOS F represents control delay of more than 50

seconds for unsignalized intersections and more than 80 seconds for signalized intersections. Table 1 shows the level of service delay ranges.

Table 1 Intersection Levels of Service Delay Ranges			
Level of Service	Signalized Intersections		Unsignalized Intersections
	Average Control Delay (seconds per vehicle)	V/C⁽¹⁾	Average Control Delay (seconds per vehicle)⁽²⁾
A	10.0 sec or less	less than 0.60	10.0 sec or less
B	10.1-20.0 sec	0.60-0.69	10.1-15.0 sec
C	20.1-35.0 sec	0.70-0.79	15.1-25.0 sec
D	35.1-55.0 sec	0.80-0.89	25.1-35.0 sec
E	55.1-80.0 sec	0.90-0.99	35.1-50.0 sec
F	80.1 sec or more	1.00 and greater	50.1 sec or more
(1) Source: <i>Transportation Research Circular 212</i>			
(2) 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 intersection of US Highway 24/State Highway 94/Meadowbrook Parkway has been analyzed using Synchro. The results of the analysis are shown in Figure 4. As shown on the figure this intersection is currently operating at an acceptable level of service (LOS D or better) during the peak hours. The level of service reports are attached.

The intersection of Marksheffel Road/Meadowbrook Parkway has been analyzed based on the unsignalized method of analysis procedures found in the *Highway Capacity Manual, 2010 Edition* by the Transportation Research Board. The eastbound and westbound approaches at this intersection are currently operating at LOS F during the peak hours.

TRAFFIC SIGNAL WARRANT ANALYSIS

The intersection of Marksheffel Road/Meadowbrook Parkway was analyzed to determine if a Four-Hour Volume Traffic Signal Warrant is currently satisfied based on existing traffic volumes recorded in the field in October 2016. This analysis has been based on procedures and guidelines contained in the 2009 *Manual on Uniform Traffic Control Devices (MUTCD)*. Results of the analysis are shown below in Exhibit 1.

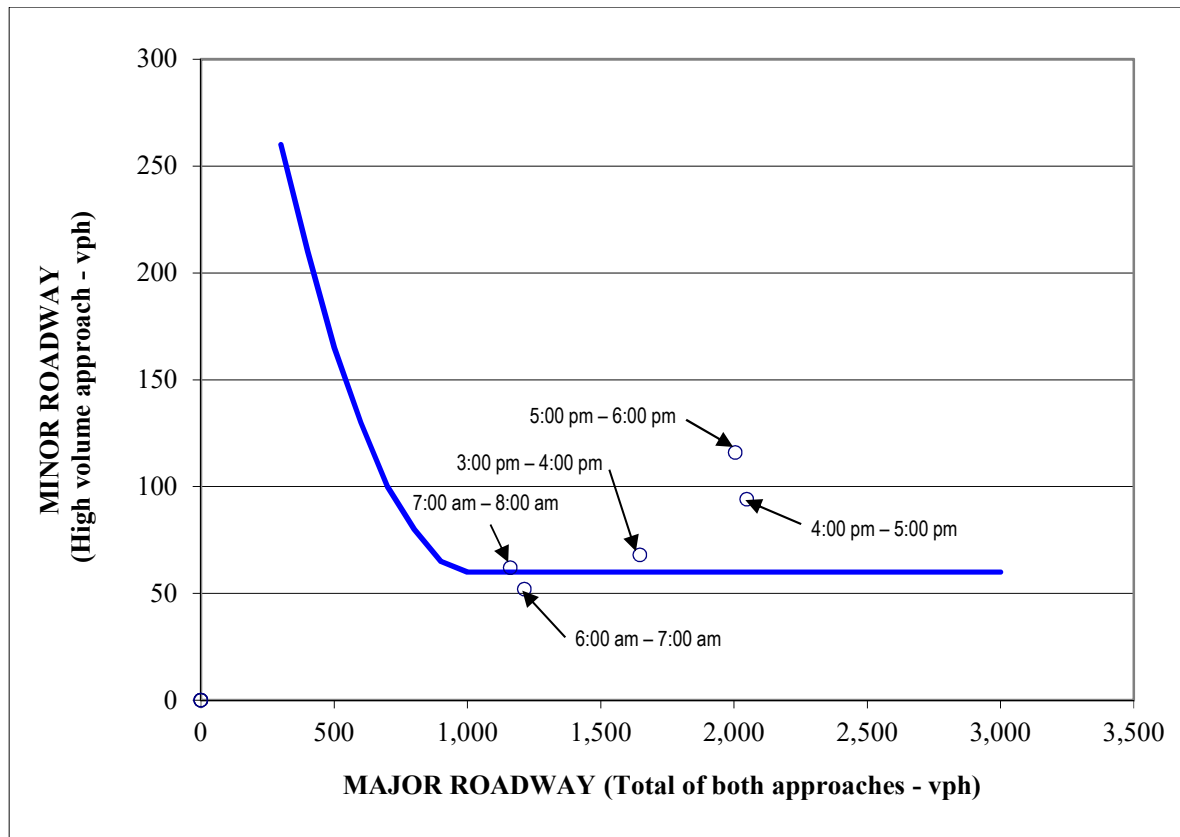


Exhibit 1 – Four-Hour Traffic Signal Warrant

As shown in the exhibit, the Four-Hour Vehicular Volume Traffic Signal Warrant is currently satisfied at this intersection. As this MUTCD signal warrant is currently met, level of service analysis for future traffic scenarios assume this intersection to be signalized.

2020 BACKGROUND TRAFFIC

Figure 5 shows the projected background traffic volumes for the year 2020. Background traffic is the traffic estimated to be on the adjacent streets without consideration of the proposed development. It includes through traffic and traffic generated by adjacent/nearby developments including buildout of the proposed gas station to be located northwest of Meadowbrook Parkway and Marksheffel Road. The traffic volumes estimated to be generated by this development were taken from the *Circle K Store Traffic Impact Analysis* by LSC dated July 31, 2015. Estimates of background traffic on US 24 and SH 94 are based on a growth rate of about two percent per year.

2040 BACKGROUND TRAFFIC

Figures 6 and 7 show the projected background traffic volumes for the year 2040. The background traffic volumes for US 24 and US 94 were based on the latest traffic volume data and 20-year growth factors from the Colorado Department of Transportation.

The background traffic volumes on Meadowbrook Parkway were estimated by LSC based on trip generation estimates for other vacant parcels served by Meadowbrook Parkway between US 24 and Marksheffel Road. To estimate potential additional traffic on Meadowbrook Parkway, the area between US 24 and Marksheffel Road was divided into traffic analysis zones shown in Appendix Figure 1. The land use assumed for each parcel is shown in the appendix table. Two land use scenarios are shown for TAZ 3 located south of the site. The first scenario assumes this site will be developed for retail uses as shown in the *Highway 24/Highway 94 Commercial Rezone Site Updated Traffic Memorandum* by LSC dated April 29, 2014. The 2040 background volumes based on this scenario are shown in Figure 6. The second scenario assumes TAZ 3 will be developed with about 184 single-family homes. The 2040 background volumes based on this scenario are shown in Figure 7. The 2040 background traffic volumes assume Meadowbrook Parkway has been extended west to Peterson Boulevard.

TRIP GENERATION

The site-generated vehicle-trips were estimated using the nationally published trip generation rates from *Trip Generation, 9th Edition, 2012* by the Institute of Transportation Engineers (ITE). Table 2 shows the site's average weekday, morning peak-hour, and afternoon peak-hour trip generation estimates.

The proposed development could be expected to generate about 1,085 new vehicle-trips on the average weekday, with about half entering and half exiting the site during a 24-hour period. During the morning peak hour, which generally occurs for one hour between 6:30 and 8:30 a.m., about 21 vehicles would enter and 64 vehicles would exit the site. During the afternoon peak hour, which generally occurs for one hour between 4:15 and 6:15 p.m., about 72 vehicles would enter and 42 vehicles would exit the site.

DIRECTIONAL DISTRIBUTION AND ASSIGNMENT

The directional distribution of the site-generated traffic volumes on the area roadways is an important factor in determining the site's traffic impacts. Figure 8 shows directional distribution estimates for the site-generated traffic volumes. The estimates have been based on the following factors: the site's location with respect to the nearby employment, commercial, and activity centers.

When the distribution percentages in Figure 8 are applied to the trip generation estimates shown in Table 2, the site-generated traffic volumes on the adjacent streets can be determined. Figures 9 and 10 show the short-term and long-term site-generated traffic volumes, respectively. The short-term site-generated traffic volumes assume the existing street network. The long-term site-generated traffic volumes assume Meadowbrook Parkway has been extended west to Peterson Road.

TOTAL TRAFFIC

Figure 11 shows the 2020 total traffic volumes. The 2020 total traffic volumes are the sum of the short-term site-generated volumes from Figure 9 plus the 2020 background traffic volumes from Figure 5.

Figures 12 and 13 show the 2040 total traffic volumes based on the two potential land use scenarios for the parcel located just west of the site. Figure 12 shows the 2040 total traffic volumes based on Scenario

1, which assumes the parcel just south of the site is developed for retail uses. The volumes are the sum of the 2040 Scenario 1 background volumes from Figure 6 plus the long-term site-generated volumes from Figure 10. Figure 13 shows the 2040 total traffic volumes based on Scenario 2, which assumes the parcel just south of the site is developed for residential uses. The volumes are the sum of the 2040 Scenario 2 background volumes from Figure 7 plus the long-term site-generated volumes from Figure 10.

PROJECTED LEVEL OF SERVICE

The intersection of US 24/US 94/Meadowbrook and the site access points were analyzed to determine the projected levels of service during the peak hours for the 2020 and 2040 background and total traffic volumes. The signalized intersection of US 24/US 94/Meadowbrook was analyzed using Synchro. The site access points were analyzed based on the unsignalized method of analysis procedures from the *Highway Capacity Manual, 2010 Edition*. Figures 5 through 7 and Figures 11 through 13 show the analysis results from the attached level of service reports.

US 24/US 94/Meadowbrook

The intersection of US 24/US 94/Meadowbrook is projected to continue to operate at a satisfactory level of service as a signalized intersection based on the projected 2020 total traffic volumes. By 2040 this intersection is projected to operate at LOS D during the morning peak hour and LOS C during the afternoon peak hour based on both the projected background and total traffic volumes assuming the parcel south of the site is developed for either retail or residential uses. As shown in Figures 6, 7, 12 and 13, some of the minor movements are projected to operate at LOS E in both the background and total traffic analyses. Based on these projected high through volumes on US 24 and the high westbound left-turn volumes from Highway 94, the intersection would need to be upgraded to a grade-separated intersection in order to meet county standards for LOS regardless of this development. The PPACG 2040 plan shows the intersection of Highway 24/Marksheffel as a grade-separated interchange, but not this intersection.

Funding for the future grade-separated interchange at this intersection of two state highways will be a regional improvement that should not be the responsibility of this development. It will be the high critical movements on the state highways identified above that will eventually cause the at-grade intersection to have an LOS below CDOT and county standards.

Marksheffel/Meadowbrook

The intersection of Marksheffel/Meadowbrook is currently two-way stop-sign controlled. The eastbound and westbound approaches are currently operating at LOS F during the peak hours. As discussed in the Traffic Signal Warrant Analysis section above, this intersection currently meets a Four-Hour Vehicular Volume Traffic Signal Warrant. This intersection was therefore analyzed as a signalized intersection for the short-term and 2040 background and total scenarios. Based on the short-term total traffic volumes the overall intersection is projected to operate at LOS B and all movements are projected to operate at LOS D or better during the peak hours. By 2040, the eastbound left-turn and westbound through and left-turn movements are projected to operate at LOS E during the afternoon peak hour based on 2040

background and total traffic assuming both Scenario 1 and Scenario 2 development. These movements have projected delays in the LOS E range simply because they arrive at the traffic signal at the beginning of the red phase at an intersection with many phases and a long cycle length. These movements would not be considered “failing” since their volume-to-capacity ratios are less than one. The justification is that to progress through traffic along an arterial corridor, the traffic signal offsets and left-turn phase times have been adjusted to favor the through band, which can result in higher delay for the left-turn movements even though there is sufficient capacity for them.

Meadowbrook/Newt Drive

Currently Meadowbrook Parkway extends northwest from the intersection of US 24/SH 94 for about 500 feet and then makes a 90-degree turn and continues northeast to Marksheffel Road. This intersection is planned to be reconstructed as a three-leg intersection with this development. This intersection is projected to operate at a satisfactory level of service (LOS B or better) as a stop-sign-controlled intersection based on the projected 2020 total traffic volumes.

In the future Meadowbrook Parkway is planned to be extended west to Peterson Boulevard. Based on the 2040 background volumes, the intersection may need to be signalized (if warrants are met) in the future with traffic generation (background traffic) by other area parcels as the northbound and southbound left-turn movements show level of service F. Figures 12 and 13 show the lane geometry assumed in the analysis.

East Site Access Point

All movements at the east site access point to Meadowbrook Parkway are projected to operate at a satisfactory level of service (LOS C or better) based on the projected 2020 and 2040 Scenario 1 and Scenario 2 total traffic volumes assuming these intersections are Stop-sign controlled.

RECOMMENDED STREET CLASSIFICATIONS

All streets within this subdivision should be classified as Urban Local streets.

COUNTYWIDE ROAD IMPROVEMENT FEE PROGRAM

The applicant will be required to participate in the County Road Impact Fee Program. The applicant proposes to have this subdivision annexed into the 10-mil PID. Based on the new net fee of \$923 per single-family dwelling unit to be included with the *Major Transportation Corridors Plan (MTCP)* update, the net fee for the proposed 114 lots would be \$105,222.

CONCLUSIONS/RECOMMENDATIONS

1. The site could be expected to generate about 1,085 new vehicle-trips on the average weekday with about half entering and half exiting the site during a 24-hour period. During the morning peak hour about 21 vehicles would enter and 64 vehicles would exit the site. During the afternoon peak hour about 72 vehicles would enter and 42 vehicles would exit the site.

2. The intersection of US 24/US 94/Meadowbrook is projected to operate at LOS D during the morning peak hour and LOS C during the afternoon peak hour based on both the projected 2040 background and total traffic volumes. Some of the minor movements are projected to operate at LOS E during the peak hours. The poor level of service for this movement is the result of high projected volumes on Highway 24 and Highway 94. Based on these projected high through volumes on US 24 and the high westbound left-turn volumes from Highway 94, the intersection would need to be upgraded to a grade-separated intersection in order to meet county standards for LOS regardless of this development. The PPACG 2040 plan shows the intersection of Highway 24/Marksheffel as a grade-separated interchange, but not this intersection. Funding for the future grade-separated interchange at this intersection of two state highways will be a regional improvement, which should not be the responsibility of this development. It will be the high critical movements on the state highways identified above that will eventually cause the at-grade intersection to have a LOS below county standards.
3. The intersection of Marksheffel/Meadowbrook is currently two-way stop-sign controlled. The eastbound and westbound approaches are currently operating at LOS F during the peak hours. As discussed in the Traffic Signal Warrant section above, this intersection currently meets a Four-Hour Vehicular Volume Traffic Signal Warrant. This intersection was therefore analyzed as a signalized intersection for the short-term and 2040 background and total scenarios. Based on the short-term total traffic volumes the overall intersection is projected to operate at LOS B and all movements are projected to operate at LOS D or better during the peak hours. By 2040, the eastbound left-turn and westbound through and left-turn movements are projected to operate at LOS E during the afternoon peak hour based on 2040 background and total traffic assuming both Scenario 1 and Scenario 2 development. These movements have projected delays in the LOS E range simply because they arrive at the traffic signal at the beginning of the red phase at an intersection with many phases and a long cycle length. These movements would not be considered “failing” since their volume-to-capacity ratios are less than one. The justification is that to progress through traffic along an arterial corridor, the traffic signal offsets and left-turn phase times have been adjusted to favor the through band, which can result in higher delay for the left-turn movements even though there is sufficient capacity for them.
4. The proposed east site access point to Meadowbrook Parkway is projected to operate at a satisfactory level of service as a Stop-sign-controlled intersection based on the 2020 and 2040 total traffic volumes.
5. Currently Meadowbrook Parkway extends northwest from the intersection of US 24/SH 94 for about 500 feet and then makes a 90-degree turn and continues northeast to Marksheffel Road. The site plan shows this intersection reconstructed as a three-leg intersection with this development. In the short-term this intersection should be stop-sign controlled with stop control for the north and south legs. As the parcel south of the site develops and/or a future connection is made to Peterson Road, the intersection of Meadowbrook/Meadowbrook may need to be signalized. The intersection may need to be signalized in the future (if warrants are met) with traffic generation (background traffic) by other area parcels.


6. Left-turn lanes at the site access points on Meadowbrook Parkway would be provided once Meadowbrook is striped for a center, two-way left-turn lane.
7. A westbound right-turn deceleration lane would not be required on Meadowbrook Parkway approaching either site access point.
8. All streets within this subdivision should be classified as Urban Local streets.
9. The applicant will be required to participate in the County Road Impact Fee Program. The applicant proposes to have this subdivision annexed into the 10-mil PID. Based on the new net fee of \$923 per single-family dwelling unit to be included with the *Major Transportation Corridors Plan (MTCP)* update, the net fee for the proposed 104 lots would be \$95,992.

* * * * *

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

Sincerely,

LSC TRANSPORTATION CONSULTANTS, INC.

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

JCH:KDF:bjwb

Enclosures: Table 2
Appendix Table
Figures 1-13
Appendix Figure 1
Traffic Count Data Sheets
Level of Service Reports

Table 2
Trip Generation Estimate
Meadowbrook Crossing

Table 2 Trip Generation Estimate Meadowbrook Crossing												
Land Use Code	Land Use Description	Trip Generation Units	Trip Generation Rates ⁽¹⁾						Total Trips Generated			
			Average Weekday Traffic	Morning Peak Hour		Afternoon Peak Hour		Average Weekday Traffic	Morning Peak Hour		Afternoon Peak Hour	
				In	Out	In	Out		In	Out	In	Out
210	Single-Family Detached Housing	114 DU ⁽²⁾	9.52	0.19	0.56	0.63	0.37	1,085	21	64	72	42
Notes: (1) Source: "Trip Generation, 9th Edition, 2012" by the Institute of Transportation Engineers (ITE) (2) DU = dwelling unit												
Source: LSC Transportation Consultants, Inc.												

<p align="center"> Appendix Table Background Trip Generation Estimate Meadowbrook Crossing </p>
--

Traffic Analysis Zone	Land Use Code	Land Use Description	Trip Generation Units	Trip Generation Rates ⁽¹⁾					Total Trips Generated					Pass-By Trips ⁽²⁾	New External Trips Generated
				Average Weekday Traffic	Morning Peak Hour In	Morning Peak Hour Out	Afternoon Peak Hour In	Afternoon Peak Hour Out	Average Weekday Traffic	Morning Peak Hour In	Morning Peak Hour Out	Afternoon Peak Hour In	Afternoon Peak Hour Out		Average Weekday Traffic
1	944	Gasoline/Service Station	18 VFP ⁽³⁾	168.56	6.20	5.96	6.94	6.94	3,034	112	107	125	125	56%	1,335
2	820	Shopping Center	22.0 KSF ⁽⁴⁾	48.89	0.67	0.41	2.29	2.38	1,076	15	9	50	52	34%	710
3	820	Shopping Center	233.7 KSF	48.89	0.67	0.41	2.29	2.38	11,426	157	96	534	556	34%	7,541
	OR														
	210	Single-Family Detached Housing	184 DU ⁽⁵⁾	9.52	0.19	0.56	0.63	0.37	1,752	35	104	116	68	0%	1,752
4	130	Single-Family Detached Housing	114 DU	9.52	0.19	0.56	0.63	0.37	1,085	21	64	72	42	0%	1,085
5	130	Industrial Park	32 acres	61.17	6.81	1.39	1.79	6.74	1,956	218	45	57	215	0%	1,956
6	130	Industrial Park	6.86 acres	61.17	6.81	1.39	1.79	6.74	420	47	10	12	46	0%	420
	820	Shopping Center	54 KSF	84.26	1.23	0.75	3.52	3.74	4,550	66	41	190	202	34%	3,003
7	820	Shopping Center	9.0 KSF	157.74	2.52	1.61	6.90	7.18	1,420	23	15	62	65	34%	937
	945	Gasoline/Service Station with Convenience Mark	10 VFP	162.78	5.08	5.08	6.76	6.76	1,628	51	51	68	68	56%	716
8	210	Single-Family Detached Housing	77 DU	9.52	0.19	0.56	0.63	0.37	733	14	43	49	28	0%	733
9	220	Apartment	324 DU	6.65	0.10	0.41	0.40	0.22	2,155	33	132	131	70	0%	2,155
10	820	Shopping Center	120.0 KSF	63.71	0.90	0.55	2.94	3.06	7,645	108	66	352	367	34%	5,046

Notes:

(1) Source: "Trip Generation, 9th Edition, 2012" by the Institute of Transportation Engineers (ITE)

(2) Source: "Trip Generation Handbook - An ITE Proposed Recommended Practice, 2nd Edition 2004" by ITE

(3) VFP = vehicle fueling positions

(4) KSF - thousand square feet of floor space

(5) DU = dwelling units

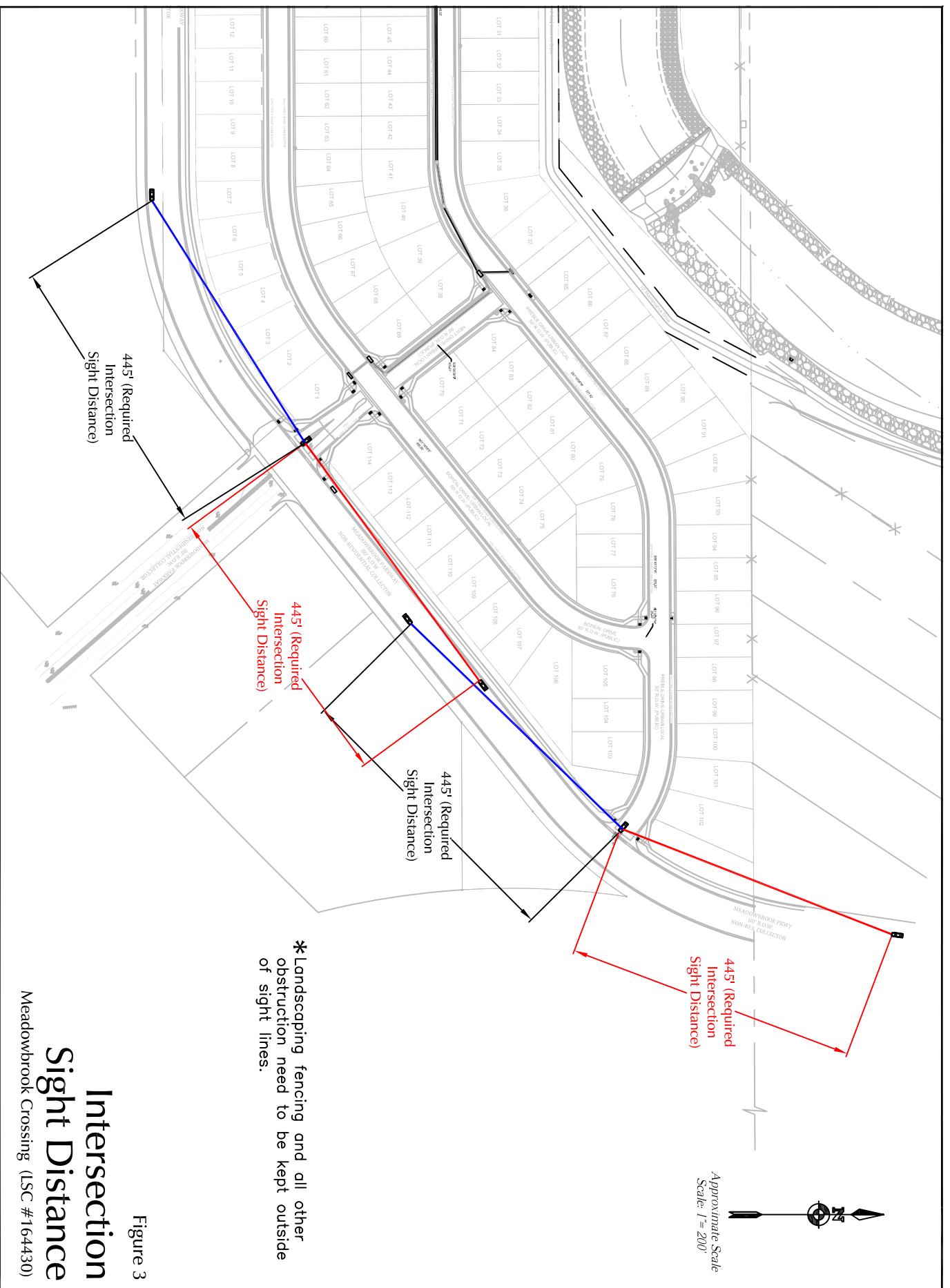
Source: LSC Transportation Consultants, Inc.

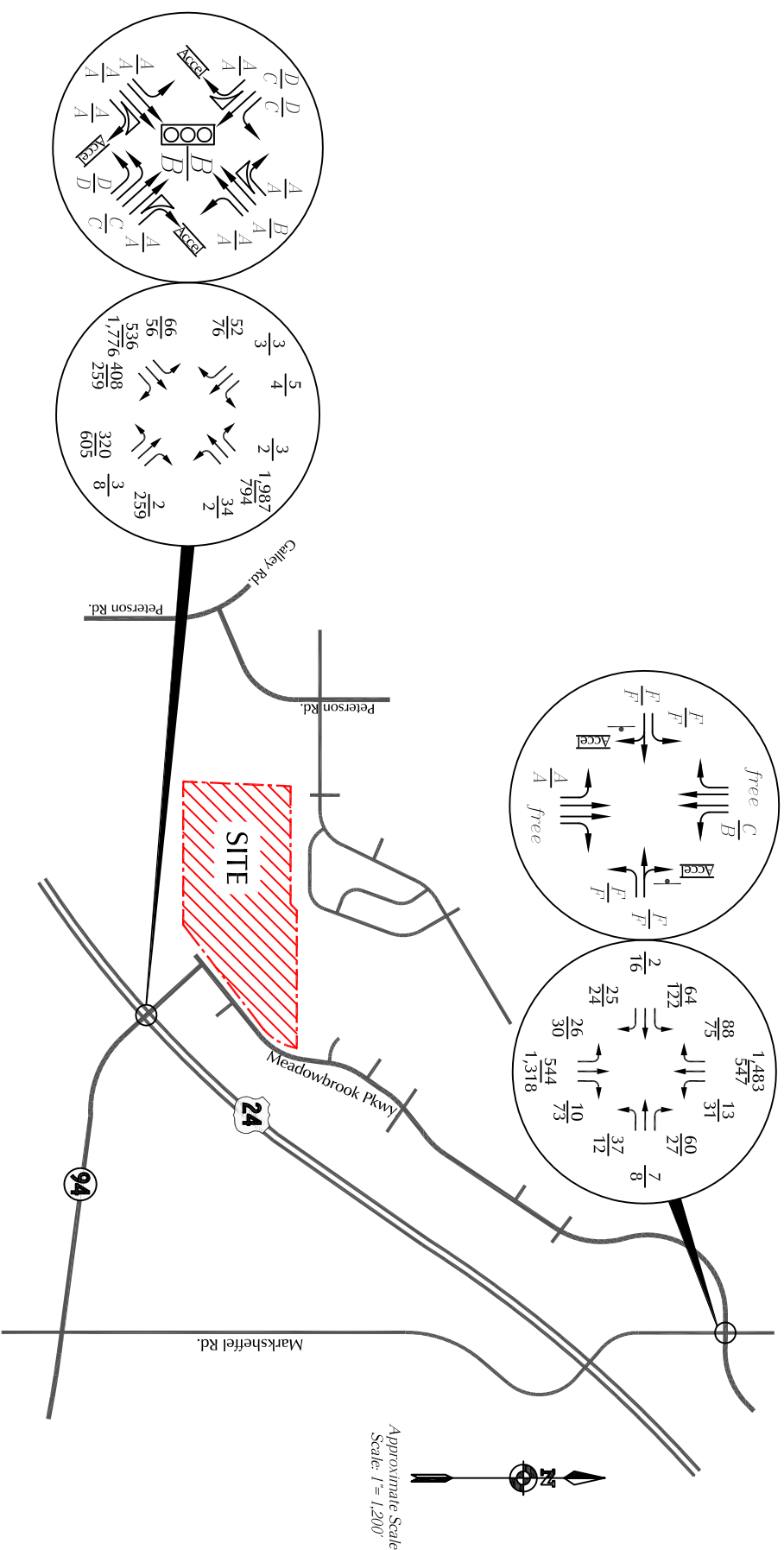


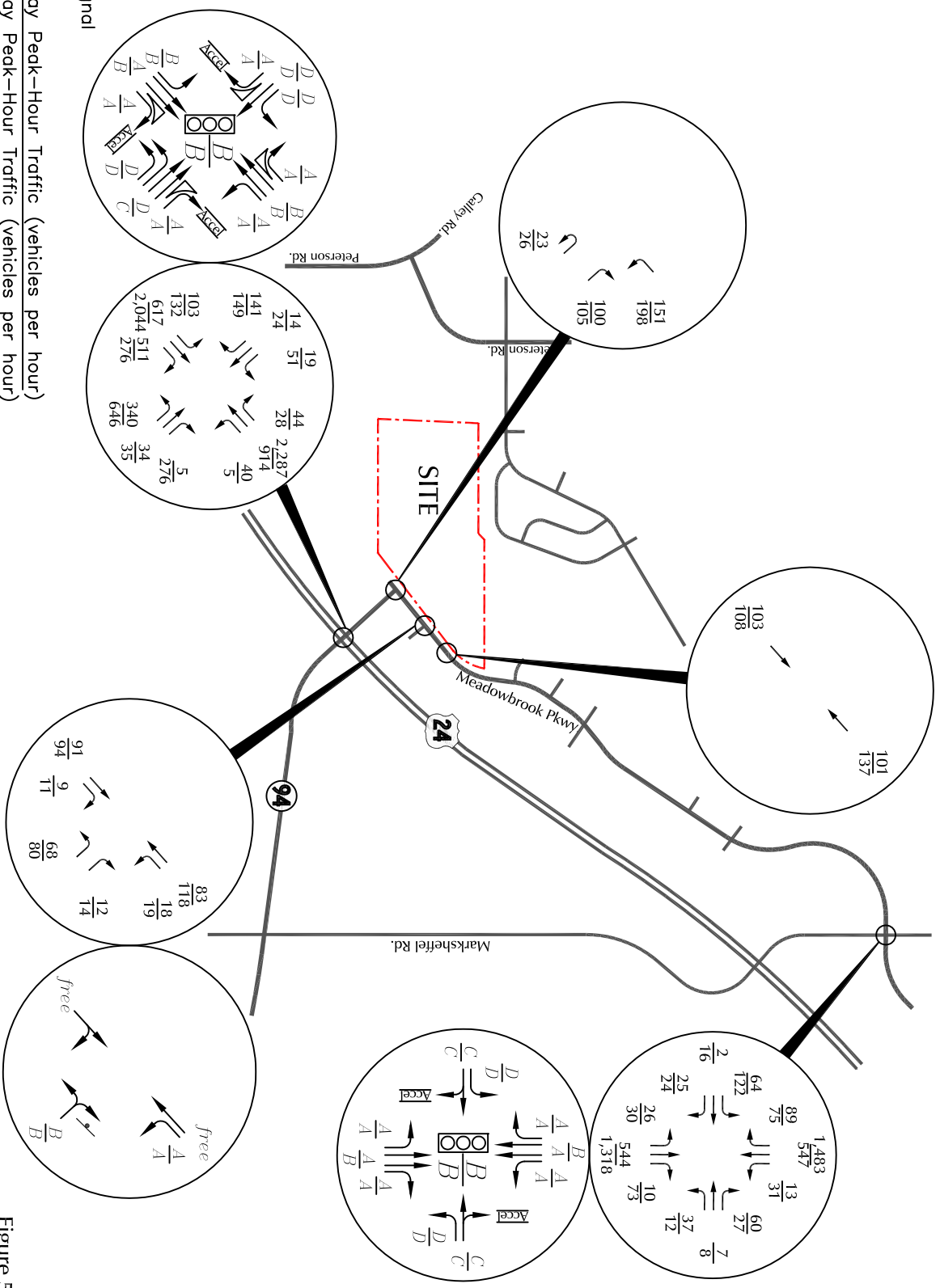
Approximate Scale
Scale: 1" = 1,200'

Figure 1
**Vicinity
Map**

Meadowbrook Crossing (LSC #164430)



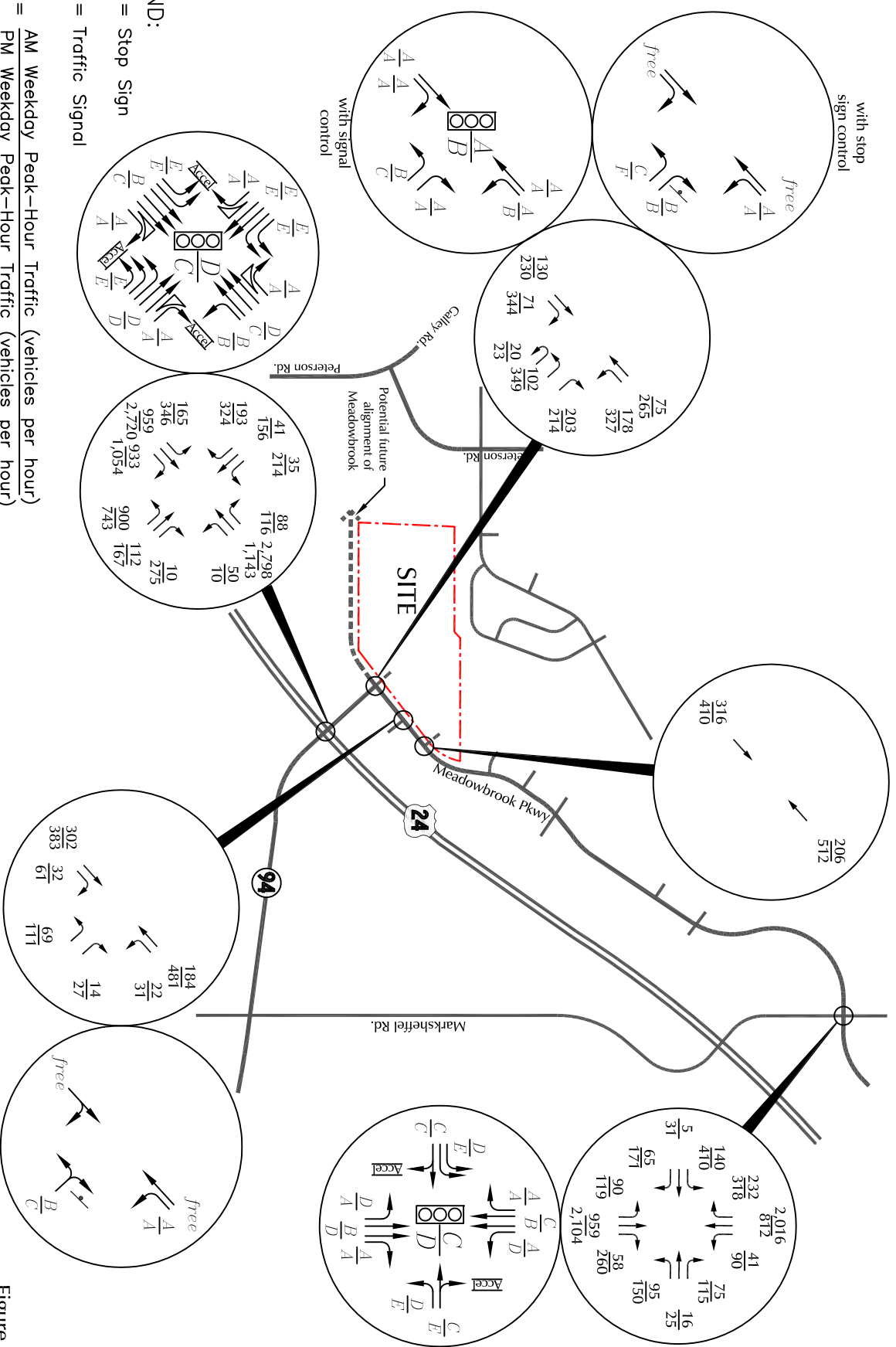




Year 2020 Background Traffic, Lane Geometry, Traffic Control and Level of Service

Meadowbrook Crossing (LSC #164430)

Figure 5



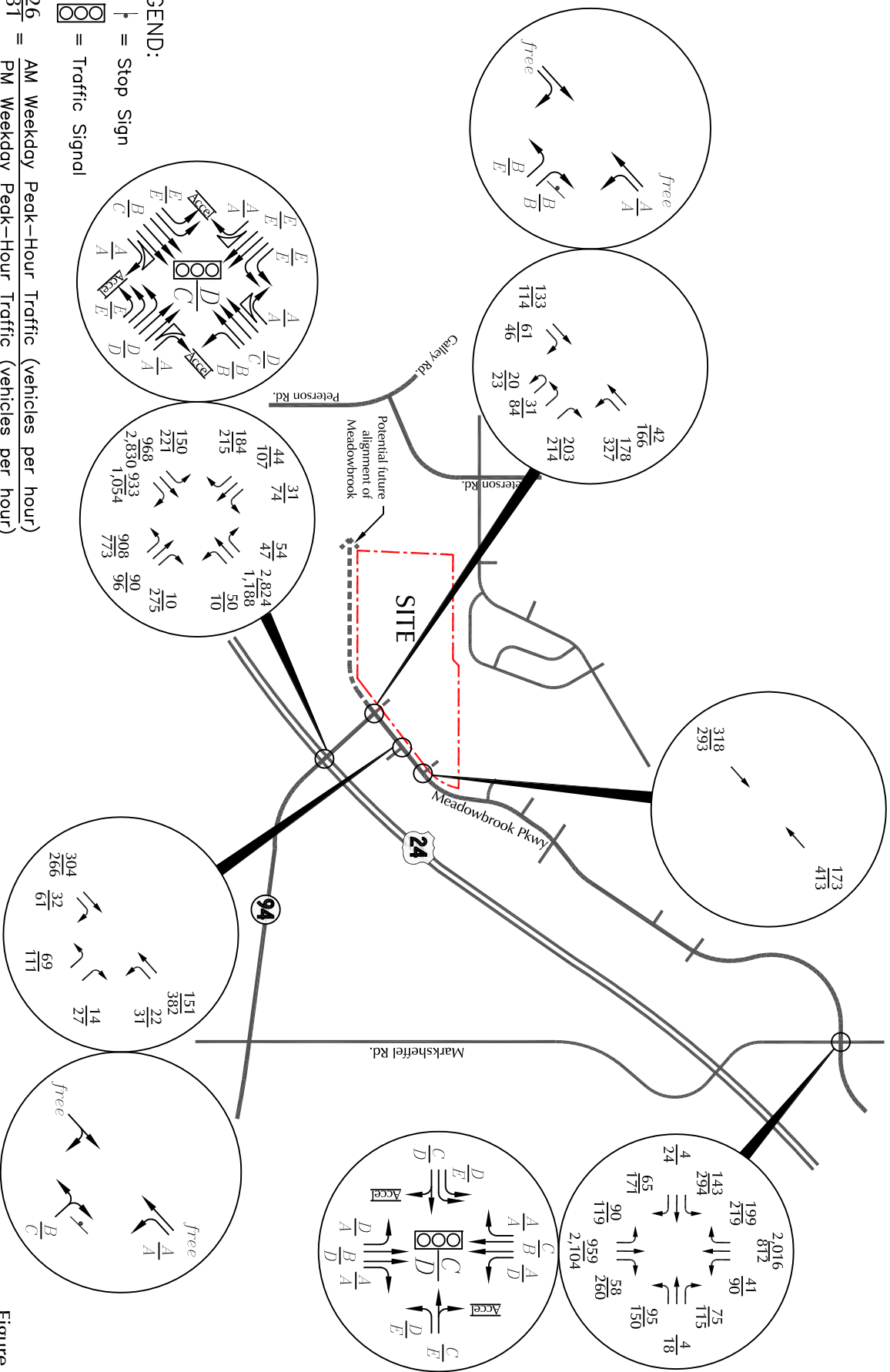
LEGEND:
 + = Stop Sign
 ○ = Traffic Signal

$\frac{26}{31}$ = AM Weekday Peak-Hour Traffic (vehicles per hour)
 $\frac{26}{31}$ = PM Weekday Peak-Hour Traffic (vehicles per hour)
 $\frac{A}{B}$ = AM Individual Movement Peak-Hour Level of Service
 $\frac{A}{B}$ = PM Individual Movement Peak-Hour Level of Service
 $\frac{C}{D}$ = AM Entire Intersection Peak-Hour Level of Service
 $\frac{C}{D}$ = PM Entire Intersection Peak-Hour Level of Service
 500 = Average Weekday Traffic (vehicles per day)

Option 1 Year 2040 Background Traffic, Lane Geometry, Traffic Control and Level of Service

Meadowbrook Crossing (LSC #164430)

Figure 6

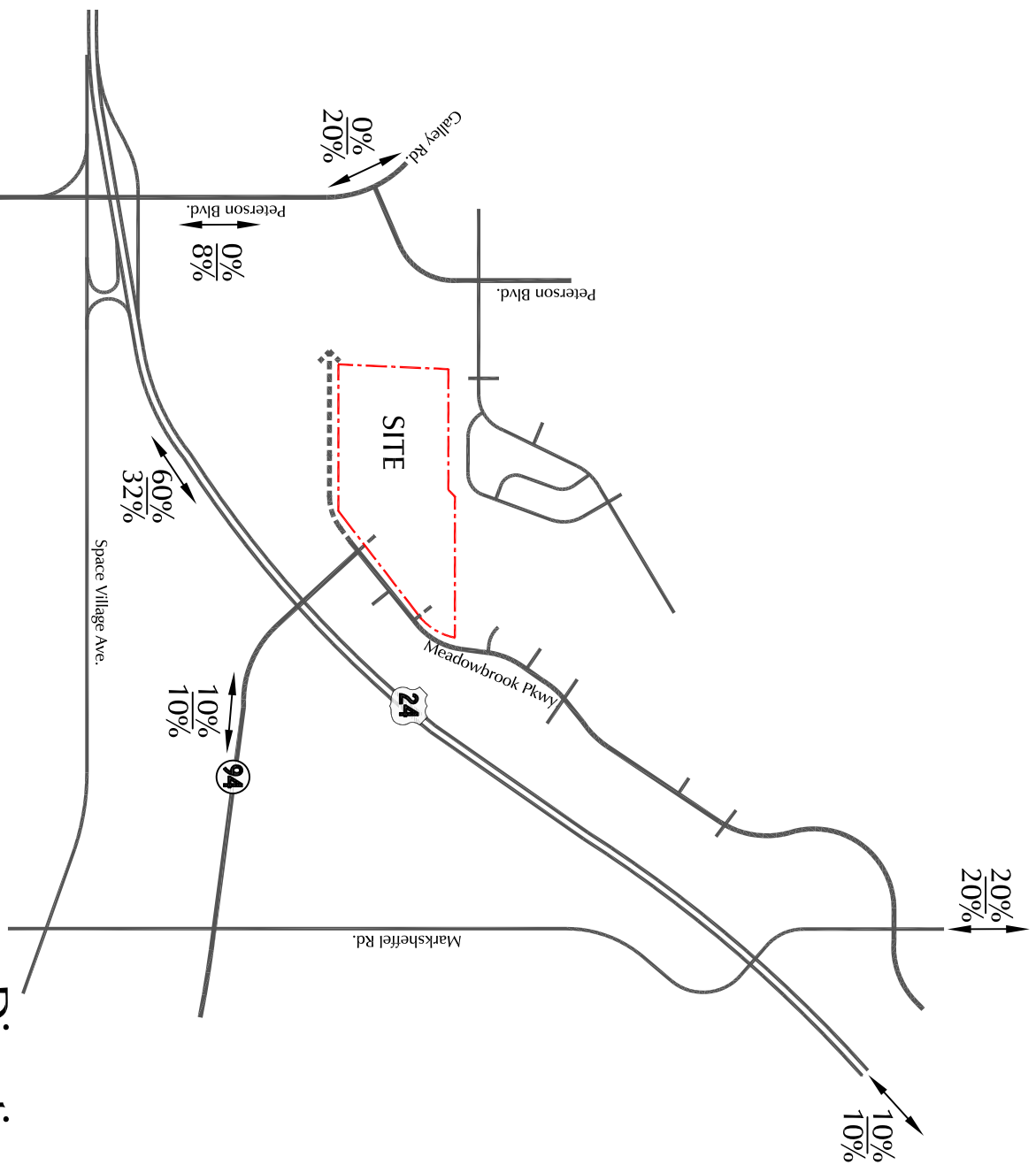


Option 2 Year 2040 Background Traffic, Lane Geometry, Traffic Control and Level of Service

Meadowbrook Crossing (LSC #164430)



Approximate Scale
Scale: 1" = 1,200'



LEGEND:

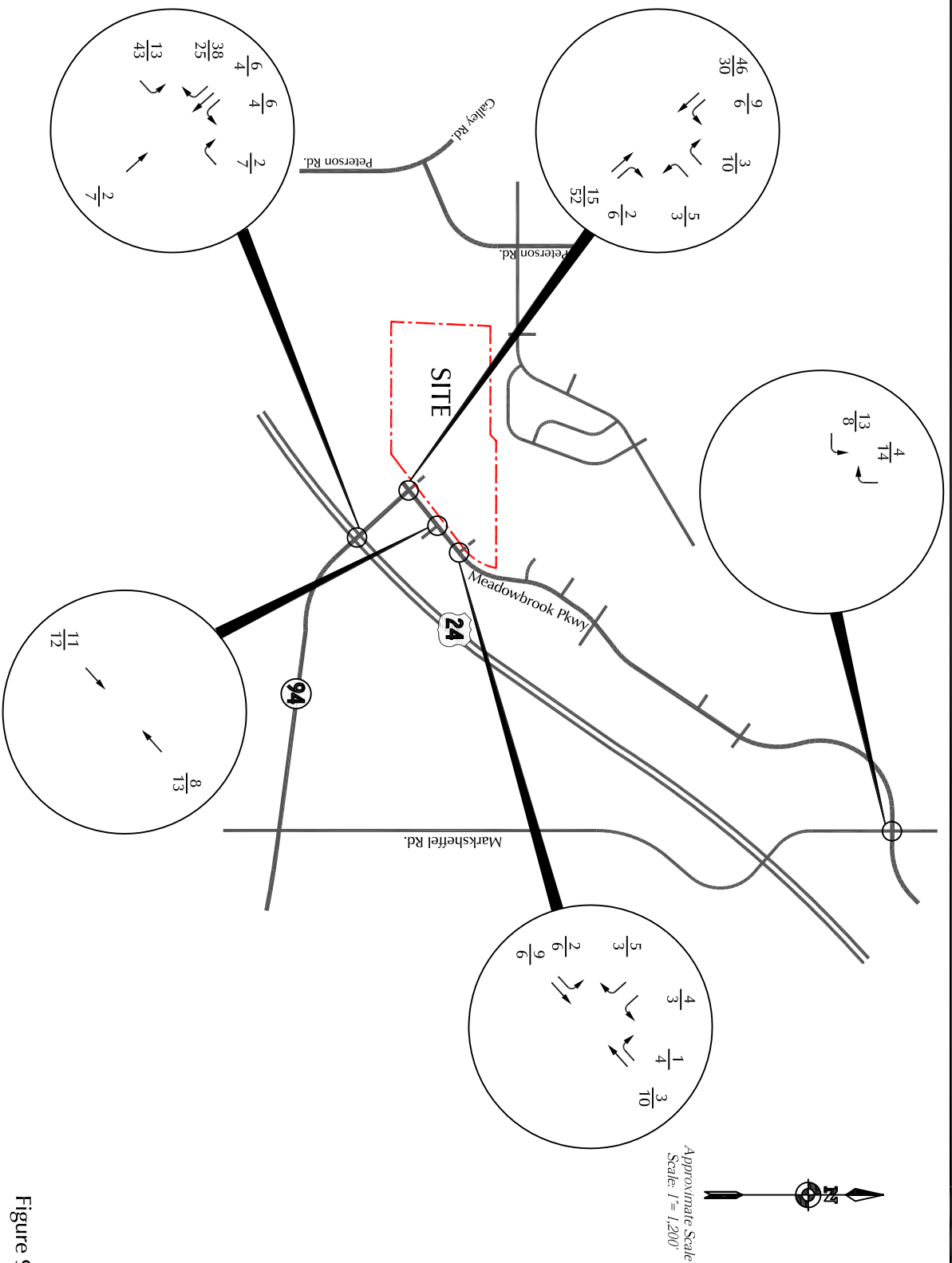
$\frac{35\%}{25\%}$

= $\frac{\text{Short-Term Percent Directional Distribution of Primary Trips}}{\text{Long-Term Percent Directional Distribution of Primary Trips}}$

Figure 8

Directional Distribution of Site-Generated Traffic

Meadowbrook Crossing (LSC #164430)



LEGEND:

$\frac{26}{31}$ = AM Weekday Peak-Hour Traffic (vehicles per hour)
 PM Weekday Peak-Hour Traffic (vehicles per hour)

500 = Average Weekday Traffic (vehicles per day)

Figure 9

Short-Term Assignment of Site-Generated Traffic

Meadowbrook Crossing (LSC #164430)

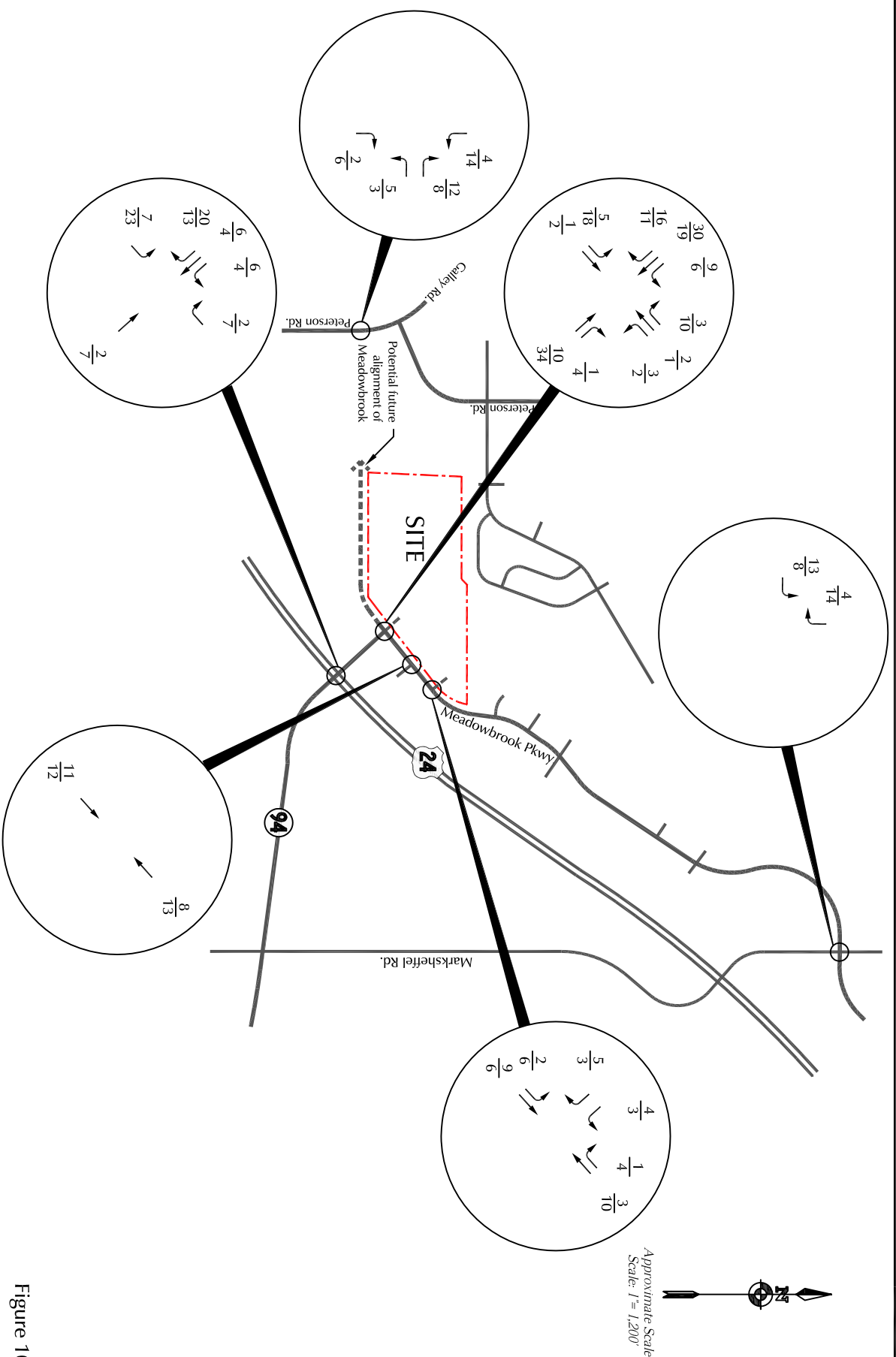
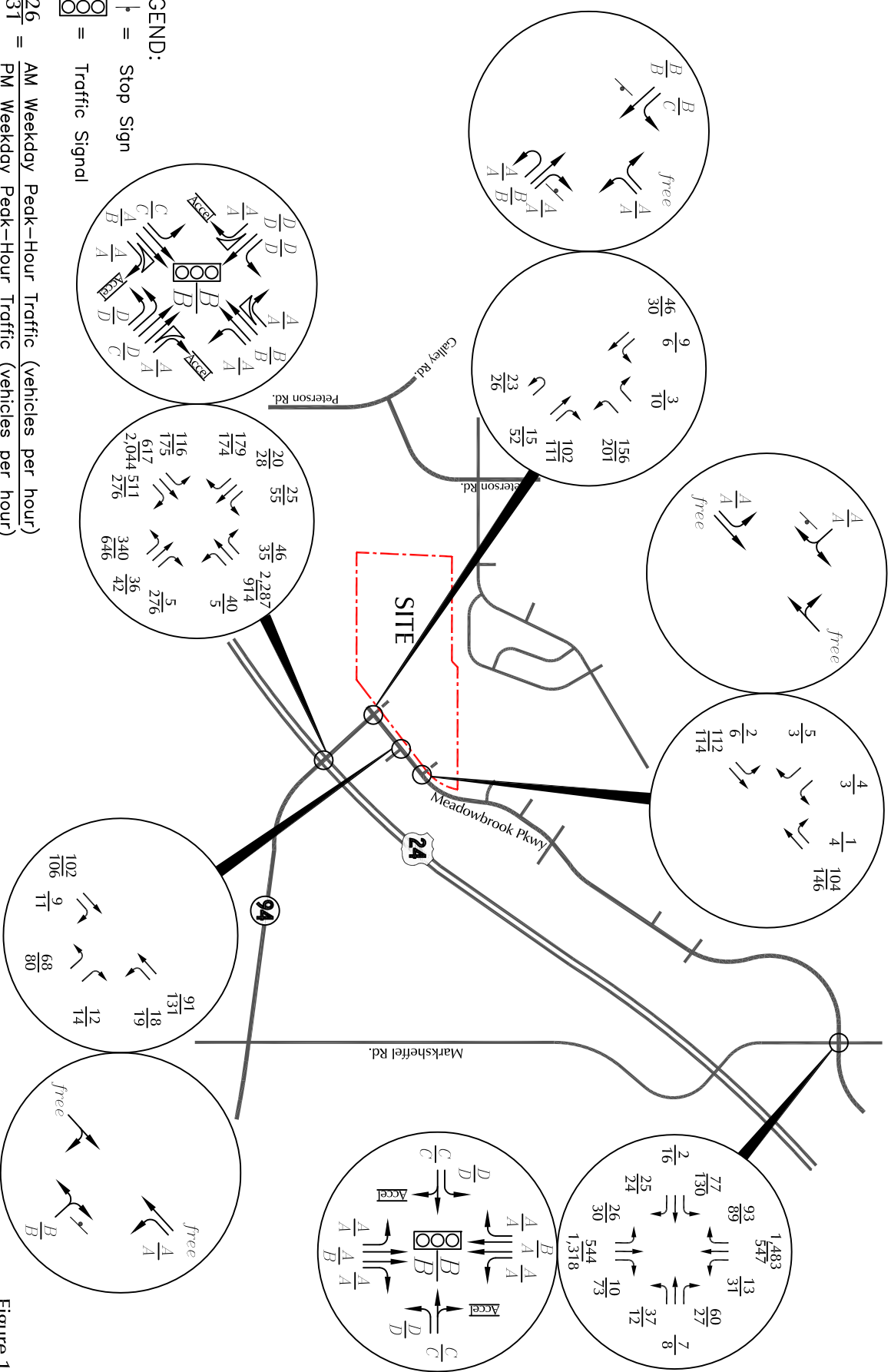


Figure 10

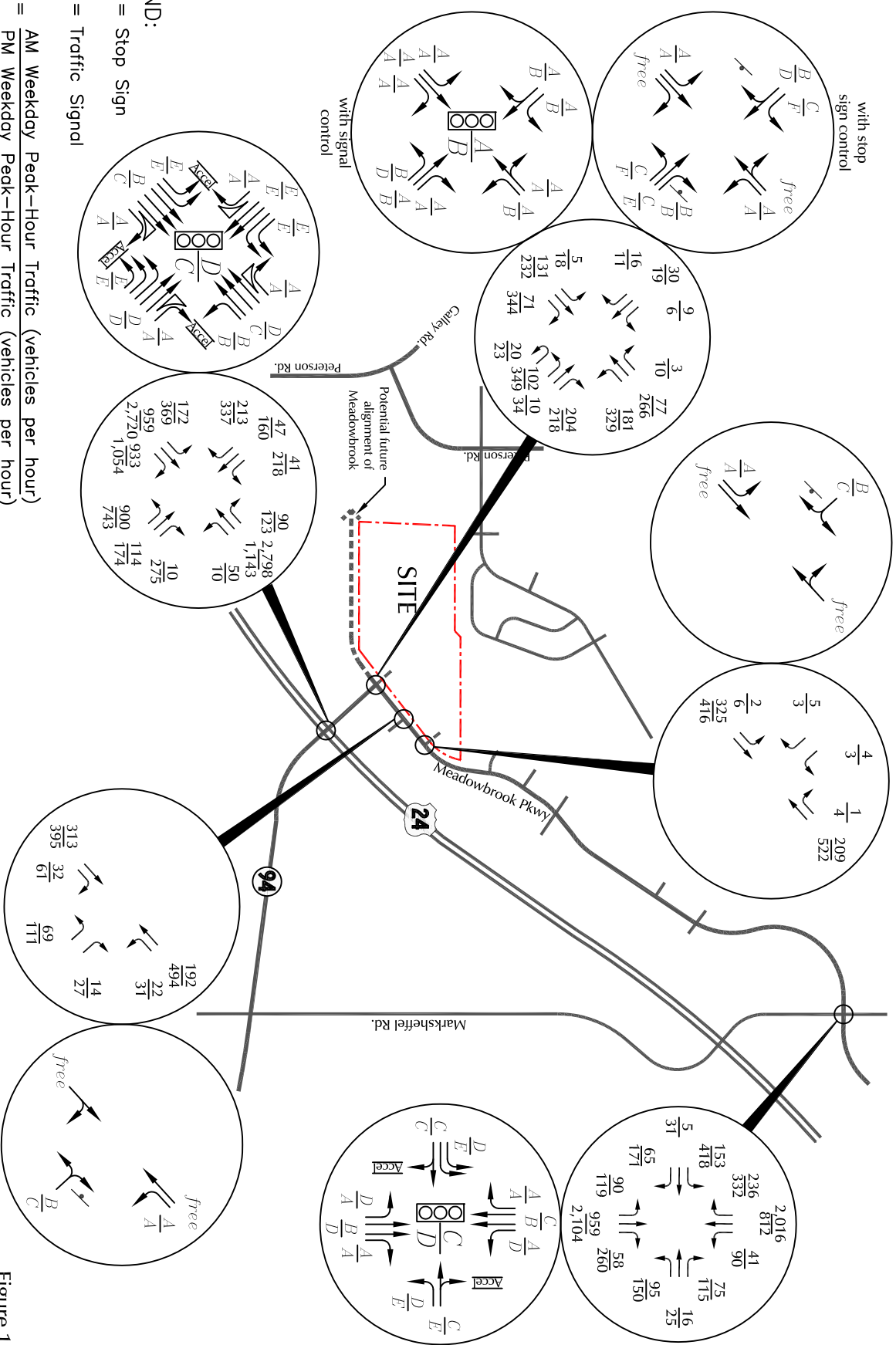
Long-Term Assignment of Site-Generated Traffic

Meadowbrook Crossing (LSC #164430)



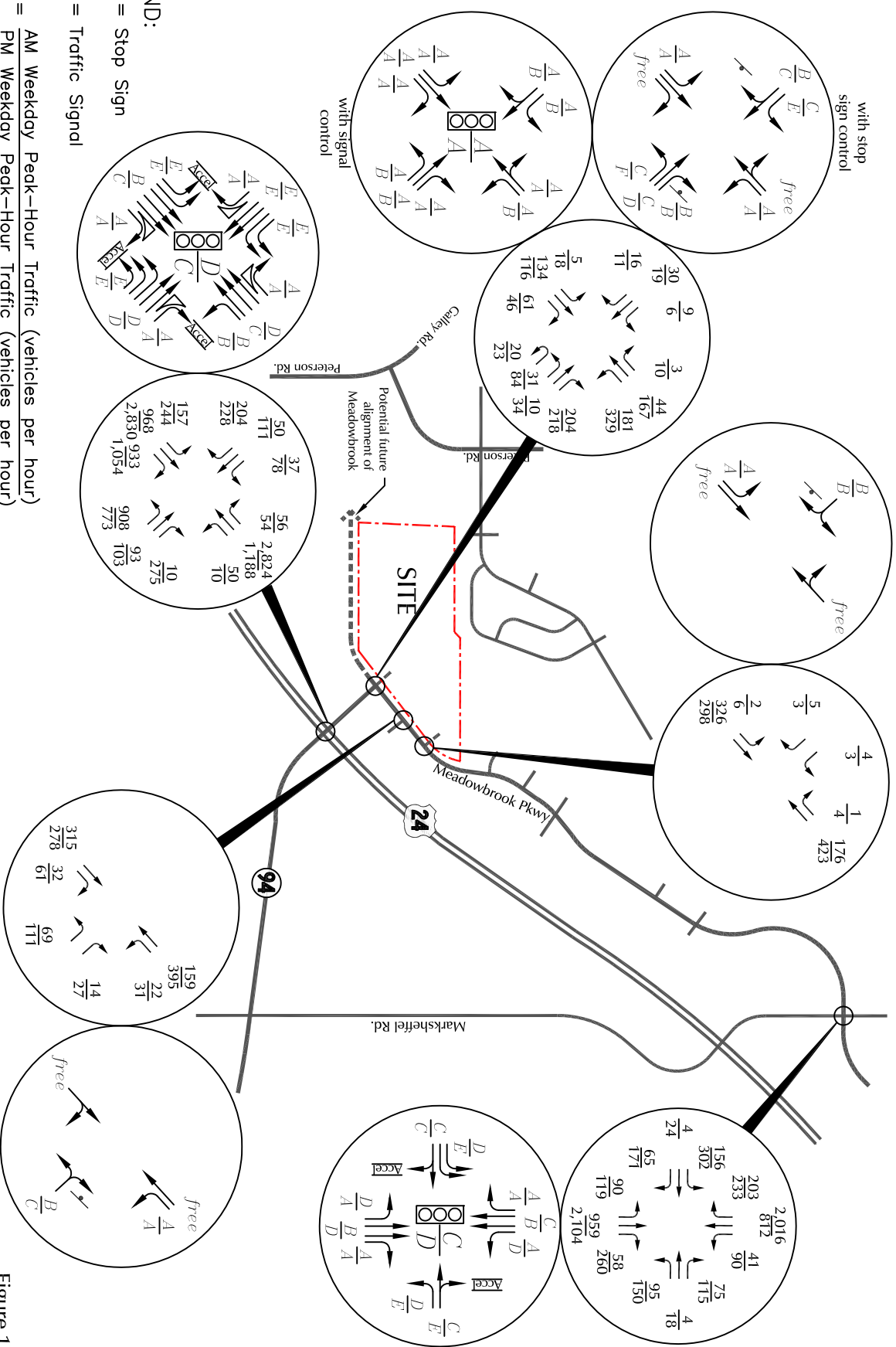
$\frac{26}{31}$ = AM Weekday Peak-Hour Traffic (vehicles per hour)
 PM Weekday Peak-Hour Traffic (vehicles per hour)
 $\frac{A}{B}$ = AM Individual Movement Peak-Hour Level of Service
 PM Individual Movement Peak-Hour Level of Service
 $\frac{C}{D}$ = AM Entire Intersection Peak-Hour Level of Service
 PM Entire Intersection Peak-Hour Level of Service

Meadowbrook Crossing (LSC #164430)



Option 1 Year 2040 Total Traffic, Lane Geometry, Traffic Control and Level of Service

Meadowbrook Crossing (LSC #164430)



LEGEND:

⊥ = Stop Sign

⊞ = Traffic Signal

$\frac{26}{31}$ = AM Weekday Peak-Hour Traffic (vehicles per hour)
 PM Weekday Peak-Hour Traffic (vehicles per hour)

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

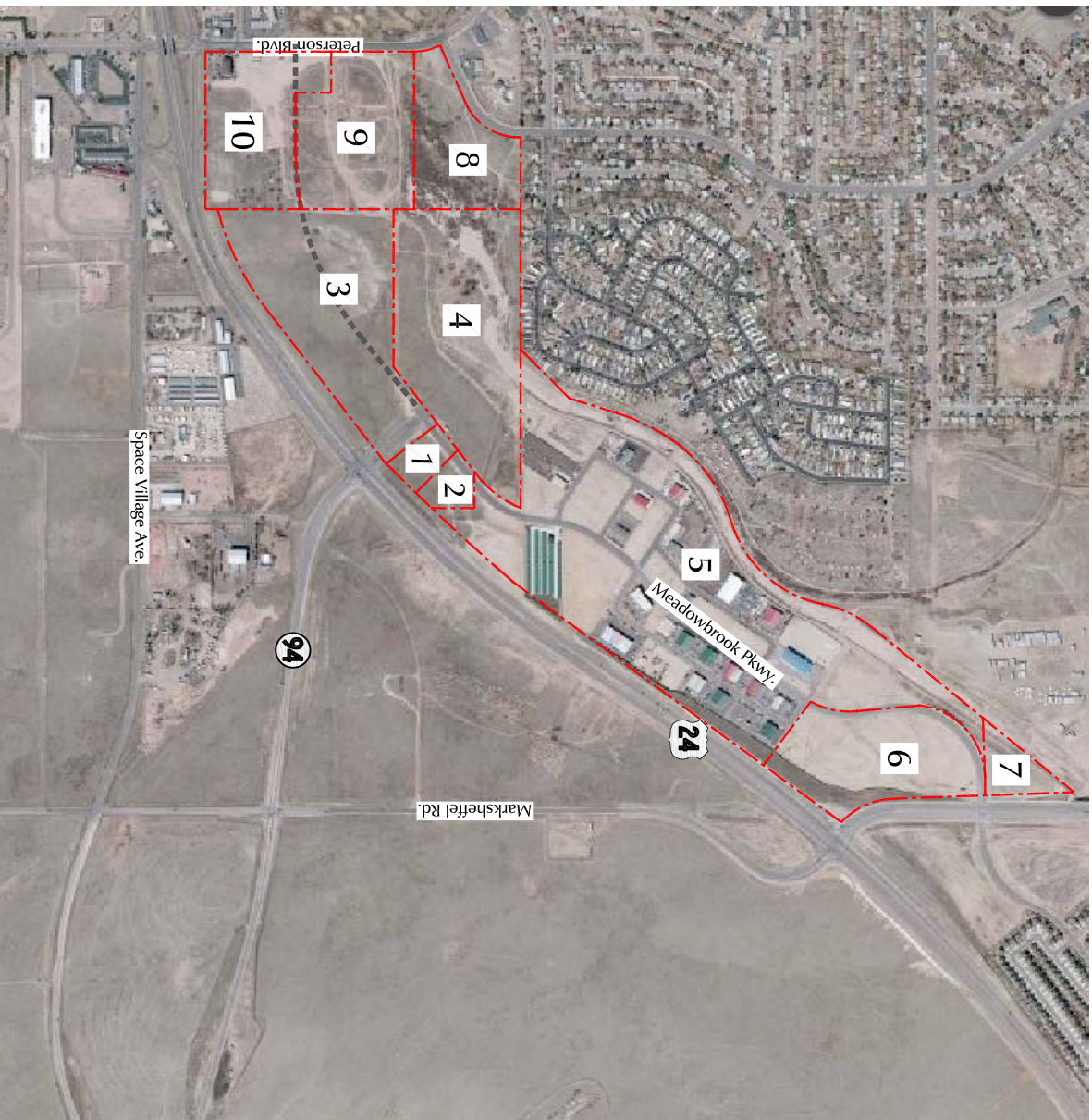
$\frac{C}{D}$ = AM Entire Intersection Peak-Hour Level of Service
 PM Entire Intersection Peak-Hour Level of Service

500 = Average Weekday Traffic (vehicles per day)

Option 2 Year 2040 Total Traffic, Lane Geometry, Traffic Control and Level of Service

Meadowbrook Crossing (LSC #164430)

Figure 13



Approximate Scale
Scale: 1" = 1,200'

LEGEND:

= "Conceptual" future alignment of Meadowbrook Parkway and Subject to change

Appendix Figure 1

Background TAZ Map

Meadowbrook Crossing (LSC #164430)

LSC Transportation Consultants, Inc.
545 E. Pikes Peak Ave., #210
Colorado Springs, CO 80903
(719) 633-2868

LSC Transportation Consultants, Inc.

File Name : Hwy 24 - Hwy 94 AM
 Site Code : 00164430
 Start Date : 06/14/2016
 Page No : 1

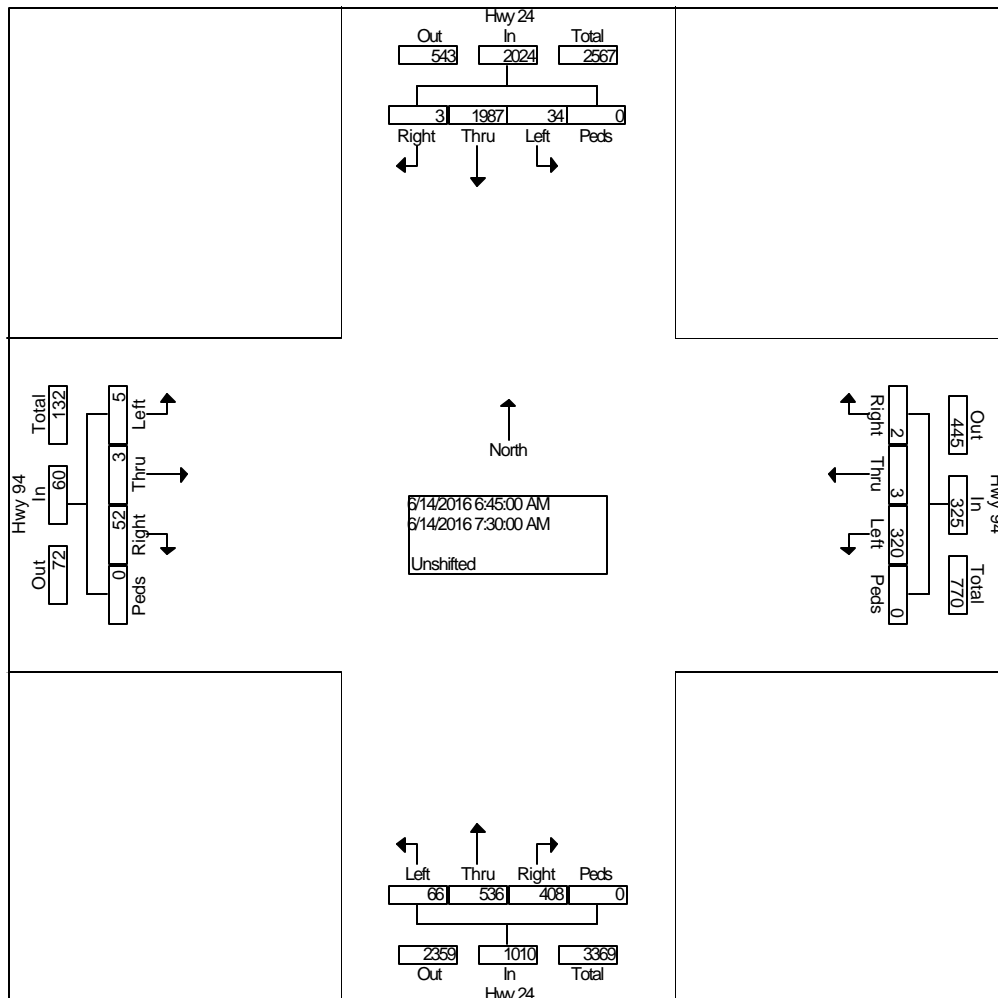
Groups Printed- Unshifted

	Hwy 24 From North				Hwy 94 From East				Hwy 24 From South				Hwy 94 From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	0	454	6	0	0	1	75	0	119	142	22	0	8	0	1	0	828
06:45 AM	0	468	14	0	1	0	86	0	115	147	22	0	12	1	3	0	869
Total	0	922	20	0	1	1	161	0	234	289	44	0	20	1	4	0	1697
07:00 AM	2	492	7	0	0	0	64	0	122	134	11	0	19	0	2	0	853
07:15 AM	0	496	7	0	1	2	88	0	81	120	13	0	12	1	0	0	821
07:30 AM	1	531	6	0	0	1	82	0	90	135	20	0	9	1	0	0	876
07:45 AM	0	382	1	0	2	1	81	0	79	143	10	0	8	2	0	0	709
Total	3	1901	21	0	3	4	315	0	372	532	54	0	48	4	2	0	3259
08:00 AM	1	335	2	0	0	2	60	0	56	118	11	0	21	0	1	0	607
08:15 AM	0	324	0	0	1	0	62	0	45	129	15	1	5	0	0	0	582
Grand Total	4	3482	43	0	5	7	598	0	707	1068	124	1	94	5	7	0	6145
Apprch %	0.1	98.7	1.2	0.0	0.8	1.1	98.0	0.0	37.2	56.2	6.5	0.1	88.7	4.7	6.6	0.0	
Total %	0.1	56.7	0.7	0.0	0.1	0.1	9.7	0.0	11.5	17.4	2.0	0.0	1.5	0.1	0.1	0.0	

LSC Transportation Consultants, Inc.
 545 E. Pikes Peak Ave., #210
 Colorado Springs, CO 80903
 (719) 633-2868

File Name : Hwy 24 - Hwy 94 AM
 Site Code : 00164430
 Start Date : 06/14/2016
 Page No : 2

	Hwy 24 From North					Hwy 94 From East					Hwy 24 From South					Hwy 94 From West					
Start Time	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Int. Total
Peak Hour From 06:30 AM to 08:15 AM - Peak 1 of 1																					
Intersection	06:45 AM																				
Volume	3	19	34	0	2024	2	3	32	0	325	40	53	66	0	1010	52	3	5	0	60	3419
		87						0			8	6									
Percent	0.1	98.2	1.7	0.0		0.6	0.9	98.5	0.0		40.4	53.1	6.5	0.0		86.7	5.0	8.3	0.0		
07:30		53										13									
Volume	1	1	6	0	538	0	1	82	0	83	90	5	20	0	245	9	1	0	0	10	876
Peak Factor																					0.976
High Int.	07:30 AM					07:15 AM					06:45 AM					07:00 AM					
Volume	1	53	6	0	538	1	2	88	0	91	11	14	22	0	284	19	0	2	0	21	
Peak Factor		1			0.94					0.89	5	7			0.88					0.71	4
					1					3					9						



LSC Transportation Consultants, Inc.
545 E. Pikes Peak Ave., #210
Colorado Springs, CO 80903
(719) 633-2868

LSC Transportation Consultants, Inc.

File Name : Hwy 24 - Hwy 94 PM
 Site Code : 00164430
 Start Date : 06/14/2016
 Page No : 1

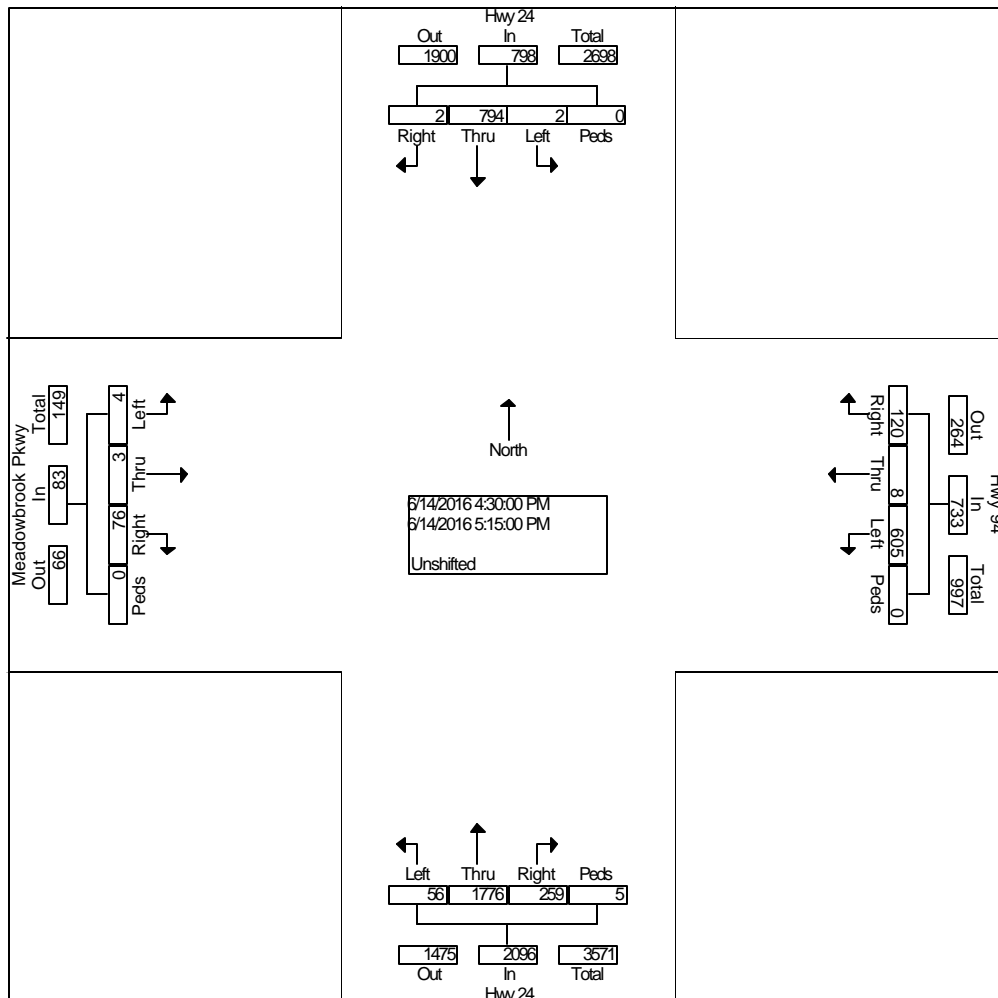
Groups Printed- Unshifted

	Hwy 24 From North				Hwy 94 From East				Hwy 24 From South				Meadowbrook Pkwy From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:00 PM	1	166	2	0	3	0	86	0	59	379	17	0	18	0	0	0	731
04:15 PM	1	163	1	0	12	17	108	0	51	396	19	2	23	1	3	0	797
04:30 PM	0	172	0	0	13	3	152	0	50	449	15	0	18	2	1	0	875
04:45 PM	1	183	1	0	37	0	135	0	58	433	20	1	17	0	0	0	886
Total	3	684	4	0	65	20	481	0	218	1657	71	3	76	3	4	0	3289
05:00 PM	0	197	1	0	31	4	160	0	85	433	8	3	24	1	3	0	950
05:15 PM	1	242	0	0	39	1	158	0	66	461	13	1	17	0	0	0	999
05:30 PM	0	192	1	0	4	0	86	0	63	411	9	0	21	1	1	0	789
05:45 PM	0	186	0	0	1	1	52	0	83	321	11	3	13	0	0	0	671
Total	1	817	2	0	75	6	456	0	297	1626	41	7	75	2	4	0	3409
Grand Total	4	1501	6	0	140	26	937	0	515	3283	112	10	151	5	8	0	6698
Apprch %	0.3	99.3	0.4	0.0	12.7	2.4	85.0	0.0	13.1	83.8	2.9	0.3	92.1	3.0	4.9	0.0	
Total %	0.1	22.4	0.1	0.0	2.1	0.4	14.0	0.0	7.7	49.0	1.7	0.1	2.3	0.1	0.1	0.0	

LSC Transportation Consultants, Inc.
545 E. Pikes Peak Ave., #210
Colorado Springs, CO 80903
(719) 633-2868

File Name : Hwy 24 - Hwy 94 PM
 Site Code : 00164430
 Start Date : 06/14/2016
 Page No : 2

	Hwy 24 From North					Hwy 94 From East					Hwy 24 From South					Meadowbrook Pkwy From West					
Start Time	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Int. Total
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Intersection	04:30 PM																				
Volume	2	79	2	0	798	12	8	60	0	733	25	17	56	5	2096	76	3	4	0	83	3710
		4				0		5			9	76									
Percent	0.3	99.	0.3	0.0		16.	1.1	82.	0.0		12.	84.	2.7	0.2		91.	3.6	4.8	0.0		
		5				4		5			4	7				6					
05:15		24						15				46									
Volume	1	2	0	0	243	39	1	8	0	198	66	1	13	1	541	17	0	0	0	17	999
Peak																					0.928
Factor																					
High Int.	05:15 PM					05:15 PM					05:15 PM					05:00 PM					
Volume	1	24			243	39	1	15		198	66	46	13	1	541	24	1	3	0	28	
		2						8				1									
Peak					0.82					0.92					0.96					0.74	
Factor					1					6					9					1	



LSC Transportation Consultants, Inc.
545 E. Pikes Peak Ave., #210

LSC Transportation Consultants, Inc. **Colorado Springs, CO 80903** File Name : Marksheffel Rd - Hwy 94 AM
 (719) 633-2868 Site Code : 00164430
 Start Date : 06/21/2016
 Page No : 1

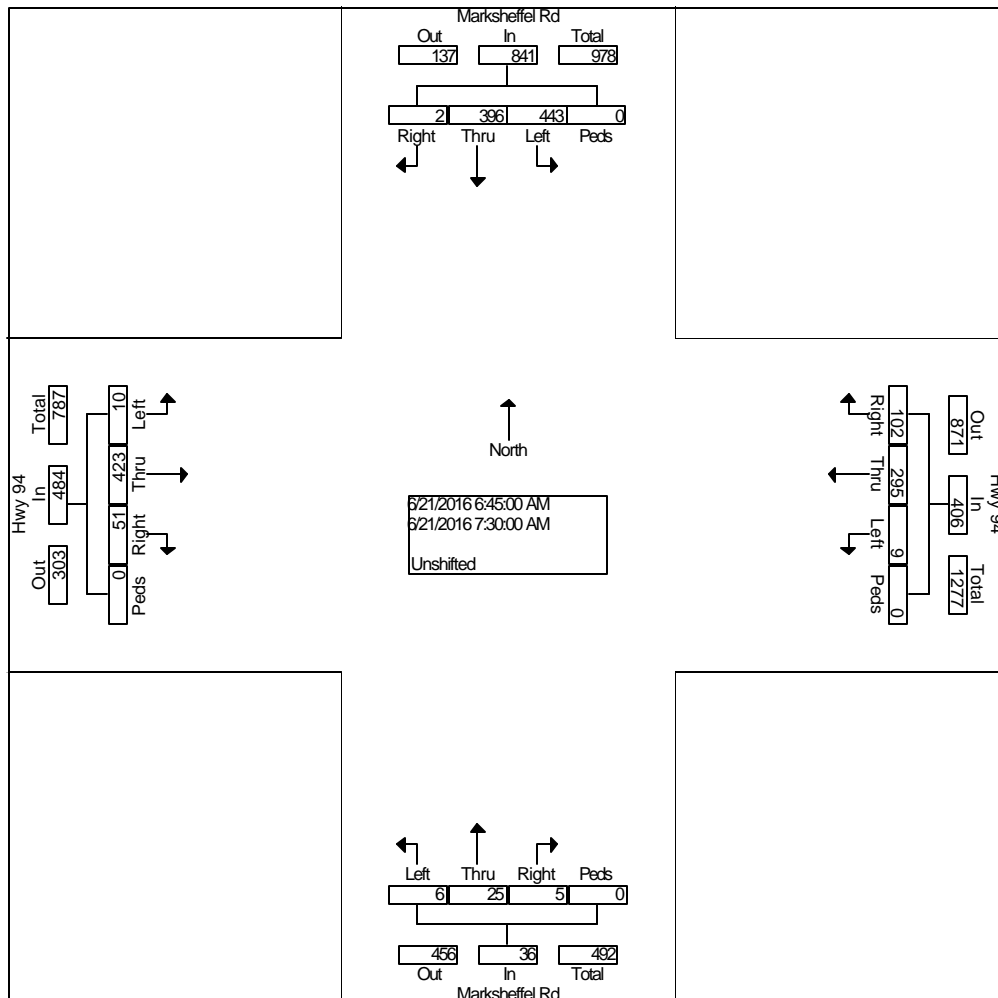
Groups Printed- Unshifted

	Marksheffel Rd From North				Hwy 94 From East				Marksheffel Rd From South				Hwy 94 From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	0	91	118	0	34	65	4	0	1	2	0	0	7	91	1	0	414
06:45 AM	0	85	104	0	26	78	3	0	1	4	1	0	15	117	2	0	436
Total	0	176	222	0	60	143	7	0	2	6	1	0	22	208	3	0	850
07:00 AM	0	106	156	0	26	49	1	0	4	9	1	0	11	115	1	0	479
07:15 AM	2	114	94	0	24	71	2	0	0	7	1	0	12	96	4	0	427
07:30 AM	0	91	89	0	26	97	3	0	0	5	3	0	13	95	3	0	425
07:45 AM	1	84	59	0	18	73	2	0	2	12	2	0	11	50	2	0	316
Total	3	395	398	0	94	290	8	0	6	33	7	0	47	356	10	0	1647
08:00 AM	0	53	49	0	18	67	2	0	1	13	4	0	5	41	0	0	253
08:15 AM	0	54	42	0	20	54	3	0	0	7	2	0	4	37	1	0	224
Grand Total	3	678	711	0	192	554	20	0	9	59	14	0	78	642	14	0	2974
Apprch %	0.2	48.7	51.1	0.0	25.1	72.3	2.6	0.0	11.0	72.0	17.1	0.0	10.6	87.5	1.9	0.0	
Total %	0.1	22.8	23.9	0.0	6.5	18.6	0.7	0.0	0.3	2.0	0.5	0.0	2.6	21.6	0.5	0.0	

LSC Transportation Consultants, Inc.
545 E. Pikes Peak Ave., #210
Colorado Springs, CO 80903
(719) 633-2868

File Name : Marksheffel Rd - Hwy 94 AM
 Site Code : 00164430
 Start Date : 06/21/2016
 Page No : 2

	Marksheffel Rd From North					Hwy 94 From East					Marksheffel Rd From South					Hwy 94 From West					
Start Time	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Int. Total
Peak Hour From 06:30 AM to 08:15 AM - Peak 1 of 1																					
Intersection	06:45 AM																				
Volume	2	39	44	0	841	10	29	9	0	406	5	25	6	0	36	51	42	10	0	484	1767
		6	3			2	5										3				
Percent	0.2	47.	52.	0.0		25.	72.	2.2	0.0		13.	69.	16.	0.0		10.	87.	2.1	0.0		
		1	7			1	7				9	4	7			5	4				
07:00		10	15														11				
Volume	0	6	6	0	262	26	49	1	0	76	4	9	1	0	14	11	5	1	0	127	479
Peak Factor																					0.922
High Int.	07:00 AM					07:30 AM					07:00 AM					06:45 AM					
Volume	0	10	15	0	262	26	97	3	0	126	4	9	1	0	14	15	11	2	0	134	
		6	6														7				
Peak Factor					0.80					0.80					0.64					0.90	
					2					6					3					3	



LSC Transportation Consultants, Inc.
545 E. Pikes Peak Ave., #210

LSC Transportation Consultants, Inc. **Colorado Springs, CO 80903** File Name : Marksheffel Rd - Hwy 94 PM
 (719) 633-2868 Site Code : 00164430
 Start Date : 06/21/2016
 Page No : 1

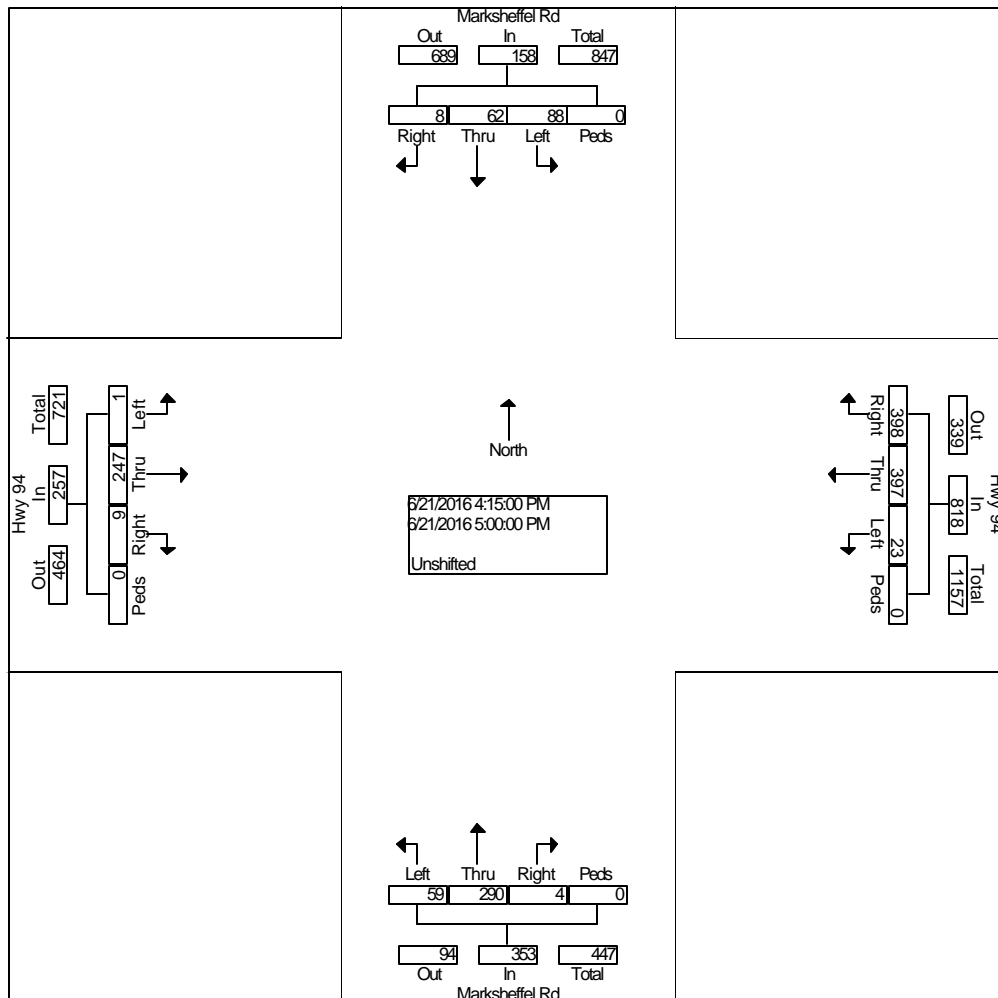
Groups Printed- Unshifted

	Marksheffel Rd From North				Hwy 94 From East				Marksheffel Rd From South				Hwy 94 From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:00 PM	0	8	27	0	66	81	1	0	0	92	16	0	2	61	0	0	354
04:15 PM	3	15	15	0	99	105	4	0	0	88	18	0	0	59	0	0	406
04:30 PM	1	11	25	0	94	104	6	0	0	88	14	0	1	62	0	0	406
04:45 PM	3	23	27	0	112	108	7	0	1	56	16	0	2	56	1	0	412
Total	7	57	94	0	371	398	18	0	1	324	64	0	5	238	1	0	1578
05:00 PM	1	13	21	0	93	80	6	0	3	58	11	0	6	70	0	0	362
05:15 PM	2	13	33	0	79	58	2	0	0	74	14	0	2	60	0	0	337
05:30 PM	1	13	21	0	66	58	3	0	1	47	6	0	2	56	0	0	274
05:45 PM	3	11	32	0	39	35	3	0	2	44	5	0	0	60	0	0	234
Total	7	50	107	0	277	231	14	0	6	223	36	0	10	246	0	0	1207
Grand Total	14	107	201	0	648	629	32	0	7	547	100	0	15	484	1	0	2785
Apprch %	4.3	33.2	62.4	0.0	49.5	48.1	2.4	0.0	1.1	83.6	15.3	0.0	3.0	96.8	0.2	0.0	
Total %	0.5	3.8	7.2	0.0	23.3	22.6	1.1	0.0	0.3	19.6	3.6	0.0	0.5	17.4	0.0	0.0	

LSC Transportation Consultants, Inc.
545 E. Pikes Peak Ave., #210
Colorado Springs, CO 80903
(719) 633-2868

File Name : Marksheffel Rd - Hwy 94 PM
 Site Code : 00164430
 Start Date : 06/21/2016
 Page No : 2

	Marksheffel Rd From North					Hwy 94 From East					Marksheffel Rd From South					Hwy 94 From West					
Start Time	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Int. Total
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Intersection	04:15 PM																				
Volume	8	62	88	0	158	39	39	23	0	818	4	29	59	0	353	9	24	1	0	257	1586
Percent	5.1	39.2	55.7	0.0		48.7	48.5	2.8	0.0		1.1	82.2	16.7	0.0		3.5	96.1	0.4	0.0		
04:45 Volume	3	23	27	0	53	11	10	7	0	227	1	56	16	0	73	2	56	1	0	59	412
Peak Factor																					0.962
High Int.	04:45 PM					04:45 PM					04:15 PM					05:00 PM					
Volume	3	23	27	0	53	11	10	7	0	227	0	88	18	0	106	6	70	0	0	76	
Peak Factor					0.74					0.90					0.83					0.84	
					5					1					3					5	



LSC Transportation Consultants, Inc.
545 E. Pikes Peak Ave., #210

LSC Transportation Consultants, Inc. Colorado Springs, CO 80903 : Marksheffel - Meadowbrook Pkwy AM
 (719) 633-2888 Site Code : 00164840
 Start Date : 10/27/2016

Page No : 1

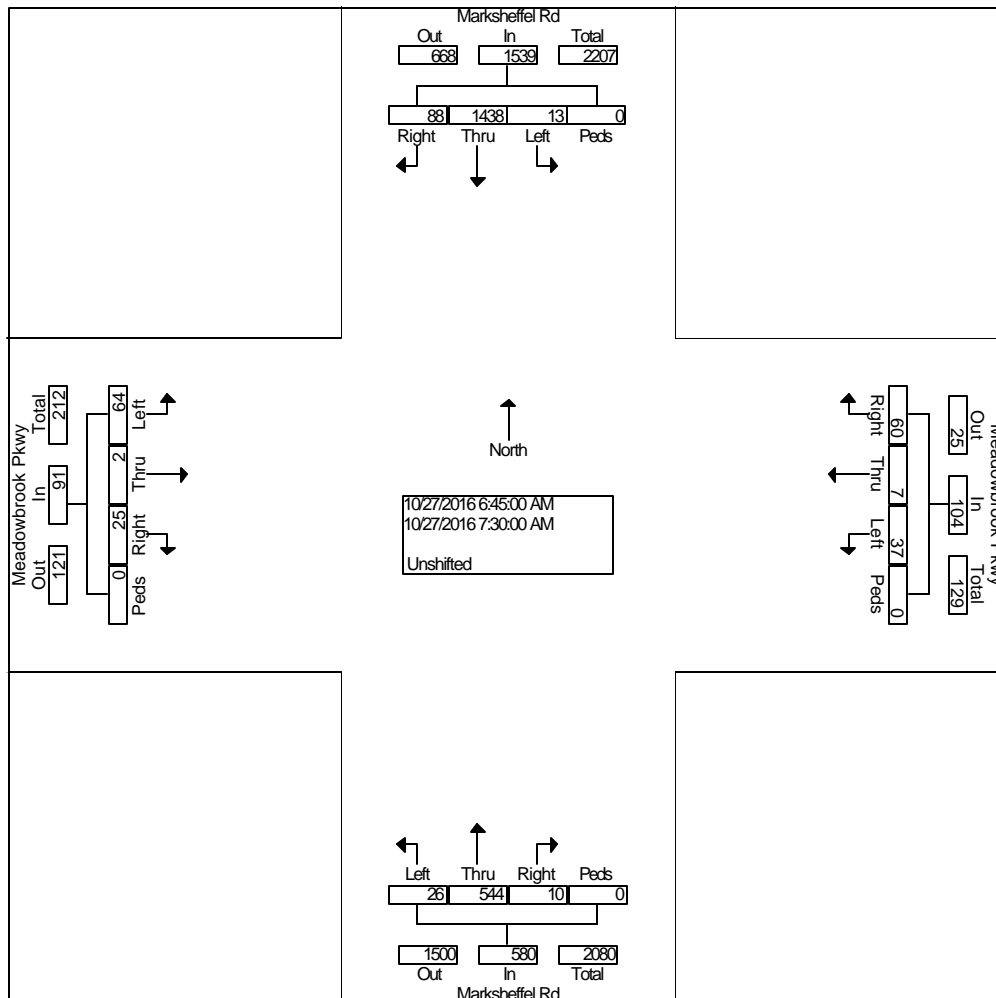
Groups Printed- Unshifted

	Marksheffel Rd From North				Meadowbrook Pkwy From East				Marksheffel Rd From South				Meadowbrook Pkwy From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	19	316	1	0	7	1	6	0	2	120	8	0	5	0	7	0	492
06:45 AM	30	328	3	0	13	2	6	0	2	147	10	0	5	0	7	0	553
Total	49	644	4	0	20	3	12	0	4	267	18	0	10	0	14	0	1045
07:00 AM	17	357	1	0	13	1	17	0	4	111	6	0	11	0	22	0	560
07:15 AM	20	406	3	0	15	2	6	0	3	135	6	0	7	0	16	0	619
07:30 AM	21	347	6	0	19	2	8	0	1	151	4	0	2	2	19	0	582
07:45 AM	11	330	7	0	12	2	3	0	4	123	7	0	5	0	18	0	522
Total	69	1440	17	0	59	7	34	0	12	520	23	0	25	2	75	0	2283
08:00 AM	18	266	14	0	10	1	7	0	5	88	5	0	6	0	14	0	434
08:15 AM	14	232	4	0	6	2	6	0	3	111	2	0	6	0	11	0	397
Grand Total	150	2582	39	0	95	13	59	0	24	986	48	0	47	2	114	0	4159
Apprch %	5.4	93.2	1.4	0.0	56.9	7.8	35.3	0.0	2.3	93.2	4.5	0.0	28.8	1.2	69.9	0.0	
Total %	3.6	62.1	0.9	0.0	2.3	0.3	1.4	0.0	0.6	23.7	1.2	0.0	1.1	0.0	2.7	0.0	

LSC Transportation Consultants, Inc.
545 E. Pikes Peak Ave., #210
Colorado Springs, CO 80903
(719) 633-2888

Project : Marksheffel - Meadowbrook Pkwy AM
 Site Code : 00164840
 Start Date : 10/27/2016
 Page No : 2

	Marksheffel Rd From North					Meadowbrook Pkwy From East					Marksheffel Rd From South					Meadowbrook Pkwy From West					
Start Time	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Int. Total
Peak Hour From 06:30 AM to 08:15 AM - Peak 1 of 1																					
Intersection	06:45 AM																				
Volume	88	14	13	0	1539	60	7	37	0	104	10	54	26	0	580	25	2	64	0	91	2314
Percent	5.7	93.4	0.8	0.0		57.7	6.7	35.6	0.0		1.7	93.8	4.5	0.0		27.5	2.2	70.3	0.0		
07:15	20	40	3	0	429	15	2	6	0	23	3	13	6	0	144	7	0	16	0	23	619
Volume		6									5										
Peak																					0.935
Factor																					
High Int.	07:15 AM					07:00 AM					06:45 AM					07:00 AM					
Volume	20	40	3	0	429	13	1	17	0	31	2	14	10	0	159	11	0	22	0	33	
Peak		6									7										
Factor					0.89					0.83					0.91					0.68	
					7					9					2					9	



LSC Transportation Consultants, Inc.
545 E. Pikes Peak Ave., #210

LSC Transportation Consultants, Inc. Colorado Springs, CO 80903
 (719) 633-2868

Project: Marksheffel - Meadowbrook Pkwy Noon
 Site Code : 00164840
 Start Date : 10/27/2016
 Page No : 1

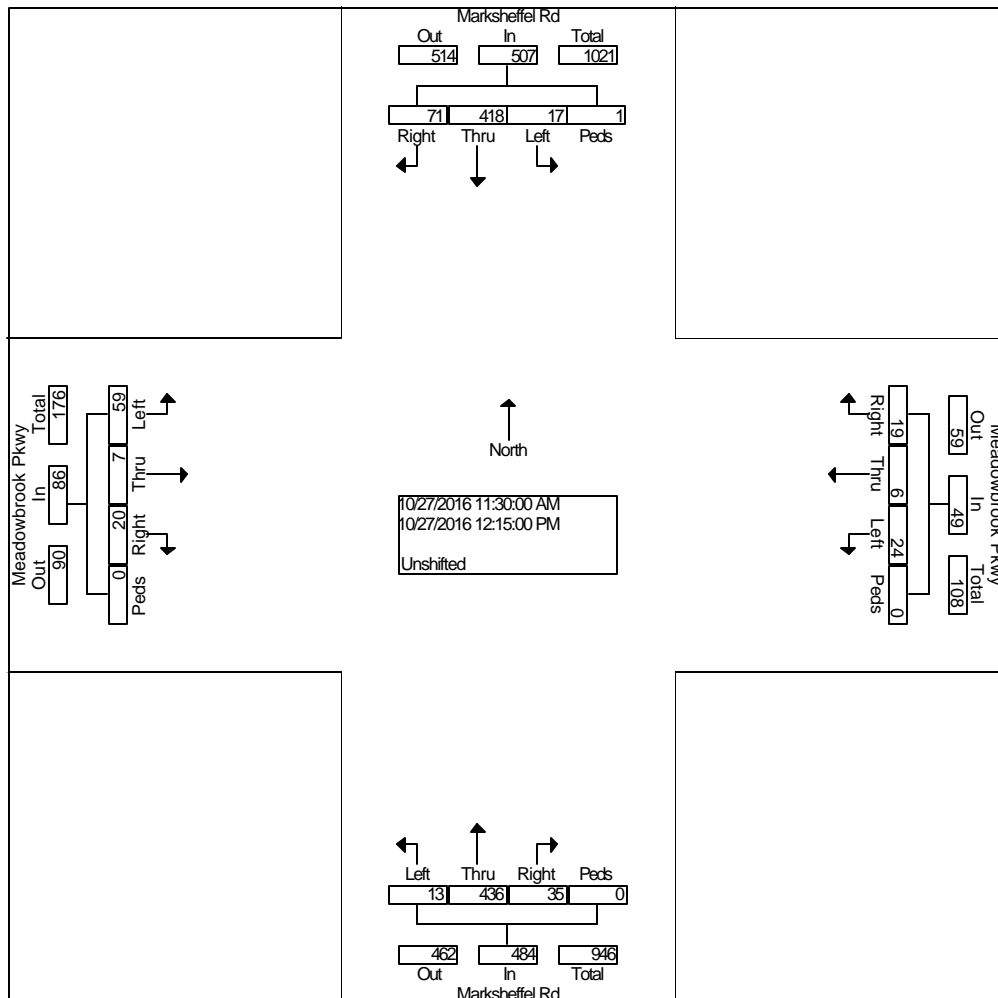
Groups Printed- Unshifted

	Marksheffel Rd From North				Meadowbrook Pkwy From East				Marksheffel Rd From South				Meadowbrook Pkwy From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
11:30 AM	15	103	6	1	5	1	10	0	5	113	3	0	4	1	14	0	281
11:45 AM	17	94	4	0	6	2	1	0	10	103	3	0	6	3	10	0	259
Total	32	197	10	1	11	3	11	0	15	216	6	0	10	4	24	0	540
12:00 PM	20	101	2	0	4	2	6	0	12	103	5	0	9	2	20	0	286
12:15 PM	19	120	5	0	4	1	7	0	8	117	2	0	1	1	15	0	300
12:30 PM	8	111	3	0	8	0	4	0	10	83	1	0	0	0	11	0	239
12:45 PM	12	109	5	0	4	1	5	0	5	102	2	0	4	0	8	0	257
Total	59	441	15	0	20	4	22	0	35	405	10	0	14	3	54	0	1082
Grand Total	91	638	25	1	31	7	33	0	50	621	16	0	24	7	78	0	1622
Apprch %	12.1	84.5	3.3	0.1	43.7	9.9	46.5	0.0	7.3	90.4	2.3	0.0	22.0	6.4	71.6	0.0	
Total %	5.6	39.3	1.5	0.1	1.9	0.4	2.0	0.0	3.1	38.3	1.0	0.0	1.5	0.4	4.8	0.0	

LSC Transportation Consultants, Inc.
545 E. Pikes Peak Ave., #210
Colorado Springs, CO 80903
(719) 633-2868

CO-80903 Marksheffel - Meadowbrook Pkwy Noon
 Site Code : 00164840
 Start Date : 10/27/2016
 Page No : 2

	Marksheffel Rd From North					Meadowbrook Pkwy From East					Marksheffel Rd From South					Meadowbrook Pkwy From West					Int.
Start Time	Rig	Thr	Lef	Pe	App.	Rig	Thr	Lef	Pe	App.	Rig	Thr	Lef	Pe	App.	Rig	Thr	Lef	Pe	App.	Total
Peak Hour From 11:30 AM to 12:45 PM - Peak 1 of 1																					
Intersection	11:30 AM																				
Volume	71	41	17	1	507	19	6	24	0	49	35	43	13	0	484	20	7	59	0	86	1126
Percent	14.0	82.4	3.4	0.2		38.8	12.2	49.0	0.0		7.2	90.1	2.7	0.0		23.3	8.1	68.6	0.0		
12:15 Volume	19	12	5	0	144	4	1	7	0	12	8	11	2	0	127	1	1	15	0	17	300
Peak Factor																					0.938
High Int.	12:15 PM					11:30 AM					12:15 PM					12:00 PM					
Volume	19	12	5	0	144	5	1	10	0	16	8	11	2	0	127	9	2	20	0	31	
Peak Factor					0.88					0.76					0.95					0.69	
					0					6					3					4	



LSC Transportation Consultants, Inc.
545 E. Pikes Peak Ave., #210

LSC Transportation Consultants, Inc. Colorado Springs, CO 80903 : Marksheffel - Meadowbrook Pkwy PM
 Site Code : 00164850
 Start Date : 10/27/2016
 Page No : 1

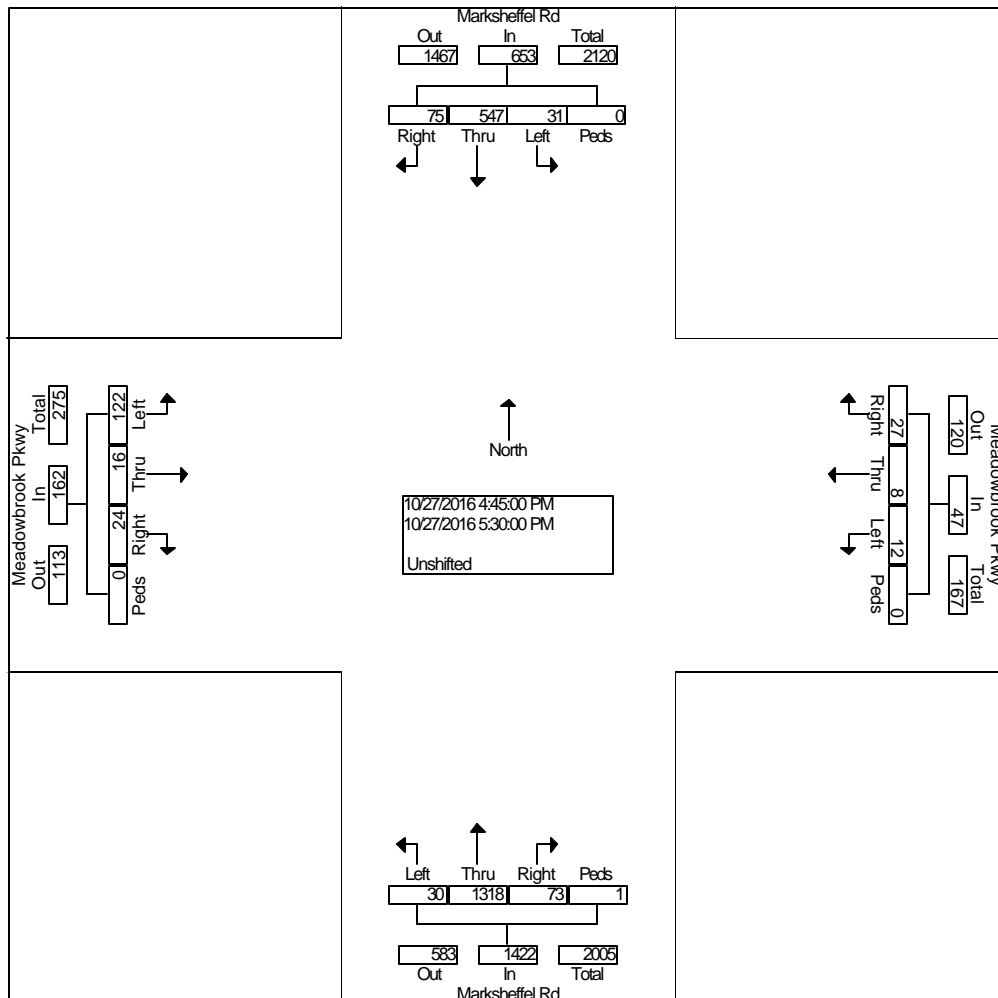
Groups Printed- Unshifted

	Marksheffel Rd From North				Meadowbrook Pkwy From East				Marksheffel Rd From South				Meadowbrook Pkwy From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
03:00 PM	22	116	6	0	4	1	2	0	11	220	3	0	12	0	12	0	409
03:15 PM	21	120	12	0	6	3	4	0	10	219	4	0	5	1	14	0	419
03:30 PM	30	133	8	0	7	1	1	0	13	236	6	1	6	2	22	0	466
03:45 PM	31	144	16	0	3	0	7	0	19	240	7	0	11	2	20	0	500
Total	104	513	42	0	20	5	14	0	53	915	20	1	34	5	68	0	1794
04:00 PM	34	134	8	1	10	1	6	0	15	301	2	0	7	2	26	0	547
04:15 PM	25	138	12	0	6	1	4	0	15	312	7	0	13	6	19	0	558
04:30 PM	24	97	9	0	7	1	1	0	24	329	5	0	7	1	20	0	525
04:45 PM	19	146	10	0	3	1	4	0	24	353	4	0	6	8	29	0	607
Total	102	515	39	1	26	4	15	0	78	1295	18	0	33	17	94	0	2237
05:00 PM	14	150	7	0	6	2	4	0	15	325	10	1	6	1	33	0	574
05:15 PM	13	118	6	0	11	3	1	0	23	322	7	0	5	2	32	0	543
05:30 PM	29	133	8	0	7	2	3	0	11	318	9	0	7	5	28	0	560
05:45 PM	22	122	6	0	6	2	2	0	13	314	7	0	5	4	23	0	526
Total	78	523	27	0	30	9	10	0	62	1279	33	1	23	12	116	0	2203
Grand Total	284	1551	108	1	76	18	39	0	193	3489	71	2	90	34	278	0	6234
Apprch %	14.6	79.8	5.6	0.1	57.1	13.5	29.3	0.0	5.1	92.9	1.9	0.1	22.4	8.5	69.2	0.0	
Total %	4.6	24.9	1.7	0.0	1.2	0.3	0.6	0.0	3.1	56.0	1.1	0.0	1.4	0.5	4.5	0.0	

LSC Transportation Consultants, Inc.
545 E. Pikes Peak Ave., #210
Colorado Springs, CO 80903
(719) 633-2868

































Project : Marksheffel - Meadowbrook Pkwy PM
 Site Code : 00164850
 Start Date : 10/27/2016
 Page No : 2

	Marksheffel Rd From North					Meadowbrook Pkwy From East					Marksheffel Rd From South					Meadowbrook Pkwy From West					
Start Time	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Int. Total
Peak Hour From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Intersection	04:45 PM																				
Volume	75	54	31	0	653	27	8	12	0	47	73	13	30	1	1422	24	16	12	0	162	2284
Percent	11.5	83.8	4.7	0.0		57.4	17.0	25.5	0.0		5.1	92.7	2.1	0.1		14.8	9.9	75.3	0.0		
04:45 Volume	19	14	10	0	175	3	1	4	0	8	24	35	4	0	381	6	8	29	0	43	607
Peak Factor																					0.941
High Int.	04:45 PM					05:15 PM					04:45 PM					04:45 PM					
Volume	19	14	10	0	175	11	3	1	0	15	24	35	4	0	381	6	8	29	0	43	
Peak Factor					0.93					0.78					0.93					0.94	
					3					3					3					2	



Timings 1: Meadowbrook Pkwy & US 24

Existing Traffic
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  		 	 		 	 	
Traffic Volume (vph)	66	536	408	34	1987	3	320	3	2	4	3	76
Future Volume (vph)	66	536	408	34	1987	3	320	3	2	4	3	76
Turn Type	pm+pt	NA	Free	pm+pt	NA	Perm	Split	NA	Free	Split	NA	Free
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4		Free	8		8			Free			Free
Detector Phase	7	4		3	8	8	2	2		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	
Minimum Split (s)	10.0	10.0		10.0	10.0	10.0	10.0	10.0		10.0	10.0	
Total Split (s)	10.0	55.0		10.0	55.0	55.0	15.0	15.0		10.0	10.0	
Total Split (%)	11.1%	61.1%		11.1%	61.1%	61.1%	16.7%	16.7%		11.1%	11.1%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	-1.0		0.0	-1.0	0.0	-1.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	4.0		5.0	4.0	5.0	4.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Recall Mode	None	None		None	None	None	None	None		None	None	
Act Effect Green (s)	46.5	44.9	71.4	45.4	42.8	41.7	11.2	10.1	71.4	5.3	5.3	71.4
Actuated g/C Ratio	0.65	0.63	1.00	0.64	0.60	0.58	0.16	0.14	1.00	0.07	0.07	1.00
v/c Ratio	0.29	0.17	0.26	0.06	0.69	0.00	0.61	0.01	0.00	0.02	0.01	0.05
Control Delay	7.4	6.5	0.4	4.2	11.9	0.0	37.6	33.3	0.0	38.0	38.0	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	7.4	6.5	0.4	4.2	11.9	0.0	37.6	33.3	0.0	38.0	38.0	0.1
LOS	A	A	A	A	B	A	D	C	A	D	D	A
Approach Delay		4.1			11.8			37.4			3.3	
Approach LOS		A			B			D			A	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 71.4

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 11.8

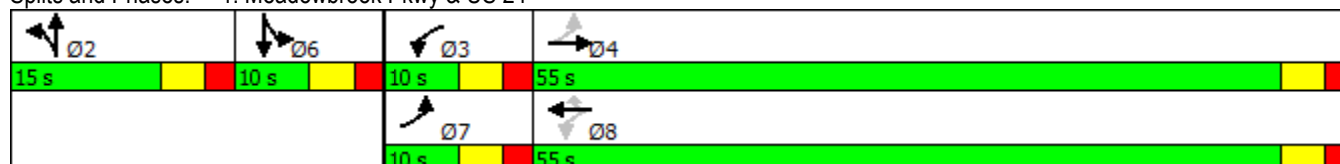
Intersection LOS: B

Intersection Capacity Utilization 69.5%

ICU Level of Service C























Analysis Period (min) 15

Splits and Phases: 1: Meadowbrook Pkwy & US 24



HCM Unsignalized Intersection Capacity Analysis 25: Marksheffel Rd & Meadowbrook Parkway

Existing Traffic
AM Peak Hour

























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	64	2	25	37	7	60	26	544	10	13	1483	88
Future Volume (Veh/h)	64	2	25	37	7	60	26	544	10	13	1483	88
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.99	0.99	0.99	1.00	1.00	1.00	1.00	1.00	1.00	0.90	0.90	0.90
Hourly flow rate (vph)	65	2	25	37	7	60	26	544	10	14	1648	98
Pedestrians								1928		1159		
Lane Width (ft)								12.0		12.0		
Walking Speed (ft/s)								4.0		4.0		
Percent Blockage								80		80		
Right turn flare (veh)												
Median type								None		None		
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	3222	2282	2752	3402	2370	1431	1746			554		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	3222	2282	2752	3402	2370	1431	1746			554		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	94	0	0	78	0	93			99		
cM capacity (veh/h)	0	36	3	0	32	25	360			1019		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	65	27	37	67	26	272	272	10	14	824	824	98
Volume Left	65	0	37	0	26	0	0	0	14	0	0	0
Volume Right	0	25	0	60	0	0	0	10	0	0	0	98
cSH	0	3	0	26	360	1700	1700	1700	1019	1700	1700	1700
Volume to Capacity	Err	8.35	Err	2.62	0.07	0.16	0.16	0.01	0.01	0.48	0.48	0.06
Queue Length 95th (ft)	Err	Err	Err	206	6	0	0	0	1	0	0	0
Control Delay (s)	Err	Err	Err	1057.2	15.8	0.0	0.0	0.0	8.6	0.0	0.0	0.0
Lane LOS	F	F	F	F	C				A			
Approach Delay (s)	Err			Err	0.7				0.1			
Approach LOS	F			F								
Intersection Summary												
Average Delay				Err								
Intersection Capacity Utilization				63.6%		ICU Level of Service			B			
Analysis Period (min)				15								

Timings

1: Meadowbrook Pkwy & US 24

Existing Traffic

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	1776	259	2	794	2	605	8	259	4	3	76
Future Volume (vph)	56	1776	259	2	794	2	605	8	259	4	3	76
Turn Type	pm+pt	NA	Free	pm+pt	NA	Perm	Split	NA	Free	Split	NA	Free
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4		Free	8		8			Free			Free
Detector Phase	7	4		3	8	8	2	2		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	
Minimum Split (s)	10.0	10.0		10.0	10.0	10.0	10.0	10.0		10.0	10.0	
Total Split (s)	10.0	55.0		10.0	55.0	55.0	15.0	15.0		10.0	10.0	
Total Split (%)	11.1%	61.1%		11.1%	61.1%	61.1%	16.7%	16.7%		11.1%	11.1%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	-1.0		0.0	-1.0	0.0	-1.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	4.0		5.0	4.0	5.0	4.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Recall Mode	None	None		None	None	None	None	None		None	None	
Act Effect Green (s)	32.2	32.6	55.6	30.0	28.3	27.2	11.9	10.8	55.6	5.4	5.4	55.6
Actuated g/C Ratio	0.58	0.59	1.00	0.54	0.51	0.49	0.21	0.19	1.00	0.10	0.10	1.00
v/c Ratio	0.15	0.61	0.17	0.01	0.37	0.00	0.89	0.01	0.18	0.01	0.01	0.05
Control Delay	5.6	8.9	0.2	4.5	9.3	0.0	42.1	26.8	0.2	31.5	31.7	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.6	8.9	0.2	4.5	9.3	0.0	42.1	26.8	0.2	31.5	31.7	0.1
LOS	A	A	A	A	A	A	D	C	A	C	C	A
Approach Delay		7.7			9.3			29.6			2.7	
Approach LOS		A			A			C			A	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 55.6

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 12.9









Intersection LOS: B

Intersection Capacity Utilization 73.2%

ICU Level of Service D























Analysis Period (min) 15

Splits and Phases: 1: Meadowbrook Pkwy & US 24

					
Ø2	Ø6	Ø3	Ø4		
15 s	10 s	10 s	55 s		
					
		Ø7	Ø8		
		10 s	55 s		
































HCM Unsignalized Intersection Capacity Analysis 25: Marksheffel Rd & Meadowbrook Parkway

Existing Traffic
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	122	16	24	12	8	27	30	1318	73	31	547	75
Future Volume (Veh/h)	122	16	24	12	8	27	30	1318	73	31	547	75
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.94	0.94	0.94	1.00	1.00	1.00	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	130	17	26	12	8	27	32	1417	78	33	588	81
Pedestrians								1928		1159		
Lane Width (ft)								12.0		12.0		
Walking Speed (ft/s)								4.0		4.0		
Percent Blockage								80		80		
Right turn flare (veh)												
Median type								None		None		
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2616	2213	2222	3804	2216	1868	669			1495		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2616	2213	2222	3804	2216	1868	669			1495		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	57	0	0	80	0	97			93		
cM capacity (veh/h)	0	39	7	0	39	13	924			450		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	130	43	12	35	32	708	708	78	33	294	294	81
Volume Left	130	0	12	0	32	0	0	0	33	0	0	0
Volume Right	0	26	0	27	0	0	0	78	0	0	0	81
cSH	0	11	0	15	924	1700	1700	1700	450	1700	1700	1700
Volume to Capacity	Err	4.08	Err	2.35	0.03	0.42	0.42	0.05	0.07	0.17	0.17	0.05
Queue Length 95th (ft)	Err	Err	Err	127	3	0	0	0	6	0	0	0
Control Delay (s)	Err	Err	Err	1142.0	9.0	0.0	0.0	0.0	13.6	0.0	0.0	0.0
Lane LOS	F	F	F	F	A				B			
Approach Delay (s)	Err			Err	0.2					0.6		
Approach LOS	F			F								
Intersection Summary												
Average Delay				Err								
Intersection Capacity Utilization				56.5%		ICU Level of Service			B			
Analysis Period (min)				15								

Timings
1: Meadowbrook Pkwy & US 24

2020 Background Traffic
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  		 	 			 	
Traffic Volume (vph)	103	617	511	40	2287	44	340	34	5	19	14	141
Future Volume (vph)	103	617	511	40	2287	44	340	34	5	19	14	141
Turn Type	pm+pt	NA	Free	pm+pt	NA	Perm	Split	NA	Free	Split	NA	Free
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4		Free	8		8			Free			Free
Detector Phase	7	4		3	8	8	2	2		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	
Minimum Split (s)	10.0	10.0		10.0	10.0	10.0	10.0	10.0		10.0	10.0	
Total Split (s)	10.0	55.0		10.0	55.0	55.0	15.0	15.0		10.0	10.0	
Total Split (%)	11.1%	61.1%		11.1%	61.1%	61.1%	16.7%	16.7%		11.1%	11.1%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	-1.0		0.0	-1.0	0.0	-1.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	4.0		5.0	4.0	5.0	4.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Recall Mode	None	None		None	None	None	None	None		None	None	
Act Effect Green (s)	52.0	50.4	80.8	51.0	48.3	47.3	11.3	10.3	80.8	5.2	5.2	80.8
Actuated g/C Ratio	0.64	0.62	1.00	0.63	0.60	0.59	0.14	0.13	1.00	0.06	0.06	1.00
v/c Ratio	0.51	0.19	0.32	0.08	0.80	0.05	0.72	0.08	0.00	0.18	0.07	0.09
Control Delay	18.8	7.9	0.5	5.4	16.4	0.1	46.1	36.1	0.0	44.3	41.0	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	18.8	7.9	0.5	5.4	16.4	0.1	46.1	36.1	0.0	44.3	41.0	0.1
LOS	B	A	A	A	B	A	D	D	A	D	D	A
Approach Delay		5.8			15.9			44.6			8.2	
Approach LOS		A			B			D			A	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 80.8

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 15.3

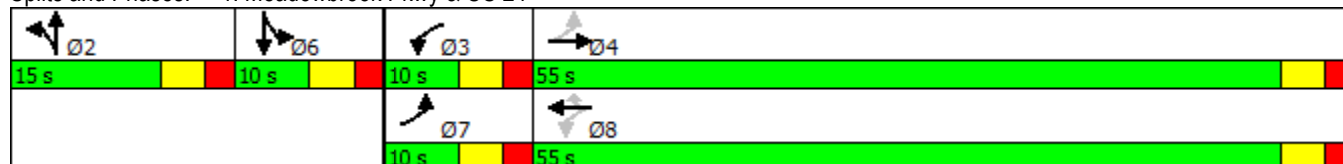
Intersection LOS: B





Intersection Capacity Utilization 77.9%

ICU Level of Service D

Analysis Period (min) 15





















Splits and Phases: 1: Meadowbrook Pkwy & US 24



Intersection						
Int Delay, s/veh	3.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	91	9	18	83	68	12
Future Vol, veh/h	91	9	18	83	68	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	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	99	10	20	90	74	13
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	109	0	233	104
Stage 1	-	-	-	-	104	-
Stage 2	-	-	-	-	129	-
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	-	-	1481	-	755	951
Stage 1	-	-	-	-	920	-
Stage 2	-	-	-	-	897	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1481	-	745	951
Mov Cap-2 Maneuver	-	-	-	-	751	-
Stage 1	-	-	-	-	920	-
Stage 2	-	-	-	-	885	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1.3		10.2	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	775	-	-	1481	-	
HCM Lane V/C Ratio	0.112	-	-	0.013	-	
HCM Control Delay (s)	10.2	-	-	7.5	-	
HCM Lane LOS	B	-	-	A	-	
HCM 95th %tile Q(veh)	0.4	-	-	0	-	

Timings 25: Marksheffel Rd & Meadowbrook Parkway

2020 Background Traffic
AM Peak Hour

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	64	2	37	7	26	544	10	13	1483	89
Future Volume (vph)	64	2	37	7	26	544	10	13	1483	89
Turn Type	pm+pt	NA	pm+pt	NA	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
Detector Phase	7	4	3	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
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Total Split (s)	20.0	10.0	20.0	10.0	10.0	80.0	80.0	10.0	80.0	80.0
Total Split (%)	16.7%	8.3%	16.7%	8.3%	8.3%	66.7%	66.7%	8.3%	66.7%	66.7%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	Max	None	Max	Max
Act Effect Green (s)	15.2	9.0	11.4	5.0	82.7	82.0	82.0	81.8	80.1	80.1
Actuated g/C Ratio	0.14	0.08	0.10	0.05	0.76	0.75	0.75	0.75	0.73	0.73
v/c Ratio	0.37	0.30	0.22	0.51	0.12	0.20	0.01	0.02	0.63	0.08
Control Delay	46.4	30.0	43.0	30.7	5.6	6.3	0.0	4.5	11.9	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.4	30.0	43.0	30.7	5.6	6.3	0.0	4.5	11.9	1.4
LOS	D	C	D	C	A	A	A	A	B	A
Approach Delay		41.6		35.1		6.1			11.2	
Approach LOS		D		D		A			B	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 109

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 12.1









Intersection LOS: B

Intersection Capacity Utilization 65.3%

ICU Level of Service C

































Analysis Period (min) 15

Splits and Phases: 25: Marksheffel Rd & Meadowbrook Parkway

			
10 s	80 s	20 s	10 s
			
10 s	80 s	20 s	10 s

Timings
1: Meadowbrook Pkwy & US 24

2020 Background Traffic
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  		 	 		 	 	
Traffic Volume (vph)	132	2044	276	5	914	28	646	35	276	51	24	149
Future Volume (vph)	132	2044	276	5	914	28	646	35	276	51	24	149
Turn Type	pm+pt	NA	Free	pm+pt	NA	Perm	Split	NA	Free	Split	NA	Free
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4		Free	8		8			Free			Free
Detector Phase	7	4		3	8	8	2	2		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	
Minimum Split (s)	10.0	10.0		10.0	10.0	10.0	10.0	10.0		10.0	10.0	
Total Split (s)	10.0	50.0		10.0	50.0	50.0	20.0	20.0		10.0	10.0	
Total Split (%)	11.1%	55.6%		11.1%	55.6%	55.6%	22.2%	22.2%		11.1%	11.1%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	-1.0		0.0	-1.0	0.0	-1.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	4.0		5.0	4.0	5.0	4.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Recall Mode	None	None		None	None	None	None	None		None	None	
Act Effect Green (s)	41.8	42.0	75.9	38.9	36.2	35.2	16.5	15.5	75.9	5.2	5.2	75.9
Actuated g/C Ratio	0.55	0.55	1.00	0.51	0.48	0.46	0.22	0.20	1.00	0.07	0.07	1.00
v/c Ratio	0.49	0.75	0.18	0.03	0.46	0.04	0.93	0.05	0.19	0.23	0.11	0.10
Control Delay	14.4	15.7	0.2	7.6	14.8	0.1	53.6	29.0	0.3	40.3	38.8	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.4	15.7	0.2	7.6	14.8	0.1	53.6	29.0	0.3	40.3	38.8	0.1
LOS	B	B	A	A	B	A	D	C	A	D	D	A
Approach Delay		13.9			14.4			37.3			13.4	
Approach LOS		B			B			D			B	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 75.9

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 18.9

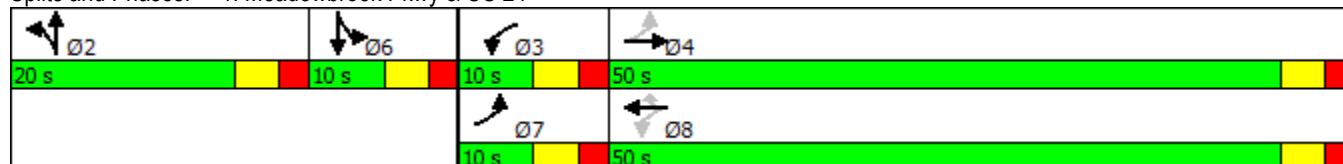
Intersection LOS: B

Intersection Capacity Utilization 79.6%

ICU Level of Service D





Analysis Period (min) 15

Splits and Phases: 1: Meadowbrook Pkwy & US 24























HCM 2010 TWSC
15: Full Access & Meadowbrook Pkwy

2020 Background Traffic
PM Peak Hour

Intersection						
Int Delay, s/veh	3.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	94	11	19	118	80	14
Future Vol, veh/h	94	11	19	118	80	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	-	-	250	-	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	102	12	21	128	87	15
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	114	0	278	108
Stage 1	-	-	-	-	108	-
Stage 2	-	-	-	-	170	-
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	-	-	1475	-	712	946
Stage 1	-	-	-	-	916	-
Stage 2	-	-	-	-	860	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1475	-	702	946
Mov Cap-2 Maneuver	-	-	-	-	720	-
Stage 1	-	-	-	-	916	-
Stage 2	-	-	-	-	848	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1		10.6	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	747	-	-	1475	-	
HCM Lane V/C Ratio	0.137	-	-	0.014	-	
HCM Control Delay (s)	10.6	-	-	7.5	-	
HCM Lane LOS	B	-	-	A	-	
HCM 95th %tile Q(veh)	0.5	-	-	0	-	

Timings 25: Marksheffel Rd & Meadowbrook Parkway

2020 Background Traffic
PM Peak Hour

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	122	16	12	8	30	1318	73	31	547	75
Future Volume (vph)	122	16	12	8	30	1318	73	31	547	75
Turn Type	pm+pt	NA	pm+pt	NA	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
Detector Phase	7	4	3	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
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Total Split (s)	25.0	10.0	25.0	10.0	10.0	75.0	75.0	10.0	75.0	75.0
Total Split (%)	20.8%	8.3%	20.8%	8.3%	8.3%	62.5%	62.5%	8.3%	62.5%	62.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	Max	None	Max	Max
Act Effect Green (s)	18.7	16.5	8.9	5.1	73.9	71.2	71.2	73.9	71.2	71.2
Actuated g/C Ratio	0.18	0.16	0.08	0.05	0.70	0.67	0.67	0.70	0.67	0.67
v/c Ratio	0.55	0.21	0.08	0.33	0.05	0.59	0.07	0.14	0.24	0.07
Control Delay	47.0	24.9	37.3	33.9	6.0	13.0	1.0	7.1	8.9	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.0	24.9	37.3	33.9	6.0	13.0	1.0	7.1	8.9	1.1
LOS	D	C	D	C	A	B	A	A	A	A
Approach Delay		41.6		34.8		12.2		7.9		
Approach LOS		D		C		B		A		

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 105.5

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 13.6









Intersection LOS: B

Intersection Capacity Utilization 58.2%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 25: Marksheffel Rd & Meadowbrook Parkway

































			
Ø1	Ø2	Ø3	Ø4
10 s	75 s	25 s	10 s
			
Ø5	Ø6	Ø7	Ø8
10 s	75 s	25 s	10 s

Timings

1: Meadowbrook Pkwy & US 24

2020 Total Traffic

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  		 	 		 	 	
Traffic Volume (vph)	116	617	511	40	2287	46	340	36	5	25	20	179
Future Volume (vph)	116	617	511	40	2287	46	340	36	5	25	20	179
Turn Type	pm+pt	NA	Free	pm+pt	NA	Perm	Split	NA	Free	Split	NA	Free
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4		Free	8		8			Free			Free
Detector Phase	7	4		3	8	8	2	2		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	
Minimum Split (s)	10.0	10.0		10.0	10.0	10.0	10.0	10.0		10.0	10.0	
Total Split (s)	10.0	55.0		10.0	55.0	55.0	15.0	15.0		10.0	10.0	
Total Split (%)	11.1%	61.1%		11.1%	61.1%	61.1%	16.7%	16.7%		11.1%	11.1%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	-1.0		0.0	-1.0	0.0	-1.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	4.0		5.0	4.0	5.0	4.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Recall Mode	None	None		None	None	None	None	None		None	None	
Act Effect Green (s)	55.6	53.8	84.2	53.4	49.3	48.3	11.1	10.1	84.2	5.0	5.0	84.2
Actuated g/C Ratio	0.66	0.64	1.00	0.63	0.59	0.57	0.13	0.12	1.00	0.06	0.06	1.00
v/c Ratio	0.61	0.19	0.32	0.08	0.82	0.05	0.77	0.09	0.00	0.25	0.10	0.12
Control Delay	26.6	7.8	0.5	5.4	17.4	0.1	49.5	36.2	0.0	46.8	41.4	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.6	7.8	0.5	5.4	17.4	0.1	49.5	36.2	0.0	46.8	41.4	0.2
LOS	C	A	A	A	B	A	D	D	A	D	D	A
Approach Delay		6.6			16.8			47.6			9.1	
Approach LOS		A			B			D			A	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 84.2

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 16.2

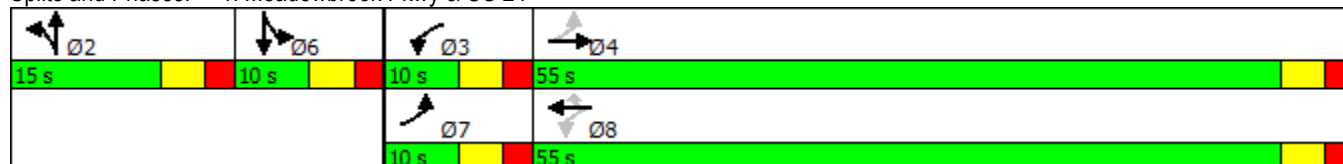
Intersection LOS: B

Intersection Capacity Utilization 78.6%

ICU Level of Service D









Analysis Period (min) 15

Splits and Phases: 1: Meadowbrook Pkwy & US 24







HCM 2010 TWSC
2: SH 94/West Site Access & Meadowbrook Pkwy

2020 Total Traffic
AM Peak Hour

Intersection													
Int Delay, s/veh	8.8												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	0	1	0	156	0	3	23	0	15	102	9	46	0
Future Vol, veh/h	0	1	0	156	0	3	23	0	15	102	9	46	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	-	None	-	-	None
Storage Length	-	-	-	150	-	-	-	200	-	0	0	-	-
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	92
Heavy Vehicles, %	5	5	5	3	5	2	5	5	2	3	2	2	5
Mvmt Flow	0	1	0	170	0	3	25	0	16	111	10	50	0
Major/Minor	Major1			Major2			Minor1			Minor2			
Conflicting Flow All	3	0	0	1	0	0	0	367	343	1	350	342	-
Stage 1	-	-	-	-	-	-	0	1	1	-	341	341	-
Stage 2	-	-	-	-	-	-	0	366	342	-	9	1	-
Critical Hdwy	4.15	-	-	4.13	-	-	-	7.15	6.52	6.23	7.12	6.52	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.15	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.15	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.245	-	-	2.227	-	-	-	3.545	4.018	3.327	3.518	4.018	-
Pot Cap-1 Maneuver	1600	-	-	1615	-	-	0	584	579	1081	605	580	0
Stage 1	-	-	-	-	-	-	0	1014	895	-	674	639	0
Stage 2	-	-	-	-	-	-	0	647	638	-	1012	895	0
Platoon blocked, %		-	-		-	-	-						
Mov Cap-1 Maneuver	1600	-	-	1615	-	-	0	498	518	1081	487	519	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	0	498	518	-	487	519	-
Stage 1	-	-	-	-	-	-	0	1014	895	-	674	572	-
Stage 2	-	-	-	-	-	-	0	528	571	-	892	895	-
Approach	EB			WB			NB			SB			
HCM Control Delay, s	0			7.3			9.1			12.7			
HCM LOS							A			B			
Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	-	518	1081	1600	-	-	1615	-	-	487	519		
HCM Lane V/C Ratio	-	0.031	0.103	-	-	-	0.105	-	-	0.02	0.096		
HCM Control Delay (s)	0	12.2	8.7	0	-	-	7.5	-	-	12.5	12.7		
HCM Lane LOS	A	B	A	A	-	-	A	-	-	B	B		
HCM 95th %tile Q(veh)	-	0.1	0.3	0	-	-	0.4	-	-	0.1	0.3		





HCM 2010 TWSC
9: Meadowbrook Pkwy & East Site Access

2020 Total Traffic
AM Peak Hour

Intersection						
Int Delay, s/veh	0.4					
Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	4	5	2	112	104	1
Future Vol, veh/h	4	5	2	112	104	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	-	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	4	5	2	122	113	1
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	240	114	114	0	-	0
Stage 1	114	-	-	-	-	-
Stage 2	126	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.15	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	742	931	1457	-	-	-
Stage 1	903	-	-	-	-	-
Stage 2	892	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	741	931	1457	-	-	-
Mov Cap-2 Maneuver	741	-	-	-	-	-
Stage 1	903	-	-	-	-	-
Stage 2	891	-	-	-	-	-
Approach	SE	NE		SW		
HCM Control Delay, s	9.4	0.1		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NEL	NET	SELn1	SWT	SWR	
Capacity (veh/h)	1457	-	836	-	-	
HCM Lane V/C Ratio	0.001	-	0.012	-	-	
HCM Control Delay (s)	7.5	-	9.4	-	-	
HCM Lane LOS	A	-	A	-	-	
HCM 95th %tile Q(veh)	0	-	0	-	-	





















HCM 2010 TWSC
15: Circle K & Meadowbrook Pkwy

2020 Total Traffic
AM Peak Hour

Intersection						
Int Delay, s/veh	3.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	102	9	18	91	68	12
Future Vol, veh/h	102	9	18	91	68	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	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	111	10	20	99	74	13
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	121	0	254	116
Stage 1	-	-	-	-	116	-
Stage 2	-	-	-	-	138	-
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	-	-	1467	-	735	936
Stage 1	-	-	-	-	909	-
Stage 2	-	-	-	-	889	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1467	-	725	936
Mov Cap-2 Maneuver	-	-	-	-	738	-
Stage 1	-	-	-	-	909	-
Stage 2	-	-	-	-	877	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1.2		10.3	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	762	-	-	1467	-	
HCM Lane V/C Ratio	0.114	-	-	0.013	-	
HCM Control Delay (s)	10.3	-	-	7.5	-	
HCM Lane LOS	B	-	-	A	-	
HCM 95th %tile Q(veh)	0.4	-	-	0	-	

Timings
25: Marksheffel Rd & Meadowbrook Parkway

2020 Total Traffic
AM Peak Hour









										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	77	2	37	7	26	544	10	13	1493	93
Future Volume (vph)	77	2	37	7	26	544	10	13	1493	93
Turn Type	pm+pt	NA	pm+pt	NA	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
Detector Phase	7	4	3	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
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Total Split (s)	20.0	10.0	20.0	10.0	10.0	80.0	80.0	10.0	80.0	80.0
Total Split (%)	16.7%	8.3%	16.7%	8.3%	8.3%	66.7%	66.7%	8.3%	66.7%	66.7%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	Max	None	Max	Max
Act Effect Green (s)	16.5	9.6	11.4	5.0	82.8	82.1	82.1	81.8	80.2	80.2
Actuated g/C Ratio	0.15	0.09	0.10	0.05	0.75	0.75	0.75	0.75	0.73	0.73
v/c Ratio	0.42	0.29	0.22	0.51	0.13	0.20	0.01	0.02	0.64	0.09
Control Delay	47.2	29.0	42.7	31.0	5.9	6.5	0.0	4.7	12.4	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.2	29.0	42.7	31.0	5.9	6.5	0.0	4.7	12.4	1.6
LOS	D	C	D	C	A	A	A	A	B	A
Approach Delay		42.5		35.1		6.4			11.7	
Approach LOS		D		D		A			B	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 109.7
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.64
 Intersection Signal Delay: 12.7
 Intersection Capacity Utilization 65.5%
 Analysis Period (min) 15

Intersection LOS: B
 ICU Level of Service C

Splits and Phases: 25: Marksheffel Rd & Meadowbrook Parkway
































			
Ø1	Ø2	Ø3	Ø4
10 s	80 s	20 s	10 s
			
Ø5	Ø6	Ø7	Ø8
10 s	80 s	20 s	10 s

Timings

2020 Total Traffic

1: Meadowbrook Pkwy/Newt Dr & US 24

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  		 	 			 	
Traffic Volume (vph)	175	2044	276	5	914	35	646	42	276	55	28	174
Future Volume (vph)	175	2044	276	5	914	35	646	42	276	55	28	174
Turn Type	pm+pt	NA	Free	pm+pt	NA	Perm	Split	NA	Free	Split	NA	Free
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4		Free	8		8			Free			Free
Detector Phase	7	4		3	8	8	2	2		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	
Minimum Split (s)	10.0	10.0		10.0	10.0	10.0	10.0	10.0		10.0	10.0	
Total Split (s)	10.0	50.0		10.0	50.0	50.0	20.0	20.0		10.0	10.0	
Total Split (%)	11.1%	55.6%		11.1%	55.6%	55.6%	22.2%	22.2%		11.1%	11.1%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	-1.0		0.0	-1.0	0.0	-1.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	4.0		5.0	4.0	5.0	4.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Recall Mode	None	None		None	None	None	None	None		None	None	
Act Effect Green (s)	41.8	42.0	75.9	37.5	33.4	32.3	16.5	15.5	75.9	5.2	5.2	75.9
Actuated g/C Ratio	0.55	0.55	1.00	0.49	0.44	0.43	0.22	0.20	1.00	0.07	0.07	1.00
v/c Ratio	0.67	0.75	0.18	0.03	0.50	0.06	0.93	0.06	0.19	0.49	0.12	0.12
Control Delay	24.0	15.7	0.2	7.6	15.9	0.1	53.6	29.0	0.3	53.9	38.9	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.0	15.7	0.2	7.6	15.9	0.1	53.6	29.0	0.3	53.9	38.9	0.1
LOS	C	B	A	A	B	A	D	C	A	D	D	A
Approach Delay		14.6			15.3			37.3			16.0	
Approach LOS		B			B			D			B	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 75.9

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 19.5

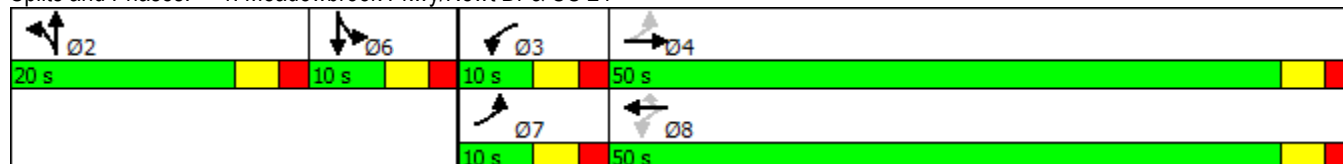
Intersection LOS: B

Intersection Capacity Utilization 79.6%

ICU Level of Service D









Analysis Period (min) 15

Splits and Phases: 1: Meadowbrook Pkwy/Newt Dr & US 24



HCM 2010 TWSC
2: SH 94/West Site Access & Meadowbrook Pkwy

2020 Total Traffic
PM Peak Hour

Intersection													
Int Delay, s/veh	9.2												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	0	0	0	201	0	10	26	0	52	111	6	30	0
Future Vol, veh/h	0	0	0	201	0	10	26	0	52	111	6	30	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	200	-	0	0	-	-
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	92
Heavy Vehicles, %	2	2	2	3	2	2	5	2	2	3	2	2	2
Mvmt Flow	0	0	0	218	0	11	28	0	57	121	7	33	0





Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	11	0	0	1	0	0	0	460	449	1	471	443
Stage 1	-	-	-	-	-	-	0	1	1	-	442	442
Stage 2	-	-	-	-	-	-	0	459	448	-	29	1
Critical Hdwy	4.12	-	-	4.13	-	-	-	7.12	6.52	6.23	7.12	6.52
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52
Follow-up Hdwy	2.218	-	-	2.227	-	-	-	3.518	4.018	3.327	3.518	4.018
Pot Cap-1 Maneuver	1608	-	-	1615	-	-	0	512	505	1081	503	509
Stage 1	-	-	-	-	-	-	0	1022	895	-	594	576
Stage 2	-	-	-	-	-	-	0	582	573	-	988	895
Platoon blocked, %		-	-		-	-	-					
Mov Cap-1 Maneuver	1608	-	-	1615	-	-	0	434	437	1081	362	440
Mov Cap-2 Maneuver	-	-	-	-	-	-	0	434	437	-	362	440
Stage 1	-	-	-	-	-	-	0	1022	895	-	594	498
Stage 2	-	-	-	-	-	-	0	470	496	-	822	895

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	7.2	10.6	14
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	437	1081	1608	-	-	1615	-	-	362	440
HCM Lane V/C Ratio	-	0.129	0.112	-	-	-	0.135	-	-	0.018	0.074
HCM Control Delay (s)	0	14.5	8.7	0	-	-	7.6	-	-	15.1	13.8
HCM Lane LOS	A	B	A	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	-	0.4	0.4	0	-	-	0.5	-	-	0.1	0.2





HCM 2010 TWSC
9: Meadowbrook Pkwy & East Site Access

2020 Total Traffic
PM Peak Hour

Intersection						
Int Delay, s/veh	0.4					
Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	3	3	6	114	146	4
Future Vol, veh/h	3	3	6	114	146	4
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	-	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	3	3	7	124	159	4
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	298	161	163	0	-	0
Stage 1	161	-	-	-	-	-
Stage 2	137	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.15	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	687	876	1398	-	-	-
Stage 1	861	-	-	-	-	-
Stage 2	882	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	684	876	1398	-	-	-
Mov Cap-2 Maneuver	684	-	-	-	-	-
Stage 1	861	-	-	-	-	-
Stage 2	878	-	-	-	-	-
Approach	SE	NE		SW		
HCM Control Delay, s	9.7	0.4		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NEL	NET	SELn1	SWT	SWR	
Capacity (veh/h)	1398	-	768	-	-	
HCM Lane V/C Ratio	0.005	-	0.008	-	-	
HCM Control Delay (s)	7.6	-	9.7	-	-	
HCM Lane LOS	A	-	A	-	-	
HCM 95th %tile Q(veh)	0	-	0	-	-	





















HCM 2010 TWSC
15: Circle K & Meadowbrook Pkwy

2020 Total Traffic
PM Peak Hour

Intersection						
Int Delay, s/veh	3.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	106	11	19	131	80	14
Future Vol, veh/h	106	11	19	131	80	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	-	-	100	-	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	115	12	21	142	87	15
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	127	0	305	121
Stage 1	-	-	-	-	121	-
Stage 2	-	-	-	-	184	-
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	-	-	1459	-	687	930
Stage 1	-	-	-	-	904	-
Stage 2	-	-	-	-	848	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1459	-	677	930
Mov Cap-2 Maneuver	-	-	-	-	703	-
Stage 1	-	-	-	-	904	-
Stage 2	-	-	-	-	836	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1		10.7	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	730	-	-	1459	-	
HCM Lane V/C Ratio	0.14	-	-	0.014	-	
HCM Control Delay (s)	10.7	-	-	7.5	-	
HCM Lane LOS	B	-	-	A	-	
HCM 95th %tile Q(veh)	0.5	-	-	0	-	

Timings
25: Marksheffel Rd & Meadowbrook Parkway

2020 Total Traffic
PM Peak Hour

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	130	16	12	8	30	1318	73	31	547	89
Future Volume (vph)	130	16	12	8	30	1318	73	31	547	89
Turn Type	pm+pt	NA	pm+pt	NA	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
Detector Phase	7	4	3	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
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Total Split (s)	25.0	10.0	25.0	10.0	10.0	75.0	75.0	10.0	75.0	75.0
Total Split (%)	20.8%	8.3%	20.8%	8.3%	8.3%	62.5%	62.5%	8.3%	62.5%	62.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	Max	None	Max	Max
Act Effect Green (s)	18.9	16.7	8.9	5.1	73.9	71.2	71.2	73.9	71.2	71.2
Actuated g/C Ratio	0.18	0.16	0.08	0.05	0.70	0.67	0.67	0.70	0.67	0.67
v/c Ratio	0.56	0.21	0.08	0.33	0.05	0.59	0.07	0.14	0.24	0.09
Control Delay	47.2	24.8	37.2	34.0	6.1	13.1	1.0	7.2	9.0	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.2	24.8	37.2	34.0	6.1	13.1	1.0	7.2	9.0	1.8
LOS	D	C	D	C	A	B	A	A	A	A
Approach Delay		41.9		34.9		12.4			8.0	
Approach LOS		D		C		B			A	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 105.7

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 13.7









Intersection LOS: B

Intersection Capacity Utilization 58.6%





ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 25: Marksheffel Rd & Meadowbrook Parkway

			
10 s	75 s	25 s	10 s
			
10 s	75 s	25 s	10 s

Intersection						
Int Delay, s/veh	7.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Vol, veh/h	130	71	178	75	122	203
Future Vol, veh/h	130	71	178	75	122	203
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	150	-	200	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	3	2	2	3
Mvmt Flow	137	75	187	79	128	214
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	137	0	591	137
Stage 1	-	-	-	-	137	-
Stage 2	-	-	-	-	454	-
Critical Hdwy	-	-	4.13	-	6.42	6.23
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.227	-	3.518	3.327
Pot Cap-1 Maneuver	-	-	1441	-	470	909
Stage 1	-	-	-	-	890	-
Stage 2	-	-	-	-	640	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1441	-	409	909
Mov Cap-2 Maneuver	-	-	-	-	409	-
Stage 1	-	-	-	-	890	-
Stage 2	-	-	-	-	557	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		5.5		13.1	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	409	909	-	-	1441	-
HCM Lane V/C Ratio	0.314	0.235	-	-	0.13	-
HCM Control Delay (s)	17.8	10.2	-	-	7.9	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	1.3	0.9	-	-	0.4	-

























Intersection						
Int Delay, s/veh	2.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	302	32	22	184	69	14
Future Vol, veh/h	302	32	22	184	69	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	-	-	100	-	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	328	35	24	200	75	15
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	363	0	594	346
Stage 1	-	-	-	-	346	-
Stage 2	-	-	-	-	248	-
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	-	-	1196	-	468	697
Stage 1	-	-	-	-	716	-
Stage 2	-	-	-	-	793	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1196	-	459	697
Mov Cap-2 Maneuver	-	-	-	-	459	-
Stage 1	-	-	-	-	716	-
Stage 2	-	-	-	-	777	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.9		14.1	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	487	-	-	1196	-	
HCM Lane V/C Ratio	0.185	-	-	0.02	-	
HCM Control Delay (s)	14.1	-	-	8.1	-	
HCM Lane LOS	B	-	-	A	-	
HCM 95th %tile Q(veh)	0.7	-	-	0.1	-	

Timings

2040 Background Traffic (Scenario 1 - Retail)

1: Meadowbrook Pkwy & US 24

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	959	933	50	2798	88	900	112	10	35	41	193
Future Volume (vph)	165	959	933	50	2798	88	900	112	10	35	41	193
Turn Type	Prot	NA	Free	pm+pt	NA	Perm	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free	8		8			Free			Free
Detector Phase	7	4		3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	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		10.0	10.0	
Total Split (s)	30.0	98.0		10.0	78.0	78.0	30.0	25.0		17.0	12.0	
Total Split (%)	20.0%	65.3%		6.7%	52.0%	52.0%	20.0%	16.7%		11.3%	8.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	-1.0		0.0	-1.0	0.0	-1.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	4.0		5.0	4.0	5.0	4.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None	None	None	None		None	None	
Act Effect Green (s)	12.2	83.5	134.7	78.2	74.2	73.2	26.1	24.7	134.7	6.9	6.6	134.7
Actuated g/C Ratio	0.09	0.62	1.00	0.58	0.55	0.54	0.19	0.18	1.00	0.05	0.05	1.00
v/c Ratio	0.56	0.31	0.62	0.15	1.02	0.10	0.95	0.18	0.01	0.21	0.25	0.13
Control Delay	66.5	13.1	1.8	10.0	52.8	0.2	73.3	48.9	0.0	65.7	67.3	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.5	13.1	1.8	10.0	52.8	0.2	73.3	48.9	0.0	65.7	67.3	0.2
LOS	E	B	A	B	D	A	E	D	A	E	E	A
Approach Delay		12.3			50.4			69.8			18.9	
Approach LOS		B			D			E			B	

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 134.7

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.02

Intersection Signal Delay: 39.6

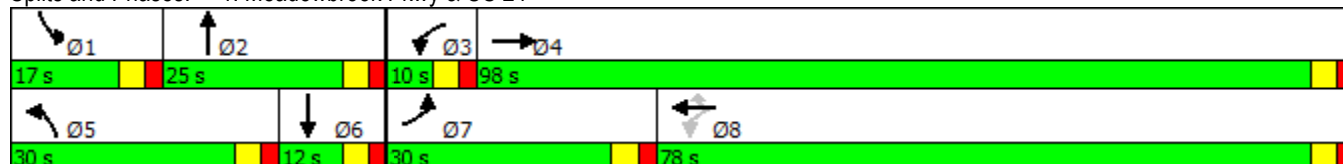
Intersection LOS: D

Intersection Capacity Utilization 94.2%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 1: Meadowbrook Pkwy & US 24



Timings
2: SH 94 & Meadowbrook Pkwy

2040 Background Traffic (Scenario 1 - Retail)

AM Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	130	71	178	75	122	203
Future Volume (vph)	130	71	178	75	122	203
Turn Type	NA	Perm	Perm	NA	Prot	Prot
Protected Phases	4			8	5	5
Permitted Phases		4	8			
Detector Phase	4	4	8	8	5	5
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0	9.0
Total Split (s)	70.0	70.0	70.0	70.0	20.0	20.0
Total Split (%)	77.8%	77.8%	77.8%	77.8%	22.2%	22.2%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
Act Effect Green (s)	10.2	10.2	10.4	10.4	7.9	7.9
Actuated g/C Ratio	0.40	0.40	0.41	0.41	0.31	0.31
v/c Ratio	0.18	0.11	0.37	0.10	0.23	0.33
Control Delay	6.7	2.5	9.0	6.2	10.0	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.7	2.5	9.0	6.2	10.0	3.7
LOS	A	A	A	A	A	A
Approach Delay	5.2			8.1	6.0	
Approach LOS	A			A	A	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 25.3

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.37

Intersection Signal Delay: 6.5

Intersection LOS: A

Intersection Capacity Utilization 36.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 2: SH 94 & Meadowbrook Pkwy





























Timings

2040 Background Traffic (Scenario 1 - Retail)

25: Marksheffel Rd & Meadowbrook Parkway

AM Peak Hour

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 		 		 	 		 	 	
Traffic Volume (vph)	140	5	95	16	90	959	58	41	2016	232
Future Volume (vph)	140	5	95	16	90	959	58	41	2016	232
Turn Type	Prot	NA	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4	3	8	5	2		1	6	
Permitted Phases			8		2		2	6		6
Detector Phase	7	4	3	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
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Total Split (s)	22.0	20.0	15.0	13.0	10.0	75.0	75.0	10.0	75.0	75.0
Total Split (%)	18.3%	16.7%	12.5%	10.8%	8.3%	62.5%	62.5%	8.3%	62.5%	62.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	Max	None	Max	Max
Act Effect Green (s)	10.1	8.4	17.9	7.6	76.1	72.2	72.2	75.1	70.1	70.1
Actuated g/C Ratio	0.09	0.07	0.16	0.07	0.67	0.64	0.64	0.67	0.62	0.62
v/c Ratio	0.47	0.60	0.42	0.52	0.66	0.44	0.06	0.12	0.93	0.23
Control Delay	54.3	33.6	43.5	26.2	38.3	11.9	0.1	6.6	28.6	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.3	33.6	43.5	26.2	38.3	11.9	0.1	6.6	28.6	3.7
LOS	D	C	D	C	D	B	A	A	C	A
Approach Delay		47.4		35.0		13.5			25.6	
Approach LOS		D		D		B			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 112.8

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 23.7









Intersection LOS: C

Intersection Capacity Utilization 91.8%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 25: Marksheffel Rd & Meadowbrook Parkway





			
10 s	75 s	15 s	20 s
			
10 s	75 s	22 s	13 s

HCM 2010 TWSC
2: Meadowbrook & Meadowbrook Pkwy

2040 Background Traffic (Scenario 1 - Retail)

PM Peak Hour

Intersection						
Int Delay, s/veh	169.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Vol, veh/h	230	344	327	265	372	214
Future Vol, veh/h	230	344	327	265	372	214
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	150	-	200	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	96	95	95	95
Heavy Vehicles, %	2	2	3	2	2	3
Mvmt Flow	242	362	341	279	392	225
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	242	0	1202	242
Stage 1	-	-	-	-	242	-
Stage 2	-	-	-	-	960	-
Critical Hdwy	-	-	4.13	-	6.42	6.23
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.227	-	3.518	3.327
Pot Cap-1 Maneuver	-	-	1319	-	~ 204	794
Stage 1	-	-	-	-	798	-
Stage 2	-	-	-	-	~ 372	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1319	-	~ 151	794
Mov Cap-2 Maneuver	-	-	-	-	~ 151	-
Stage 1	-	-	-	-	798	-
Stage 2	-	-	-	-	~ 276	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		4.8		\$ 501	
HCM LOS					F	
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	151	794	-	-	1319	-
HCM Lane V/C Ratio	2.593	0.284	-	-	0.258	-
HCM Control Delay (s)	\$ 782.7	11.3	-	-	8.7	-
HCM Lane LOS	F	B	-	-	A	-
HCM 95th %tile Q(veh)	34.3	1.2	-	-	1	-
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						

























Intersection						
Int Delay, s/veh	2.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	383	61	31	481	111	27
Future Vol, veh/h	383	61	31	481	111	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	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	416	66	34	523	121	29
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	483	0	1039	449
Stage 1	-	-	-	-	449	-
Stage 2	-	-	-	-	590	-
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	-	-	1080	-	255	610
Stage 1	-	-	-	-	643	-
Stage 2	-	-	-	-	554	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1080	-	247	610
Mov Cap-2 Maneuver	-	-	-	-	378	-
Stage 1	-	-	-	-	643	-
Stage 2	-	-	-	-	537	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.5		18.9	
HCM LOS					C	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	408	-	-	1080	-	
HCM Lane V/C Ratio	0.368	-	-	0.031	-	
HCM Control Delay (s)	18.9	-	-	8.4	-	
HCM Lane LOS	C	-	-	A	-	
HCM 95th %tile Q(veh)	1.7	-	-	0.1	-	

Timings

2040 Background Traffic (Scenario 1 - Retail)

1: Meadowbrook Pkwy & US 24

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	346	2720	1054	10	1143	116	743	167	275	214	156	324
Future Volume (vph)	346	2720	1054	10	1143	116	743	167	275	214	156	324
Turn Type	Prot	NA	Free	pm+pt	NA	Perm	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free	8		8			Free			Free
Detector Phase	7	4		3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	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		10.0	10.0	
Total Split (s)	35.0	85.0		10.0	60.0	60.0	29.0	10.0		45.0	26.0	
Total Split (%)	23.3%	56.7%		6.7%	40.0%	40.0%	19.3%	6.7%		30.0%	17.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	-1.0		0.0	-1.0	0.0	-1.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	4.0		5.0	4.0	5.0	4.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None	None	None	None		None	None	
Act Effect Green (s)	19.4	81.3	134.0	64.7	60.7	59.6	24.3	20.7	134.0	14.2	11.6	134.0
Actuated g/C Ratio	0.14	0.61	1.00	0.48	0.45	0.44	0.18	0.15	1.00	0.11	0.09	1.00
v/c Ratio	0.73	0.90	0.70	0.09	0.51	0.15	0.84	0.32	0.18	0.62	0.54	0.22
Control Delay	64.5	29.0	2.6	14.0	27.8	1.8	62.6	53.5	0.3	65.7	66.1	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	64.5	29.0	2.6	14.0	27.8	1.8	62.6	53.5	0.3	65.7	66.1	0.3
LOS	E	C	A	B	C	A	E	D	A	E	E	A
Approach Delay		25.1			25.2			46.6			35.3	
Approach LOS		C			C			D			D	

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 134

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 29.6

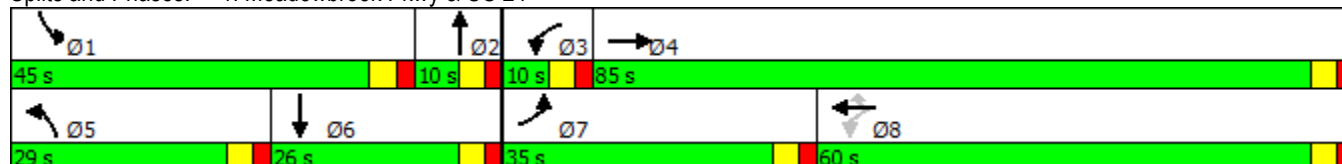
Intersection LOS: C

Intersection Capacity Utilization 89.3%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: Meadowbrook Pkwy & US 24



Timings
2: SH 94 & Meadowbrook Pkwy

2040 Background Traffic (Scenario 1 - Retail)
PM Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	230	344	327	265	372	214
Future Volume (vph)	230	344	327	265	372	214
Turn Type	NA	Perm	Perm	NA	Prot	Prot
Protected Phases	4			8	5	5
Permitted Phases		4	8			
Detector Phase	4	4	8	8	5	5
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0	9.0
Total Split (s)	70.0	70.0	70.0	70.0	20.0	20.0
Total Split (%)	77.8%	77.8%	77.8%	77.8%	22.2%	22.2%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
Act Effect Green (s)	19.2	19.2	19.2	19.2	15.3	15.3
Actuated g/C Ratio	0.43	0.43	0.43	0.43	0.34	0.34
v/c Ratio	0.30	0.41	0.71	0.35	0.65	0.33
Control Delay	8.8	2.5	18.9	9.2	22.5	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.8	2.5	18.9	9.2	22.5	4.4
LOS	A	A	B	A	C	A
Approach Delay	5.0			14.5	15.9	
Approach LOS	A			B	B	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 44.8

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 11.9

Intersection LOS: B

Intersection Capacity Utilization 63.3%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 2: SH 94 & Meadowbrook Pkwy























Timings

2040 Background Traffic (Scenario 1 - Retail)

25: Marksheffel Rd & Meadowbrook Parkway

PM Peak Hour

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	410	31	150	25	119	2104	260	90	812	318
Future Volume (vph)	410	31	150	25	119	2104	260	90	812	318
Turn Type	Prot	NA	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4	3	8	5	2		1	6	
Permitted Phases			8		2		2	6		6
Detector Phase	7	4	3	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
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Total Split (s)	22.0	20.0	15.0	13.0	10.0	75.0	75.0	10.0	75.0	75.0
Total Split (%)	18.3%	16.7%	12.5%	10.8%	8.3%	62.5%	62.5%	8.3%	62.5%	62.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	Max	None	Max	Max
Act Effect Green (s)	16.8	14.7	17.8	7.8	75.0	70.0	70.0	75.0	70.0	70.0
Actuated g/C Ratio	0.14	0.12	0.15	0.07	0.63	0.59	0.59	0.63	0.59	0.59
v/c Ratio	0.89	0.80	0.77	0.85	0.33	1.03	0.27	0.69	0.41	0.31
Control Delay	71.6	33.8	64.0	68.0	9.7	52.2	4.4	42.7	14.3	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.6	33.8	64.0	68.0	9.7	52.2	4.4	42.7	14.3	2.0
LOS	E	C	E	E	A	D	A	D	B	A
Approach Delay		59.1		65.9		45.0			13.2	
Approach LOS		E		E		D			B	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 119.6

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.03

Intersection Signal Delay: 39.7

















Intersection LOS: D

Intersection Capacity Utilization 113.4%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 25: Marksheffel Rd & Meadowbrook Parkway

























							
10 s	75 s		15 s	20 s			
							
10 s	75 s		22 s	13 s			

Timings

2040 Background Traffic (Scenario 2 - Residential)

1: Meadowbrook Pkwy & US 24

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	150	968	933	50	2824	54	908	90	10	31	44	184
Future Volume (vph)	150	968	933	50	2824	54	908	90	10	31	44	184
Turn Type	Prot	NA	Free	pm+pt	NA	Perm	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free	8		8			Free			Free
Detector Phase	7	4		3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	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		10.0	10.0	
Total Split (s)	30.0	98.0		10.0	78.0	78.0	30.0	25.0		17.0	12.0	
Total Split (%)	20.0%	65.3%		6.7%	52.0%	52.0%	20.0%	16.7%		11.3%	8.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	-1.0		0.0	-1.0	0.0	-1.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	4.0		5.0	4.0	5.0	4.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None	None	None	None		None	None	
Act Effect Green (s)	11.5	82.9	134.1	78.2	74.2	73.2	26.1	27.1	134.1	6.7	6.6	134.1
Actuated g/C Ratio	0.09	0.62	1.00	0.58	0.55	0.55	0.19	0.20	1.00	0.05	0.05	1.00
v/c Ratio	0.54	0.31	0.62	0.16	1.02	0.06	0.96	0.13	0.01	0.19	0.26	0.12
Control Delay	66.2	13.2	1.8	10.0	53.8	0.1	73.7	46.7	0.0	65.2	67.1	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.2	13.2	1.8	10.0	53.8	0.1	73.7	46.7	0.0	65.2	67.1	0.2
LOS	E	B	A	B	D	A	E	D	A	E	E	A
Approach Delay		11.9			52.0			70.5			19.3	
Approach LOS		B			D			E			B	

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 134.1

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.02

Intersection Signal Delay: 40.3

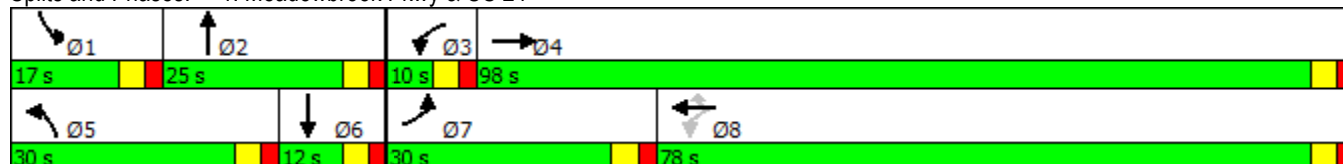
Intersection LOS: D

Intersection Capacity Utilization 94.4%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 1: Meadowbrook Pkwy & US 24







HCM 2010 TWSC
2: Meadowbrook & Meadowbrook Pkwy

2040 Background Traffic (Scenario 2 - Residential)

AM Peak Hour

Intersection						
Int Delay, s/veh	6.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Vol, veh/h	133	61	178	42	51	203
Future Vol, veh/h	133	61	178	42	51	203
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	150	-	200	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	3	2	2	3
Mvmt Flow	140	64	187	44	54	214
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	140	0	559	140
Stage 1	-	-	-	-	140	-
Stage 2	-	-	-	-	419	-
Critical Hdwy	-	-	4.13	-	7.12	6.23
Critical Hdwy Stg 1	-	-	-	-	6.12	-
Critical Hdwy Stg 2	-	-	-	-	6.12	-
Follow-up Hdwy	-	-	2.227	-	3.518	3.327
Pot Cap-1 Maneuver	-	-	1437	-	440	905
Stage 1	-	-	-	-	863	-
Stage 2	-	-	-	-	612	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1437	-	396	905
Mov Cap-2 Maneuver	-	-	-	-	396	-
Stage 1	-	-	-	-	863	-
Stage 2	-	-	-	-	532	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		6.4		11.3	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	396	905	-	-	1437	-
HCM Lane V/C Ratio	0.136	0.236	-	-	0.13	-
HCM Control Delay (s)	15.5	10.2	-	-	7.9	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.5	0.9	-	-	0.4	-

























Intersection						
Int Delay, s/veh	2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	304	32	22	151	69	14
Future Vol, veh/h	304	32	22	151	69	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	-	-	100	-	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	330	35	24	164	75	15
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	365	0	560	348
Stage 1	-	-	-	-	348	-
Stage 2	-	-	-	-	212	-
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	-	-	1194	-	489	695
Stage 1	-	-	-	-	715	-
Stage 2	-	-	-	-	823	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1194	-	479	695
Mov Cap-2 Maneuver	-	-	-	-	562	-
Stage 1	-	-	-	-	715	-
Stage 2	-	-	-	-	806	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1		12.3	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	581	-	-	1194	-	
HCM Lane V/C Ratio	0.155	-	-	0.02	-	
HCM Control Delay (s)	12.3	-	-	8.1	-	
HCM Lane LOS	B	-	-	A	-	
HCM 95th %tile Q(veh)	0.5	-	-	0.1	-	

Timings

2040 Background Traffic (Scenario 2 - Residential)

25: Marksheffel Rd & Meadowbrook Parkway

AM Peak Hour

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 		 			 			 	
Traffic Volume (vph)	143	4	95	4	90	959	58	41	2016	199
Future Volume (vph)	143	4	95	4	90	959	58	41	2016	199
Turn Type	Prot	NA	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4	3	8	5	2		1	6	
Permitted Phases			8		2		2	6		6
Detector Phase	7	4	3	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
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Total Split (s)	22.0	20.0	15.0	13.0	10.0	75.0	75.0	10.0	75.0	75.0
Total Split (%)	18.3%	16.7%	12.5%	10.8%	8.3%	62.5%	62.5%	8.3%	62.5%	62.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	Max	None	Max	Max
Act Effect Green (s)	10.2	8.2	15.3	7.3	76.5	72.6	72.6	75.3	70.3	70.3
Actuated g/C Ratio	0.09	0.07	0.14	0.07	0.69	0.66	0.66	0.68	0.64	0.64
v/c Ratio	0.47	0.60	0.47	0.46	0.65	0.43	0.06	0.12	0.90	0.19
Control Delay	53.7	33.5	45.6	21.2	36.7	11.4	0.1	6.5	25.8	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.7	33.5	45.6	21.2	36.7	11.4	0.1	6.5	25.8	3.5
LOS	D	C	D	C	D	B	A	A	C	A
Approach Delay		47.2		34.6		12.9			23.4	
Approach LOS		D		C		B			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 110.5

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 22.2









Intersection LOS: C

Intersection Capacity Utilization 92.0%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 25: Marksheffel Rd & Meadowbrook Parkway

























			
10 s	75 s	15 s	20 s
			
10 s	75 s	22 s	13 s

Timings

2040 Background Traffic (Scenario 2 - Residential)

1: Meadowbrook Pkwy & US 24

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	221	2830	1054	10	1188	47	773	96	275	74	107	215
Future Volume (vph)	221	2830	1054	10	1188	47	773	96	275	74	107	215
Turn Type	Prot	NA	Free	pm+pt	NA	Perm	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free	8		8			Free			Free
Detector Phase	7	4		3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	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		10.0	10.0	
Total Split (s)	35.0	85.0		10.0	60.0	60.0	29.0	10.0		45.0	26.0	
Total Split (%)	23.3%	56.7%		6.7%	40.0%	40.0%	19.3%	6.7%		30.0%	17.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	-1.0		0.0	-1.0	0.0	-1.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	4.0		5.0	4.0	5.0	4.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None	None	None	None		None	None	
Act Effect Green (s)	14.3	81.2	132.3	69.7	65.7	64.7	24.7	24.9	132.3	8.4	9.6	132.3
Actuated g/C Ratio	0.11	0.61	1.00	0.53	0.50	0.49	0.19	0.19	1.00	0.06	0.07	1.00
v/c Ratio	0.63	0.93	0.70	0.09	0.48	0.06	0.85	0.15	0.18	0.36	0.44	0.14
Control Delay	64.8	30.1	2.6	12.2	23.3	0.1	62.1	46.9	0.3	65.1	65.1	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.8	30.1	2.6	12.2	23.3	0.1	62.1	46.9	0.3	65.1	65.1	0.2
LOS	E	C	A	B	C	A	E	D	A	E	E	A
Approach Delay		24.8			22.3			45.7			29.9	
Approach LOS		C			C			D			C	

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 132.3

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 28.1

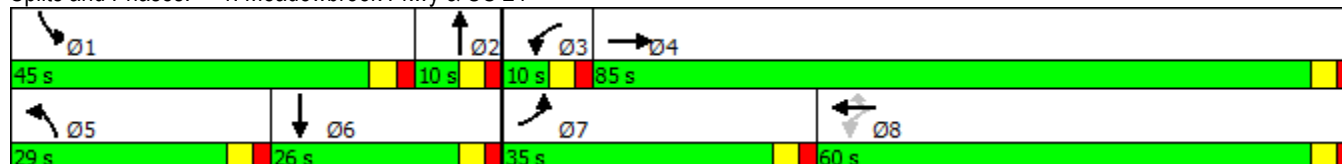
Intersection LOS: C

Intersection Capacity Utilization 91.0%





ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 1: Meadowbrook Pkwy & US 24



Intersection						
Int Delay, s/veh	9.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Vol, veh/h	114	46	327	166	107	214
Future Vol, veh/h	114	46	327	166	107	214
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	150	-	200	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	96	95	95	95
Heavy Vehicles, %	2	2	3	2	2	3
Mvmt Flow	120	48	341	175	113	225
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	120	0	976	120
Stage 1	-	-	-	-	120	-
Stage 2	-	-	-	-	856	-
Critical Hdwy	-	-	4.13	-	6.42	6.23
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.227	-	3.518	3.327
Pot Cap-1 Maneuver	-	-	1462	-	279	929
Stage 1	-	-	-	-	905	-
Stage 2	-	-	-	-	416	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1462	-	214	929
Mov Cap-2 Maneuver	-	-	-	-	214	-
Stage 1	-	-	-	-	905	-
Stage 2	-	-	-	-	319	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		5.4		19.8	
HCM LOS					C	
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	214	929	-	-	1462	-
HCM Lane V/C Ratio	0.526	0.242	-	-	0.233	-
HCM Control Delay (s)	39.1	10.1	-	-	8.2	-
HCM Lane LOS	E	B	-	-	A	-
HCM 95th %tile Q(veh)	2.7	0.9	-	-	0.9	-

























Intersection						
Int Delay, s/veh	4.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	266	61	31	382	111	27
Future Vol, veh/h	266	61	31	382	111	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	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	289	66	34	415	121	29
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	355	0	805	322
Stage 1	-	-	-	-	322	-
Stage 2	-	-	-	-	483	-
Critical Hdwy	-	-	4.12	-	7.12	6.22
Critical Hdwy Stg 1	-	-	-	-	6.12	-
Critical Hdwy Stg 2	-	-	-	-	6.12	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1204	-	301	719
Stage 1	-	-	-	-	690	-
Stage 2	-	-	-	-	565	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1204	-	295	719
Mov Cap-2 Maneuver	-	-	-	-	295	-
Stage 1	-	-	-	-	690	-
Stage 2	-	-	-	-	549	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.6		24.4	
HCM LOS					C	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	333	-	-	1204	-	
HCM Lane V/C Ratio	0.45	-	-	0.028	-	
HCM Control Delay (s)	24.4	-	-	8.1	-	
HCM Lane LOS	C	-	-	A	-	
HCM 95th %tile Q(veh)	2.2	-	-	0.1	-	

Timings

2040 Background Traffic (Scenario 2 - Residential)

25: Marksheffel Rd & Meadowbrook Parkway

PM Peak Hour

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 		 			 			 	
Traffic Volume (vph)	294	24	150	18	119	2104	260	90	812	219
Future Volume (vph)	294	24	150	18	119	2104	260	90	812	219
Turn Type	Prot	NA	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4	3	8	5	2		1	6	
Permitted Phases			8		2		2	6		6
Detector Phase	7	4	3	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
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Total Split (s)	22.0	20.0	15.0	13.0	10.0	75.0	75.0	10.0	75.0	75.0
Total Split (%)	18.3%	16.7%	12.5%	10.8%	8.3%	62.5%	62.5%	8.3%	62.5%	62.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	Max	None	Max	Max
Act Effect Green (s)	15.0	12.7	17.6	7.7	75.1	70.1	70.1	75.1	70.1	70.1
Actuated g/C Ratio	0.13	0.11	0.15	0.07	0.64	0.60	0.60	0.64	0.60	0.60
v/c Ratio	0.70	0.81	0.76	0.79	0.32	1.01	0.27	0.68	0.40	0.22
Control Delay	58.4	35.3	62.8	56.1	9.3	46.5	4.4	41.0	13.6	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.4	35.3	62.8	56.1	9.3	46.5	4.4	41.0	13.6	1.9
LOS	E	D	E	E	A	D	A	D	B	A
Approach Delay		49.2		59.7		40.1			13.6	
Approach LOS		D		E		D			B	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 117.7

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.01

Intersection Signal Delay: 35.5









Intersection LOS: D

Intersection Capacity Utilization 113.5%

ICU Level of Service H

Analysis Period (min) 15












Splits and Phases: 25: Marksheffel Rd & Meadowbrook Parkway

 Ø1	 Ø2	 Ø3	 Ø4
10 s	75 s	15 s	20 s
 Ø5	 Ø6	 Ø7	 Ø8
10 s	75 s	22 s	13 s

HCM 2010 TWSC
2: SH 94/West Site Access & Meadowbrook Pkwy





2040 Total Traffic (Scenario 1 - Retail)





AM Peak Hour

Intersection												
Int Delay, s/veh	8.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	131	71	181	77	3	122	10	204	9	30	16
Future Vol, veh/h	5	131	71	181	77	3	122	10	204	9	30	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	150	150	-	-	200	-	0	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	3	2	2	2	2	3	2	2	2
Mvmt Flow	5	138	75	191	81	3	128	11	215	9	32	17
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	84	0	0	138	0	0	636	613	138	618	612	83
Stage 1	-	-	-	-	-	-	148	148	-	464	464	-
Stage 2	-	-	-	-	-	-	488	465	-	154	148	-
Critical Hdwy	4.12	-	-	4.13	-	-	7.12	6.52	6.23	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.227	-	-	3.518	4.018	3.327	3.518	4.018	3.318
Pot Cap-1 Maneuver	1513	-	-	1440	-	-	391	408	908	402	408	976
Stage 1	-	-	-	-	-	-	855	775	-	578	564	-
Stage 2	-	-	-	-	-	-	561	563	-	848	775	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1513	-	-	1440	-	-	321	353	908	269	353	976
Mov Cap-2 Maneuver	-	-	-	-	-	-	321	353	-	269	353	-
Stage 1	-	-	-	-	-	-	852	772	-	576	489	-
Stage 2	-	-	-	-	-	-	447	488	-	637	772	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			5.5			15.2			14.7		
HCM LOS							C			B		
Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	
Capacity (veh/h)	321	353	908	1513	-	-	1440	-	-	269	454	
HCM Lane V/C Ratio	0.4	0.03	0.236	0.003	-	-	0.132	-	-	0.035	0.107	
HCM Control Delay (s)	23.5	15.5	10.2	7.4	-	-	7.9	-	-	18.9	13.9	
HCM Lane LOS	C	C	B	A	-	-	A	-	-	C	B	
HCM 95th %tile Q(veh)	1.9	0.1	0.9	0	-	-	0.5	-	-	0.1	0.4	

HCM 2010 TWSC
9: Meadowbrook Pkwy & East Site Access

2040 Total Traffic (Scenario 1 - Retail)
AM Peak Hour

Intersection						
Int Delay, s/veh	0.2					
Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	4	5	2	325	209	1
Future Vol, veh/h	4	5	2	325	209	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	-	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	4	5	2	342	220	1
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	567	221	221	0	-	0
Stage 1	221	-	-	-	-	-
Stage 2	346	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.15	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	480	811	1331	-	-	-
Stage 1	809	-	-	-	-	-
Stage 2	710	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	479	811	1331	-	-	-
Mov Cap-2 Maneuver	479	-	-	-	-	-
Stage 1	809	-	-	-	-	-
Stage 2	709	-	-	-	-	-
Approach	SE	NE		SW		
HCM Control Delay, s	10.9	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NEL	NET	SELn1	SWT	SWR	
Capacity (veh/h)	1331	-	620	-	-	
HCM Lane V/C Ratio	0.002	-	0.015	-	-	
HCM Control Delay (s)	7.7	-	10.9	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q(veh)	0	-	0	-	-	

























Intersection						
Int Delay, s/veh	1.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	313	32	22	192	69	14
Future Vol, veh/h	313	32	22	192	69	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	-	-	100	-	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	340	35	24	209	75	15
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	375	0	615	358
Stage 1	-	-	-	-	358	-
Stage 2	-	-	-	-	257	-
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	-	-	1183	-	455	686
Stage 1	-	-	-	-	707	-
Stage 2	-	-	-	-	786	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1183	-	446	686
Mov Cap-2 Maneuver	-	-	-	-	539	-
Stage 1	-	-	-	-	707	-
Stage 2	-	-	-	-	770	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.8		12.7	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	559	-	-	1183	-	
HCM Lane V/C Ratio	0.161	-	-	0.02	-	
HCM Control Delay (s)	12.7	-	-	8.1	-	
HCM Lane LOS	B	-	-	A	-	
HCM 95th %tile Q(veh)	0.6	-	-	0.1	-	

Timings

2040 Total Traffic (Scenario 1 - Retail)

1: Meadowbrook Pkwy & US 24

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	172	959	933	50	2798	90	900	114	10	41	47	213
Future Volume (vph)	172	959	933	50	2798	90	900	114	10	41	47	213
Turn Type	Prot	NA	Free	pm+pt	NA	Perm	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free	8		8			Free			Free
Detector Phase	7	4		3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	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		10.0	10.0	
Total Split (s)	30.0	98.0		10.0	78.0	78.0	30.0	25.0		17.0	12.0	
Total Split (%)	20.0%	65.3%		6.7%	52.0%	52.0%	20.0%	16.7%		11.3%	8.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	-1.0		0.0	-1.0	0.0	-1.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	4.0		5.0	4.0	5.0	4.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None	None	None	None		None	None	
Act Effect Green (s)	12.4	83.8	135.0	78.2	74.2	73.2	26.1	24.6	135.0	7.1	6.6	135.0
Actuated g/C Ratio	0.09	0.62	1.00	0.58	0.55	0.54	0.19	0.18	1.00	0.05	0.05	1.00
v/c Ratio	0.57	0.31	0.62	0.15	1.02	0.10	0.95	0.19	0.01	0.24	0.28	0.14
Control Delay	66.8	13.1	1.8	10.0	53.6	0.2	73.8	49.3	0.0	66.1	68.1	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.8	13.1	1.8	10.0	53.6	0.2	73.8	49.3	0.0	66.1	68.1	0.2
LOS	E	B	A	B	D	A	E	D	A	E	E	A
Approach Delay		12.5			51.1			70.2			19.7	
Approach LOS		B			D			E			B	

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 135

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.02

Intersection Signal Delay: 39.9

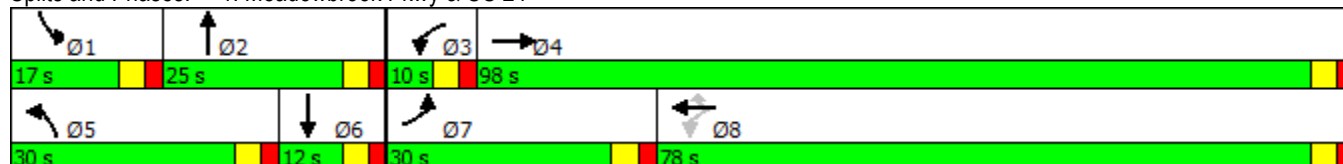
Intersection LOS: D

Intersection Capacity Utilization 94.4%

ICU Level of Service F

Analysis Period (min) 15

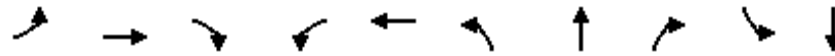
Splits and Phases: 1: Meadowbrook Pkwy & US 24













2: SH 94/West Site Access & Meadowbrook Pkwy

2040 Total Traffic (Scenario 1 - Retail)

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	5	131	71	181	77	122	10	204	9	30
Future Volume (vph)	5	131	71	181	77	122	10	204	9	30
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		4			8		2			6
Permitted Phases	4		4	8		2		2	6	
Detector Phase	4	4	4	8	8	2	2	2	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
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Total Split (s)	70.0	70.0	70.0	70.0	70.0	20.0	20.0	20.0	20.0	20.0
Total Split (%)	77.8%	77.8%	77.8%	77.8%	77.8%	22.2%	22.2%	22.2%	22.2%	22.2%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	10.6	10.6	10.6	10.8	10.8	8.9	8.9	8.9	8.7	8.7
Actuated g/C Ratio	0.40	0.40	0.40	0.41	0.41	0.34	0.34	0.34	0.33	0.33
v/c Ratio	0.01	0.19	0.11	0.38	0.11	0.28	0.02	0.32	0.02	0.08
Control Delay	6.4	7.4	2.8	9.8	6.7	10.7	8.2	3.4	8.3	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.4	7.4	2.8	9.8	6.7	10.7	8.2	3.4	8.3	6.7
LOS	A	A	A	A	A	B	A	A	A	A
Approach Delay		5.8			8.8		6.2			7.0
Approach LOS		A			A		A			A

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 26.4

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.38

Intersection Signal Delay: 6.9

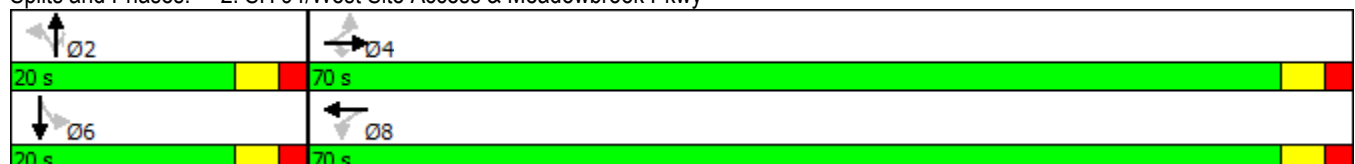
Intersection LOS: A

Intersection Capacity Utilization 42.8%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 2: SH 94/West Site Access & Meadowbrook Pkwy































Timings

2040 Total Traffic (Scenario 1 - Retail)

25: Marksheffel Rd & Meadowbrook Parkway

AM Peak Hour

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 		 	 	 	 	 	 	 	
Traffic Volume (vph)	153	5	95	16	90	959	58	41	2016	236
Future Volume (vph)	153	5	95	16	90	959	58	41	2016	236
Turn Type	Prot	NA	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4	3	8	5	2		1	6	
Permitted Phases			8		2		2	6		6
Detector Phase	7	4	3	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
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Total Split (s)	22.0	20.0	15.0	13.0	10.0	75.0	75.0	10.0	75.0	75.0
Total Split (%)	18.3%	16.7%	12.5%	10.8%	8.3%	62.5%	62.5%	8.3%	62.5%	62.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	Max	None	Max	Max
Act Effect Green (s)	10.6	8.5	17.7	7.3	76.1	72.2	72.2	75.1	70.1	70.1
Actuated g/C Ratio	0.09	0.08	0.16	0.06	0.67	0.64	0.64	0.66	0.62	0.62
v/c Ratio	0.50	0.59	0.42	0.53	0.66	0.44	0.06	0.12	0.93	0.23
Control Delay	54.4	33.3	43.4	27.0	38.4	12.0	0.1	6.6	28.8	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.4	33.3	43.4	27.0	38.4	12.0	0.1	6.6	28.8	3.7
LOS	D	C	D	C	D	B	A	A	C	A
Approach Delay		47.8		35.4		13.5			25.7	
Approach LOS		D		D		B			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 113

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 23.9









Intersection LOS: C

Intersection Capacity Utilization 91.8%

ICU Level of Service F

Analysis Period (min) 15












Splits and Phases: 25: Marksheffel Rd & Meadowbrook Parkway

 Ø1	 Ø2	 Ø3	 Ø4
10 s	75 s	15 s	20 s
 Ø5	 Ø6	 Ø7	 Ø8
10 s	75 s	22 s	13 s

HCM 2010 TWSC
2: SH 94/West Site Access & Meadowbrook Pkwy





2040 Total Traffic (Scenario 1 - Retail)





PM Peak Hour

Intersection												
Int Delay, s/veh	285.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	18	232	344	329	266	10	372	34	218	6	19	11
Future Vol, veh/h	18	232	344	329	266	10	372	34	218	6	19	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	150	150	-	-	200	-	0	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	96	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	3	2	2	2	2	3	2	2	2
Mvmt Flow	19	244	362	343	280	11	392	36	229	6	20	12
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	291	0	0	244	0	0	1268	1258	244	1271	1253	285
Stage 1	-	-	-	-	-	-	282	282	-	971	971	-
Stage 2	-	-	-	-	-	-	986	976	-	300	282	-
Critical Hdwy	4.12	-	-	4.13	-	-	7.12	6.52	6.23	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.227	-	-	3.518	4.018	3.327	3.518	4.018	3.318
Pot Cap-1 Maneuver	1271	-	-	1316	-	-	~ 145	171	792	145	172	754
Stage 1	-	-	-	-	-	-	725	678	-	304	331	-
Stage 2	-	-	-	-	-	-	~ 298	329	-	709	678	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1271	-	-	1316	-	-	~ 100	125	792	64	125	754
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 100	125	-	64	125	-
Stage 1	-	-	-	-	-	-	714	668	-	299	245	-
Stage 2	-	-	-	-	-	-	~ 199	243	-	469	668	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			4.7			\$ 840.9			35.6		
HCM LOS							F			E		
Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	
Capacity (veh/h)	100	125	792	1271	-	-	1316	-	-	64	180	
HCM Lane V/C Ratio	3.916	0.286	0.29	0.015	-	-	0.26	-	-	0.099	0.175	
HCM Control Delay (s)	\$ 1399.8	45	11.4	7.9	-	-	8.7	-	-	67.3	29.2	
HCM Lane LOS	F	E	B	A	-	-	A	-	-	F	D	
HCM 95th %tile Q(veh)	40.1	1.1	1.2	0	-	-	1	-	-	0.3	0.6	
Notes												
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon												

HCM 2010 TWSC
9: Meadowbrook Pkwy & East Site Access

2040 Total Traffic (Scenario 1 - Retail)
PM Peak Hour

Intersection						
Int Delay, s/veh	0.1					
Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	3	3	6	416	522	4
Future Vol, veh/h	3	3	6	416	522	4
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	-	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	3	3	6	438	549	4
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1003	552	554	0	-	0
Stage 1	552	-	-	-	-	-
Stage 2	451	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.15	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	265	528	1001	-	-	-
Stage 1	571	-	-	-	-	-
Stage 2	635	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	263	528	1001	-	-	-
Mov Cap-2 Maneuver	263	-	-	-	-	-
Stage 1	571	-	-	-	-	-
Stage 2	631	-	-	-	-	-
Approach	SE	NE		SW		
HCM Control Delay, s	15.4	0.1		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NEL	NET	SELn1	SWT	SWR	
Capacity (veh/h)	1001	-	351	-	-	
HCM Lane V/C Ratio	0.006	-	0.018	-	-	
HCM Control Delay (s)	8.6	-	15.4	-	-	
HCM Lane LOS	A	-	C	-	-	
HCM 95th %tile Q(veh)	0	-	0.1	-	-	

























Intersection						
Int Delay, s/veh	2.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	395	61	31	494	111	27
Future Vol, veh/h	395	61	31	494	111	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	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	429	66	34	537	121	29
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	496	0	1067	463
Stage 1	-	-	-	-	463	-
Stage 2	-	-	-	-	604	-
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	-	-	1068	-	246	599
Stage 1	-	-	-	-	634	-
Stage 2	-	-	-	-	546	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1068	-	238	599
Mov Cap-2 Maneuver	-	-	-	-	370	-
Stage 1	-	-	-	-	634	-
Stage 2	-	-	-	-	529	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.5		19.3	
HCM LOS					C	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	400	-	-	1068	-	
HCM Lane V/C Ratio	0.375	-	-	0.032	-	
HCM Control Delay (s)	19.3	-	-	8.5	-	
HCM Lane LOS	C	-	-	A	-	
HCM 95th %tile Q(veh)	1.7	-	-	0.1	-	

Timings

2040 Total Traffic (Scenario 1 - Retail)

1: Meadowbrook Pkwy & US 24

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	369	2720	1054	10	1143	123	743	174	275	218	160	337
Future Volume (vph)	369	2720	1054	10	1143	123	743	174	275	218	160	337
Turn Type	Prot	NA	Free	pm+pt	NA	Perm	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free	8		8			Free			Free
Detector Phase	7	4		3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	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		10.0	10.0	
Total Split (s)	35.0	85.0		10.0	60.0	60.0	29.0	10.0		45.0	26.0	
Total Split (%)	23.3%	56.7%		6.7%	40.0%	40.0%	19.3%	6.7%		30.0%	17.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	-1.0		0.0	-1.0	0.0	-1.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	4.0		5.0	4.0	5.0	4.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None	None	None	None		None	None	
Act Effect Green (s)	20.3	81.3	134.1	63.7	59.7	58.7	24.3	20.7	134.1	14.3	11.7	134.1
Actuated g/C Ratio	0.15	0.61	1.00	0.48	0.45	0.44	0.18	0.15	1.00	0.11	0.09	1.00
v/c Ratio	0.75	0.90	0.70	0.09	0.52	0.16	0.84	0.33	0.18	0.63	0.54	0.22
Control Delay	64.2	29.1	2.6	14.3	28.6	2.2	62.8	53.8	0.3	65.8	66.2	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.2	29.1	2.6	14.3	28.6	2.2	62.8	53.8	0.3	65.8	66.2	0.3
LOS	E	C	A	B	C	A	E	D	A	E	E	A
Approach Delay		25.4			25.9			46.7			35.0	
Approach LOS		C			C			D			C	

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 134.1

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 29.9

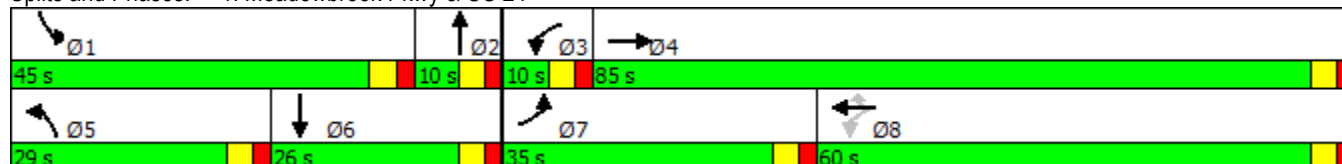
Intersection LOS: C

Intersection Capacity Utilization 89.4%

ICU Level of Service E

Analysis Period (min) 15





















Splits and Phases: 1: Meadowbrook Pkwy & US 24



Timings
2: SH 94/West Site Access & Meadowbrook Pkwy

2040 Total Traffic (Scenario 1 - Retail)

PM Peak Hour

										
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	18	232	344	329	266	372	34	218	6	19
Future Volume (vph)	18	232	344	329	266	372	34	218	6	19
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		4			8		2			6
Permitted Phases	4		4	8		2		2	6	
Detector Phase	4	4	4	8	8	2	2	2	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
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Total Split (s)	70.0	70.0	70.0	70.0	70.0	20.0	20.0	20.0	20.0	20.0
Total Split (%)	77.8%	77.8%	77.8%	77.8%	77.8%	22.2%	22.2%	22.2%	22.2%	22.2%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	None	None	None	None
Act Effect Green (s)	19.6	19.6	19.6	19.6	19.6	15.3	15.3	15.3	15.3	15.3
Actuated g/C Ratio	0.43	0.43	0.43	0.43	0.43	0.34	0.34	0.34	0.34	0.34
v/c Ratio	0.04	0.30	0.41	0.71	0.36	0.84	0.06	0.33	0.01	0.05
Control Delay	6.5	8.7	2.5	18.7	9.1	38.1	13.5	4.4	13.7	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.5	8.7	2.5	18.7	9.1	38.1	13.5	4.4	13.7	10.8
LOS	A	A	A	B	A	D	B	A	B	B
Approach Delay		5.0			14.3		25.0			11.3
Approach LOS		A			B		C			B

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 45.1

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 14.9





Intersection LOS: B

Intersection Capacity Utilization 70.2%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 2: SH 94/West Site Access & Meadowbrook Pkwy



























	
20 s	70 s
	
20 s	70 s

Timings

25: Marksheffel Rd & Meadowbrook Parkway

2040 Total Traffic (Scenario 1 - Retail)

PM Peak Hour

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 		 		 	 		 	 	
Traffic Volume (vph)	418	31	150	25	119	2104	260	90	812	332
Future Volume (vph)	418	31	150	25	119	2104	260	90	812	332
Turn Type	Prot	NA	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4	3	8	5	2		1	6	
Permitted Phases			8		2		2	6		6
Detector Phase	7	4	3	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
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Total Split (s)	22.0	20.0	15.0	13.0	10.0	75.0	75.0	10.0	75.0	75.0
Total Split (%)	18.3%	16.7%	12.5%	10.8%	8.3%	62.5%	62.5%	8.3%	62.5%	62.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	Max	None	Max	Max
Act Effect Green (s)	16.9	14.7	17.8	7.8	75.0	70.0	70.0	75.0	70.0	70.0
Actuated g/C Ratio	0.14	0.12	0.15	0.07	0.63	0.58	0.58	0.63	0.58	0.58
v/c Ratio	0.90	0.80	0.77	0.85	0.33	1.03	0.27	0.70	0.41	0.32
Control Delay	73.2	33.7	64.0	68.0	9.7	52.5	4.4	42.8	14.3	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.2	33.7	64.0	68.0	9.7	52.5	4.4	42.8	14.3	2.0
LOS	E	C	E	E	A	D	A	D	B	A
Approach Delay		60.3		65.9		45.2			13.1	
Approach LOS		E		E		D			B	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 119.7

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.03

Intersection Signal Delay: 39.9









Intersection LOS: D












Intersection Capacity Utilization 113.4%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 25: Marksheffel Rd & Meadowbrook Parkway

 Ø1	 Ø2	 Ø3	 Ø4
10 s	75 s	15 s	20 s
 Ø5	 Ø6	 Ø7	 Ø8
10 s	75 s	22 s	13 s

Intersection												
Int Delay, s/veh	7.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	134	61	181	44	3	51	10	204	9	30	16
Future Vol, veh/h	5	134	61	181	44	3	51	10	204	9	30	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	150	150	-	-	200	-	0	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	3	2	2	2	2	3	2	2	2
Mvmt Flow	5	141	64	191	46	3	54	11	215	9	32	17





Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	49	0	0	141	0	0	605	583	141	586	581	48
Stage 1	-	-	-	-	-	-	152	152	-	429	429	-
Stage 2	-	-	-	-	-	-	453	431	-	157	152	-
Critical Hdwy	4.12	-	-	4.13	-	-	7.12	6.52	6.23	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.227	-	-	3.518	4.018	3.327	3.518	4.018	3.318
Pot Cap-1 Maneuver	1558	-	-	1436	-	-	410	424	904	422	425	1021
Stage 1	-	-	-	-	-	-	850	772	-	604	584	-
Stage 2	-	-	-	-	-	-	586	583	-	845	772	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1558	-	-	1436	-	-	338	366	904	282	367	1021
Mov Cap-2 Maneuver	-	-	-	-	-	-	338	366	-	282	367	-
Stage 1	-	-	-	-	-	-	847	770	-	602	506	-
Stage 2	-	-	-	-	-	-	468	505	-	633	770	-





Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	6.3	11.8	14.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	338	366	904	1558	-	-	1436	-	-	282	472
HCM Lane V/C Ratio	0.159	0.029	0.238	0.003	-	-	0.133	-	-	0.034	0.103
HCM Control Delay (s)	17.7	15.1	10.2	7.3	-	-	7.9	-	-	18.2	13.5
HCM Lane LOS	C	C	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.6	0.1	0.9	0	-	-	0.5	-	-	0.1	0.3

HCM 2010 TWSC
9: Meadowbrook Pkwy & East Site Access

2040 Total Traffic (Scenario 2 - Residential)
AM Peak Hour

Intersection						
Int Delay, s/veh	0.2					
Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	4	5	2	326	176	1
Future Vol, veh/h	4	5	2	326	176	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	-	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	4	5	2	343	185	1
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	533	186	186	0	-	0
Stage 1	186	-	-	-	-	-
Stage 2	347	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.15	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	502	849	1371	-	-	-
Stage 1	839	-	-	-	-	-
Stage 2	709	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	501	849	1371	-	-	-
Mov Cap-2 Maneuver	501	-	-	-	-	-
Stage 1	839	-	-	-	-	-
Stage 2	708	-	-	-	-	-
Approach	SE	NE		SW		
HCM Control Delay, s	10.6	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NEL	NET	SELn1	SWT	SWR	
Capacity (veh/h)	1371	-	649	-	-	
HCM Lane V/C Ratio	0.002	-	0.015	-	-	
HCM Control Delay (s)	7.6	-	10.6	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q(veh)	0	-	0	-	-	

























Intersection						
Int Delay, s/veh	2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	315	32	22	159	69	14
Future Vol, veh/h	315	32	22	159	69	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	-	-	100	-	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	342	35	24	173	75	15
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	377	0	581	360
Stage 1	-	-	-	-	360	-
Stage 2	-	-	-	-	221	-
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	-	-	1181	-	476	684
Stage 1	-	-	-	-	706	-
Stage 2	-	-	-	-	816	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1181	-	466	684
Mov Cap-2 Maneuver	-	-	-	-	553	-
Stage 1	-	-	-	-	706	-
Stage 2	-	-	-	-	799	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1		12.5	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	571	-	-	1181	-	
HCM Lane V/C Ratio	0.158	-	-	0.02	-	
HCM Control Delay (s)	12.5	-	-	8.1	-	
HCM Lane LOS	B	-	-	A	-	
HCM 95th %tile Q(veh)	0.6	-	-	0.1	-	

Timings

2040 Total Traffic (Scenario 2 - Residential)

1: Meadowbrook Pkwy & US 24

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	157	968	933	50	2824	56	908	93	10	37	50	204
Future Volume (vph)	157	968	933	50	2824	56	908	93	10	37	50	204
Turn Type	Prot	NA	Free	pm+pt	NA	Perm	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free	8		8			Free			Free
Detector Phase	7	4		3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	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		10.0	10.0	
Total Split (s)	30.0	98.0		10.0	78.0	78.0	30.0	25.0		17.0	12.0	
Total Split (%)	20.0%	65.3%		6.7%	52.0%	52.0%	20.0%	16.7%		11.3%	8.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	-1.0		0.0	-1.0	0.0	-1.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	4.0		5.0	4.0	5.0	4.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None	None	None	None		None	None	
Act Effect Green (s)	11.8	83.2	134.4	78.2	74.2	73.2	26.1	24.7	134.4	7.0	6.7	134.4
Actuated g/C Ratio	0.09	0.62	1.00	0.58	0.55	0.54	0.19	0.18	1.00	0.05	0.05	1.00
v/c Ratio	0.55	0.31	0.62	0.15	1.03	0.06	0.96	0.15	0.01	0.22	0.30	0.14
Control Delay	66.4	13.2	1.8	10.0	54.7	0.1	74.3	48.5	0.0	65.6	68.0	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.4	13.2	1.8	10.0	54.7	0.1	74.3	48.5	0.0	65.6	68.0	0.2
LOS	E	B	A	B	D	A	E	D	A	E	E	A
Approach Delay		12.1			52.8			71.1			20.2	
Approach LOS		B			D			E			C	

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 134.4

Natural Cycle: 110

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.03

Intersection Signal Delay: 40.8

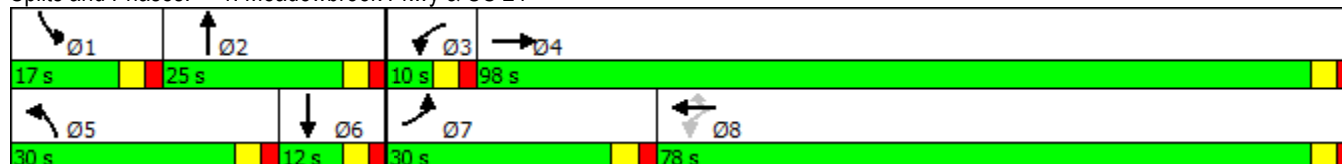
Intersection LOS: D

Intersection Capacity Utilization 94.6%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 1: Meadowbrook Pkwy & US 24

























Timings

2040 Total Traffic (Scenario 2 - Residential)

2: SH 94/West Site Access & Meadowbrook Pkwy

AM Peak Hour

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	
Lane Configurations											
Traffic Volume (vph)	5	134	61	181	44	51	10	204	9	30	
Future Volume (vph)	5	134	61	181	44	51	10	204	9	30	
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	Perm	NA	
Protected Phases		4			8		2			6	
Permitted Phases	4		4	8		2		2	6		
Detector Phase	4	4	4	8	8	2	2	2	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	
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	
Total Split (s)	70.0	70.0	70.0	70.0	70.0	20.0	20.0	20.0	20.0	20.0	
Total Split (%)	77.8%	77.8%	77.8%	77.8%	77.8%	22.2%	22.2%	22.2%	22.2%	22.2%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0	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	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Lead/Lag											
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	None	None	None	None	None	
Act Effct Green (s)	9.7	9.7	9.7	9.9	9.9	7.1	7.1	7.1	7.1	7.1	
Actuated g/C Ratio	0.39	0.39	0.39	0.40	0.40	0.29	0.29	0.29	0.29	0.29	
v/c Ratio	0.01	0.19	0.10	0.39	0.07	0.13	0.02	0.36	0.02	0.09	
Control Delay	5.4	6.6	2.5	9.0	5.6	9.4	8.5	3.9	8.6	7.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	5.4	6.6	2.5	9.0	5.6	9.4	8.5	3.9	8.6	7.1	
LOS	A	A	A	A	A	A	A	A	A	A	
Approach Delay		5.3			8.3		5.1			7.3	
Approach LOS		A			A		A			A	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 24.8

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.39

Intersection Signal Delay: 6.3













Intersection LOS: A

Intersection Capacity Utilization 39.1%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 2: SH 94/West Site Access & Meadowbrook Pkwy





















					
20 s	70 s		70 s		
					
20 s	70 s		70 s		

Timings

2040 Total Traffic (Scenario 2 - Residential)

25: Marksheffel Rd & Meadowbrook Parkway

AM Peak Hour

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	156	5	95	4	90	959	58	41	2016	203
Future Volume (vph)	156	5	95	4	90	959	58	41	2016	203
Turn Type	Prot	NA	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4	3	8	5	2		1	6	
Permitted Phases			8		2		2	6		6
Detector Phase	7	4	3	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
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Total Split (s)	22.0	20.0	15.0	13.0	10.0	75.0	75.0	10.0	75.0	75.0
Total Split (%)	18.3%	16.7%	12.5%	10.8%	8.3%	62.5%	62.5%	8.3%	62.5%	62.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	Max	None	Max	Max
Act Effect Green (s)	10.6	8.3	15.1	7.1	76.5	72.6	72.6	75.3	70.3	70.3
Actuated g/C Ratio	0.10	0.07	0.14	0.06	0.69	0.66	0.66	0.68	0.64	0.64
v/c Ratio	0.50	0.59	0.47	0.47	0.65	0.43	0.06	0.12	0.91	0.20
Control Delay	53.7	33.5	45.7	21.7	36.9	11.5	0.1	6.5	26.1	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.7	33.5	45.7	21.7	36.9	11.5	0.1	6.5	26.1	3.6
LOS	D	C	D	C	D	B	A	A	C	A
Approach Delay		47.5		34.9		13.0			23.6	
Approach LOS		D		C		B			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 110.7

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 22.4









Intersection LOS: C












Intersection Capacity Utilization 91.8%

ICU Level of Service F

Analysis Period (min) 15





Splits and Phases: 25: Marksheffel Rd & Meadowbrook Parkway





			
10 s	75 s	15 s	20 s
			
10 s	75 s	22 s	13 s

Intersection												
Int Delay, s/veh	14											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	18	116	46	329	167	10	107	34	218	6	19	11
Future Vol, veh/h	18	116	46	329	167	10	107	34	218	6	19	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	150	150	-	-	200	-	0	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	96	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	3	2	2	2	2	3	2	2	2
Mvmt Flow	19	122	48	343	176	11	113	36	229	6	20	12
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	186	0	0	122	0	0	1042	1032	122	1044	1026	181
Stage 1	-	-	-	-	-	-	160	160	-	866	866	-
Stage 2	-	-	-	-	-	-	882	872	-	178	160	-
Critical Hdwy	4.12	-	-	4.13	-	-	7.12	6.52	6.23	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.227	-	-	3.518	4.018	3.327	3.518	4.018	3.318
Pot Cap-1 Maneuver	1388	-	-	1459	-	-	208	233	926	207	235	862
Stage 1	-	-	-	-	-	-	842	766	-	348	370	-
Stage 2	-	-	-	-	-	-	341	368	-	824	766	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1388	-	-	1459	-	-	153	176	926	107	177	862
Mov Cap-2 Maneuver	-	-	-	-	-	-	153	176	-	107	177	-
Stage 1	-	-	-	-	-	-	830	756	-	343	283	-
Stage 2	-	-	-	-	-	-	239	281	-	582	756	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.8			5.3			31.6			24.7		
HCM LOS							D			C		
Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	
Capacity (veh/h)	153	176	926	1388	-	-	1459	-	-	107	250	
HCM Lane V/C Ratio	0.736	0.203	0.248	0.014	-	-	0.235	-	-	0.059	0.126	
HCM Control Delay (s)	75.6	30.6	10.2	7.6	-	-	8.2	-	-	40.7	21.5	
HCM Lane LOS	F	D	B	A	-	-	A	-	-	E	C	
HCM 95th %tile Q(veh)	4.4	0.7	1	0	-	-	0.9	-	-	0.2	0.4	

HCM 2010 TWSC
9: Meadowbrook Pkwy & East Site Access

2040 Total Traffic (Scenario 2 - Residential)
PM Peak Hour

Intersection						
Int Delay, s/veh	0.2					
Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	3	3	6	298	423	4
Future Vol, veh/h	3	3	6	298	423	4
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	-	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	3	3	6	314	445	4
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	773	447	449	0	-	0
Stage 1	447	-	-	-	-	-
Stage 2	326	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.15	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	363	605	1096	-	-	-
Stage 1	638	-	-	-	-	-
Stage 2	725	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	361	605	1096	-	-	-
Mov Cap-2 Maneuver	361	-	-	-	-	-
Stage 1	638	-	-	-	-	-
Stage 2	721	-	-	-	-	-
Approach	SE	NE		SW		
HCM Control Delay, s	13.1	0.2		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NEL	NET	SELn1	SWT	SWR	
Capacity (veh/h)	1096	-	452	-	-	
HCM Lane V/C Ratio	0.006	-	0.014	-	-	
HCM Control Delay (s)	8.3	-	13.1	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q(veh)	0	-	0	-	-	



































Intersection						
Int Delay, s/veh	2.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	278	61	31	395	111	27
Future Vol, veh/h	278	61	31	395	111	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	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	302	66	34	429	121	29
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	368	0	832	335
Stage 1	-	-	-	-	335	-
Stage 2	-	-	-	-	497	-
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	-	-	1191	-	339	707
Stage 1	-	-	-	-	725	-
Stage 2	-	-	-	-	611	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1191	-	329	707
Mov Cap-2 Maneuver	-	-	-	-	445	-
Stage 1	-	-	-	-	725	-
Stage 2	-	-	-	-	594	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.6		15.9	
HCM LOS					C	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	480	-	-	1191	-	
HCM Lane V/C Ratio	0.313	-	-	0.028	-	
HCM Control Delay (s)	15.9	-	-	8.1	-	
HCM Lane LOS	C	-	-	A	-	
HCM 95th %tile Q(veh)	1.3	-	-	0.1	-	

Timings

2040 Total Traffic (Scenario 2 - Residential)

1: Meadowbrook Pkwy & US 24

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  			  		  	 		 	 	
Traffic Volume (vph)	244	2830	1054	10	1188	54	773	103	275	78	111	228
Future Volume (vph)	244	2830	1054	10	1188	54	773	103	275	78	111	228
Turn Type	Prot	NA	Free	pm+pt	NA	Perm	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free	8		8			Free			Free
Detector Phase	7	4		3	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	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		10.0	10.0	
Total Split (s)	35.0	85.0		10.0	60.0	60.0	29.0	10.0		45.0	26.0	
Total Split (%)	23.3%	56.7%		6.7%	40.0%	40.0%	19.3%	6.7%		30.0%	17.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	-1.0		0.0	-1.0	0.0	-1.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	4.0		5.0	4.0	5.0	4.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None	None	None	None		None	None	
Act Effect Green (s)	15.2	81.2	132.5	68.8	64.8	63.8	24.7	24.9	132.5	8.6	9.8	132.5
Actuated g/C Ratio	0.11	0.61	1.00	0.52	0.49	0.48	0.19	0.19	1.00	0.06	0.07	1.00
v/c Ratio	0.65	0.93	0.70	0.09	0.49	0.07	0.85	0.16	0.18	0.37	0.45	0.15
Control Delay	64.8	30.2	2.6	12.4	24.0	0.1	62.3	47.1	0.3	65.2	65.2	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.8	30.2	2.6	12.4	24.0	0.1	62.3	47.1	0.3	65.2	65.2	0.2
LOS	E	C	A	B	C	A	E	D	A	E	E	A
Approach Delay		25.1			22.9			45.8			29.7	
Approach LOS		C			C			D			C	

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 132.5

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 28.4

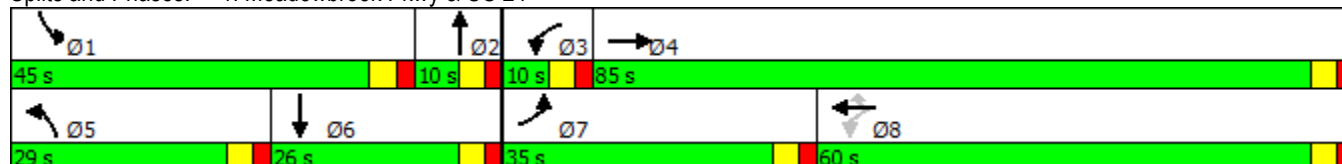
Intersection LOS: C

Intersection Capacity Utilization 91.0%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 1: Meadowbrook Pkwy & US 24























Timings

2040 Total Traffic (Scenario 2 - Residential)

2: SH 94/West Site Access & Meadowbrook Pkwy

PM Peak Hour

										
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	18	116	46	329	167	107	34	218	6	19
Future Volume (vph)	18	116	46	329	167	107	34	218	6	19
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		4			8		2			6
Permitted Phases	4		4	8		2		2	6	
Detector Phase	4	4	4	8	8	2	2	2	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
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Total Split (s)	70.0	70.0	70.0	70.0	70.0	20.0	20.0	20.0	20.0	20.0
Total Split (%)	77.8%	77.8%	77.8%	77.8%	77.8%	22.2%	22.2%	22.2%	22.2%	22.2%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	None	None	None	None
Act Effect Green (s)	16.2	16.2	16.2	16.2	16.2	8.9	8.9	8.9	8.9	8.9
Actuated g/C Ratio	0.45	0.45	0.45	0.45	0.45	0.25	0.25	0.25	0.25	0.25
v/c Ratio	0.04	0.14	0.06	0.60	0.22	0.33	0.08	0.41	0.02	0.07
Control Delay	5.7	6.2	2.5	12.6	6.4	15.7	12.7	5.1	12.5	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.7	6.2	2.5	12.6	6.4	15.7	12.7	5.1	12.5	10.2
LOS	A	A	A	B	A	B	B	A	B	B
Approach Delay		5.2			10.4		9.0			10.6
Approach LOS		A			B		A			B

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 35.8

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.60

Intersection Signal Delay: 9.1





Intersection LOS: A

Intersection Capacity Utilization 45.8%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 2: SH 94/West Site Access & Meadowbrook Pkwy



























	
20 s	70 s
	
20 s	70 s

Timings

2040 Total Traffic (Scenario 2 - Residential)

25: Marksheffel Rd & Meadowbrook Parkway

PM Peak Hour

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 		 		 	 		 	 	
Traffic Volume (vph)	302	24	150	18	119	2104	260	90	812	233
Future Volume (vph)	302	24	150	18	119	2104	260	90	812	233
Turn Type	Prot	NA	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4	3	8	5	2		1	6	
Permitted Phases			8		2		2	6		6
Detector Phase	7	4	3	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
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Total Split (s)	22.0	20.0	15.0	13.0	10.0	75.0	75.0	10.0	75.0	75.0
Total Split (%)	18.3%	16.7%	12.5%	10.8%	8.3%	62.5%	62.5%	8.3%	62.5%	62.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	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
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	Max	None	Max	Max
Act Effect Green (s)	15.2	12.9	17.6	7.7	75.1	70.0	70.0	75.1	70.0	70.0
Actuated g/C Ratio	0.13	0.11	0.15	0.07	0.64	0.59	0.59	0.64	0.59	0.59
v/c Ratio	0.71	0.81	0.76	0.79	0.32	1.01	0.27	0.68	0.40	0.23
Control Delay	58.9	34.9	62.8	56.3	9.3	47.1	4.4	41.2	13.7	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.9	34.9	62.8	56.3	9.3	47.1	4.4	41.2	13.7	1.9
LOS	E	C	E	E	A	D	A	D	B	A
Approach Delay		49.4		59.8		40.6			13.5	
Approach LOS		D		E		D			B	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 117.9

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.01

Intersection Signal Delay: 35.8









Intersection LOS: D

Intersection Capacity Utilization 113.5%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 25: Marksheffel Rd & Meadowbrook Parkway

 Ø1	 Ø2	 Ø3	 Ø4
10 s	75 s	15 s	20 s
 Ø5	 Ø6	 Ø7	 Ø8
10 s	75 s	22 s	13 s



Development Services Department
2880 International Circle
Colorado Springs, Colorado 80910

Phone: 719.520.6300
Fax: 719.520.6695
Website www.elpasoco.com

DEVIATION REVIEW AND DECISION FORM

Procedure # R-FM-051-07
Issue Date: 12/31/07
Revision Issued: 00/00/00

DSD FILE NO.:

D	E	V	I	7	0	0	9
---	---	---	---	---	---	---	---

General Property Information:

Address of Subject Property (Street Number/Name): N/A

Tax Schedule ID(s) #: 5408000055

Legal Description of Property: PT OF S2 SEC 08-14-65 DES AS FOLS: COM AT W4 COR OF SD SEC 8, TH N 89<43'13" E 1249.50 FT ALG N LN OF S2 SEC 8 TO NE COR OF TR DES IN BK 2190-226 & BEING POB OF TR HEREIN DES, CONT N 89<43'13" E 2006.25 FT TO A PT ON FORMER WLY R/W LN OF DENVER & NEW ORLEANS RR CO, TH SWLY ALG ARC OF CUR TO L HAVING A RAD OF 1196.00 FT A C/A OF 21<21'19" AN ARC LENGTH OF 445.77 FT WHICH CHORD BEARS S 07°02'32" W 443.20 FT, S 89<43'13" W 252.25 FT, S 51<20'00" W 719.23 FT, S 89<43'13" W 1199.14 FT, N 03<56'24" E 888.62 FT TO POB, EX THAT PT OF R/W MEADOWBROOK PKWY PLATTED W/IN CLAREMONT BUSINESS PARK FIL NO 2, EX THAT PT DESC BY REC #216115777

Subdivision or Project Name: Meadowbrook Crossing

Section of ECM from Which Deviation is Sought: 2.3.3.F.3

Specific Criteria from Which a Deviation is Sought: Minimum tangent length between broken back curves on a Local roadway

Proposed Nature and Extent of Deviation:

Applicant Information:

Applicant: Meadowbrook Crossing LLC

Email Address: danny@theequitygroup.net

Applicant is: ☒ Owner ☐ Consultant ☐ Contractor

Mailing Address: 90 S. Cascade Ave., #1500, Colorado Springs

State: CO

Postal Code: 80903

Telephone Number: 719-448-4034

Fax Number:

Engineer Information:

Engineer: Jeffrey C. Hodsdon, P.E., PTOE

Email Address: jeff@Lsctrans.com

Company Name: LSC Transportation Consultants, Inc.

Mailing Address: 545 East Pikes Peak Avenue, #210

State: CO

Postal Code: 80903

Registration Number: 31684

State of Registration: Colorado

Telephone Number: (719) 633-2868

Fax Number: (719) 633-5430

Explanation of Request (Attached diagrams, figures and other documentation to clarify request):

Section of ECM from Which Deviation is Sought: 2.3.3.F.3

Specific Criteria from Which a Deviation is Sought: Minimum tangent length between broken back curves on a Local roadway

Proposed Nature and Extent of Deviation: The request for a deviation is to adjust the centerline tangent length between the two broken back curves on Boreal Drive (Urban Local) located at the western portion of the property from the required 200 feet to the proposed 146 feet as illustrated on the drawings.

Reason for the Requested Deviation: This area of the site contains several constraints that cannot be mitigated. These constraints include the location and width of Meadowbrook Parkway; the location of Sand Creek and its improvements; and the location of the 30-foot Sanitary Sewer Easement running parallel with the creek. All of these constraints combined narrow and limit the amount of developable area in this portion of the site. As a result, the 200-foot minimum tangent length is not achievable given the available width. The lot sizes are as small as they can be in order to remain buildable and effective. In addition, the lack of available width prevents the ability to completely line the street with units as shown on the drawings.

Comparison of Proposed Deviation to ECM Standard: The requested tangent length is 146 feet which is 54 feet less than the ECM standard of 200 feet.

Applicable Regional or National Standards used as Basis: _____

Application Consideration:

CHECK IF APPLICATION MEETS CRITERIA FOR CONSIDERATION

☐ The ECM standard is inapplicable to a particular situation.

☒ Topography, right-of-way, or other geographical conditions or impediments impose an undue hardship on the applicant, and an equivalent alternative that can accomplish the same design objective is available and does not compromise public safety or accessibility.

☐ A change to a standard is required to address a specific design or construction problem, and if not modified, the standard will impose an undue hardship on the applicant with little or no material benefit to the public.

JUSTIFICATION

This area of the site contains several constraints that cannot be mitigated. These constraints include the location and width of Meadowbrook Parkway; the location of Sand Creek and its improvements; and the location of the 30-foot Sanitary Sewer Easement running parallel with the creek. All of these constraints combined narrow and limit the amount of developable area in this portion of the site. As a result, the 200-foot minimum tangent length is not achievable given the available width. The lot sizes are as small as they can be in order to remain buildable and effective. In addition, the lack of available width prevents the ability to completely line the street with units as shown on the drawings.

If at least one of the criteria listed above is not met, this application for deviation cannot be considered.

Criteria for Approval:

PLEASE EXPLAIN HOW EACH OF THE FOLLOWING CRITERIA HAVE BEEN SATISFIED BY THIS REQUEST

The request for a deviation is not based exclusively on financial considerations.

The request is not based on financial considerations. The request is based on geographical constraints.

The deviation will achieve the intended result with a comparable or superior design and quality of improvement.

N/A

The deviation will not adversely affect safety or operations.

This shortened roadway tangent will not be a high traffic area nor will it become a through way as only a handful of homes are served by this looping local street. Moreover, this situation is for two 90-degree curves with 50-foot centerline radii (combined with corner knuckles) which will have design speed of about 15 mph.

El Paso County Procedures Manual

Procedure # R-FM-051-07

Issue Date: 12/31/07

Revision Issued: 00/00/00

DSD File No. _____

This situation is vastly different from the traditional problematic "broken-back" curve issue which the ECM criteria is intended to prevent - with significantly higher design speed curves on through roadways/arterials etc. One of the reasons the typical broken-back curve situation should be avoided is because drivers do not expect to encounter such arrangement with typical highway geometry. The proposed 146-foot-long tangent length between the curves would actually exceed the stopping sight distance for a 15-mph speed (80 feet). Therefore, a motorist would not only have time to react to the adjacent curve, but could actually come to a stop before reaching the second curve. This particular situation is not uncommon or unexpected in residential neighborhoods. This deviation would not be detrimental to the health, safety, or welfare of the residents.

The deviation will not adversely affect maintenance and its associated cost.

N/A

The deviation will not adversely affect aesthetic appearance.

N/A

Owner, Applicant and Engineer Declaration:

To the best of my knowledge, the information on this application and all additional or supplemental documentation is true, factual and complete. I am fully aware that any misrepresentation of any information on this application may be grounds for denial. I have familiarized myself with the rules, regulations and procedures with respect to preparing and filing this application. I also understand that an incorrect submittal will be cause to have the project removed from the agenda of the Planning Commission, Board of County Commissioners and/or Board of Adjustment or delay review, and that any approval of this application is based on the representations made in the application and may be revoked on any breach of representation or condition(s) of approval.

Signature of owner (or authorized representative)

Date

5-5-17

Signature of applicant (if different from owner)

Date

5-5-17

Signature of Engineer

Date

Engineer's Seal



Review and Recommendation:
APPROVED by the ECM Administrator

Date

17 MAY 2017

This request has been determined to have met the criteria for approval. A deviation from Section _____ of ECM is hereby granted based on the justification provided. Comments:

____ Additional comments or information are attached.

DENIED by the ECM Administrator

____ Date _____

This request has been determined not to have met criteria for approval. A deviation from Section
____ of ECM is hereby denied. Comments:

____ Additional comments or information are attached.