



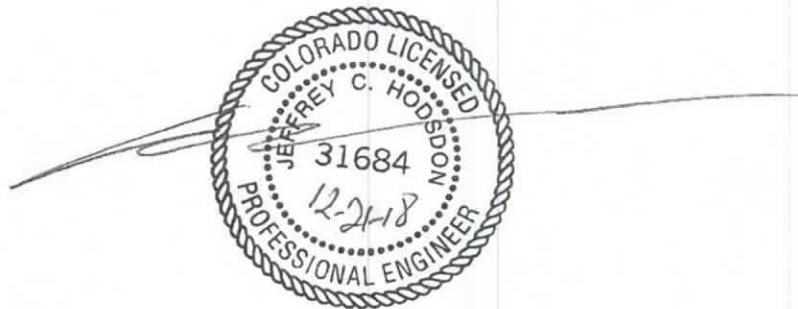
LSC TRANSPORTATION CONSULTANTS, INC.  
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The Ranch Sketch Plan  
Master Traffic Impact and Access Analysis  
(LSC #184390)  
December 21, 2018

Traffic Engineer's Statement

is there a special district being formed or a "program" to construct Briargate from Stapleton to the west sooner rather than later? PJ has mention this.... I dont know that it needs to be included if not headed that direction....

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



Developer's Statement

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

A handwritten signature in blue ink, appearing to read 'J. C. Hodsdon', followed by the initials 'v.p.'.

DEC 21 2018

Date



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December 21, 2018

Loren J. Moreland  
PRI #4 LLC  
6385 Corporate Drive, Suite 200  
Colorado Springs, CO 80919

RE: The Ranch Sketch Plan  
El Paso County, Colorado  
Traffic Impact Analysis  
LSC #184390

Dear Mr. Moreland,

In response to your request, LSC Transportation Consultants, Inc. has prepared this "master" traffic impact analysis for The Ranch Sketch Plan. As shown in Figure 1, the site is located northwest of the Meadows neighborhood, south of Old Stapleton Road, and east of Raygor Road in El Paso County, Colorado.

## REPORT CONTENTS

This report is being prepared as part of a Sketch Plan submittal to El Paso County. It identifies the general traffic impacts associated with the proposed Sketch Plan. The report contains the following:

- The traffic count data and street conditions.
- Projections of short-term (2020) and long-term (2040) background traffic volumes.
- The projected average weekday and peak-hour vehicle-trips to be generated by the site.
- The assignment of the site's projected traffic volumes to the key area streets and intersections for the short and long term and the resulting total traffic volumes for the long term.
- The resulting traffic impacts including level of service analysis at key intersections and average daily traffic volumes on key street sections in the vicinity of the site.
- The anticipated lane geometry requirements at the key area intersections.
- The recommended functional classification for the streets within and in the vicinity of the site.

## LAND USE

The site is surrounded by existing residential developments on the north, south and east. The Sterling Ranch development is located one-quarter mile west of the site. Figure 2 shows the currently proposed sketch plan. The 629.1-acre site is planned to be developed with a maximum of 2,100 residential dwelling units and a school.

The Ranch is planned to be developed starting with the parcels in the northeast corner and moving to the southwest. Initial access is planned via a new section of Briargate Parkway which will be constructed west from the intersection of Towner Avenue and Stapleton Drive. As the site develops to the south Woodmen Hills Drive will be extended west from Towner Avenue to provide secondary access. Woodmen Hills Drive will eventually extend northwest through the site connecting to the intersection of Raygor and Stapleton Drive. For this report Phase 1 was assumed to include 390 single family dwelling units with access to Meridian Road via both Briargate Parkway and Woodmen Hills Drive.

/Stapleton Drive

## ROADWAY AND TRAFFIC CONDITIONS

### Area Roadways

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

- **Meridian Road** extends north from South Blaney Road to County Line Road. Meridian Road is shown as a Four Lane Principal Arterial south of Stapleton Drive, a four-lane Minor Arterial south of Rex Road and a two-lane Minor Arterial north of Rex Road on the *El Paso County Major Transportation Corridors Plan (MTCP)*.
- **Briargate Parkway** is a six-lane, Principal Arterial that extends east from I-25 to Grand Lawn Circle (about one-half mile east of Powers Boulevard). Briargate Parkway is planned to ultimately extend east to Stapleton Road. The County MTCP shows Briargate/Stapleton east of Black Forest Road as a four-lane Principal Arterial.
- **Stapleton Drive** currently extends east from just west of Towner Drive across US Highway 24 to the intersection of Judge Orr Road and Curtis Road. West of Meridian Road, Stapleton Drive is currently a two-lane roadway with a posted speed limit of 45 miles per hour (mph). Stapleton Drive is planned to be extended west from Towner Drive as Briargate Parkway with this development.
- **Woodmen Hills Drive** is a Rural Collector Roadway extending west from Eastonville Road and terminating at the site's southeast corner. West of Meridian Road, Woodmen Hills Drive is a two-lane road with a rural cross section and a posted speed limit of 30 mph. Woodmen Hills Drive has an 80-foot right-of-way and is about 30-feet wide west of Meridian Road, except for the westernmost 2,200 feet, which is about 40-feet wide. Woodmen Hills Drive is proposed to

Rex

north

Murphy

be extended northwest through the site as an Urban Residential Collector to the extension of Briargate Parkway.

- **Raygor Road** is a two-lane Collector extending south from Burgess Road and terminating at the site's northwest corner. Raygor Road is planned to be extended southeast through the site as an Urban Residential Collector to the future intersection of Stapleton Drive and Woodmen Hills Drive.
- **Towner Avenue** is a 40-foot-wide Urban Residential Collector street (within Paint Brush Hills) that extends south from Londonderry Drive to just south of Woodmen Hills Drive. The posted speed limit is 35 miles per hour.
- **Woodmen Road** is an east/west Expressway through the northern portion of the City of Colorado Springs and El Paso County.
- **Banning Lewis Parkway** is a planned north/south street through the Banning Lewis Ranch development on the east side of the City of Colorado Springs. North of Woodmen Road, Banning Lewis Parkway is classified as a four-lane Principal Arterial on the El Paso County MTCP.

### Existing Traffic Volumes

Figure 3 shows the existing peak-hour traffic volumes and existing lane geometries and traffic controls at the intersections of Meridian/Woodmen Hills, Meridian/Stapleton and Towner/Stapleton and Woodmen/Meridian. The traffic volumes are based on counts by LSC in May 2018. The traffic count reports are attached.

### Existing Level of Service

Level of service (LOS) is a quantitative measure of the level of delay 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 <sup>(1)</sup>	Average Control Delay (seconds per vehicle) <sup>(2)</sup>
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 intersections of Meridian/Woodmen, Meridian/Woodmen Hills, Meridian/Stapleton, Towner/Stapleton have been analyzed to determine the existing levels of service. The signalized intersections of Meridian/Woodmen, Meridian/Woodmen Hills and Meridian/Stapleton have been analyzed using Synchro. The intersection of Towner/Stapleton has been analyzed based on the unsignalized method of analysis procedures found in the *Highway Capacity Manual, 6th Edition* by the Transportation Research Board. The results of the analysis are shown in Figure 3. The level of service reports are attached.

All movements at the signalized intersections of Meridian/Woodmen Hills and Meridian/Stapleton are currently operating at LOS D or better during the peak hours based on the existing traffic volumes.

The intersection of Towner/Stapleton is currently operating at a satisfactory level of service for all movements as Stop-sign-controlled intersections.

## BACKGROUND TRAFFIC

Figure 4 shows the projected short-term background (year 2020) traffic volumes. These volumes assume buildout of the residential portion of the Paint Brush Hills development and buildout of all approved developments within Meridian Ranch.

Figure 5 shows the projected background traffic volumes for the year 2040. These volumes assume Stapleton Drive has been extended west as Briargate Parkway to connect with the existing section Briargate Parkway. The 2040 background traffic volumes were based in part previous work completed by LSC in the area including work done for Meridian Ranch, Paint Brush Hills and Sterling Ranch.

## TRIP GENERATION

Estimates of site-generated vehicle-trips are typically made using the nationally published trip generation rates from *Trip Generation, 10th Edition, 2017* by the Institute of Transportation Engineers (ITE). Table 2 shows the results of the trip generation estimates. The short-term estimate assumes buildout of about 170 single family dwelling units and 246 multi-family dwelling units. The long-term estimate assume buildout of the maximum number of residential units allowed by The Ranch Sketch Plan plus an elementary school.

Table 2 includes an estimate of internal trips, which are trips beginning and ending within The Ranch. Internal trips reflect travel between residential areas and the schools at full buildout. Internal trips between residential and school use have been balanced.

As shown in Table 2, at buildout The Ranch could be expected to generate about 19,823 new external vehicle-trips on the average weekday, with about one-half entering and one-half exiting in a 24-hour period. During the morning peak hour, which generally occurs for one hour between 6:30 and 8:30 a.m., about 440 vehicles would enter and 1,190 vehicles would exit the site. During the afternoon peak hour, which generally occurs for one hour between 4:30 and 6:30 p.m., about 1,319 vehicles would enter and 781 vehicles would exit the site.

## TRIP DISTRIBUTION AND ASSIGNMENT

The directional distribution of the site-generated traffic volumes on the street and roadway system serving the site is one of the most important factors in determining the site's traffic impacts. Figure 6 shows the short-term and long-term external trip distribution estimates (external to The Ranch). The directional distribution estimates have been based on the location of the site with respect to the regional residential employment, commercial, and activity centers; the land use proposed; the access/roadway connections assumed; and the roadway network. The short-term directional distribution assumes Briargate Parkway and Woodmen Hills Drive have been extended west to the boundaries of the Phase 1 development only. The short-term directional distribution estimate also assumes Meridian Road has been extended south to US 24. . The long-term directional distribution estimate assumes Briargate Parkway has been extended east of the Sketch Plan area and Woodmen Hills Drive has been extended northwest to Raygor Road . The internal trips have been assigned separately based on the location of the proposed school site.

When the external trip distribution percentages (from Figure 6) are applied to the trip generation estimates (from Table 2), the resulting site-generated traffic volumes can be determined. Figures

7 and 8 show the short-term and long-term site-generated traffic volume estimates, respectively. The short-term estimate assumes buildout of about 170 single family dwelling units and 246 multi-family dwelling units. The long-term site-generated traffic volumes assume buildout of the maximum number of residential dwelling units allowed by The Ranch Sketch Plan plus an elementary school.

## **TOTAL TRAFFIC**

Figure 9 shows the projected short-term total traffic volumes. The short-term total traffic volumes are the sum of the short-term background traffic volumes (from Figure 4) plus the short-term buildout site-generated traffic volumes from Figure 7.

Figure 10 shows the projected 2040 total traffic volumes. The 2040 total traffic volumes are the sum of the 2040 background traffic volumes (from Figure 5) plus the long-term buildout site-generated traffic volumes from Figure 8.

## **PROJECTED LEVELS OF SERVICE**

The key area intersections were analyzed to determine the projected levels of service for short-term and 2040 background and total traffic volumes based on the unsignalized method of analysis procedures from the *Highway Capacity Manual, 6th Edition* by the Transportation Research Board and the Synchro signalized intersection procedures. Figures 4, 5, 9 and 10 show the level of service analysis results. The laneage and traffic control assumed in the analysis are depicted on the figures. The level of service reports are attached.

### **Meridian/Woodmen Hills**

All movements at the signalized intersection of Meridian/Woodmen Hills are projected to operate at LOS D or better during the peak hours based on the projected short-term and 2040 total traffic volumes.

### **Meridian/Stapleton Drive**

The intersection of Meridian/Stapleton is projected to operate at an overall level of service D or better during the peak hours based on the projected short-term total traffic volumes and the existing lane geometry. Some of the minor movements are projected to operate at LOS E during the morning peak hour. This analysis assumes the addition of protected phasing for the eastbound and westbound left-turn movements.

By 2040 it was assumed that the intersection of Meridian/Stapleton would be improved to provide two eastbound and westbound through lanes and dual northbound, eastbound and westbound left-turn lanes. Based the 2040 total traffic volumes the lane geometry shown in Figure 10 the intersection of Meridian/Stapleton is projected to operate at an overall LOS D or better during the peak hours. The eastbound and northbound left-turn movements are projected to operate at LOS

E during the morning peak hour. 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.

### **Towner/Stapleton/Briargate**

The intersection of Towner/Stapleton is currently an all-way stop-sign controlled T-intersection. This intersection should be reevaluated with each Preliminary Plan submittal to determine if traffic signal warrant(s) will be met. All movements are projected to continue to operate at a LOS D or better during the peak hours based on the projected short-term total traffic volumes assuming this intersection remains all-way stop-sign controlled. It was assumed by 2040 that this intersection would be signal controlled. As a signalized intersection all movements are projected to operate at LOS D or better during the peak hours.

### **Briargate/Raygor/Woodmen Hills**

The future intersection of Briargate/Raygor/Woodmen Hills is planned to be constructed as a two-lane modern roundabout. As a two-lane modern roundabout all of the movements at this intersection are projected to operate at D or better during the peak hours based on the projected 2040 total traffic volumes.

### **Briargate/Banning Lewis**

Based the 2040 total traffic volumes the lane geometry shown in Figure 10 the future intersection of Briargate/Banning Lewis is projected to operate at an overall LOS D or better during the peak hours, however some of the minor movements are projected to operate at LOS E during the peak hours and the northbound left-turn movement is projected to operate at LOS F during the afternoon peak hour. The 2040 total traffic volumes shown at this intersection are based on previous work completed by LSC in the area including the Sterling Ranch Master Plan, however, this is a planned regional intersection and the projected volumes will likely be reevaluated with the Stapleton Corridor Study which has been identified as a Pikes Peak Rural Transportation Authority (PPRTA) “A” Group Project.

### **Stapleton/ Residential Collector**

An Urban Residential Collector is proposed to be constructed forming a loop on the south side of Stapleton Drive from just east of Woodmen Hills Drive to just west of Towner Avenue. The west intersection is planned to be constructed as a modern two-lane roundabout. As a two-lane modern roundabout all of the movements at this intersection are projected to operate at LOS D or better during the peak hours based on the projected 2040 total traffic volumes.

The east intersection is planned to be constructed as a standard four-leg intersection. This intersection should be reevaluated with each Preliminary Plan submittal to determine if traffic signal warrant(s) will be met. It was assumed by 2040 that this intersection would be signal controlled. As a signalized intersection all movements are projected to operate at LOS D or better during the peak hours.

### **Woodmen Hills/Residential Collector**

The intersection of Woodmen Hills Drive and the proposed Residential Collector loop is planned to be constructed as a modern two-lane roundabout. All movements at this intersection are projected to operate at LOS D or better during the peak hours based on the projected 2040 total traffic volumes.

**Address conceptual transitions from rural to urban cross-sections.**

## **CONCLUSIONS AND RECOMMENDATIONS**

### **Trip Generation**

The Ranch could be expected to generate about 19,823 new external vehicle-trips on the average weekday, with about one-half entering and one-half exiting in a 24-hour period. During the morning peak hour about 440 vehicles would enter and 1,190 vehicles would exit the site. During the afternoon peak hour about 1,319 vehicles would enter and 781 vehicles would exit the site.

### **Street Classification**

Figure 11 shows the recommended street classifications the streets in the vicinity of the site based on the projected 2040 traffic volumes shown in Figure 10.

### **Improvements**

A general, preliminary summary of potentially-needed transportation improvements in the area due to the sketch plan, background traffic or a combination is shown in Table 3.

A traffic study should be completed at each development phase of The Ranch to determine the specific roadway improvements necessary to accommodate the proposed number of lots based on the traffic conditions at the time of submittal. The need for and timing of regional improvements such as the improvement of the existing two-lane section of Stapleton Drive to a Principal Arterial cross-section, the extension of Briargate Parkway east of the site to Vollmer Road and the extension of Woodmen Hills Drive east of Towner Avenue should also be addressed with each applicable Preliminary Plan submittal.

**Address mitigation for failing 2020 LOS specifically.**

### **El Paso County Roadway Improvement Fee Program**

This project will be required to participate in the El Paso County Road Impact Fee Program.

\* \* \* \* \*

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

Enclosures: Tables 2-3  
Figures 1-11  
Traffic Count Reports  
Level of Service Reports

**Table 1**  
**Trip Generation Estimate**  
**The Ranch**

Land Use Code	Land Use Description	Trip Generation Units	Trip Generation Rates <sup>(1)</sup>						Total Trips Generated						Daily Internal Trips <sup>(2)</sup>	Total "External" Trips Generated					
			Average Weekday Traffic	Morning Peak Hour		Afternoon Peak Hour		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		In		Out	In	Out			
Phase 1																					
210	Single-Family Detached Housing	390 DU	9.44	0.19	0.56	0.62	0.37	3,682	72	216	243	143	0.0%	3,682	72	216	243	143			
Buildout																					
210	Single-Family Detached Housing	2,100 DU	9.44	0.19	0.56	0.62	0.37	19,824	389	1,166	1,310	769	2.4%	19,351	350	1,075	1,288	759			
520	Elementary School	500 Students	1.89	0.36	0.31	0.08	0.09	945	181	154	41	44	50%	472	90	115	31	22			
							</														

Table 3 Roadway Improvements The Ranch		
Improvement	Timing	Responsibility <sup>(1)</sup>
Roadway Segment Improvements		
<b>Stapleton Drive (Meridian Road to Towner Avenue):</b> Upgrade the existing unimproved roadway by constructing a one-half section of a four-lane Urban Principal Arterial with auxiliary turn lanes as required per the ECM.	Once the ADT on this segment of roadway exceeds 7,000 vehicles per day.	Applicant and or adjacent development(s) potentially with other matching funds from other sources.
<b>Stapleton Drive (Meridian Road to Towner Avenue):</b> Upgrade Stapleton Drive to a Four-Lane Urban Principal Arterial Cross Section from Meridian Road to Towner Avenue	Once the ADT on this segment of roadway exceeds the capacity of the half section of 4-lane, Princpal Arterial (Estimated 15,000 -20,000 ADT) depending on the design of the half section and other capacity considerations.	El Paso County, adjacent development(s) and/or the applicant.
<b>Briargate Parkway (Towner Avenue to the west boundary of The Ranch Sketch Plan area):</b> Construct as a half section or full-section 4-lane Principal Arterial.	As required for capacity/to meet ECM criteria/to satisfy yet-to-be-formulated development agreements. To be evaluated with each Preliminary Plan submittal.	The applicant and potentially El Paso County/PPRTA for completion of the 3rd and 4th through lanes (if phased by construction of a half-section)
<b>Briargate Parkway</b> (from the west boundary of The Ranch Sketch Plan area to the section being constructed by Sterling Ranch Phase 1 just east of Vollmer Road):	To be evaluated with each Preliminary Plan submittal.	Depending on timing of development, Sterling Ranch, the applicant and/or potentially El Paso County/PPRTA.
<b>Woodmen Hills (Meridian Road to Garrison Road):</b> Upgrade to an Urban Residential Collector standard	Once this project adds significant traffic to this segment of roadway; volumes already exceed 1,500 vehicles per day. To be evaluated with each Preliminary Plan submittal.	Applicant, potentially with matching funds from other sources.
<b>Woodmen Hills (Garrison Road to 750' west of Theriot Road):</b> Upgrade to an Urban Residential Collector standard	Once the ADT on this segment of roadway exceeds 1,500 vehicles per day; To be evaluated with each Preliminary Plan submittal.	Applicant, potentially with matching funds from other sources.
Woodmen Hills Drive (Towner Avenue to the future extension of Briargate Parkway): Construct as a two-lane Urban Residential Collector	To be evaluated with each Preliminary Plan submittal.	Applicant
Construct Raygor Road from Old Stapleton Drive to the future extension of Briargate Parkway as a two-lane Urban Residential Collector	To be evaluated with each Preliminary Plan submittal.	Applicant
Intersection Improvements		
Woodmen Hills Drive/Meridian Road- Upgrade the west leg of the intersection for additional eastbound lanes and to match the east side; any other necessary auxiliary turn lane improvements; signal modifications.	As required for capacity/to meet ECM criteria/to satisfy yet-to-be-formulated development agreements. To be evaluated with each Preliminary Plan submittal.	Applicant, potentially with matching funds from other sources.
Stapleton/Meridian: Auxiliary turn lane improvements (ultimately right turn lanes and dual northbound, eastbound and westbound left-turn lanes); Two eastbound and westbound through lanes (ultimately); and any needed traffic signal modifications	As required for capacity/to meet ECM criteria/to satisfy yet-to-be-formulated development agreements. To be evaluated with each Preliminary Plan submittal.	Depending on timing of development, Sterling Ranch, the applicant and/or potentially El Paso County/PPRTA.
Stapleton/Towner: Construct additional auxiliary turn lanes as needed to accommodate turning movements from this development	As required for capacity/to meet ECM criteria/to satisfy yet-to-be-formulated development agreements. To be evaluated with each Preliminary Plan submittal.	Applicant, potentially with matching funds from other sources.
Meridian/Woodmen: Lengthen Eastbound Dual Left Turn Lanes or fair-share contribution toward a lengthening project.	As needed to accommodate vehicle queuing	Falcon Marketplace Development and potentially the applicant depending on timing and phasing of this development and the Briargate extension; potentially other developments and/or El Paso County/PPRTA.
Construct the intersection of Briargate/Raygor/Woodmen Hills as a modern two-lane roundabout	To be evaluated with each Preliminary Plan submittal.	Applicant
Construct a modern two-lane roundabout intersection on Briargate Parkway west of Woodmen Hills/Raygor	With development of The Ranch parcels adjacent to the intersection	Applicant
Signalize the east intersection of the proposed Urban Residential Collector loop and Briargate Parkway	Once warrants are met; This should be evaluated with each Preliminary Plan submittal. The decision on timing of traffic signal installation rest with El Paso County Public Works	Applicant
Signalize the intersection of Briargate Parkway/Towner (or construct as a multi-lane modern roundabout)	Once warrants are met; This should be evaluated with each Preliminary Plan submittal. The decision on timing of traffic signal installation rest with El Paso County Public Works	El Paso County
Notes: (1) Preliminary concept of responsibility; the actual construction or participation responsibility would be determined through development agreements and/or subdivision improvement agreements. (2) PPRTA = Pikes Peak Rural Transportation Authority.		
Source: LSC Transportation Consultants, Inc.		

or development that meets warrants

or roundabout?

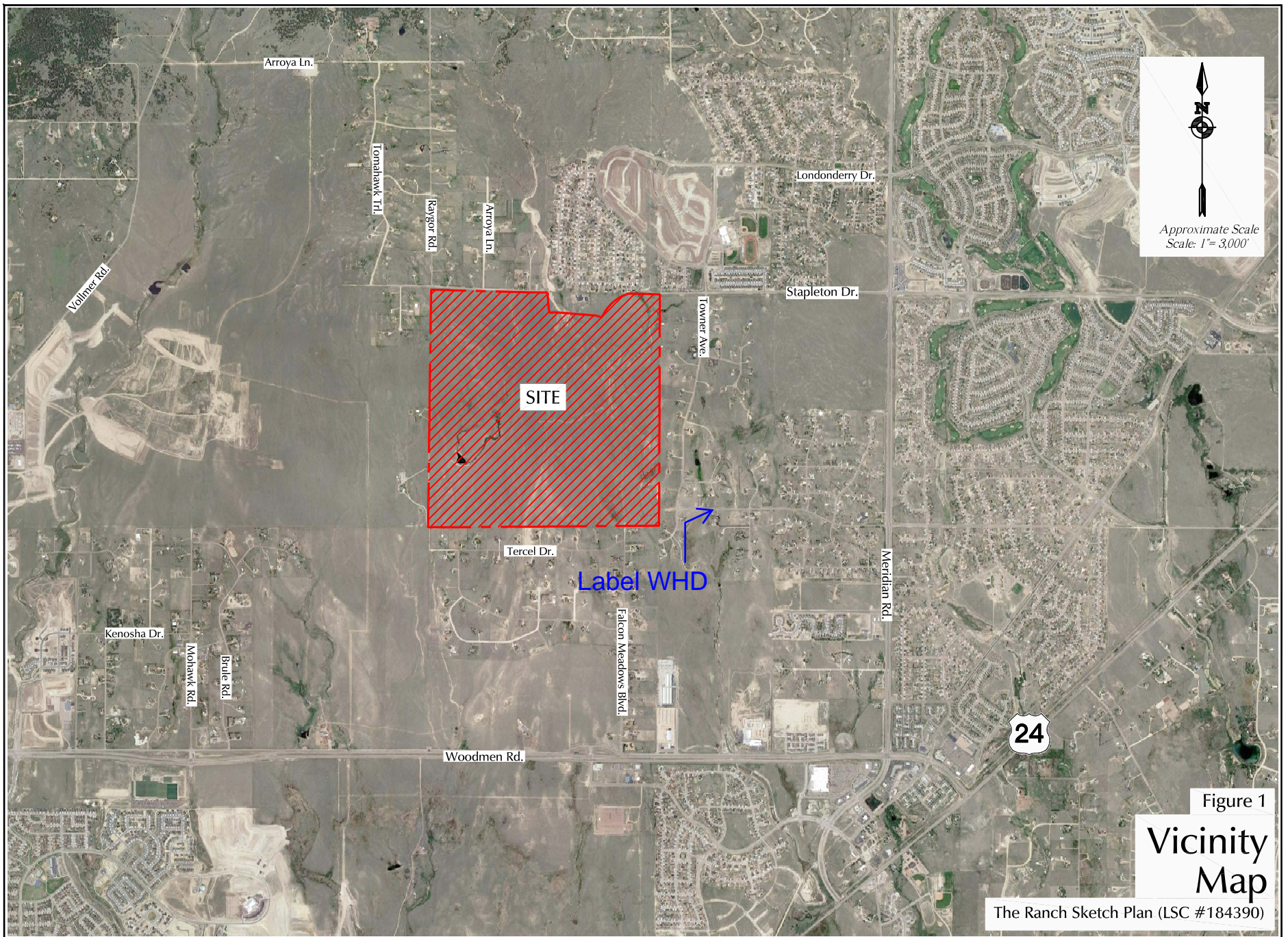
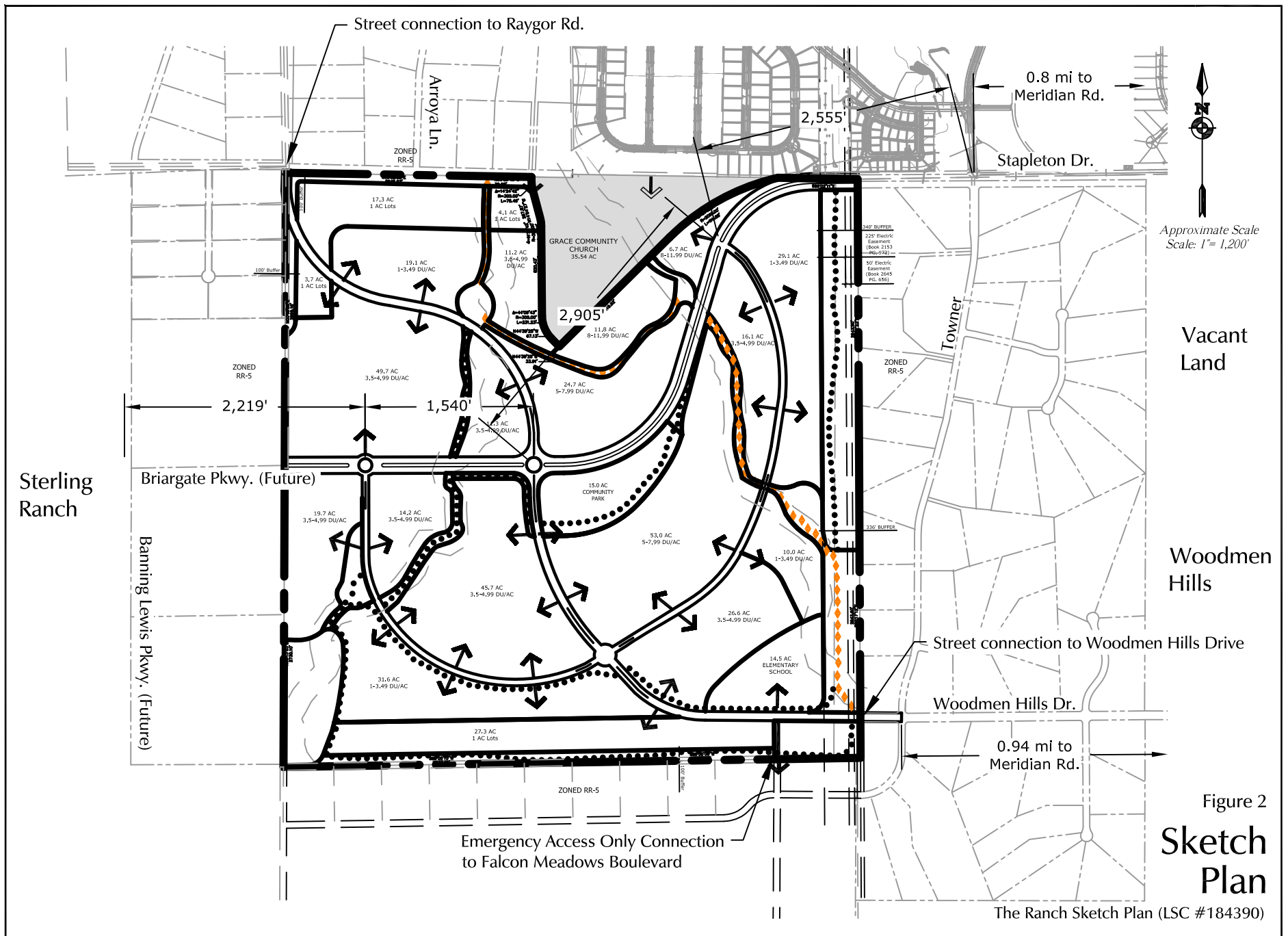


Figure 1

# Vicinity Map

The Ranch Sketch Plan (LSC #184390)

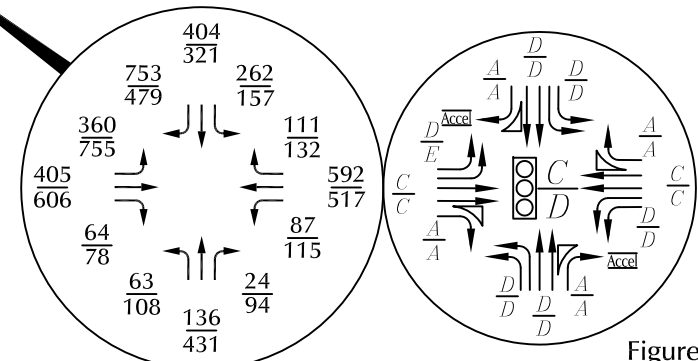
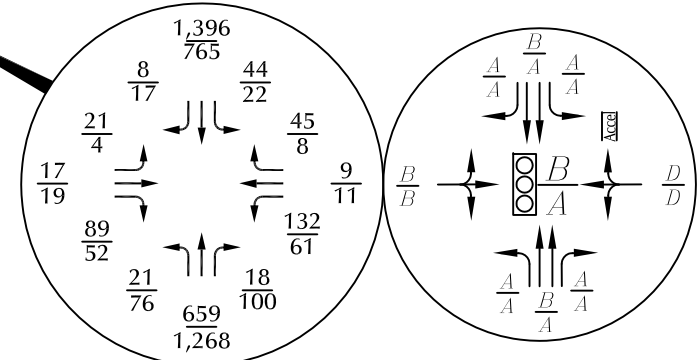
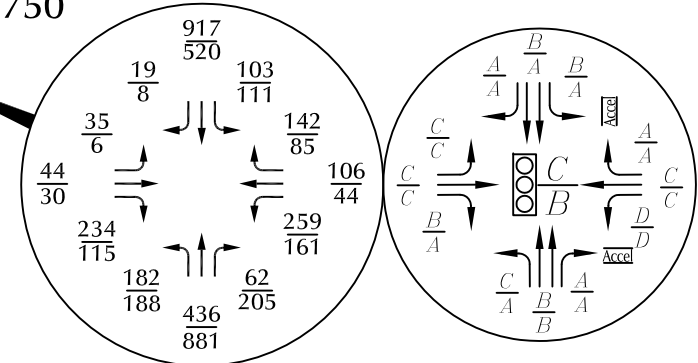


21,000?

6,750

5,000  
2,100

1,700  
23,000



LEGEND:

Stop Sign

Traffic Signal

XX = AM Weekday Peak-Hour Traffic (vehicles per hour)

XX = PM Weekday Peak-Hour Traffic (vehicles per hour)

A = AM Individual Movement Peak-Hour Level of Service

B = PM Individual Movement Peak-Hour Level of Service

C = AM Entire Intersection Peak-Hour Level of Service

C = PM Entire Intersection Peak-Hour Level of Service

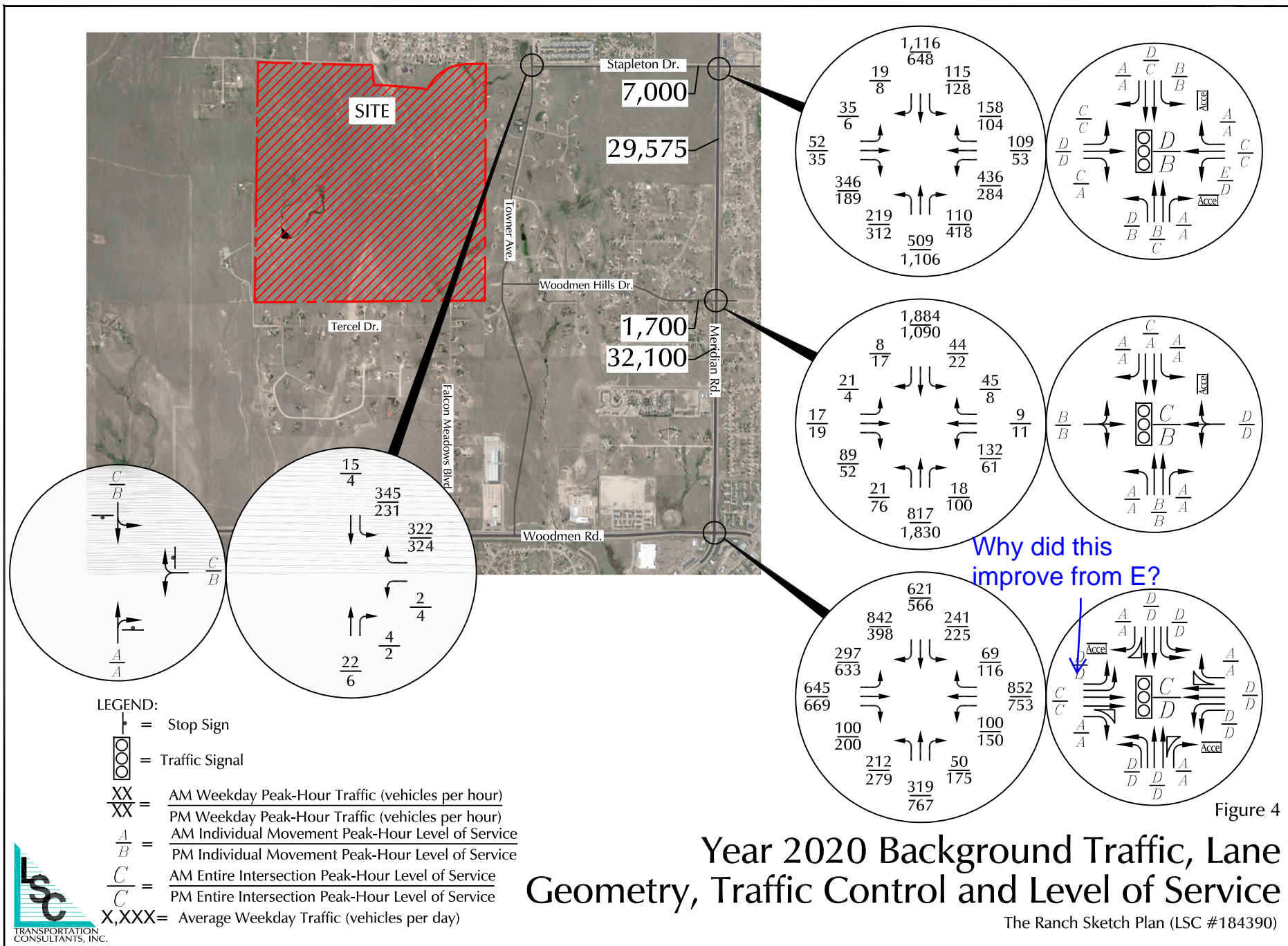
X,XXX = Average Weekday Traffic (vehicles per day) Estimates by LSC

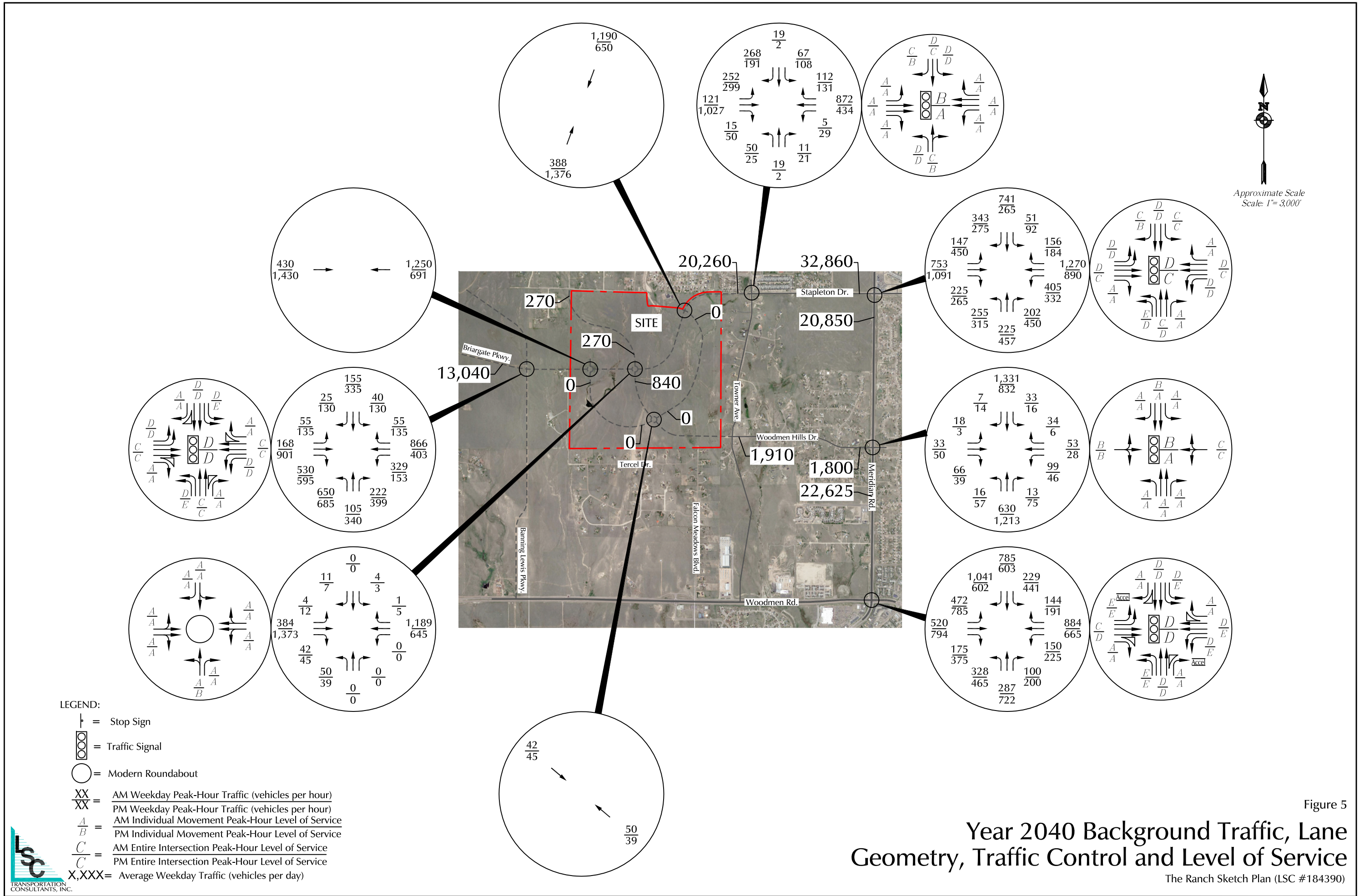
# Existing Traffic, Lane Geometry, Traffic Control and Level of Service

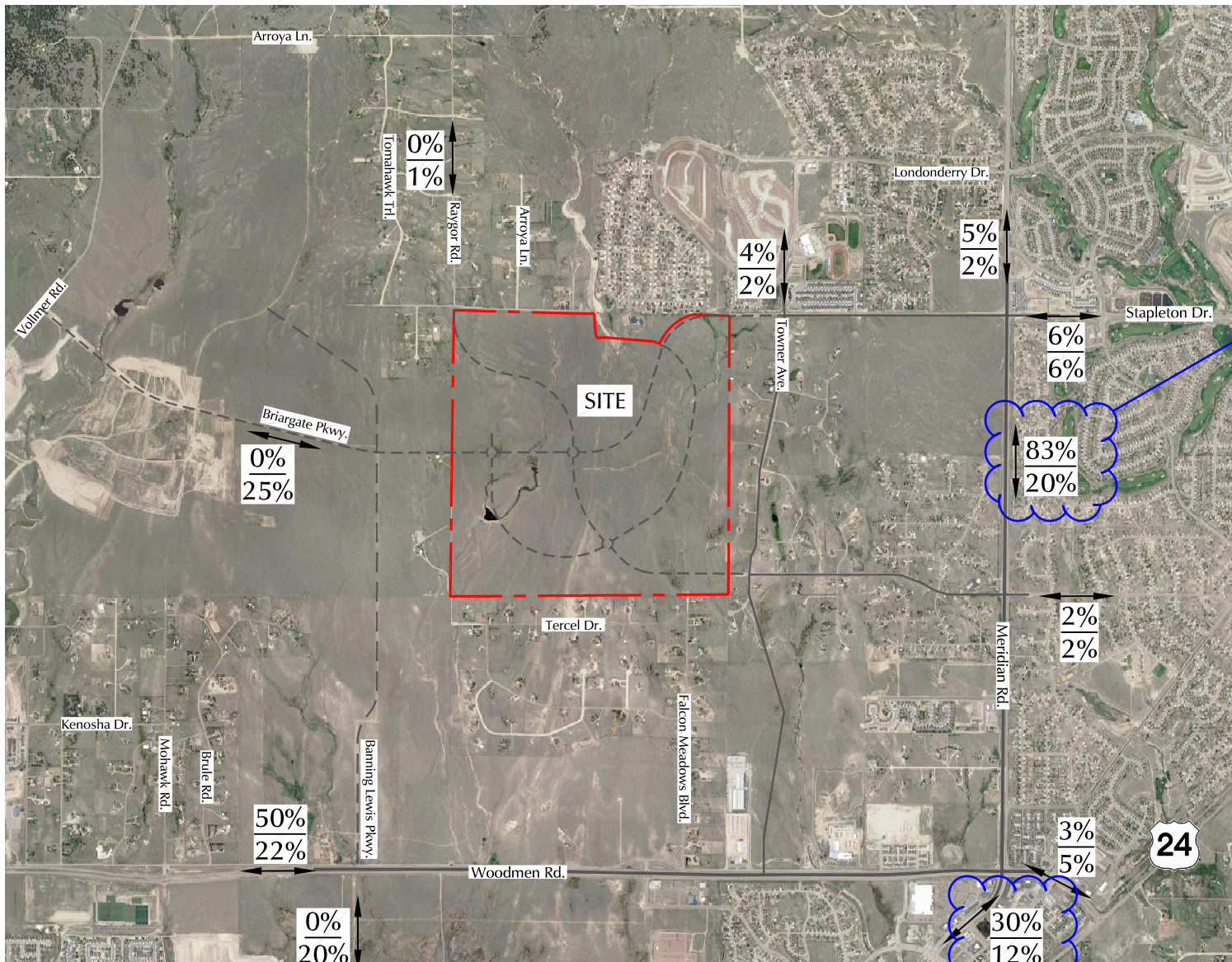
The Ranch Sketch Plan (LSC #184390)



Figure 3







Approximate Scale  
Scale: 1" = 3,000'

Is this correct?

Make sure  
long-term  
adds up to  
100%.

Seems like a big  
drop?

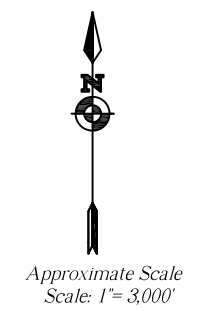
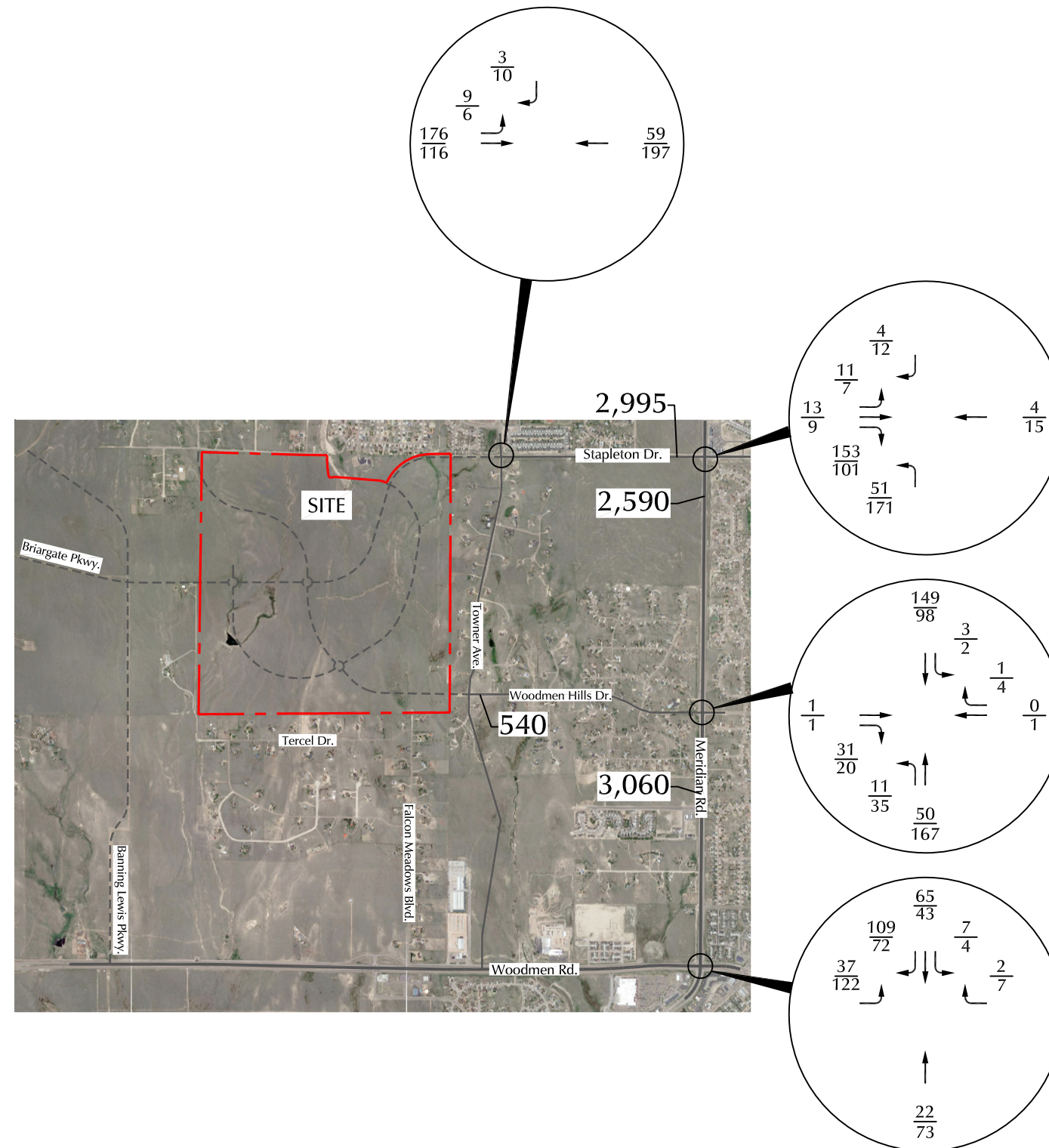
## Directional Distribution of Site-Generated Traffic

The Ranch Sketch Plan (LSC #184390)

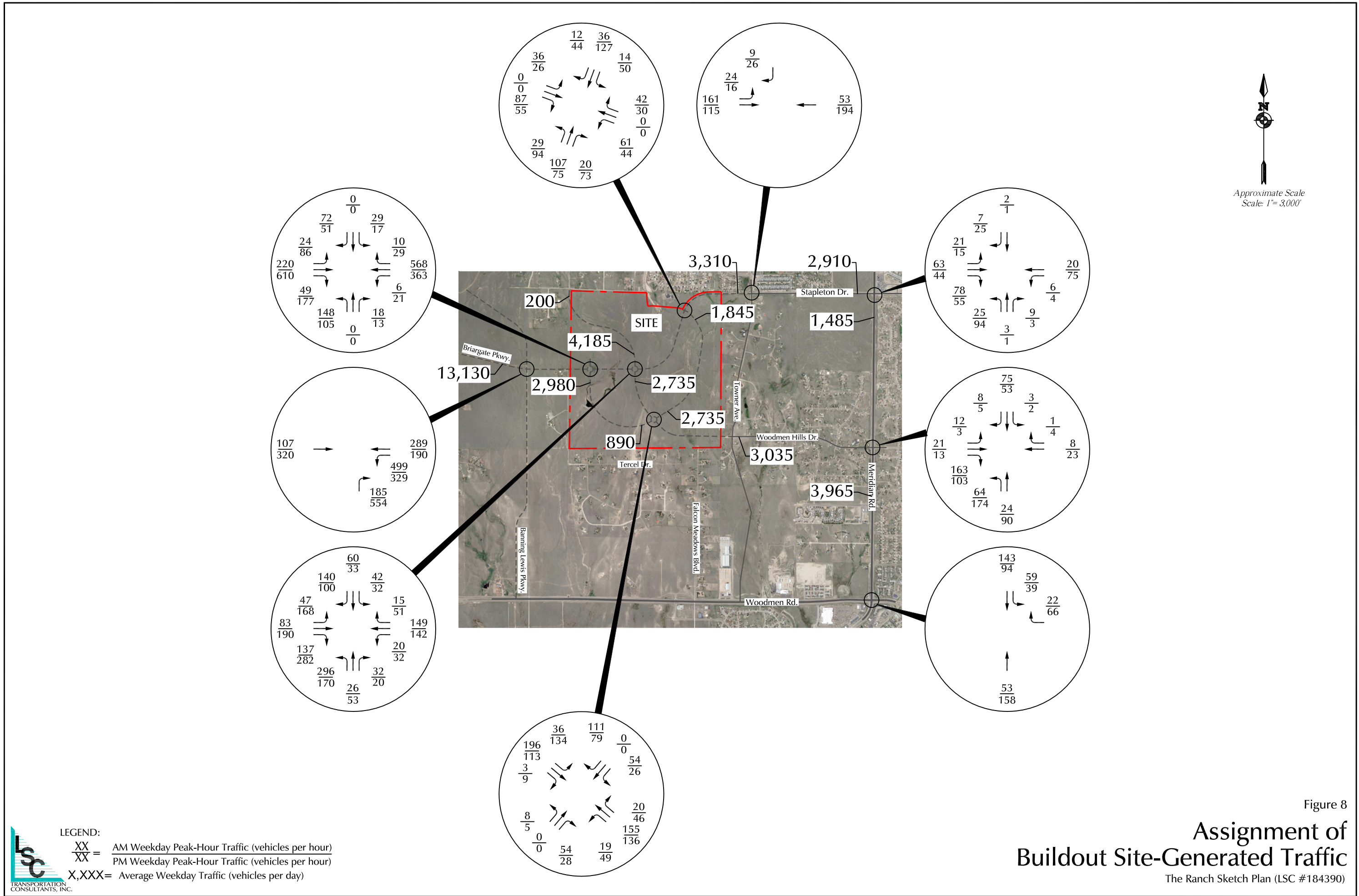
### LEGEND:

$\frac{XX\%}{XX\%}$  = Short-Term Percent Directional Distribution  
Long-Term Percent Directional Distribution

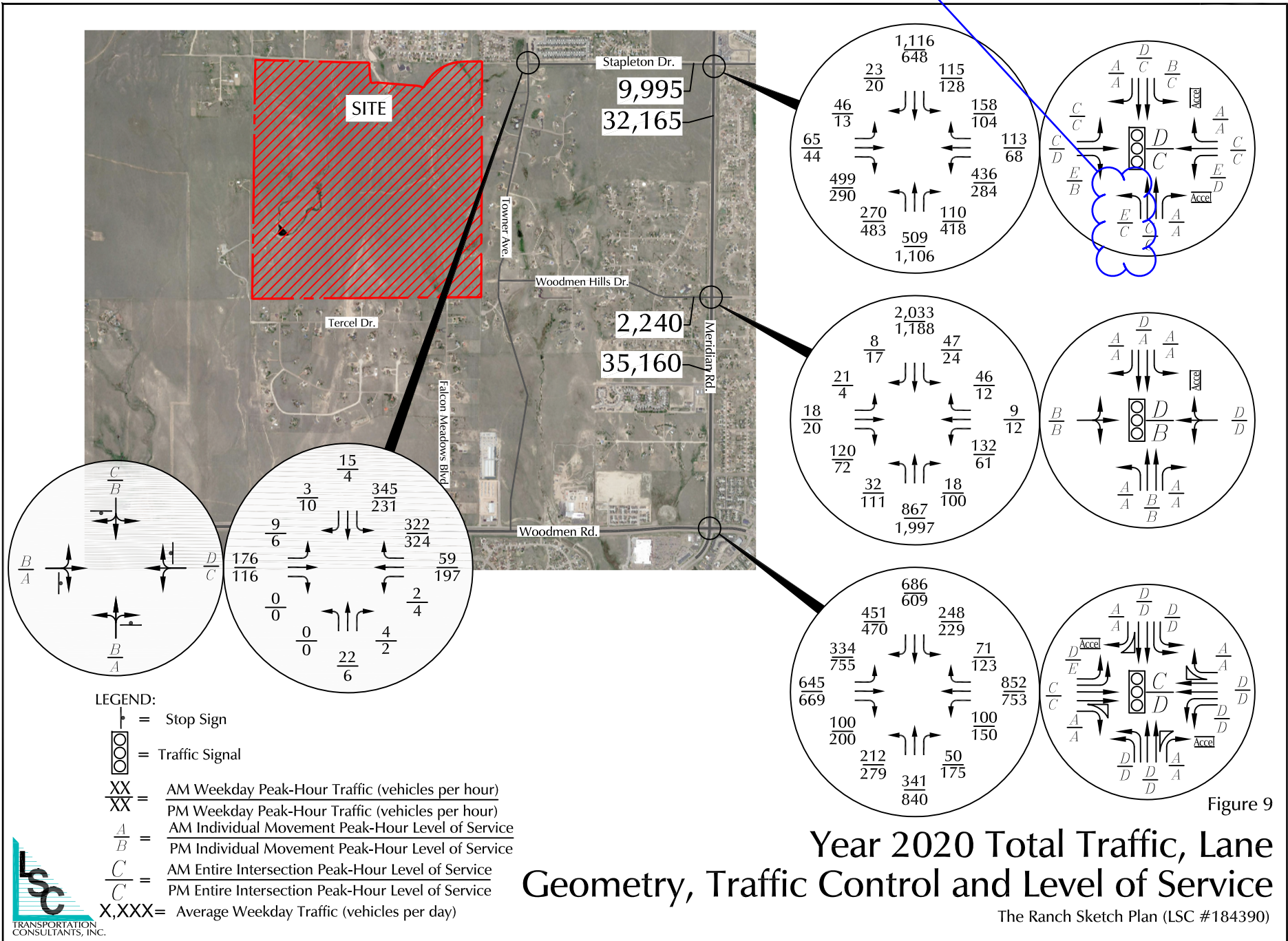
Figure 6

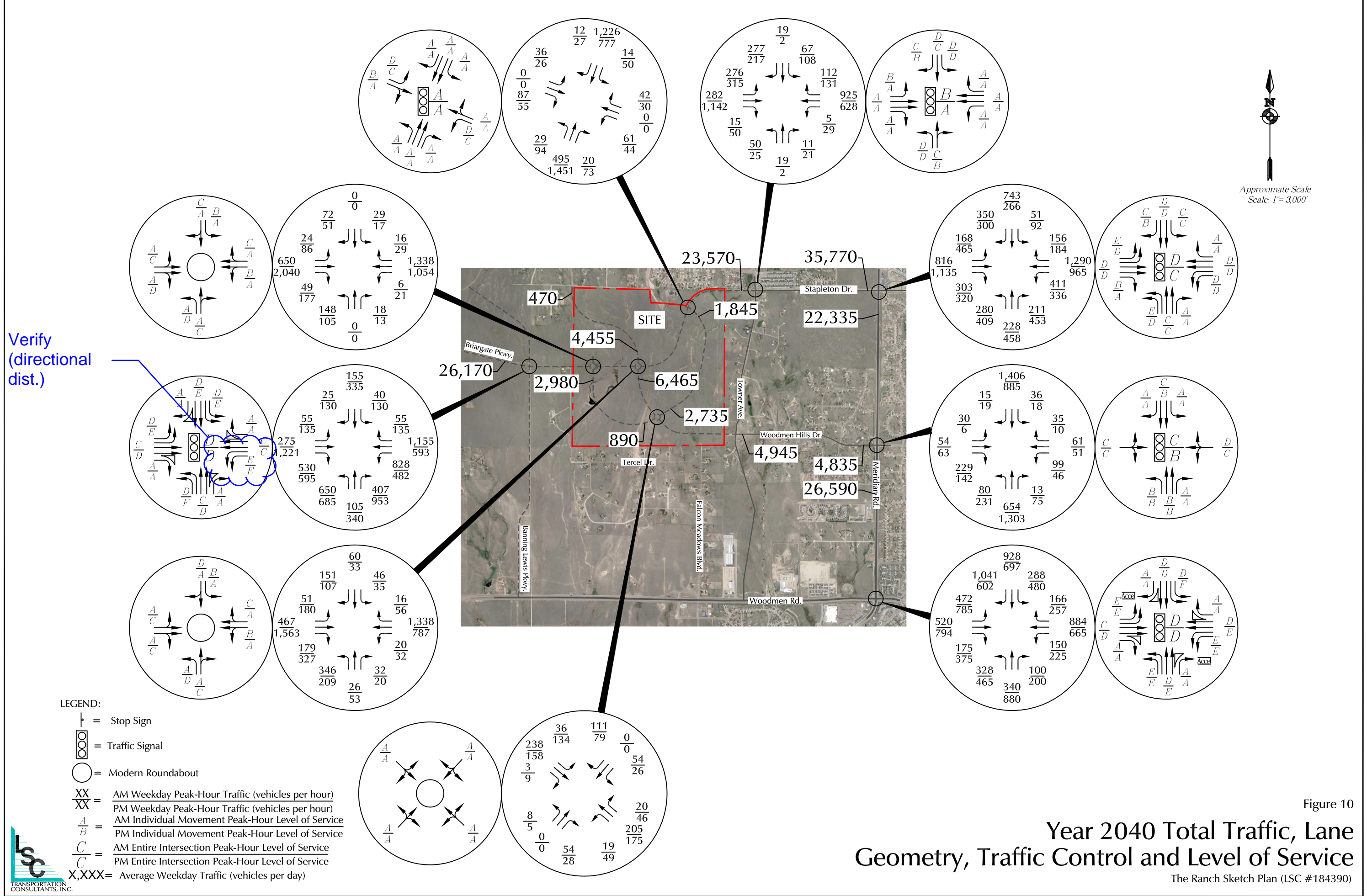


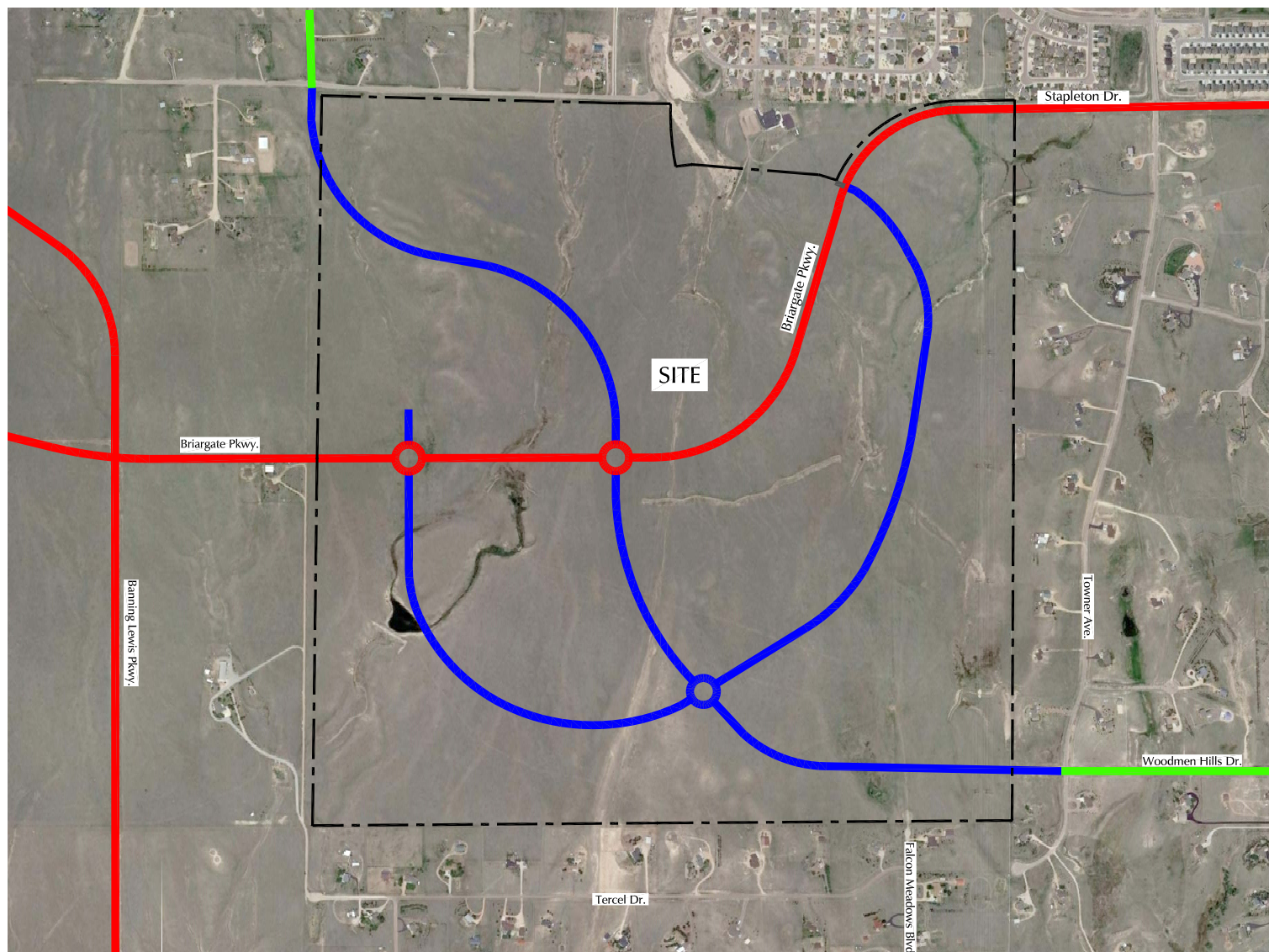
Provide a conceptual map of the Phase 1 area or hatch on this map.



Is a dual left recommended for 2020?







LEGEND:

- = 4-Lane Principal Arterial
- = Urban Residential Collector
- = Rural Collector

urban  
cross-section?

## Recommended Street Classification

The Ranch Sketch Plan (LSC #184390)



Approximate Scale  
Scale: 1" = 1,200'

Figure 11

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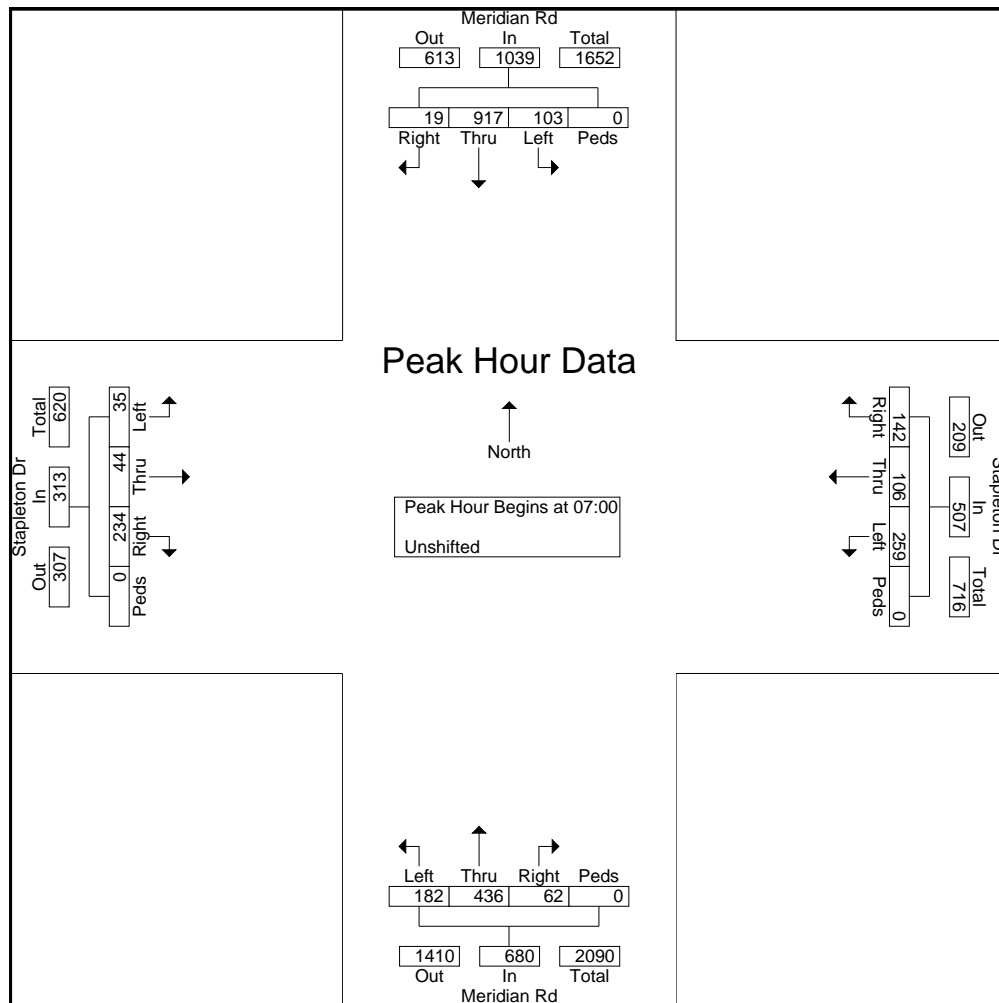
Then Click the Comments Tab

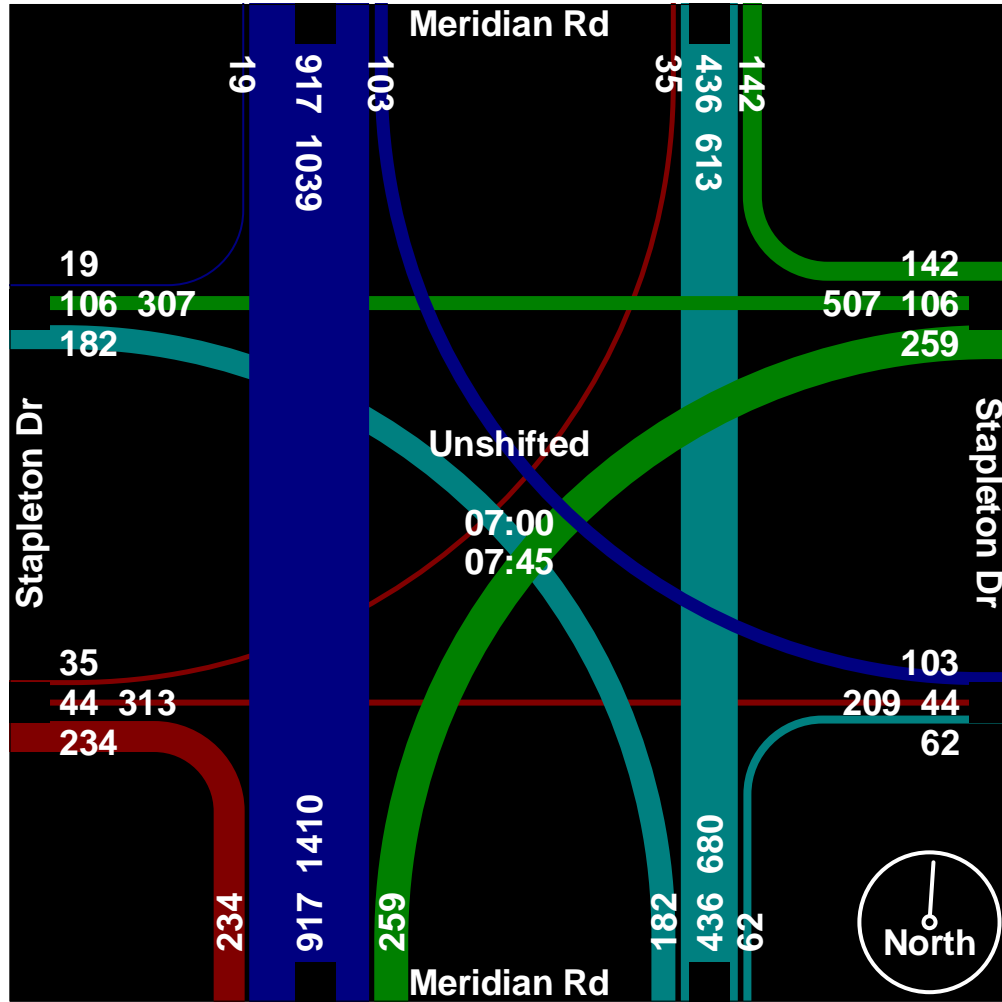
**Groups Printed- Unshifted**

	<b>Meridian Rd Southbound</b>					<b>Stapleton Dr Westbound</b>					<b>Meridian Rd Northbound</b>					<b>Stapleton Dr Eastbound</b>					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
06:30	30	174	2	0	206	39	1	21	0	61	24	50	5	0	79	2	6	41	0	49	395
06:45	24	178	1	0	203	59	5	15	0	79	32	93	10	0	135	3	6	28	0	37	454
Total	54	352	3	0	409	98	6	36	0	140	56	143	15	0	214	5	12	69	0	86	849
07:00	14	227	2	0	243	96	15	30	0	141	38	89	16	0	143	6	10	51	0	67	594
07:15	19	206	9	0	234	72	38	35	0	145	67	101	14	0	182	14	15	73	0	102	663
07:30	33	263	7	0	303	54	46	48	0	148	56	121	16	0	193	10	10	58	0	78	722
07:45	37	221	1	0	259	37	7	29	0	73	21	125	16	0	162	5	9	52	0	66	560
Total	103	917	19	0	1039	259	106	142	0	507	182	436	62	0	680	35	44	234	0	313	2539
08:00	21	179	1	0	201	38	2	22	1	63	15	90	11	0	116	6	3	22	0	31	411
08:15	8	191	5	0	204	45	3	12	0	60	16	98	22	0	136	5	1	28	0	34	434

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	Meridian Rd Southbound					Stapleton Dr Westbound					Meridian Rd Northbound					Stapleton Dr Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:30 to 08:15 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00																					
07:00	14	227	2	0	243	96	15	30	0	141	38	89	16	0	143	6	10	51	0	67	594
07:15	19	206	9	0	234	72	38	35	0	145	67	101	14	0	182	14	15	73	0	102	663
07:30	33	263	7	0	303	54	46	48	0	148	56	121	16	0	193	10	10	58	0	78	722
07:45	37	221	1	0	259	37	7	29	0	73	21	125	16	0	162	5	9	52	0	66	560
Total Volume	103	917	19	0	1039	259	106	142	0	507	182	436	62	0	680	35	44	234	0	313	2539
% App. Total	9.9	88.3	1.8	0		51.1	20.9	28	0		26.8	64.1	9.1	0		11.2	14.1	74.8	0		
PHF	.696	.872	.528	.000	.857	.674	.576	.740	.000	.856	.679	.872	.969	.000	.881	.625	.733	.801	.000	.767	.879





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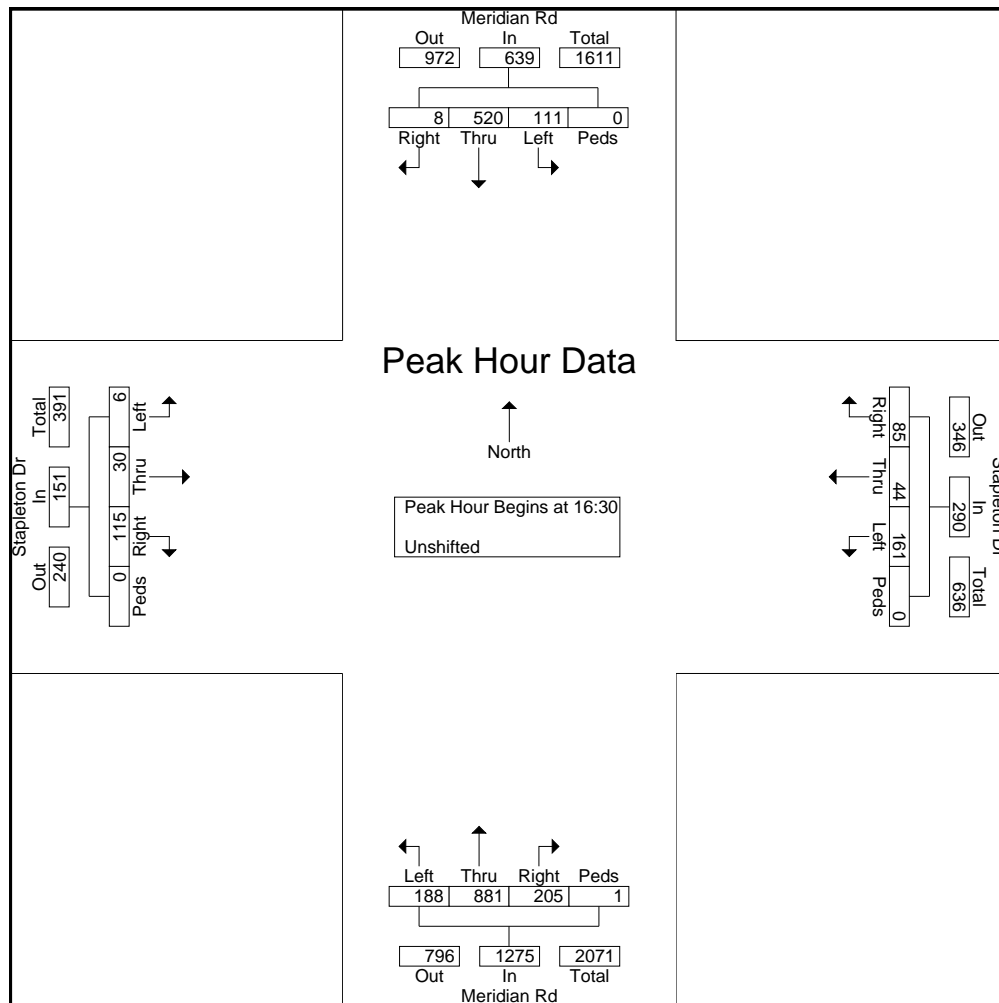
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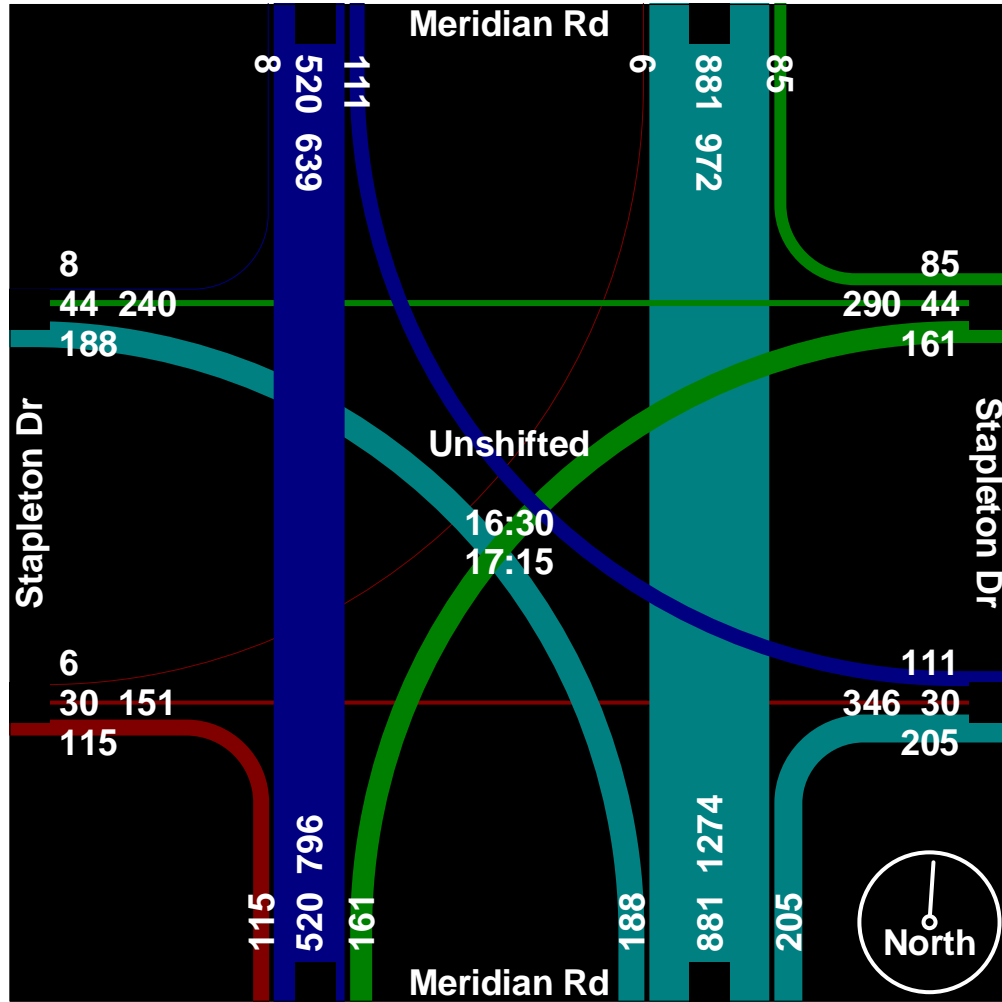
**Groups Printed- Unshifted**

	<b>Meridian Rd Southbound</b>					<b>Stapleton Dr Westbound</b>					<b>Meridian Rd Northbound</b>					<b>Stapleton Dr Eastbound</b>					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
16:00	19	176	6	0	201	40	6	20	0	66	40	218	48	0	306	2	6	28	0	36	609
16:15	25	151	3	0	179	34	9	23	0	66	28	172	64	0	264	2	3	29	0	34	543
16:30	28	131	2	0	161	50	8	28	0	86	40	217	50	0	307	0	6	32	0	38	592
16:45	32	138	3	0	173	34	10	18	0	62	50	212	46	0	308	0	8	24	0	32	575
Total	104	596	14	0	714	158	33	89	0	280	158	819	208	0	1185	4	23	113	0	140	2319
17:00	25	124	3	0	152	39	11	20	0	70	50	214	49	1	314	4	9	35	0	48	584
17:15	26	127	0	0	153	38	15	19	0	72	48	238	60	0	346	2	7	24	0	33	604
17:30	22	138	4	0	164	23	11	22	0	56	38	208	57	1	304	3	8	27	0	38	562
17:45	29	103	1	0	133	32	9	18	0	59	54	213	50	0	317	2	6	41	0	49	558
Total	102	492	8	0	602	132	46	79	0	257	190	873	216	2	1281	11	30	127	0	168	2308

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	Meridian Rd Southbound					Stapleton Dr Westbound					Meridian Rd Northbound					Stapleton Dr Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:30																					
16:30	28	131	2	0	161	50	8	28	0	86	40	217	50	0	307	0	6	32	0	38	592
16:45	32	138	3	0	173	34	10	18	0	62	50	212	46	0	308	0	8	24	0	32	575
17:00	25	124	3	0	152	39	11	20	0	70	50	214	49	1	314	4	9	35	0	48	584
17:15	26	127	0	0	153	38	15	19	0	72	48	238	60	0	346	2	7	24	0	33	604
Total Volume	111	520	8	0	639	161	44	85	0	290	188	881	205	1	1275	6	30	115	0	151	2355
% App. Total	17.4	81.4	1.3	0		55.5	15.2	29.3	0		14.7	69.1	16.1	0.1		4	19.9	76.2	0		
PHF	.867	.942	.667	.000	.923	.805	.733	.759	.000	.843	.940	.925	.854	.250	.921	.375	.833	.821	.000	.786	.975





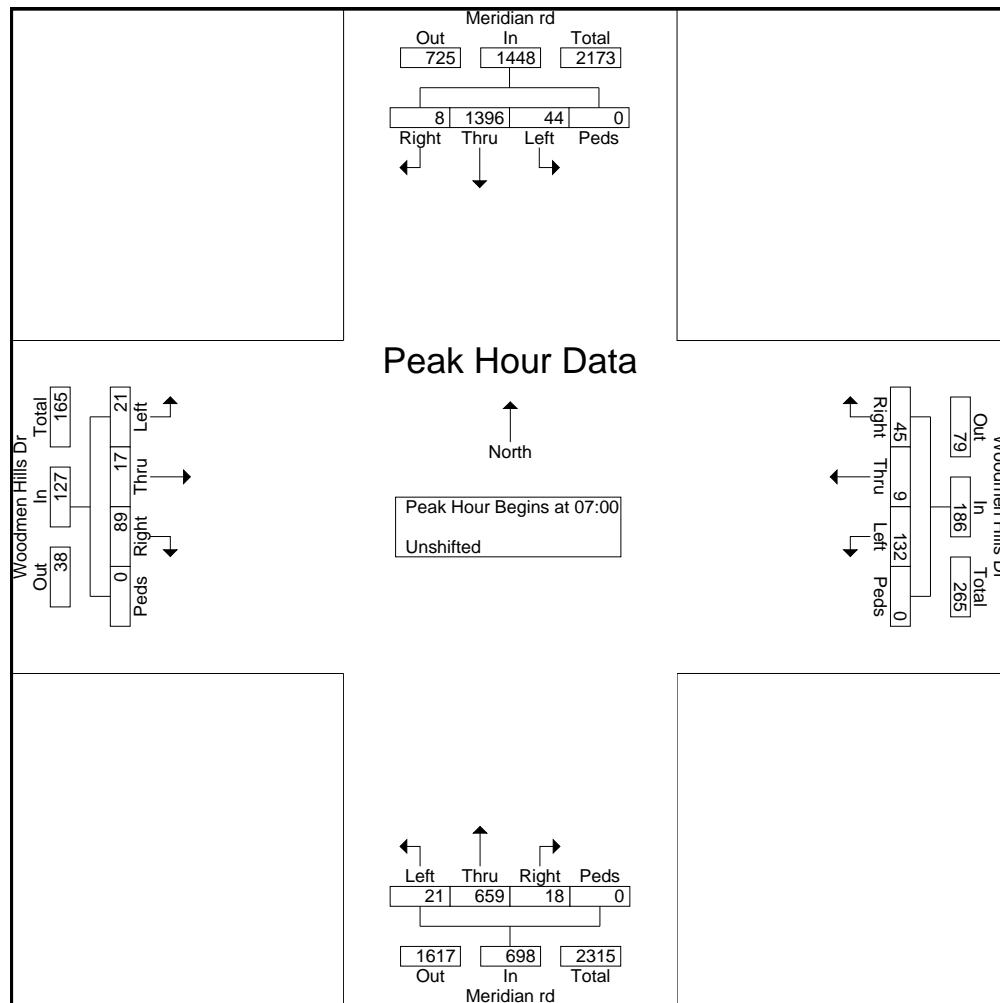
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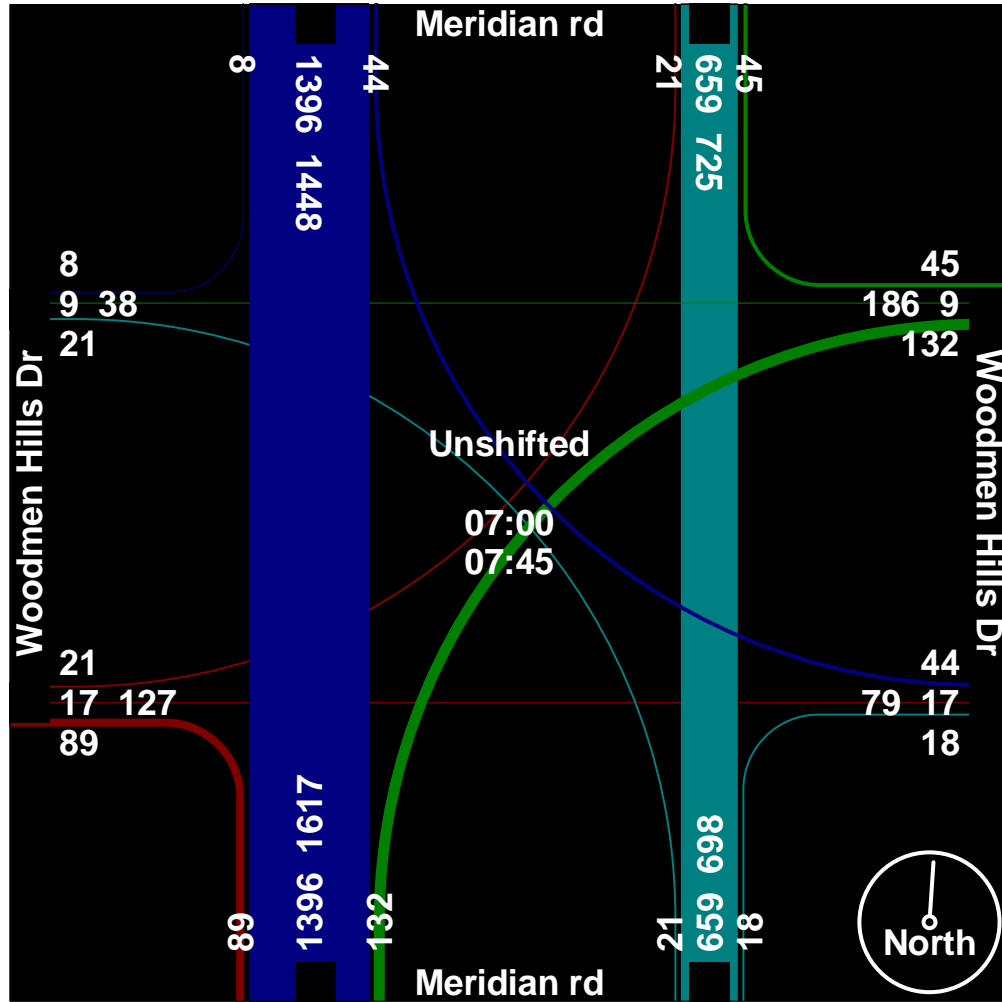
**Groups Printed- Unshifted**

	<b>Meridian rd Southbound</b>					<b>Woodmen Hills Dr Westbound</b>					<b>Meridian rd Northbound</b>					<b>Woodmen Hills Dr Eastbound</b>					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
06:30	2	225	1	0	228	25	2	11	0	38	1	137	4	0	142	0	2	9	0	11	419
06:45	2	271	1	0	274	31	2	10	0	43	1	144	7	0	152	0	2	10	0	12	481
Total	4	496	2	0	502	56	4	21	0	81	2	281	11	0	294	0	4	19	0	23	900
07:00	4	381	1	0	386	41	3	14	0	58	4	128	2	0	134	6	9	33	0	48	626
07:15	4	367	3	0	374	37	3	12	0	52	3	188	4	0	195	4	4	23	0	31	652
07:30	20	355	2	0	377	33	3	15	0	51	4	189	4	0	197	8	2	22	0	32	657
07:45	16	293	2	0	311	21	0	4	0	25	10	154	8	0	172	3	2	11	0	16	524
Total	44	1396	8	0	1448	132	9	45	0	186	21	659	18	0	698	21	17	89	0	127	2459
08:00	12	258	0	0	270	21	1	3	0	25	4	134	25	0	163	0	9	13	0	22	480
08:15	21	223	3	0	247	53	7	17	0	77	6	146	17	0	169	0	6	13	0	19	512

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	Meridian rd Southbound					Woodmen Hills Dr Westbound					Meridian rd Northbound					Woodmen Hills Dr Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:30 to 08:15 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00																					
07:00	4	381	1	0	386	41	3	14	0	58	4	128	2	0	134	6	9	33	0	48	626
07:15	4	367	3	0	374	37	3	12	0	52	3	188	4	0	195	4	4	23	0	31	652
07:30	20	355	2	0	377	33	3	15	0	51	4	189	4	0	197	8	2	22	0	32	657
07:45	16	293	2	0	311	21	0	4	0	25	10	154	8	0	172	3	2	11	0	16	524
Total Volume	44	1396	8	0	1448	132	9	45	0	186	21	659	18	0	698	21	17	89	0	127	2459
% App. Total	3	96.4	0.6	0		71	4.8	24.2	0		3	94.4	2.6	0		16.5	13.4	70.1	0		
PHF	.550	.916	.667	.000	.938	.805	.750	.750	.000	.802	.525	.872	.563	.000	.886	.656	.472	.674	.000	.661	.936





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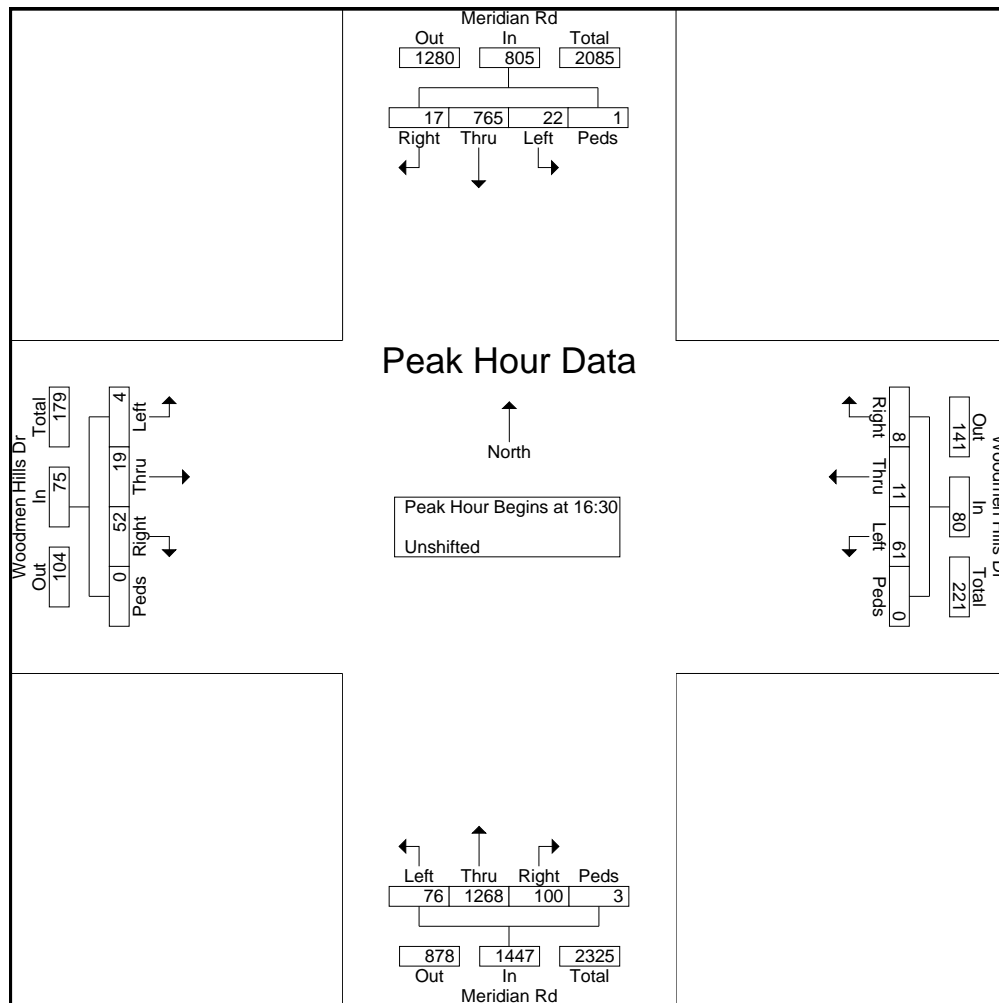
Provide dates on all counts.

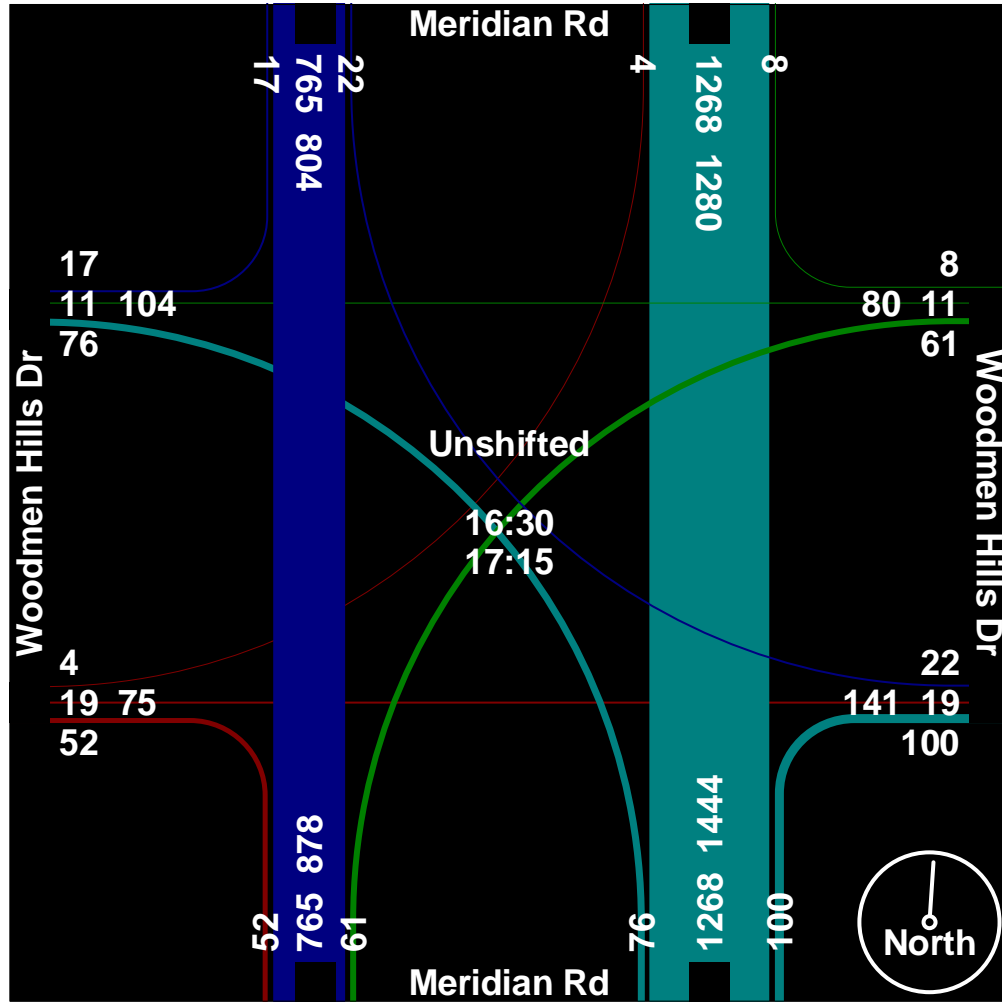
**Groups Printed- Unshifted**

	<b>Meridian Rd Southbound</b>					<b>Woodmen Hills Dr Westbound</b>					<b>Meridian Rd Northbound</b>					<b>Woodmen Hills Dr Eastbound</b>					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
16:00	6	244	2	0	252	13	0	1	0	14	24	272	21	0	317	2	0	13	0	15	598
16:15	1	199	5	0	205	11	7	6	0	24	20	276	18	1	315	1	4	6	0	11	555
16:30	4	181	6	0	191	24	3	2	0	29	14	320	24	0	358	3	5	12	0	20	598
16:45	2	215	3	0	220	4	5	3	0	12	23	297	23	1	344	1	1	14	0	16	592
Total	13	839	16	0	868	52	15	12	0	79	81	1165	86	2	1334	7	10	45	0	62	2343
17:00	5	195	5	1	206	20	3	1	0	24	27	334	22	0	383	0	8	12	0	20	633
17:15	11	174	3	0	188	13	0	2	0	15	12	317	31	2	362	0	5	14	0	19	584
17:30	3	192	1	0	196	18	1	3	0	22	28	292	42	0	362	3	2	8	0	13	593
17:45	8	161	4	0	173	17	5	0	0	22	17	327	19	0	363	2	4	16	0	22	580
Total	27	722	13	1	763	68	9	6	0	83	84	1270	114	2	1470	5	19	50	0	74	2390

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	Meridian Rd Southbound					Woodmen Hills Dr Westbound					Meridian Rd Northbound					Woodmen Hills Dr Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:30																					
16:30	4	181	6	0	191	24	3	2	0	29	14	320	24	0	358	3	5	12	0	20	598
16:45	2	215	3	0	220	4	5	3	0	12	23	297	23	1	344	1	1	14	0	16	592
17:00	5	195	5	1	206	20	3	1	0	24	27	334	22	0	383	0	8	12	0	20	633
17:15	11	174	3	0	188	13	0	2	0	15	12	317	31	2	362	0	5	14	0	19	584
Total Volume	22	765	17	1	805	61	11	8	0	80	76	1268	100	3	1447	4	19	52	0	75	2407
% App. Total	2.7	95	2.1	0.1		76.2	13.8	10	0		5.3	87.6	6.9	0.2		5.3	25.3	69.3	0		
PHF	.500	.890	.708	.250	.915	.635	.550	.667	.000	.690	.704	.949	.806	.375	.945	.333	.594	.929	.000	.938	.951





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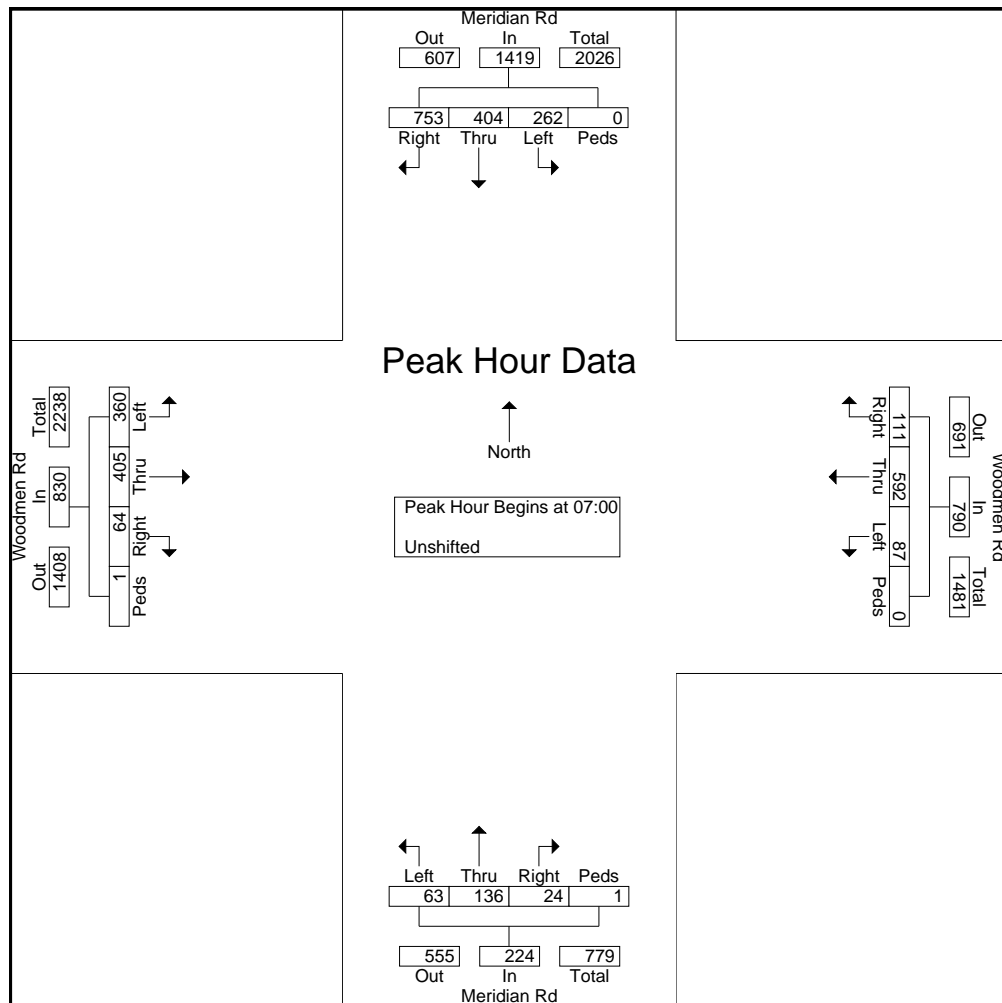
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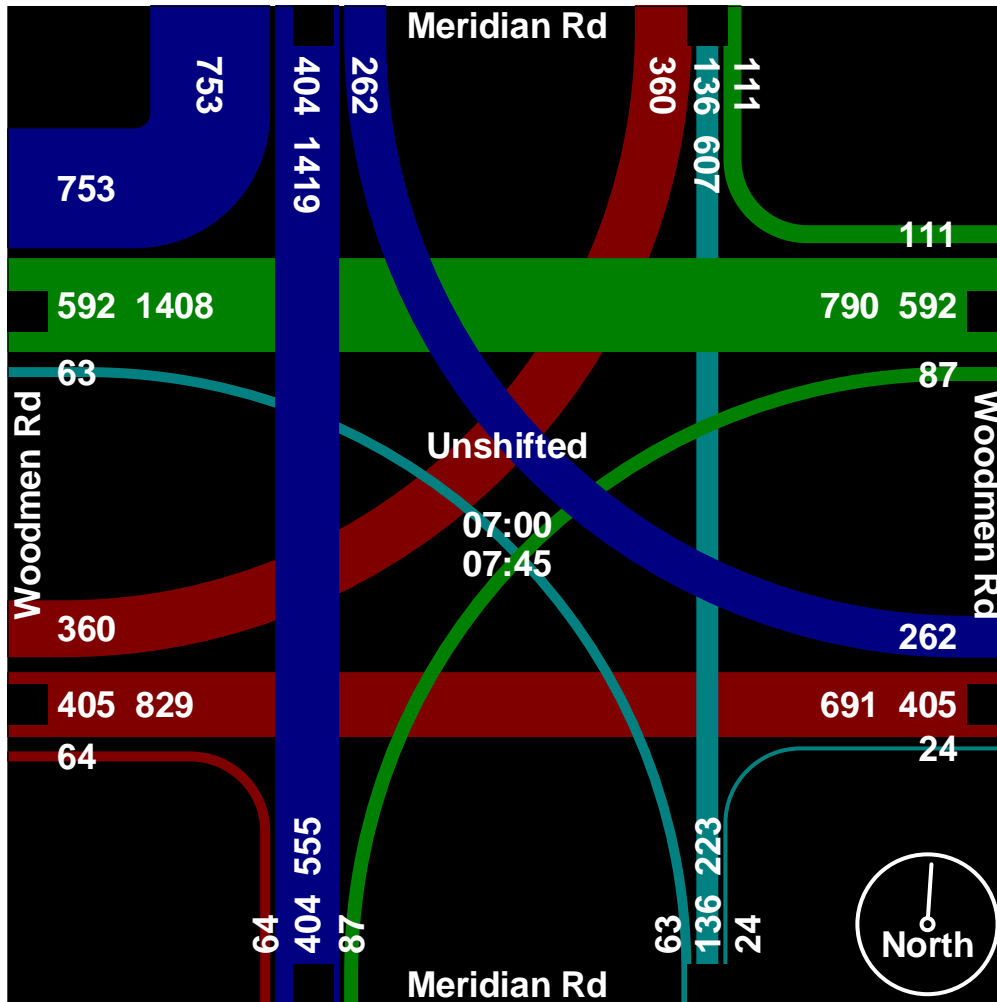
**Groups Printed- Unshifted**

	<b>Meridian Rd Southbound</b>					<b>Woodmen Rd Westbound</b>					<b>Meridian Rd Northbound</b>					<b>Woodmen Rd Eastbound</b>					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
06:30	16	38	84	0	138	1	69	9	0	79	7	8	1	0	16	37	35	4	0	76	309
06:45	61	95	139	1	296	12	135	30	0	177	13	26	3	0	42	58	92	18	0	168	683
Total	77	133	223	1	434	13	204	39	0	256	20	34	4	0	58	95	127	22	0	244	992
07:00	72	98	174	0	344	30	137	32	0	199	12	22	6	0	40	87	121	18	1	227	810
07:15	81	100	232	0	413	21	164	31	0	216	15	30	4	0	49	92	90	19	0	201	879
07:30	51	104	216	0	371	17	196	20	0	233	18	34	4	1	57	84	104	17	0	205	866
07:45	58	102	131	0	291	19	95	28	0	142	18	50	10	0	78	97	90	10	0	197	708
Total	262	404	753	0	1419	87	592	111	0	790	63	136	24	1	224	360	405	64	1	830	3263
08:00	43	75	150	0	268	13	109	27	0	149	15	24	7	0	46	103	90	24	0	217	680
08:15	40	60	143	0	243	17	139	22	0	178	19	27	7	2	55	94	56	17	0	167	643

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	Meridian Rd Southbound					Woodmen Rd Westbound					Meridian Rd Northbound					Woodmen Rd Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:30 to 08:15 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00																					
07:00	72	98	174	0	344	30	137	32	0	199	12	22	6	0	40	87	121	18	1	227	810
07:15	81	100	232	0	413	21	164	31	0	216	15	30	4	0	49	92	90	19	0	201	879
07:30	51	104	216	0	371	17	196	20	0	233	18	34	4	1	57	84	104	17	0	205	866
07:45	58	102	131	0	291	19	95	28	0	142	18	50	10	0	78	97	90	10	0	197	708
Total Volume	262	404	753	0	1419	87	592	111	0	790	63	136	24	1	224	360	405	64	1	830	3263
% App. Total	18.5	28.5	53.1	0		11	74.9	14.1	0		28.1	60.7	10.7	0.4		43.4	48.8	7.7	0.1		
PHF	.809	.971	.811	.000	.859	.725	.755	.867	.000	.848	.875	.680	.600	.250	.718	.928	.837	.842	.250	.914	.928





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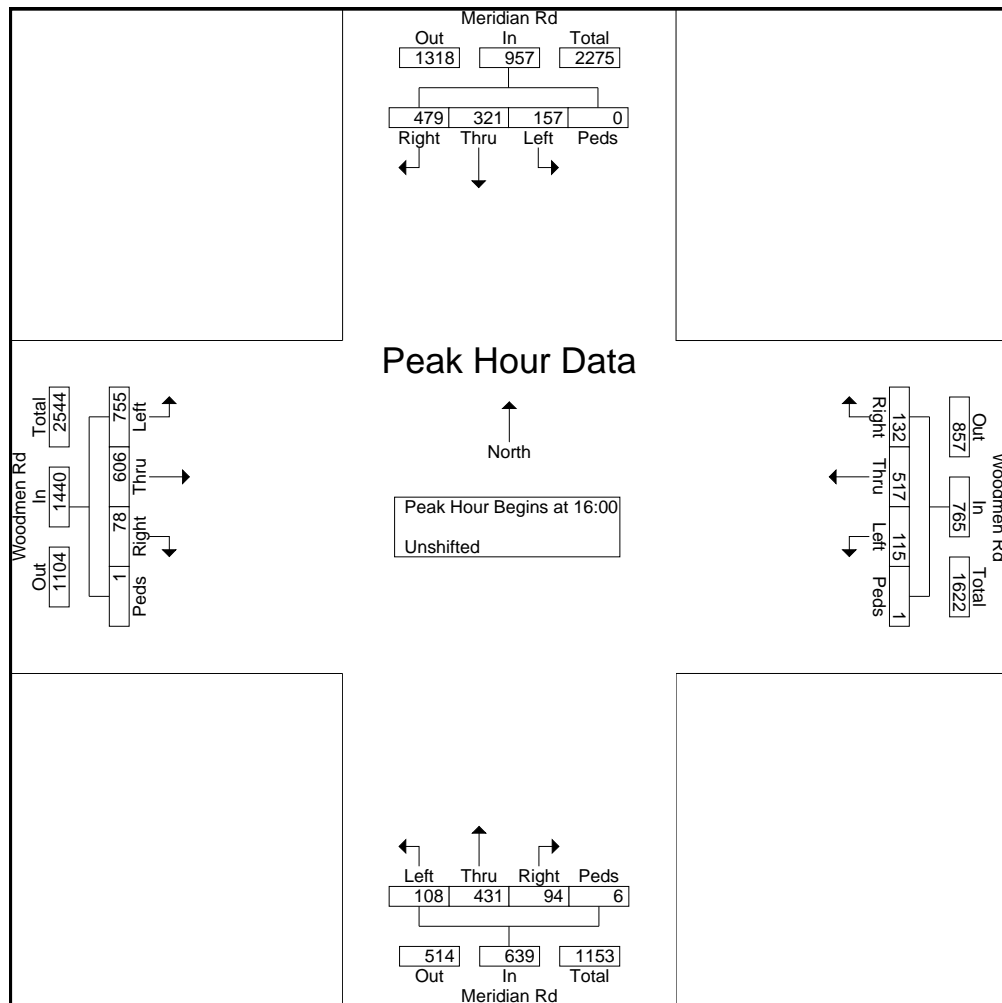
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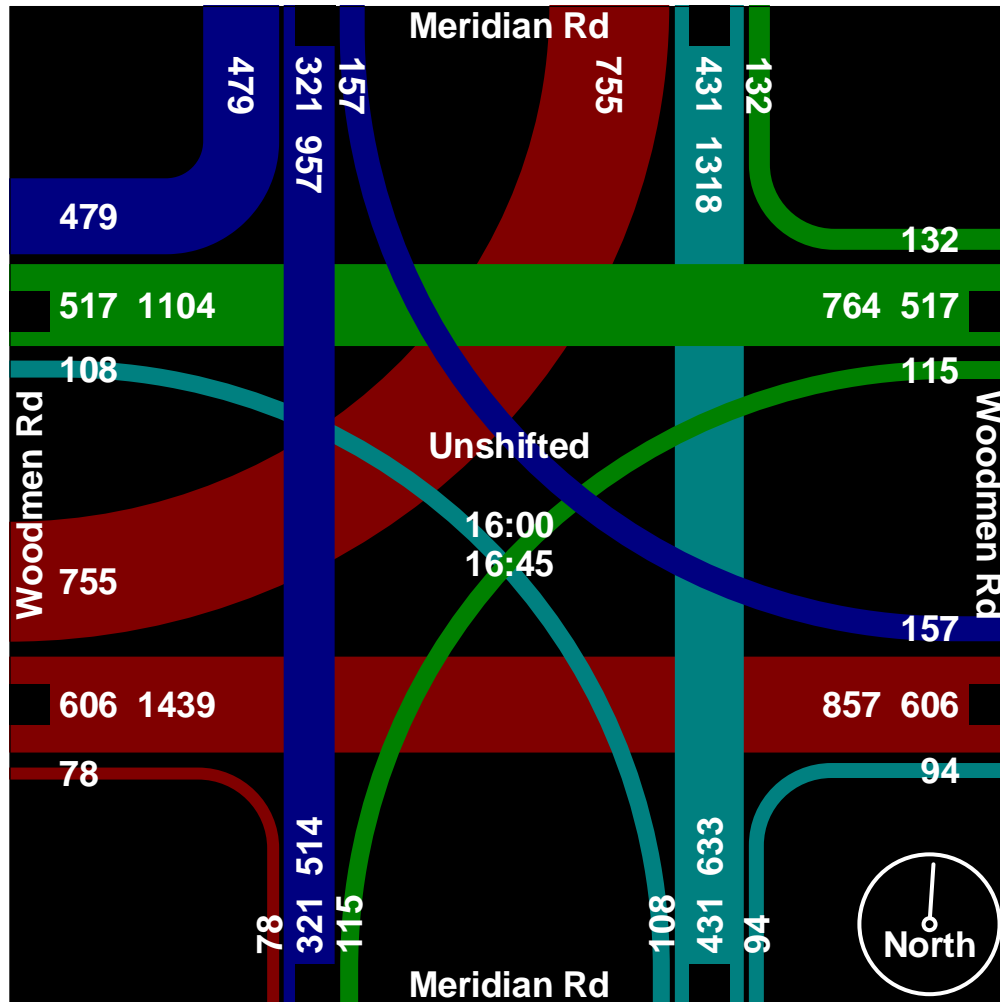
**Groups Printed- Unshifted**

	<b>Meridian Rd Southbound</b>					<b>Woodmen Rd Westbound</b>					<b>Meridian Rd Northbound</b>					<b>Woodmen Rd Eastbound</b>					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
16:00	41	86	117	0	244	14	131	29	0	174	23	111	26	2	162	187	127	8	1	323	903
16:15	37	86	115	0	238	34	105	37	0	176	30	112	23	0	165	187	169	21	0	377	956
16:30	38	70	111	0	219	38	170	22	0	230	23	111	17	2	153	191	164	19	0	374	976
16:45	41	79	136	0	256	29	111	44	1	185	32	97	28	2	159	190	146	30	0	366	966
Total	157	321	479	0	957	115	517	132	1	765	108	431	94	6	639	755	606	78	1	1440	3801
17:00	29	72	113	0	214	30	133	52	0	215	21	89	30	2	142	147	140	23	0	310	881
17:15	47	78	95	0	220	60	84	34	0	178	25	121	22	3	171	185	150	32	0	367	936
17:30	34	68	104	0	206	47	79	32	0	158	18	102	26	2	148	222	166	26	0	414	926
17:45	34	58	94	0	186	37	106	40	0	183	20	81	15	2	118	157	151	18	0	326	813
Total	144	276	406	0	826	174	402	158	0	734	84	393	93	9	579	711	607	99	0	1417	3556

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	Meridian Rd Southbound					Woodmen Rd Westbound					Meridian Rd Northbound					Woodmen Rd Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:00																					
16:00	41	86	117	0	244	14	131	29	0	174	23	111	26	2	162	187	127	8	1	323	903
16:15	37	86	115	0	238	34	105	37	0	176	30	112	23	0	165	187	169	21	0	377	956
16:30	38	70	111	0	219	38	170	22	0	230	23	111	17	2	153	191	164	19	0	374	976
16:45	41	79	136	0	256	29	111	44	1	185	32	97	28	2	159	190	146	30	0	366	966
Total Volume	157	321	479	0	957	115	517	132	1	765	108	431	94	6	639	755	606	78	1	1440	3801
% App. Total	16.4	33.5	50.1	0		15	67.6	17.3	0.1		16.9	67.4	14.7	0.9		52.4	42.1	5.4	0.1		
PHF	.957	.933	.881	.000	.935	.757	.760	.750	.250	.832	.844	.962	.839	.750	.968	.988	.896	.650	.250	.955	.974





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Default Comments

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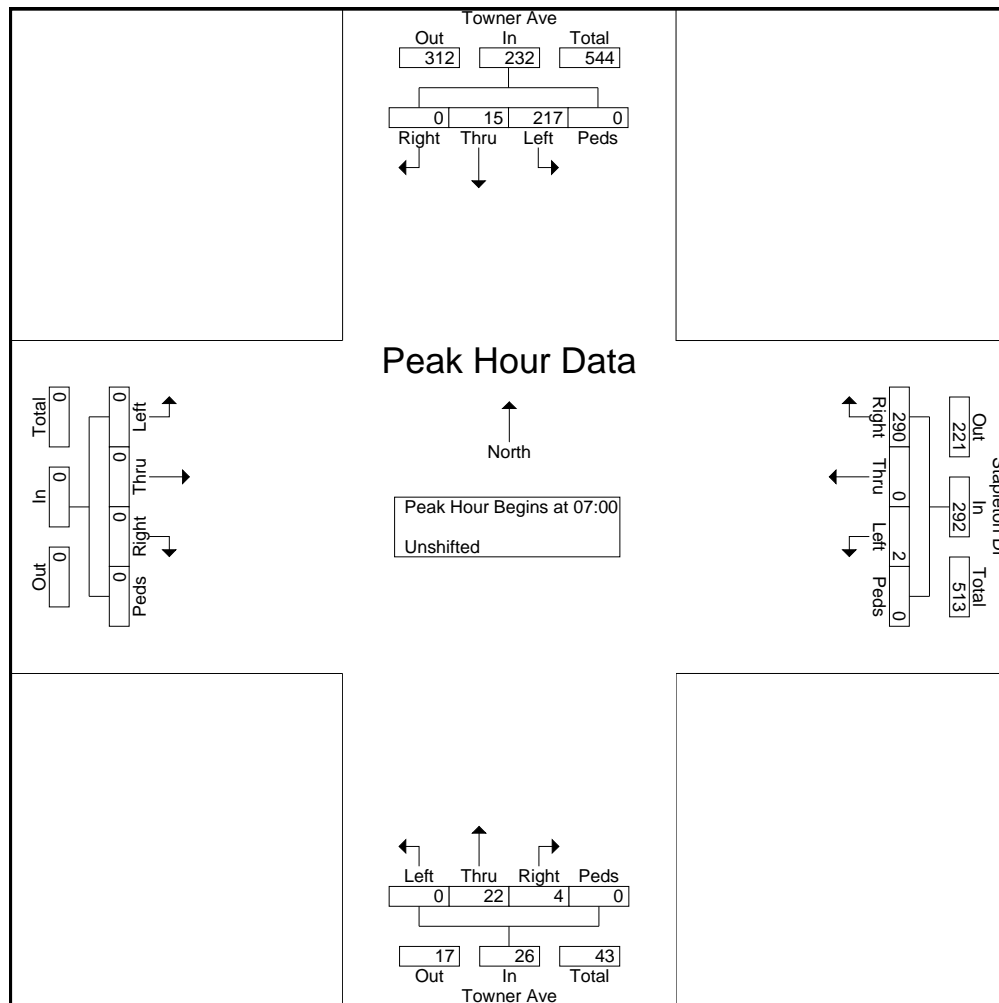
Then Click the Comments Tab

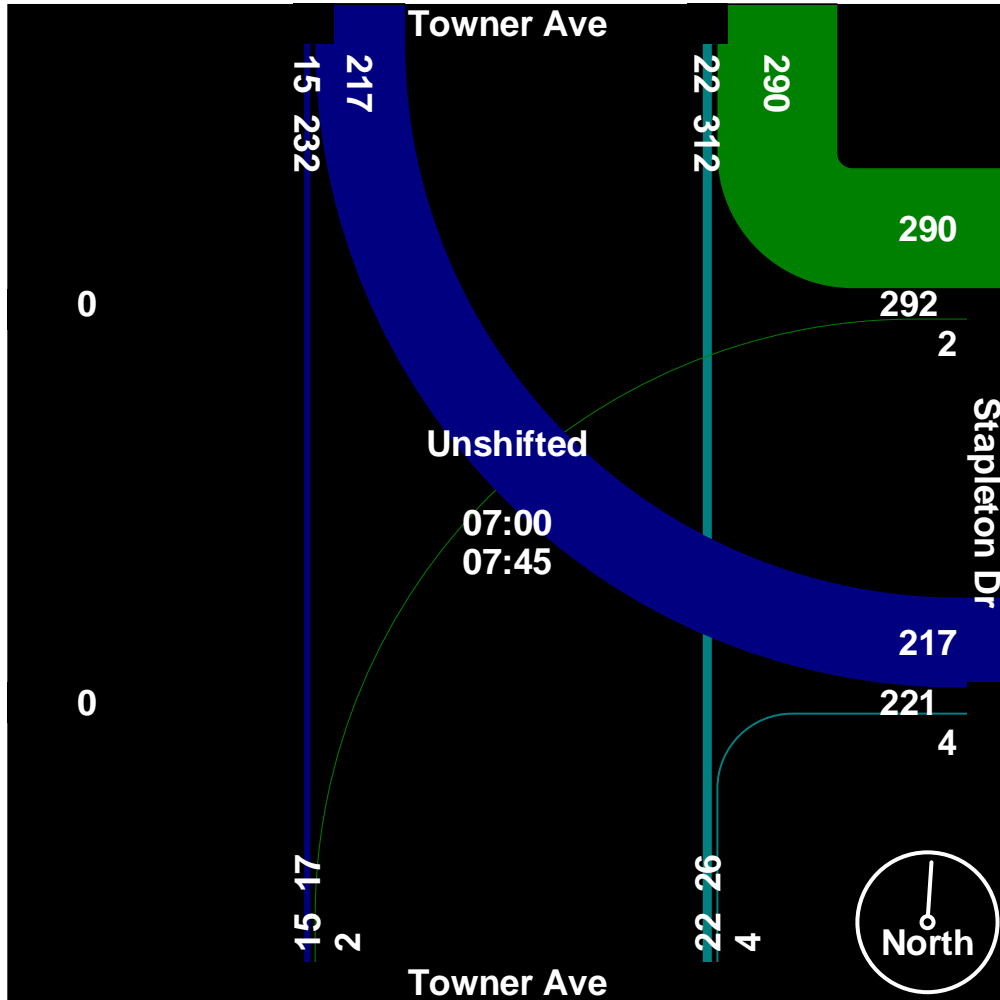
**Groups Printed- Unshifted**

	<b>Towner Ave Southbound</b>					<b>Stapleton Dr Westbound</b>					<b>Towner Ave Northbound</b>					<b>Eastbound</b>					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
06:30	22	1	0	0	23	1	0	16	0	17	0	2	1	0	3	0	0	0	0	0	43
06:45	26	1	0	0	27	0	0	33	0	33	0	2	1	0	3	0	1	0	0	1	64
Total	48	2	0	0	50	1	0	49	0	50	0	4	2	0	6	0	1	0	0	1	107
07:00	48	5	0	0	53	0	0	47	0	47	0	5	0	0	5	0	0	0	0	0	105
07:15	65	4	0	0	69	0	0	93	0	93	0	6	2	0	8	0	0	0	0	0	170
07:30	59	4	0	0	63	1	0	119	0	120	0	8	1	0	9	0	0	0	0	0	192
07:45	45	2	0	0	47	1	0	31	0	32	0	3	1	0	4	0	0	0	0	0	83
Total	217	15	0	0	232	2	0	290	0	292	0	22	4	0	26	0	0	0	0	0	550
08:00	22	1	0	0	23	1	0	20	0	21	0	2	1	0	3	0	0	0	0	0	47
08:15	16	2	0	0	18	0	0	12	0	12	0	1	0	0	1	0	0	0	0	0	31

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	Towner Ave Southbound					Stapleton Dr Westbound					Towner Ave Northbound					Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:30 to 08:15 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00																					
07:00	48	5	0	0	53	0	0	47	0	47	0	5	0	0	5	0	0	0	0	0	105
07:15	65	4	0	0	69	0	0	93	0	93	0	6	2	0	8	0	0	0	0	0	170
07:30	59	4	0	0	63	1	0	119	0	120	0	8	1	0	9	0	0	0	0	0	192
07:45	45	2	0	0	47	1	0	31	0	32	0	3	1	0	4	0	0	0	0	0	83
Total Volume	217	15	0	0	232	2	0	290	0	292	0	22	4	0	26	0	0	0	0	0	550
% App. Total	93.5	6.5	0	0		0.7	0	99.3	0		0	84.6	15.4	0		0	0	0	0		
PHF	.835	.750	.000	.000	.841	.500	.000	.609	.000	.608	.000	.688	.500	.000	.722	.000	.000	.000	.000	.000	.716





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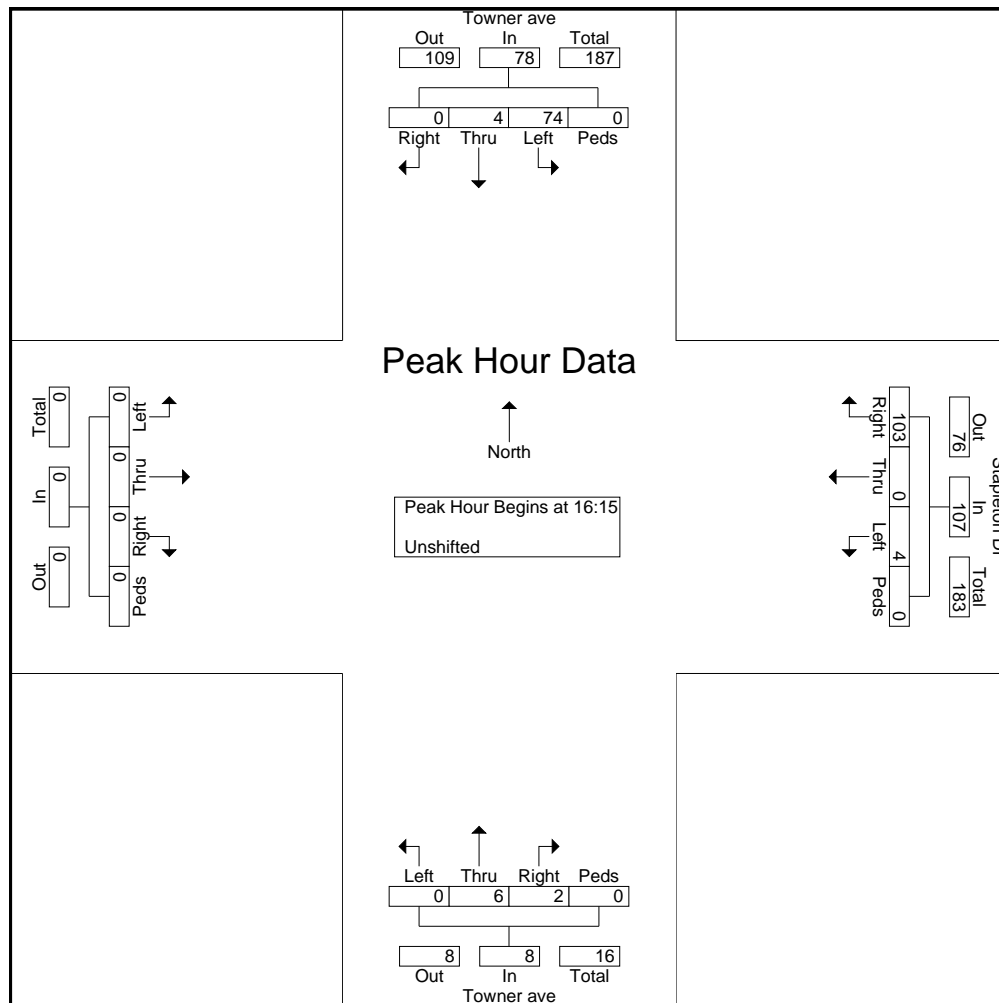
Default Comments  
Change These in The Preferences Window  
Select File/Preference in the Main Scree  
Then Click the Comments Tab

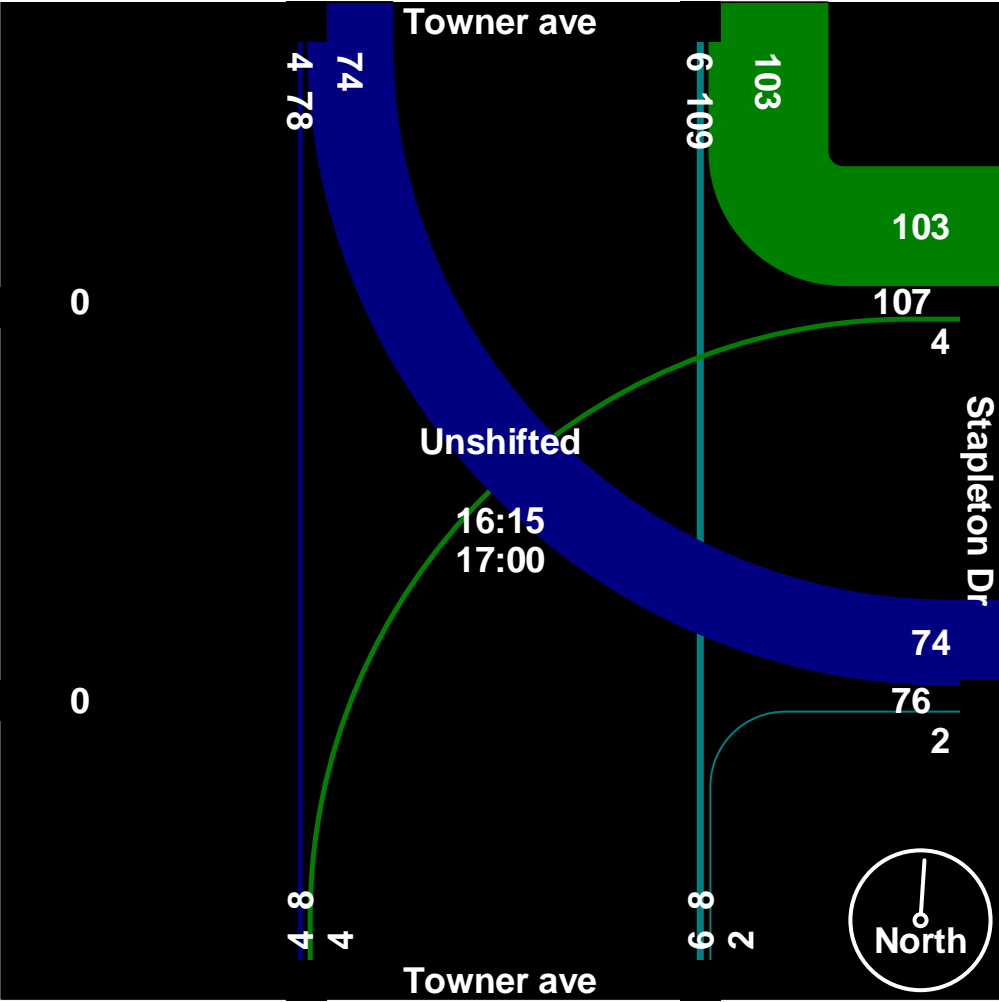
**Groups Printed- Unshifted**

	<b>Towner ave Southbound</b>					<b>Stapleton Dr Westbound</b>					<b>Towner ave Northbound</b>					<b>Eastbound</b>					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
16:00	16	0	0	0	16	0	0	10	0	10	0	1	0	0	1	0	0	0	0	0	27
16:15	16	2	0	0	18	0	0	34	0	34	0	1	1	0	2	0	0	0	0	0	54
16:30	12	0	0	0	12	1	0	26	0	27	0	3	0	0	3	0	0	0	0	0	42
16:45	17	0	0	0	17	2	0	25	0	27	0	1	0	0	1	0	0	0	0	0	45
Total	61	2	0	0	63	3	0	95	0	98	0	6	1	0	7	0	0	0	0	0	168
17:00	29	2	0	0	31	1	0	18	0	19	0	1	1	0	2	0	0	0	0	0	52
17:15	13	1	0	0	14	0	0	14	0	14	0	3	1	0	4	0	0	0	0	0	32
17:30	11	1	0	0	12	1	0	16	0	17	0	0	0	0	0	0	0	0	0	0	29
17:45	9	0	0	0	9	1	0	12	0	13	0	1	0	0	1	0	0	0	0	0	23
Total	62	4	0	0	66	3	0	60	0	63	0	5	2	0	7	0	0	0	0	0	136

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	Towner ave Southbound					Stapleton Dr Westbound					Towner ave Northbound					Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:15																					
16:15	16	2	0	0	18	0	0	34	0	34	0	1	1	0	2	0	0	0	0	0	54
16:30	12	0	0	0	12	1	0	26	0	27	0	3	0	0	3	0	0	0	0	0	42
16:45	17	0	0	0	17	2	0	25	0	27	0	1	0	0	1	0	0	0	0	0	45
17:00	29	2	0	0	31	1	0	18	0	19	0	1	1	0	2	0	0	0	0	0	52
Total Volume	74	4	0	0	78	4	0	103	0	107	0	6	2	0	8	0	0	0	0	0	193
% App. Total	94.9	5.1	0	0		3.7	0	96.3	0		0	75	25	0		0	0	0	0		
PHF	.638	.500	.000	.000	.629	.500	.000	.757	.000	.787	.000	.500	.500	.000	.667	.000	.000	.000	.000	.000	.894








Intersection

Intersection Delay, s/veh 11.6

Intersection LOS B

























Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	290	22	4	217	15
Future Vol, veh/h	2	290	22	4	217	15
Peak Hour Factor	0.61	0.61	0.72	0.72	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	475	31	6	236	16
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left NB			WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right SB		WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	12	8.6	11.2
HCM LOS	B	A	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	1%	94%
Vol Thru, %	85%	0%	6%
Vol Right, %	15%	99%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	26	292	232
LT Vol	0	2	217
Through Vol	22	0	15
RT Vol	4	290	0
Lane Flow Rate	36	479	252
Geometry Grp	1	1	1
Degree of Util (X)	0.052	0.546	0.363
Departure Headway (Hd)	5.214	4.104	5.181
Convergence, Y/N	Yes	Yes	Yes
Cap	679	876	688
Service Time	3.304	2.133	3.256
HCM Lane V/C Ratio	0.053	0.547	0.366
HCM Control Delay	8.6	12	11.2
HCM Lane LOS	A	B	B
HCM 95th-tile Q	0.2	3.4	1.7

# Timings 6: Meridian Rd & Stapleton Dr

Existing Traffic  
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	44	234	259	106	142	182	436	62	103	917	19
Future Volume (vph)	35	44	234	259	106	142	182	436	62	103	917	19
Turn Type	Perm	NA	Perm	Perm	NA	Free	pm+pt	NA	Free	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		Free	2		Free	6		6
Detector Phase	4	4	4	8	8		5	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)	40.0	40.0	40.0	40.0	40.0		10.0	50.0		10.0	50.0	50.0
Total Split (%)	40.0%	40.0%	40.0%	40.0%	40.0%		10.0%	50.0%		10.0%	50.0%	50.0%
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	Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	Max		None	Max	Max
Act Effect Green (s)	24.5	24.5	24.5	24.5	24.5	89.9	50.3	45.3	89.9	50.3	45.3	45.3
Actuated g/C Ratio	0.27	0.27	0.27	0.27	0.27	1.00	0.56	0.50	1.00	0.56	0.50	0.50
v/c Ratio	0.10	0.09	0.43	0.82	0.24	0.10	0.78	0.28	0.04	0.23	0.60	0.03
Control Delay	23.9	23.5	12.2	48.1	25.8	0.1	34.7	14.5	0.0	10.2	18.8	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	23.9	23.5	12.2	48.1	25.8	0.1	34.7	14.5	0.0	10.2	18.8	0.1
LOS	C	C	B	D	C	A	C	B	A	B	B	A
Approach Delay		15.1			30.0			18.6			17.6	
Approach LOS		B			C			B			B	

## Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 89.9

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 20.1







Intersection LOS: C

Intersection Capacity Utilization 68.9%

ICU Level of Service C



















Analysis Period (min) 15

Splits and Phases: 6: Meridian Rd & Stapleton Dr

		
Ø1	Ø2	Ø4
10 s	50 s	40 s
		
Ø5	Ø6	Ø8
10 s	50 s	40 s

Timings  
16: Meridian Rd & Woodmen Hills Dr

Existing Traffic  
AM Peak Hour

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	21	17	132	9	21	659	18	44	1396	8
Future Volume (vph)	21	17	132	9	21	659	18	44	1396	8
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		8	5	2		1	6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	4	4	8	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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)	35.0	35.0	35.0	35.0	10.0	55.0	55.0	10.0	55.0	55.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	10.0%	55.0%	55.0%	10.0%	55.0%	55.0%
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
Total Lost Time (s)		5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag					Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	Max	None	Max	Max
Act Effect Green (s)		17.4		17.4	53.6	50.8	50.8	54.5	52.7	52.7
Actuated g/C Ratio		0.21		0.21	0.64	0.61	0.61	0.65	0.63	0.63
v/c Ratio		0.37		0.74	0.12	0.32	0.02	0.11	0.77	0.01
Control Delay		12.9		47.1	7.6	10.4	0.1	6.6	17.0	0.0
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		12.9		47.1	7.6	10.4	0.1	6.6	17.0	0.0
LOS		B		D	A	B	A	A	B	A
Approach Delay		12.9		47.1		10.1			16.6	
Approach LOS		B		D		B			B	

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 83.9

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 16.7





Intersection LOS: B

Intersection Capacity Utilization 64.1%

ICU Level of Service C

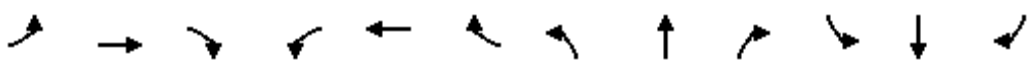
Analysis Period (min) 15

Splits and Phases: 16: Meridian Rd & Woodmen Hills Dr

		
10 s	55 s	35 s
		
10 s	55 s	35 s

Timings  
163: Meridian & Woodmen

Existing Traffic  
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑	↗	↔↔	↑↑	↗	↔↔	↑↑	↗	↔↔	↑↑	↗
Traffic Volume (vph)	360	405	64	87	592	111	63	136	24	262	404	753
Future Volume (vph)	360	405	64	87	592	111	63	136	24	262	404	753
Turn Type	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			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)	9.0	21.0		9.0	21.0	21.0	9.0	21.0		9.0	21.0	
Total Split (s)	25.0	60.0		15.0	50.0	50.0	15.0	23.0		22.0	30.0	
Total Split (%)	20.8%	50.0%		12.5%	41.7%	41.7%	12.5%	19.2%		18.3%	25.0%	
Yellow Time (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0		3.0	5.0	
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)	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	4.0	6.0		4.0	6.0	6.0	4.0	6.0		4.0	6.0	
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	Max	C-Max		Max	C-Max	C-Max	Max	Max		Max	Max	
Act Effect Green (s)	21.0	54.0	120.0	11.0	44.0	44.0	11.0	17.0	120.0	18.0	24.0	120.0
Actuated g/C Ratio	0.18	0.45	1.00	0.09	0.37	0.37	0.09	0.14	1.00	0.15	0.20	1.00
v/c Ratio	0.60	0.25	0.04	0.31	0.50	0.17	0.20	0.27	0.02	0.59	0.66	0.55
Control Delay	50.4	21.0	0.0	53.8	31.2	0.5	52.2	47.6	0.0	52.9	49.5	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.4	21.0	0.0	53.8	31.2	0.5	52.2	47.6	0.0	52.9	49.5	1.4
LOS	D	C	A	D	C	A	D	D	A	D	D	A
Approach Delay		32.2			29.4			43.8			24.6	
Approach LOS		C			C			D			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green, Master Intersection

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 28.7

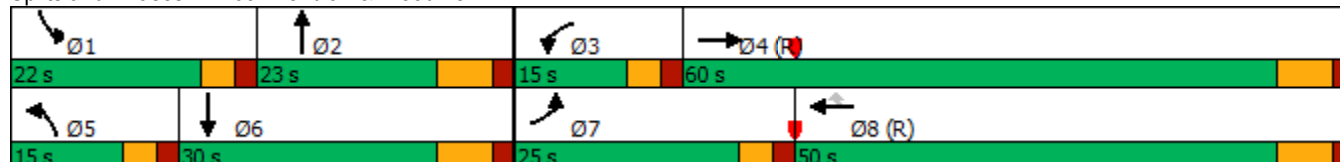
Intersection LOS: C

Intersection Capacity Utilization 57.8%

ICU Level of Service B

Analysis Period (min) 15




Splits and Phases: 163: Meridian & Woodmen



Intersection

Intersection Delay, s/veh 7.4

Intersection LOS A

























Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	103	6	2	74	4
Future Vol, veh/h	4	103	6	2	74	4
Peak Hour Factor	0.79	0.79	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	130	6	2	74	4
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left NB			WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right SB		WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	7.1	7.2	7.9
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	4%	95%
Vol Thru, %	75%	0%	5%
Vol Right, %	25%	96%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	8	107	78
LT Vol	0	4	74
Through Vol	6	0	4
RT Vol	2	103	0
Lane Flow Rate	8	135	78
Geometry Grp	1	1	1
Degree of Util (X)	0.009	0.132	0.095
Departure Headway (Hd)	4.081	3.511	4.367
Convergence, Y/N	Yes	Yes	Yes
Cap	872	1012	821
Service Time	2.128	1.566	2.393
HCM Lane V/C Ratio	0.009	0.133	0.095
HCM Control Delay	7.2	7.1	7.9
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0	0.5	0.3

# Timings 6: Meridian Rd & Stapleton Dr

Existing Traffic  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	30	115	161	44	85	188	881	205	111	520	8
Future Volume (vph)	6	30	115	161	44	85	188	881	205	111	520	8
Turn Type	Perm	NA	Perm	Perm	NA	Free	pm+pt	NA	Free	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		Free	2		Free	6		6
Detector Phase	4	4	4	8	8		5	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)	40.0	40.0	40.0	40.0	40.0		10.0	50.0		10.0	50.0	50.0
Total Split (%)	40.0%	40.0%	40.0%	40.0%	40.0%		10.0%	50.0%		10.0%	50.0%	50.0%
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	Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	Max		None	Max	Max
Act Effect Green (s)	14.4	14.4	14.4	14.4	14.4	79.6	51.2	47.3	79.6	50.1	45.1	45.1
Actuated g/C Ratio	0.18	0.18	0.18	0.18	0.18	1.00	0.64	0.59	1.00	0.63	0.57	0.57
v/c Ratio	0.02	0.09	0.30	0.65	0.13	0.05	0.35	0.46	0.14	0.29	0.26	0.01
Control Delay	25.7	26.7	7.8	42.4	27.3	0.1	7.2	11.2	0.2	7.1	9.8	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.7	26.7	7.8	42.4	27.3	0.1	7.2	11.2	0.2	7.1	9.8	0.0
LOS	C	C	A	D	C	A	A	B	A	A	A	A
Approach Delay		12.3			27.7			8.8			9.2	
Approach LOS		B			C			A			A	

## Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 79.6

Natural Cycle: 45

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 11.4







Intersection LOS: B

Intersection Capacity Utilization 58.6%

ICU Level of Service B



















Analysis Period (min) 15

Splits and Phases: 6: Meridian Rd & Stapleton Dr

		
Ø1	Ø2	Ø4
10 s	50 s	40 s
		
Ø5	Ø6	Ø8
10 s	50 s	40 s

Timings  
16: Meridian Rd & Woodmen Hills Dr

Existing Traffic  
PM Peak Hour

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	4	19	61	11	76	1268	100	22	765	17
Future Volume (vph)	4	19	61	11	76	1268	100	22	765	17
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		8	5	2		1	6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	4	4	8	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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)	35.0	35.0	35.0	35.0	10.0	55.0	55.0	10.0	55.0	55.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	10.0%	55.0%	55.0%	10.0%	55.0%	55.0%
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
Total Lost Time (s)		5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag					Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	Max	None	Max	Max
Act Effect Green (s)		10.2		10.4	57.8	57.2	57.2	55.8	53.3	53.3
Actuated g/C Ratio		0.13		0.13	0.75	0.74	0.74	0.72	0.69	0.69
v/c Ratio		0.29		0.48	0.15	0.52	0.09	0.07	0.32	0.02
Control Delay		16.7		38.6	4.1	8.0	1.9	4.0	7.6	0.0
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		16.7		38.6	4.1	8.0	1.9	4.0	7.6	0.0
LOS		B		D	A	A	A	A	A	A
Approach Delay		16.7		38.6		7.4			7.3	
Approach LOS		B		D		A			A	

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 77.3

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.52

Intersection Signal Delay: 8.8





Intersection LOS: A

Intersection Capacity Utilization 62.0%

ICU Level of Service B

























Analysis Period (min) 15

Splits and Phases: 16: Meridian Rd & Woodmen Hills Dr

		
10 s	55 s	35 s
		
10 s	55 s	35 s

Timings  
163: Meridian & Woodmen

Existing Traffic  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	755	606	78	115	517	132	108	431	94	157	321	479
Future Volume (vph)	755	606	78	115	517	132	108	431	94	157	321	479
Turn Type	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			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)	9.0	21.0		9.0	21.0	21.0	9.0	21.0		9.0	21.0	
Total Split (s)	32.0	59.0		16.0	43.0	43.0	15.0	28.0		17.0	30.0	
Total Split (%)	26.7%	49.2%		13.3%	35.8%	35.8%	12.5%	23.3%		14.2%	25.0%	
Yellow Time (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0		3.0	5.0	
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)	-2.0	-3.0		-1.0	-4.0	-3.0	-1.0	-3.0		-1.0	-3.0	
Total Lost Time (s)	3.0	4.0		4.0	3.0	4.0	4.0	4.0		4.0	4.0	
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	Max	C-Max		Max	C-Max	C-Max	Max	Max		Max	Max	
Act Effect Green (s)	29.0	55.0	120.0	12.0	40.0	39.0	11.0	24.0	120.0	13.0	26.0	120.0
Actuated g/C Ratio	0.24	0.46	1.00	0.10	0.33	0.32	0.09	0.20	1.00	0.11	0.22	1.00
v/c Ratio	0.95	0.39	0.05	0.41	0.53	0.25	0.34	0.61	0.06	0.42	0.42	0.30
Control Delay	66.0	22.3	0.1	54.5	34.3	4.4	54.4	48.0	0.1	53.9	42.5	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.0	22.3	0.1	54.5	34.3	4.4	54.4	48.0	0.1	53.9	42.5	0.5
LOS	E	C	A	D	C	A	D	D	A	D	D	A
Approach Delay		44.0			32.2			42.0			23.3	
Approach LOS		D			C			D			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 36.1

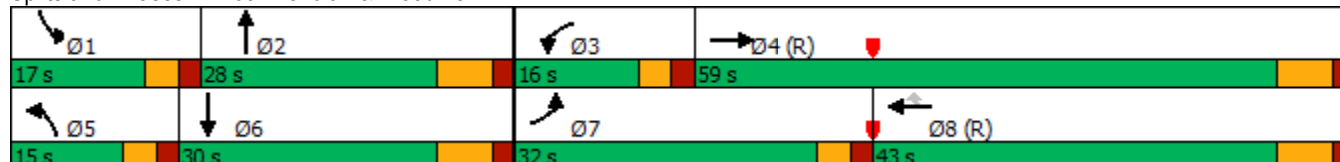
Intersection LOS: D

Intersection Capacity Utilization 65.6%

ICU Level of Service C

Analysis Period (min) 15




Splits and Phases: 163: Meridian & Woodmen



Intersection

Intersection Delay, s/veh 15.9

Intersection LOS C

























Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	322	22	4	345	15
Future Vol, veh/h	2	322	22	4	345	15
Peak Hour Factor	0.61	0.61	0.72	0.72	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	528	31	6	375	16
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left NB			WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right SB		WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	16.1	9.2	16.3
HCM LOS	C	A	C

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	1%	96%
Vol Thru, %	85%	0%	4%
Vol Right, %	15%	99%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	26	324	360
LT Vol	0	2	345
Through Vol	22	0	15
RT Vol	4	322	0
Lane Flow Rate	36	531	391
Geometry Grp	1	1	1
Degree of Util (X)	0.058	0.663	0.598
Departure Headway (Hd)	5.798	4.494	5.499
Convergence, Y/N	Yes	Yes	Yes
Cap	620	791	661
Service Time	3.815	2.591	3.501
HCM Lane V/C Ratio	0.058	0.671	0.592
HCM Control Delay	9.2	16.1	16.3
HCM Lane LOS	A	C	C
HCM 95th-tile Q	0.2	5.1	4

# Timings 6: Meridian Rd & Stapleton Dr

Short-Term Background Traffic  
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	52	346	436	109	158	219	509	110	115	1116	19
Future Volume (vph)	35	52	346	436	109	158	219	509	110	115	1116	19
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Free	pm+pt	NA	Free	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		Free	2		Free	6		6
Detector Phase	7	4	4	3	8		5	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)	8.0	9.0	9.0	8.0	9.0		9.0	9.0		9.0	9.0	9.0
Total Split (s)	10.0	23.0	23.0	20.0	33.0		17.0	47.0		10.0	40.0	40.0
Total Split (%)	10.0%	23.0%	23.0%	20.0%	33.0%		17.0%	47.0%		10.0%	40.0%	40.0%
Yellow Time (s)	3.5	3.0	3.0	3.5	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	0.5	2.0	2.0	0.5	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)	4.0	5.0	5.0	4.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	Max		None	Max	Max
Act Effect Green (s)	20.1	13.2	13.2	34.3	27.5	95.4	52.1	42.1	95.4	40.5	35.5	35.5
Actuated g/C Ratio	0.21	0.14	0.14	0.36	0.29	1.00	0.55	0.44	1.00	0.42	0.37	0.37
v/c Ratio	0.12	0.20	0.85	1.01	0.24	0.12	0.85	0.37	0.08	0.34	0.99	0.03
Control Delay	21.3	37.4	35.0	73.4	28.5	0.2	48.0	19.3	0.1	15.9	53.4	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.3	37.4	35.0	73.4	28.5	0.2	48.0	19.3	0.1	15.9	53.4	0.1
LOS	C	D	C	E	C	A	D	B	A	B	D	A
Approach Delay		34.1			50.0			24.3			49.1	
Approach LOS		C			D			C			D	

## Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 95.4

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.01

Intersection Signal Delay: 41.1

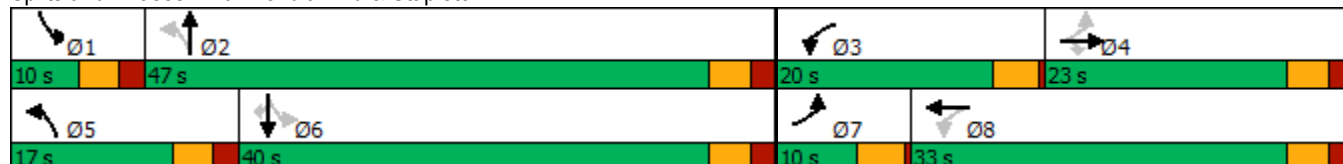
Intersection LOS: D

Intersection Capacity Utilization 88.1%

ICU Level of Service E



















Analysis Period (min) 15

Splits and Phases: 6: Meridian Rd & Stapleton Dr



# Timings 16: Meridian Rd & Woodmen Hills Dr

Short-Term Background Traffic  
AM Peak Hour

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	21	17	132	9	21	817	18	44	1884	8
Future Volume (vph)	21	17	132	9	21	817	18	44	1884	8
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		8	5	2		1	6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	4	4	8	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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)	35.0	35.0	35.0	35.0	10.0	55.0	55.0	10.0	55.0	55.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	10.0%	55.0%	55.0%	10.0%	55.0%	55.0%
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
Total Lost Time (s)		5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag					Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	Max	None	Max	Max
Act Effect Green (s)		17.2		17.2	53.6	50.9	50.9	54.6	52.8	52.8
Actuated g/C Ratio		0.21		0.21	0.64	0.61	0.61	0.65	0.63	0.63
v/c Ratio		0.38		0.75	0.12	0.40	0.02	0.11	0.92	0.01
Control Delay		13.8		48.2	7.6	11.1	0.1	6.7	24.9	0.0
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		13.8		48.2	7.6	11.1	0.1	6.7	24.9	0.0
LOS		B		D	A	B	A	A	C	A
Approach Delay		13.8		48.2		10.7			24.4	
Approach LOS		B		D		B			C	

## Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 83.7

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 21.6

Intersection LOS: C

Intersection Capacity Utilization 77.6%

ICU Level of Service D

























Analysis Period (min) 15

Splits and Phases: 16: Meridian Rd & Woodmen Hills Dr

		
Ø1	Ø2	Ø4
10 s	55 s	35 s
		
Ø5	Ø6	Ø8
10 s	55 s	35 s

Timings  
163: Meridian & Woodmen

Short-Term Background Traffic  
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	297	645	100	100	852	69	212	319	50	241	621	842
Future Volume (vph)	297	645	100	100	852	69	212	319	50	241	621	842
Turn Type	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			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)	9.0	21.0		9.0	21.0	21.0	9.0	21.0		9.0	21.0	
Total Split (s)	28.0	44.0		19.0	35.0	35.0	25.0	35.0		22.0	32.0	
Total Split (%)	23.3%	36.7%		15.8%	29.2%	29.2%	20.8%	29.2%		18.3%	26.7%	
Yellow Time (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0		3.0	5.0	
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)	-2.0	-3.0		-1.0	-4.0	-3.0	-1.0	-3.0		-1.0	-3.0	
Total Lost Time (s)	3.0	4.0		4.0	3.0	4.0	4.0	4.0		4.0	4.0	
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	Max	Max		None	None	None	None	None		None	None	
Act Effect Green (s)	25.0	45.1	111.6	9.9	32.0	31.0	13.2	25.5	111.6	15.0	27.3	111.6
Actuated g/C Ratio	0.22	0.40	1.00	0.09	0.29	0.28	0.12	0.23	1.00	0.13	0.24	1.00
v/c Ratio	0.39	0.45	0.06	0.36	0.92	0.13	0.52	0.40	0.03	0.61	0.83	0.62
Control Delay	39.1	26.3	0.1	51.5	54.1	0.5	51.1	38.5	0.0	51.5	49.9	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.1	26.3	0.1	51.5	54.1	0.5	51.1	38.5	0.0	51.5	49.9	1.8
LOS	D	C	A	D	D	A	D	D	A	D	D	A
Approach Delay		27.4			50.2			39.8			26.4	
Approach LOS		C			D			D			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 111.6

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 33.9

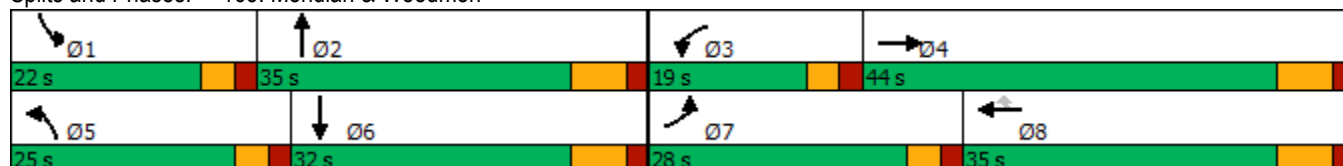
Intersection LOS: C

Intersection Capacity Utilization 68.6%

ICU Level of Service C

Analysis Period (min) 15




Splits and Phases: 163: Meridian & Woodmen



Intersection

Intersection Delay, s/veh 10.3

Intersection LOS B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	324	6	2	231	4
Future Vol, veh/h	4	324	6	2	231	4
Peak Hour Factor	0.79	0.79	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	410	6	2	231	4
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left NB			WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right SB		WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	10.3	8.1	10.5
HCM LOS	B	A	B

























Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	1%	98%
Vol Thru, %	75%	0%	2%
Vol Right, %	25%	99%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	8	328	235
LT Vol	0	4	231
Through Vol	6	0	4
RT Vol	2	324	0
Lane Flow Rate	8	415	235
Geometry Grp	1	1	1
Degree of Util (X)	0.011	0.459	0.326
Departure Headway (Hd)	4.962	3.979	4.999
Convergence, Y/N	Yes	Yes	Yes
Cap	717	905	717
Service Time	3.023	1.997	3.049
HCM Lane V/C Ratio	0.011	0.459	0.328
HCM Control Delay	8.1	10.3	10.5
HCM Lane LOS	A	B	B
HCM 95th-tile Q	0	2.4	1.4

# Timings

## 6: Meridian Rd & Stapleton Dr

# Short-Term Background Traffic

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	35	189	284	53	104	312	1106	418	128	648	8
Future Volume (vph)	6	35	189	284	53	104	312	1106	418	128	648	8
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Free	pm+pt	NA	Free	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		Free	2		Free	6		6
Detector Phase	7	4	4	3	8		5	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)	10.0	18.0	18.0	17.0	26.0		34.0	52.0		13.0	31.0	31.0
Total Split (%)	9.9%	17.8%	17.8%	16.8%	25.7%		33.7%	51.5%		12.9%	30.7%	30.7%
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	Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	Max		None	Max	Max
Act Effect Green (s)	12.3	7.3	7.3	24.3	22.3	93.8	59.1	47.0	93.8	46.8	39.3	39.3
Actuated g/C Ratio	0.13	0.08	0.08	0.26	0.24	1.00	0.63	0.50	1.00	0.50	0.42	0.42
v/c Ratio	0.03	0.24	0.55	0.81	0.12	0.07	0.64	0.68	0.29	0.50	0.44	0.01
Control Delay	26.8	44.9	8.9	50.7	30.8	0.1	13.9	20.4	0.5	19.6	21.9	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.8	44.9	8.9	50.7	30.8	0.1	13.9	20.4	0.5	19.6	21.9	0.0
LOS	C	D	A	D	C	A	B	C	A	B	C	A
Approach Delay		14.8			36.3			14.7			21.3	
Approach LOS		B			D			B			C	

## Intersection Summary

Cycle Length: 101

Actuated Cycle Length: 93.8

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 19.0

Intersection LOS: B

Intersection Capacity Utilization 72.6%

ICU Level of Service C



















Analysis Period (min) 15

## Splits and Phases: 6: Meridian Rd & Stapleton Dr



Timings  
16: Meridian Rd & Woodmen Hills Dr

Short-Term Background Traffic  
PM Peak Hour

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	4	19	61	11	76	1830	100	22	1090	17
Future Volume (vph)	4	19	61	11	76	1830	100	22	1090	17
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		8	5	2		1	6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	4	4	8	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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)	35.0	35.0	35.0	35.0	10.0	55.0	55.0	10.0	55.0	55.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	10.0%	55.0%	55.0%	10.0%	55.0%	55.0%
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
Total Lost Time (s)		5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag					Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	Max	None	Max	Max
Act Effect Green (s)		10.2		10.4	57.8	57.2	57.2	55.8	53.3	53.3
Actuated g/C Ratio		0.13		0.13	0.75	0.74	0.74	0.72	0.69	0.69
v/c Ratio		0.29		0.48	0.21	0.74	0.09	0.11	0.46	0.02
Control Delay		16.7		38.6	4.8	12.6	1.9	4.6	8.8	0.0
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		16.7		38.6	4.8	12.6	1.9	4.6	8.8	0.0
LOS		B		D	A	B	A	A	A	A
Approach Delay		16.7		38.6		11.8			8.6	
Approach LOS		B		D		B			A	

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 77.3

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 11.6

Intersection LOS: B

Intersection Capacity Utilization 77.5%

ICU Level of Service D

























Analysis Period (min) 15

Splits and Phases: 16: Meridian Rd & Woodmen Hills Dr

		
Ø1	Ø2	Ø4
10 s	55 s	35 s
		
Ø5	Ø6	Ø8
10 s	55 s	35 s

Timings  
163: Meridian & Woodmen

Short-Term Background Traffic  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	633	669	200	150	753	116	279	767	175	225	566	398
Future Volume (vph)	633	669	200	150	753	116	279	767	175	225	566	398
Turn Type	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			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)	9.0	21.0		9.0	21.0	21.0	9.0	21.0		9.0	21.0	
Total Split (s)	30.0	44.0		19.0	33.0	33.0	25.0	35.0		22.0	32.0	
Total Split (%)	25.0%	36.7%		15.8%	27.5%	27.5%	20.8%	29.2%		18.3%	26.7%	
Yellow Time (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0		3.0	5.0	
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)	-2.0	-3.0		-1.0	-4.0	-3.0	-1.0	-3.0		-1.0	-3.0	
Total Lost Time (s)	3.0	4.0		4.0	3.0	4.0	4.0	4.0		4.0	4.0	
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	Max	Max		None	None	None	None	None		None	None	
Act Effect Green (s)	27.0	43.3	115.7	11.6	29.9	28.9	16.1	30.5	115.7	14.2	28.6	115.7
Actuated g/C Ratio	0.23	0.37	1.00	0.10	0.26	0.25	0.14	0.26	1.00	0.12	0.25	1.00
v/c Ratio	0.83	0.53	0.13	0.46	0.87	0.23	0.61	0.86	0.12	0.56	0.68	0.26
Control Delay	52.8	31.0	0.2	53.6	52.6	2.6	52.7	51.9	0.1	53.3	44.5	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.8	31.0	0.2	53.6	52.6	2.6	52.7	51.9	0.1	53.3	44.5	0.4
LOS	D	C	A	D	D	A	D	D	A	D	D	A
Approach Delay		36.1			47.1			44.6			31.4	
Approach LOS		D			D			D			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 115.7

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 39.3









Intersection LOS: D

Intersection Capacity Utilization 79.8%

ICU Level of Service D

Analysis Period (min) 15





Splits and Phases: 163: Meridian & Woodmen

			
Ø1	Ø2	Ø3	Ø4
22 s	35 s	19 s	44 s
			
Ø5	Ø6	Ø7	Ø8
25 s	32 s	30 s	33 s

Intersection

Intersection Delay, s/veh 25

Intersection LOS C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	176	0	2	59	322	0	22	4	345	15	3
Future Vol, veh/h	9	176	0	2	59	322	0	22	4	345	15	3
Peak Hour Factor	0.95	0.95	0.95	0.61	0.95	0.61	0.95	0.72	0.72	0.92	0.92	0.95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	185	0	3	62	528	0	31	6	375	16	3
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

























Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left SB		NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right NB		SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	12.8	31.7	10.7	22.4
HCM LOS	B	D	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	5%	1%	95%
Vol Thru, %	85%	95%	15%	4%
Vol Right, %	15%	0%	84%	1%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	26	185	383	363
LT Vol	0	9	2	345
Through Vol	22	176	59	15
RT Vol	4	0	322	3
Lane Flow Rate	36	195	593	394
Geometry Grp	1	1	1	1
Degree of Util (X)	0.071	0.348	0.858	0.69
Departure Headway (Hd)	7.119	6.44	5.204	6.299
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	505	561	688	568
Service Time	5.133	4.443	3.302	4.398
HCM Lane V/C Ratio	0.071	0.348	0.862	0.694
HCM Control Delay	10.7	12.8	31.7	22.4
HCM Lane LOS	B	B	D	C
HCM 95th-tile Q	0.2	1.5	9.9	5.4

Timings  
6: Meridian Rd & Stapleton Dr

What would LOS  
be with dual left?

Short-Term Total Traffic  
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	65	499	436	113	158	270	509	110	115	1116	23
Future Volume (vph)	46	65	499	436	113	158	270	509	110	115	1116	23
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Free	pm+pt	NA	Free	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		Free	2		Free	6		6
Detector Phase	7	4	4	3	8		5	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)	10.0	27.0	27.0	15.0	32.0		18.0	48.0		10.0	40.0	40.0
Total Split (%)	10.0%	27.0%	27.0%	15.0%	32.0%		18.0%	48.0%		10.0%	40.0%	40.0%
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	Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	Max		None	Max	Max
Act Effect Green (s)	27.0	22.0	22.0	37.0	29.0	100.0	53.0	43.0	100.0	40.0	35.0	35.0
Actuated g/C Ratio	0.27	0.22	0.22	0.37	0.29	1.00	0.53	0.43	1.00	0.40	0.35	0.35
v/c Ratio	0.14	0.17	1.04	1.01	0.23	0.11	0.96	0.36	0.08	0.33	0.98	0.04
Control Delay	22.0	33.0	77.2	75.0	29.5	0.1	69.9	20.1	0.1	16.1	54.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.0	33.0	77.2	75.0	29.5	0.1	69.9	20.1	0.1	16.1	54.2	0.1
LOS	C	C	E	E	C	A	E	C	A	B	D	A
Approach Delay		68.1			51.0			32.7			49.7	
Approach LOS		E			D			C			D	

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.04

Intersection Signal Delay: 48.7

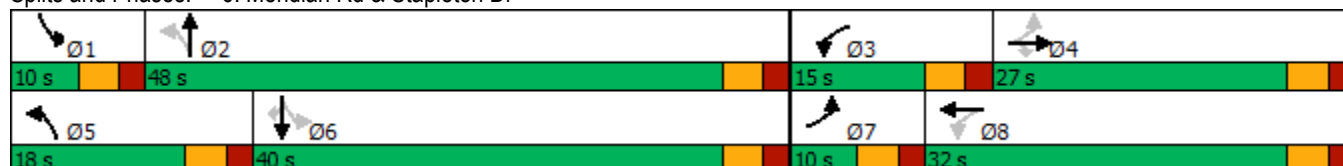
Intersection LOS: D

Intersection Capacity Utilization 98.4%

ICU Level of Service F



















Analysis Period (min) 15

Splits and Phases: 6: Meridian Rd & Stapleton Dr



Timings  
16: Meridian Rd & Woodmen Hills Dr

Short-Term Total Traffic  
AM Peak Hour

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	21	18	132	9	32	867	18	47	2033	8
Future Volume (vph)	21	18	132	9	32	867	18	47	2033	8
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		8	5	2		1	6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	4	4	8	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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)	35.0	35.0	35.0	35.0	10.0	55.0	55.0	10.0	55.0	55.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	10.0%	55.0%	55.0%	10.0%	55.0%	55.0%
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
Total Lost Time (s)		5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag					Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	Max	None	Max	Max
Act Effect Green (s)		18.7		18.7	53.7	50.9	50.9	53.7	50.9	50.9
Actuated g/C Ratio		0.22		0.22	0.63	0.60	0.60	0.63	0.60	0.60
v/c Ratio		0.45		0.79	0.17	0.43	0.02	0.13	1.05	0.01
Control Delay		17.5		51.9	8.9	12.2	0.1	7.5	54.1	0.0
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		17.5		51.9	8.9	12.2	0.1	7.5	54.1	0.0
LOS		B		D	A	B	A	A	D	A
Approach Delay		17.5		51.9		11.8			52.9	
Approach LOS		B		D		B			D	

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 85.3

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.05

Intersection Signal Delay: 40.1

Intersection LOS: D

Intersection Capacity Utilization 88.8%

ICU Level of Service E

























Analysis Period (min) 15

Splits and Phases: 16: Meridian Rd & Woodmen Hills Dr

		
Ø1	Ø2	Ø4
10 s	55 s	35 s
		
Ø5	Ø6	Ø8
10 s	55 s	35 s

Timings  
163: Meridian & Woodmen

Short-Term Total Traffic  
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	334	645	100	100	852	71	212	341	50	248	686	951
Future Volume (vph)	334	645	100	100	852	71	212	341	50	248	686	951
Turn Type	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			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)	9.0	21.0		9.0	21.0	21.0	9.0	21.0		9.0	21.0	
Total Split (s)	27.0	44.0		19.0	36.0	36.0	24.0	35.0		22.0	33.0	
Total Split (%)	22.5%	36.7%		15.8%	30.0%	30.0%	20.0%	29.2%		18.3%	27.5%	
Yellow Time (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0		3.0	5.0	
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)	-2.0	-3.0		-1.0	-4.0	-3.0	-1.0	-3.0		-1.0	-3.0	
Total Lost Time (s)	3.0	4.0		4.0	3.0	4.0	4.0	4.0		4.0	4.0	
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	Max	Max		None	None	None	None	None		None	None	
Act Effect Green (s)	24.0	45.0	113.3	10.0	33.0	32.0	13.3	27.0	113.3	15.3	29.0	113.3
Actuated g/C Ratio	0.21	0.40	1.00	0.09	0.29	0.28	0.12	0.24	1.00	0.14	0.26	1.00
v/c Ratio	0.46	0.46	0.06	0.36	0.91	0.14	0.53	0.40	0.03	0.62	0.88	0.70
Control Delay	41.8	27.2	0.1	52.1	52.5	0.5	51.9	38.5	0.0	52.5	53.3	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.8	27.2	0.1	52.1	52.5	0.5	51.9	38.5	0.0	52.5	53.3	2.6
LOS	D	C	A	D	D	A	D	D	A	D	D	A
Approach Delay		29.2			48.9			40.0			27.6	
Approach LOS		C			D			D			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 113.3

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 34.2

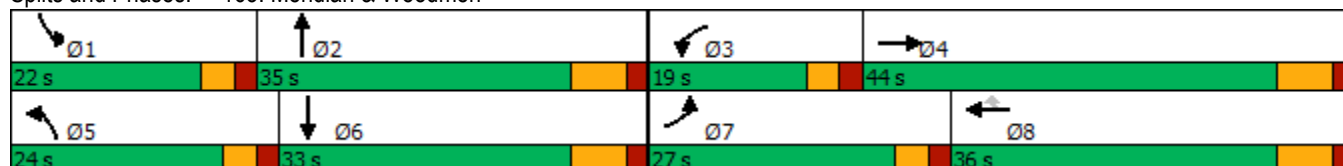
Intersection LOS: C

Intersection Capacity Utilization 71.4%

ICU Level of Service C





Analysis Period (min) 15

Splits and Phases: 163: Meridian & Woodmen



Intersection

Intersection Delay, s/veh 19  
Intersection LOS C

























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	116	0	4	197	324	0	6	2	231	4	10
Future Vol, veh/h	6	116	0	4	197	324	0	6	2	231	4	10
Peak Hour Factor	0.95	0.95	0.95	0.79	0.95	0.79	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	122	0	5	207	410	0	6	2	243	4	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left SB		NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right NB		SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	10	23.3	9.3	13.3
HCM LOS	A	C	A	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	5%	1%	94%
Vol Thru, %	75%	95%	38%	2%
Vol Right, %	25%	0%	62%	4%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	8	122	525	245
LT Vol	0	6	4	231
Through Vol	6	116	197	4
RT Vol	2	0	324	10
Lane Flow Rate	8	128	623	258
Geometry Grp	1	1	1	1
Degree of Util (X)	0.014	0.199	0.799	0.425
Departure Headway (Hd)	6.169	5.58	4.623	5.927
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	578	642	791	606
Service Time	4.232	3.624	2.623	3.968
HCM Lane V/C Ratio	0.014	0.199	0.788	0.426
HCM Control Delay	9.3	10	23.3	13.3
HCM Lane LOS	A	A	C	B
HCM 95th-tile Q	0	0.7	8.4	2.1

Timings  
6: Meridian Rd & Stapleton Dr

Short-Term Total Traffic  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	44	290	284	68	104	483	1106	418	128	648	20
Future Volume (vph)	13	44	290	284	68	104	483	1106	418	128	648	20
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Free	pm+pt	NA	Free	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		Free	2		Free	6		6
Detector Phase	7	4	4	3	8		5	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)	10.0	18.0	18.0	17.0	26.0		34.0	52.0		13.0	31.0	31.0
Total Split (%)	9.9%	17.8%	17.8%	16.8%	25.7%		33.7%	51.5%		12.9%	30.7%	30.7%
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	Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	Max		None	Max	Max
Act Effect Green (s)	13.3	8.3	8.3	25.3	23.4	94.9	59.5	47.1	94.9	37.3	29.8	29.8
Actuated g/C Ratio	0.14	0.09	0.09	0.27	0.25	1.00	0.63	0.50	1.00	0.39	0.31	0.31
v/c Ratio	0.06	0.27	0.72	0.79	0.15	0.07	0.86	0.69	0.29	0.51	0.58	0.03
Control Delay	26.8	44.4	16.0	47.9	30.4	0.1	31.2	21.3	0.5	22.5	31.5	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.8	44.4	16.0	47.9	30.4	0.1	31.2	21.3	0.5	22.5	31.5	0.1
LOS	C	D	B	D	C	A	C	C	A	C	C	A
Approach Delay		20.0			34.4			19.3			29.2	
Approach LOS		B			C			B			C	

Intersection Summary

Cycle Length: 101

Actuated Cycle Length: 94.9

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 23.3

Intersection LOS: C

Intersection Capacity Utilization 79.6%

ICU Level of Service D



















Analysis Period (min) 15

Splits and Phases: 6: Meridian Rd & Stapleton Dr



Timings  
16: Meridian Rd & Woodmen Hills Dr

Short-Term Total Traffic  
PM Peak Hour

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	4	20	61	12	111	1997	100	24	1188	17
Future Volume (vph)	4	20	61	12	111	1997	100	24	1188	17
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		8	5	2		1	6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	4	4	8	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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)	35.0	35.0	35.0	35.0	10.0	55.0	55.0	10.0	55.0	55.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	10.0%	55.0%	55.0%	10.0%	55.0%	55.0%
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
Total Lost Time (s)		5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag					Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	Max	None	Max	Max
Act Effect Green (s)		10.5		10.7	57.0	56.6	56.6	55.1	52.8	52.8
Actuated g/C Ratio		0.14		0.14	0.74	0.74	0.74	0.72	0.69	0.69
v/c Ratio		0.35		0.53	0.34	0.81	0.09	0.11	0.50	0.02
Control Delay		15.4		41.1	6.4	15.4	1.9	4.8	9.5	0.0
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		15.4		41.1	6.4	15.4	1.9	4.8	9.5	0.0
LOS		B		D	A	B	A	A	A	A
Approach Delay		15.4		41.1		14.3			9.3	
Approach LOS		B		D		B			A	

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 76.7

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 13.4

Intersection LOS: B

Intersection Capacity Utilization 82.4%

ICU Level of Service E

























Analysis Period (min) 15

Splits and Phases: 16: Meridian Rd & Woodmen Hills Dr

		
10 s	55 s	35 s
		
10 s	55 s	35 s

Timings  
163: Meridian & Woodmen

Short-Term Total Traffic  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	755	669	200	150	753	123	279	840	175	229	609	470
Future Volume (vph)	755	669	200	150	753	123	279	840	175	229	609	470
Turn Type	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			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)	9.0	21.0		9.0	21.0	21.0	9.0	21.0		9.0	21.0	
Total Split (s)	30.0	43.0		20.0	33.0	33.0	25.0	36.0		21.0	32.0	
Total Split (%)	25.0%	35.8%		16.7%	27.5%	27.5%	20.8%	30.0%		17.5%	26.7%	
Yellow Time (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0		3.0	5.0	
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)	-2.0	-3.0		-1.0	-4.0	-3.0	-1.0	-4.0		-1.0	-3.0	
Total Lost Time (s)	3.0	4.0		4.0	3.0	4.0	4.0	3.0		4.0	4.0	
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	Max	Max		None	None	None	None	None		None	None	
Act Effect Green (s)	27.0	43.3	117.2	11.7	30.0	29.0	16.3	32.9	117.2	14.2	29.9	117.2
Actuated g/C Ratio	0.23	0.37	1.00	0.10	0.26	0.25	0.14	0.28	1.00	0.12	0.26	1.00
v/c Ratio	1.01	0.54	0.13	0.46	0.88	0.25	0.62	0.89	0.12	0.58	0.71	0.31
Control Delay	78.6	31.7	0.2	54.2	54.0	3.1	53.3	52.8	0.1	54.5	45.3	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.6	31.7	0.2	54.2	54.0	3.1	53.3	52.8	0.1	54.5	45.3	0.5
LOS	E	C	A	D	D	A	D	D	A	D	D	A
Approach Delay		49.6			48.0			45.8			30.8	
Approach LOS		D			D			D			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 117.2

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.01

Intersection Signal Delay: 43.7

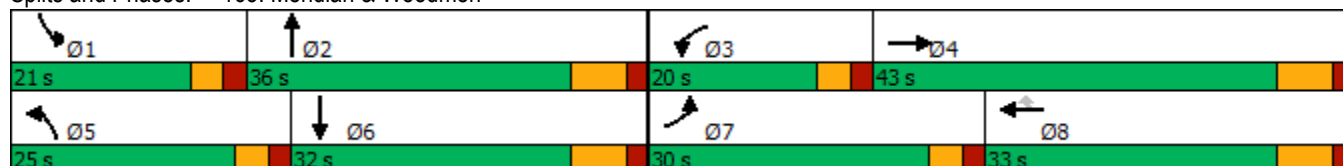
Intersection LOS: D

Intersection Capacity Utilization 85.4%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 163: Meridian & Woodmen



























Note: long-term models not reviewed pending confirmation of directional distribution.

## Timings

### 1: Banning Lewis Pkwy & Briargate Pkwy

2040 Background Traffic

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	168	530	329	866	55	650	105	222	40	155	25
Future Volume (vph)	55	168	530	329	866	55	650	105	222	40	155	25
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			Free			Free			Free			Free
Detector Phase	5	2		1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	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	
Total Split (s)	13.0	39.0		30.0	56.0		27.0	30.0		11.0	14.0	
Total Split (%)	11.8%	35.5%		27.3%	50.9%		24.5%	27.3%		10.0%	12.7%	
Yellow Time (s)	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	
Lost Time Adjust (s)	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	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	None		None	None	
Act Effect Green (s)	6.9	18.9	82.6	13.5	28.5	82.6	21.2	28.7	82.6	6.0	8.5	82.6
Actuated g/C Ratio	0.08	0.23	1.00	0.16	0.35	1.00	0.26	0.35	1.00	0.07	0.10	1.00
v/c Ratio	0.20	0.22	0.35	0.60	0.73	0.04	0.75	0.09	0.15	0.17	0.45	0.02
Control Delay	40.9	26.5	0.6	38.4	28.3	0.0	36.6	23.7	0.2	42.0	42.1	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.9	26.5	0.6	38.4	28.3	0.0	36.6	23.7	0.2	42.0	42.1	0.0
LOS	D	C	A	D	C	A	D	C	A	D	D	A
Approach Delay		9.3			29.7			26.8			37.4	
Approach LOS		A			C			C			D	

#### Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 82.6

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 24.4

Intersection LOS: C

Intersection Capacity Utilization 66.8%

ICU Level of Service C

Analysis Period (min) 15

#### Splits and Phases: 1: Banning Lewis Pkwy & Briargate Pkwy

























HCM 6th Roundabout  
3: Woodmen Hills Dr/Raygor Rd & Briargate Pkwy

2040 Background Traffic  
AM Peak Hour

Intersection									
Intersection Delay, s/veh 6.8									
Intersection LOS A									
Approach	EB		WB		NB		SB		
Entry Lanes	2		2		2		2		
Conflicting Circle Lanes	2		2		2		2		
Adj Approach Flow, veh/h	452		1253		53		16		
Demand Flow Rate, veh/h	461		1278		54		16		
Vehicles Circulating, veh/h	4		58		420		1331		
Vehicles Exiting, veh/h	1343		416		45		5		
Ped Vol Crossing Leg, #/h	0		0		0		0		
Ped Cap Adj	1.000		1.000		1.000		1.000		
Approach Delay, s/veh	4.0		7.8		4.5		8.5		
Approach LOS	A		A		A		A		
Lane	Left	Right	Left	Right	Left	Right	Left	Right	
Designated Moves	LT	TR	LT	TR	LT	R	LT	R	
Assumed Moves	LT	TR	LT	TR	LT	R	LT	R	
RT Channelized									
Lane Util	0.471	0.529	0.470	0.530	1.000	0.000	0.250	0.750	
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.667	2.535	
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.645	4.328	
Entry Flow, veh/h	217	244	601	677	54	0	4	12	
Cap Entry Lane, veh/h	1345	1415	1280	1352	917	994	397	458	
Entry HV Adj Factor	0.979	0.982	0.980	0.981	0.981	1.000	1.000	1.000	
Flow Entry, veh/h	212	240	589	664	53	0	4	12	
Cap Entry, veh/h	1316	1389	1254	1326	900	994	397	458	
V/C Ratio	0.161	0.172	0.470	0.501	0.059	0.000	0.010	0.026	
Control Delay, s/veh	4.1	4.0	7.7	7.9	4.5	3.6	9.2	8.2	
LOS	A	A	A	A	A	A	A	A	
95th %tile Queue, veh	1	1	3	3	0	0	0	0	

Timings  
5: Towner Ave & Briargate Pkwy

2040 Background Traffic  
AM Peak Hour

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	252	121	15	5	872	112	50	19	67	19	268
Future Volume (vph)	252	121	15	5	872	112	50	19	67	19	268
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	5	2		1	6			8		4	
Permitted Phases	2		2	6		6	8		4		4
Detector Phase	5	2	2	1	6	6	8	8	4	4	4
Switch Phase											
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	10.0	65.0	65.0	10.0	65.0	65.0	25.0	25.0	25.0	25.0	25.0
Total Split (%)	10.0%	65.0%	65.0%	10.0%	65.0%	65.0%	25.0%	25.0%	25.0%	25.0%	25.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None
Act Effect Green (s)	80.3	78.7	78.7	74.1	68.5	68.5	11.3	11.3	11.3	11.3	11.3
Actuated g/C Ratio	0.80	0.79	0.79	0.74	0.68	0.68	0.11	0.11	0.11	0.11	0.11
v/c Ratio	0.54	0.05	0.01	0.01	0.38	0.11	0.34	0.15	0.46	0.09	0.73
Control Delay	6.9	3.6	0.0	3.2	7.9	1.7	44.7	28.0	49.3	37.8	20.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.9	3.6	0.0	3.2	7.9	1.7	44.7	28.0	49.3	37.8	20.4
LOS	A	A	A	A	A	A	D	C	D	D	C
Approach Delay		5.6			7.2			38.4		26.8	
Approach LOS		A			A			D		C	

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

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

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 12.1

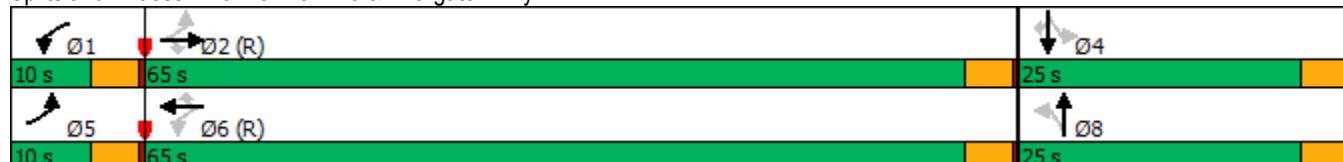
Intersection LOS: B

Intersection Capacity Utilization 58.4%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 5: Towner Ave & Briargate Pkwy



Timings  
6: Meridian Rd & Briargate Pkwy/Stapleton Dr

2040 Background Traffic  
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↱	↕↕	↱	↰↱	↕↕	↱	↰↱	↕↕	↱	↰↱	↕↕	↱
Traffic Volume (vph)	147	753	225	405	1270	156	255	225	202	51	741	343
Future Volume (vph)	147	753	225	405	1270	156	255	225	202	51	741	343
Turn Type	Prot	NA	Perm	Prot	NA	Free	Prot	NA	Free	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			Free			Free	6		6
Detector Phase	7	4	4	3	8		5	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)	13.0	34.0	34.0	22.0	43.0		15.0	34.0		10.0	29.0	29.0
Total Split (%)	13.0%	34.0%	34.0%	22.0%	43.0%		15.0%	34.0%		10.0%	29.0%	29.0%
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	Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	None		None	None	None
Act Effect Green (s)	7.8	30.1	30.1	15.7	38.0	99.2	9.9	30.5	99.2	28.5	23.5	23.5
Actuated g/C Ratio	0.08	0.30	0.30	0.16	0.38	1.00	0.10	0.31	1.00	0.29	0.24	0.24
v/c Ratio	0.56	0.72	0.38	0.76	0.96	0.10	0.76	0.21	0.13	0.15	0.90	0.66
Control Delay	52.7	35.7	9.0	49.6	46.9	0.1	59.0	27.0	0.2	20.8	52.1	21.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.7	35.7	9.0	49.6	46.9	0.1	59.0	27.0	0.2	20.8	52.1	21.2
LOS	D	D	A	D	D	A	E	C	A	C	D	C
Approach Delay		32.6			43.5			31.0			41.4	
Approach LOS		C			D			C			D	

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 99.2

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 38.6

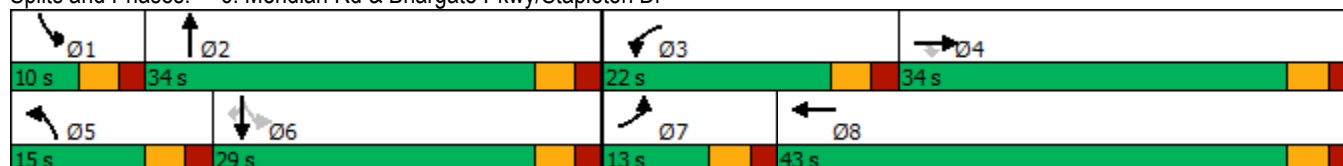
Intersection LOS: D

Intersection Capacity Utilization 83.7%

ICU Level of Service E



















Analysis Period (min) 15

Splits and Phases: 6: Meridian Rd & Briargate Pkwy/Stapleton Dr



Timings  
16: Meridian Rd & Woodmen Hills Dr

2040 Background Traffic  
AM Peak Hour

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	18	33	99	53	16	630	13	33	1331	7
Future Volume (vph)	18	33	99	53	16	630	13	33	1331	7
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		8	5	2		1	6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	4	4	8	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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)	30.0	30.0	30.0	30.0	10.0	60.0	60.0	10.0	60.0	60.0
Total Split (%)	30.0%	30.0%	30.0%	30.0%	10.0%	60.0%	60.0%	10.0%	60.0%	60.0%
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
Total Lost Time (s)		5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag					Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None	None
Act Effect Green (s)		15.5		15.5	36.3	34.9	34.9	36.3	34.9	34.9
Actuated g/C Ratio		0.24		0.24	0.56	0.54	0.54	0.56	0.54	0.54
v/c Ratio		0.29		0.55	0.07	0.34	0.02	0.07	0.71	0.01
Control Delay		16.4		31.0	6.4	9.7	0.0	6.2	14.5	0.0
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		16.4		31.0	6.4	9.7	0.0	6.2	14.5	0.0
LOS		B		C	A	A	A	A	B	A
Approach Delay		16.4		31.0		9.5			14.2	
Approach LOS		B		C		A			B	

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 64.6

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 14.4

Intersection LOS: B

Intersection Capacity Utilization 62.1%

ICU Level of Service B

























Analysis Period (min) 15

Splits and Phases: 16: Meridian Rd & Woodmen Hills Dr

		
10 s	60 s	30 s
		
10 s	60 s	30 s

Timings  
163: Meridian Rd & Woodmen Rd

2040 Background Traffic  
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	457	520	175	150	884	144	328	287	100	229	785	1041
Future Volume (vph)	457	520	175	150	884	144	328	287	100	229	785	1041
Turn Type	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Free	Prot	NA	Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			Free			6			Free			Free
Detector Phase	5	2		1	6	6	3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	11.5		10.0	11.5	11.5	10.0	11.5		10.0	11.5	
Total Split (s)	22.0	45.0		17.0	40.0	40.0	17.0	35.0		23.0	41.0	
Total Split (%)	18.3%	37.5%		14.2%	33.3%	33.3%	14.2%	29.2%		19.2%	34.2%	
Yellow Time (s)	3.0	4.5		3.0	4.5	4.5	3.0	4.5		3.0	4.5	
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)	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	4.0	5.5		4.0	5.5	5.5	4.0	5.5		4.0	5.5	
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	Min		None	Min	Min	None	None		None	None	
Act Effect Green (s)	18.1	40.2	115.3	11.2	33.3	33.3	13.0	30.7	115.3	14.2	31.8	115.3
Actuated g/C Ratio	0.16	0.35	1.00	0.10	0.29	0.29	0.11	0.27	1.00	0.12	0.28	1.00
v/c Ratio	0.90	0.43	0.11	0.46	0.88	0.26	0.86	0.31	0.06	0.56	0.82	0.67
Control Delay	69.0	30.9	0.1	54.6	50.9	4.5	73.3	35.5	0.1	53.2	47.0	2.3
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	69.0	30.9	0.1	54.6	50.9	4.5	73.3	35.5	0.1	53.2	47.0	2.3
LOS	E	C	A	D	D	A	E	D	A	D	D	A
Approach Delay		41.7			45.7			47.9			25.0	
Approach LOS		D			D			D			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 115.3

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 36.8

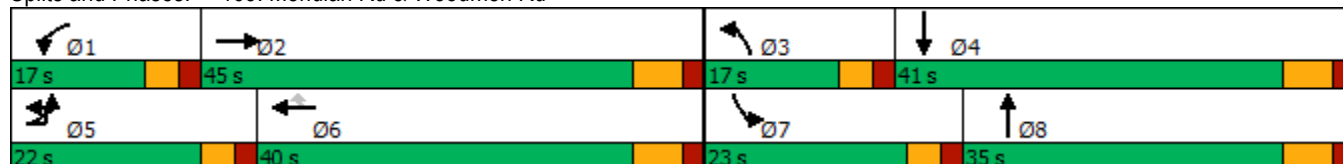
Intersection LOS: D

Intersection Capacity Utilization 84.8%

ICU Level of Service E

























Analysis Period (min) 15

Splits and Phases: 163: Meridian Rd & Woodmen Rd



# Timings 1: Banning Lewis Pkwy & Briargate Pkwy

2040 Background Traffic  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	135	901	595	153	403	135	685	340	399	130	335	130
Future Volume (vph)	135	901	595	153	403	135	685	340	399	130	335	130
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			Free			Free			Free			Free
Detector Phase	5	2		1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	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	
Total Split (s)	13.0	46.0		23.0	56.0		24.0	30.0		11.0	17.0	
Total Split (%)	11.8%	41.8%		20.9%	50.9%		21.8%	27.3%		10.0%	15.5%	
Yellow Time (s)	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	
Lost Time Adjust (s)	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	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	None		None	None	
Act Effect Green (s)	7.8	30.2	91.2	9.6	32.0	91.2	19.2	25.2	91.2	6.1	12.0	91.2
Actuated g/C Ratio	0.09	0.33	1.00	0.11	0.35	1.00	0.21	0.28	1.00	0.07	0.13	1.00
v/c Ratio	0.49	0.78	0.40	0.43	0.34	0.09	0.97	0.37	0.27	0.60	0.76	0.09
Control Delay	47.9	32.8	0.7	43.5	22.0	0.1	64.8	29.6	0.4	55.6	51.3	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.9	32.8	0.7	43.5	22.0	0.1	64.8	29.6	0.4	55.6	51.3	0.1
LOS	D	C	A	D	C	A	E	C	A	E	D	A
Approach Delay		22.2			22.4			38.0			41.1	
Approach LOS		C			C			D			D	

## Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 91.2

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.97

Intersection Signal Delay: 30.0

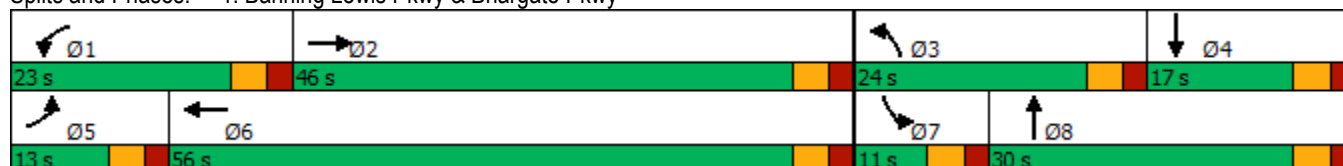
Intersection LOS: C

Intersection Capacity Utilization 74.7%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: Banning Lewis Pkwy & Briargate Pkwy

























HCM 6th Roundabout  
3: Woodmen Hills Dr/Raygor Rd & Briargate Pkwy

2040 Background Traffic  
PM Peak Hour

Intersection									
Intersection Delay, s/veh 7.7									
Intersection LOS A									
Approach	EB		WB		NB		SB		
Entry Lanes	2		2		2		2		
Conflicting Circle Lanes	2		2		2		2		
Adj Approach Flow, veh/h	1505		684		41		10		
Demand Flow Rate, veh/h	1535		698		42		10		
Vehicles Circulating, veh/h	3		55		1490		735		
Vehicles Exiting, veh/h	742		1477		48		18		
Ped Vol Crossing Leg, #/h	0		0		0		0		
Ped Cap Adj	1.000		1.000		1.000		1.000		
Approach Delay, s/veh	8.7		5.1		12.9		5.0		
Approach LOS	A		A		B		A		
Lane	Left	Right	Left	Right	Left	Right	Left	Right	
Designated Moves	LT	TR	LT	TR	LT	R	LT	R	
Assumed Moves	LT	TR	LT	TR	LT	R	LT	R	
RT Channelized									
Lane Util	0.470	0.530	0.470	0.530	1.000	0.000	0.300	0.700	
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.667	2.535	
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.645	4.328	
Entry Flow, veh/h	721	814	328	370	42	0	3	7	
Cap Entry Lane, veh/h	1346	1417	1283	1355	343	400	687	760	
Entry HV Adj Factor	0.981	0.980	0.981	0.980	0.976	1.000	1.000	1.000	
Flow Entry, veh/h	707	798	322	363	41	0	3	7	
Cap Entry, veh/h	1321	1388	1258	1329	335	400	687	760	
V/C Ratio	0.536	0.575	0.256	0.273	0.123	0.000	0.004	0.009	
Control Delay, s/veh	8.5	8.9	5.1	5.1	12.9	9.0	5.3	4.8	
LOS	A	A	A	A	B	A	A	A	
95th %tile Queue, veh	3	4	1	1	0	0	0	0	

# Timings 5: Towner Ave & Briargate Pkwy

2040 Background Traffic  
PM Peak Hour

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	299	1027	50	29	434	131	25	2	108	2	191
Future Volume (vph)	299	1027	50	29	434	131	25	2	108	2	191
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	5	2		1	6			8		4	
Permitted Phases	2		2	6		6	8		4		4
Detector Phase	5	2	2	1	6	6	8	8	4	4	4
Switch Phase											
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	10.0	65.0	65.0	10.0	65.0	65.0	25.0	25.0	25.0	25.0	25.0
Total Split (%)	10.0%	65.0%	65.0%	10.0%	65.0%	65.0%	25.0%	25.0%	25.0%	25.0%	25.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None
Act Effect Green (s)	77.6	72.2	72.2	71.5	65.5	65.5	13.7	13.7	13.7	13.7	13.7
Actuated g/C Ratio	0.78	0.72	0.72	0.72	0.66	0.66	0.14	0.14	0.14	0.14	0.14
v/c Ratio	0.43	0.42	0.05	0.08	0.20	0.13	0.14	0.10	0.61	0.01	0.52
Control Delay	5.6	7.5	2.1	3.9	7.7	1.7	37.1	15.7	53.2	33.5	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.6	7.5	2.1	3.9	7.7	1.7	37.1	15.7	53.2	33.5	10.2
LOS	A	A	A	A	A	A	D	B	D	C	B
Approach Delay		6.9			6.2			26.8		25.8	
Approach LOS		A			A			C		C	

## Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

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

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 9.6

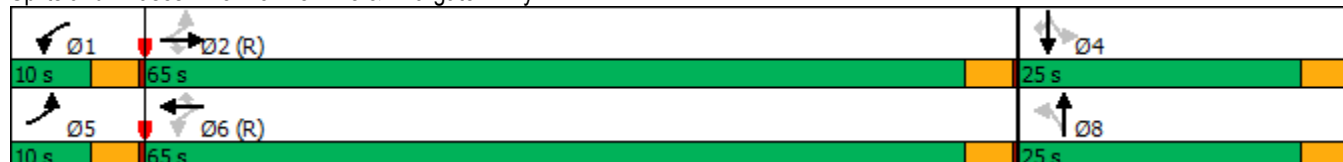
Intersection LOS: A

Intersection Capacity Utilization 54.4%

ICU Level of Service A

























Analysis Period (min) 15

Splits and Phases: 5: Towner Ave & Briargate Pkwy



Timings  
6: Meridian Rd & Briargate Pkwy

2040 Background Traffic  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	450	1091	265	332	890	184	315	457	450	92	265	275
Future Volume (vph)	450	1091	265	332	890	184	315	457	450	92	265	275
Turn Type	Prot	NA	Perm	Prot	NA	Free	Prot	NA	Free	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			Free			Free	6		6
Detector Phase	7	4	4	3	8		5	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	42.0	42.0	18.0	38.0		20.0	29.0		11.0	20.0	20.0
Total Split (%)	22.0%	42.0%	42.0%	18.0%	38.0%		20.0%	29.0%		11.0%	20.0%	20.0%
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	Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	None		None	None	None
Act Effect Green (s)	15.9	34.2	34.2	12.4	30.8	92.4	13.2	22.1	92.4	18.4	12.3	12.3
Actuated g/C Ratio	0.17	0.37	0.37	0.13	0.33	1.00	0.14	0.24	1.00	0.20	0.13	0.13
v/c Ratio	0.78	0.85	0.37	0.73	0.77	0.12	0.66	0.55	0.29	0.40	0.57	0.62
Control Delay	48.0	34.7	6.8	50.2	33.4	0.2	45.6	35.1	0.5	29.4	43.7	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.0	34.7	6.8	50.2	33.4	0.2	45.6	35.1	0.5	29.4	43.7	11.5
LOS	D	C	A	D	C	A	D	D	A	C	D	B
Approach Delay		33.9			33.0			25.0			27.6	
Approach LOS		C			C			C			C	

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 92.4

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 30.7

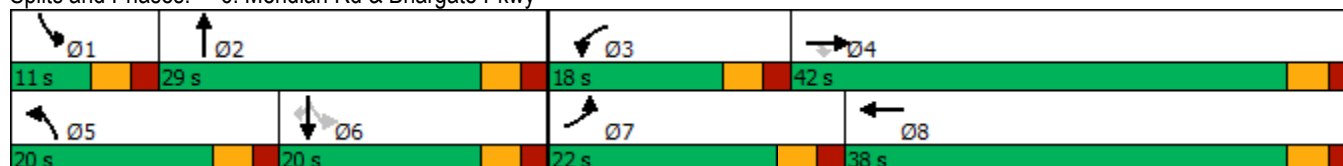
Intersection LOS: C

Intersection Capacity Utilization 74.0%

ICU Level of Service D



















Analysis Period (min) 15

Splits and Phases: 6: Meridian Rd & Briargate Pkwy



Timings  
16: Meridian Rd & Woodmen Hills Dr/Raygor Rd

2040 Background Traffic  
PM Peak Hour

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	3	50	46	28	57	1213	75	16	832	14
Future Volume (vph)	3	50	46	28	57	1213	75	16	832	14
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		8	5	2		1	6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	4	4	8	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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)	35.0	35.0	35.0	35.0	10.0	55.0	55.0	10.0	55.0	55.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	10.0%	55.0%	55.0%	10.0%	55.0%	55.0%
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
Total Lost Time (s)		5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag					Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None	None
Act Effect Green (s)		10.0		10.1	28.1	30.2	30.2	26.2	26.5	26.5
Actuated g/C Ratio		0.22		0.22	0.61	0.66	0.66	0.57	0.58	0.58
v/c Ratio		0.24		0.25	0.12	0.53	0.07	0.04	0.41	0.02
Control Delay		16.3		22.6	4.6	7.9	2.1	4.3	9.6	0.0
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		16.3		22.6	4.6	7.9	2.1	4.3	9.6	0.0
LOS		B		C	A	A	A	A	A	A
Approach Delay		16.3		22.6		7.5			9.3	
Approach LOS		B		C		A			A	

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 45.8

Natural Cycle: 45

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.53

Intersection Signal Delay: 9.0







Intersection LOS: A

Intersection Capacity Utilization 60.4%

ICU Level of Service B

























Analysis Period (min) 15

Splits and Phases: 16: Meridian Rd & Woodmen Hills Dr/Raygor Rd

		
10 s	55 s	35 s
		
10 s	55 s	35 s

Timings  
163: Meridian Rd & Woodmen Rd

2040 Background Traffic  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	755	794	375	225	665	191	465	722	200	441	603	602
Future Volume (vph)	755	794	375	225	665	191	465	722	200	441	603	602
Turn Type	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Free	Prot	NA	Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			Free			6			Free			Free
Detector Phase	5	2		1	6	6	3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	11.5		10.0	11.5	11.5	10.0	11.5		10.0	11.5	
Total Split (s)	32.0	44.0		17.0	29.0	29.0	25.0	37.0		22.0	34.0	
Total Split (%)	26.7%	36.7%		14.2%	24.2%	24.2%	20.8%	30.8%		18.3%	28.3%	
Yellow Time (s)	3.0	4.5		3.0	4.5	4.5	3.0	4.5		3.0	4.5	
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)	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	4.0	5.5		4.0	5.5	5.5	4.0	5.5		4.0	5.5	
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	Min		None	Min	Min	None	None		None	None	
Act Effect Green (s)	28.0	39.2	117.5	12.4	23.5	23.5	20.0	29.2	117.5	17.8	26.9	117.5
Actuated g/C Ratio	0.24	0.33	1.00	0.11	0.20	0.20	0.17	0.25	1.00	0.15	0.23	1.00
v/c Ratio	0.98	0.69	0.24	0.64	0.96	0.41	0.81	0.84	0.13	0.87	0.76	0.39
Control Delay	71.7	38.1	0.4	59.4	72.3	8.5	59.2	51.6	0.2	67.1	49.2	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.7	38.1	0.4	59.4	72.3	8.5	59.2	51.6	0.2	67.1	49.2	0.7
LOS	E	D	A	E	E	A	E	D	A	E	D	A
Approach Delay		44.4			58.3			46.7			36.3	
Approach LOS		D			E			D			D	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 117.5

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.98

Intersection Signal Delay: 45.2

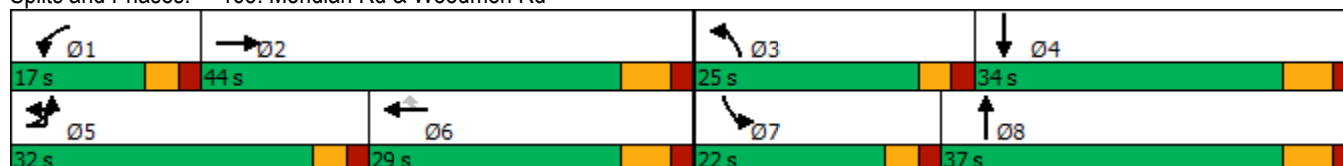
Intersection LOS: D

Intersection Capacity Utilization 89.1%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 163: Meridian Rd & Woodmen Rd



























# Timings

## 1: Banning Lewis Pkwy & Briargate Pkwy

2040 Total Traffic

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	275	530	828	1155	55	650	105	407	40	155	25
Future Volume (vph)	55	275	530	828	1155	55	650	105	407	40	155	25
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			Free			Free			Free			Free
Detector Phase	5	2		1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	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	
Total Split (s)	13.0	39.0		30.0	56.0		27.0	30.0		11.0	14.0	
Total Split (%)	11.8%	35.5%		27.3%	50.9%		24.5%	27.3%		10.0%	12.7%	
Yellow Time (s)	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	
Lost Time Adjust (s)	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	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	None		None	None	
Act Effect Green (s)	6.9	21.4	97.1	25.3	42.3	97.1	21.6	29.1	97.1	5.9	8.5	97.1
Actuated g/C Ratio	0.07	0.22	1.00	0.26	0.44	1.00	0.22	0.30	1.00	0.06	0.09	1.00
v/c Ratio	0.24	0.37	0.35	0.95	0.77	0.04	0.87	0.10	0.27	0.20	0.52	0.02
Control Delay	48.1	32.6	0.6	57.0	27.8	0.0	51.0	29.5	0.4	49.4	51.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.1	32.6	0.6	57.0	27.8	0.0	51.0	29.5	0.4	49.4	51.0	0.0
LOS	D	C	A	E	C	A	D	C	A	D	D	A
Approach Delay		13.9			38.9			31.0			44.9	
Approach LOS		B			D			C			D	

### Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 97.1

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 32.0

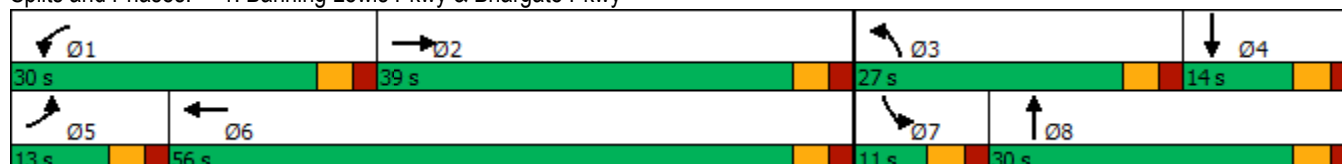
Intersection LOS: C

Intersection Capacity Utilization 74.8%

ICU Level of Service D

Analysis Period (min) 15

### Splits and Phases: 1: Banning Lewis Pkwy & Briargate Pkwy



HCM 6th Roundabout  
2: Residential Collector/TAZ 7 & Briargate Pkwy

2040 Total Traffic  
AM Peak Hour

Intersection									
Intersection Delay, s/veh12.7									
Intersection LOS B									
Approach	EB		WB		NB		SB		
Entry Lanes	2		2		2		2		
Conflicting Circle Lanes	2		2		2		2		
Adj Approach Flow, veh/h	740		1872		175		107		
Demand Flow Rate, veh/h	755		1909		178		110		
Vehicles Circulating, veh/h	38		184		733		2057		
Vehicles Exiting, veh/h	2129		727		59		36		
Ped Vol Crossing Leg, #/h	0		0		0		0		
Ped Cap Adj	1.000		1.000		1.000		1.000		
Approach Delay, s/veh	5.0		16.0		6.4		17.6		
Approach LOS	A		C		A		C		
Lane	Left	Right	Left	Right	Left	Right	Left	Right	
Designated Moves	LT	TR	LT	TR	L	TR	L	TR	
Assumed Moves	LT	TR	LT	TR	L	TR	L	TR	
RT Channelized									
Lane Util	0.470	0.530	0.470	0.530	0.893	0.107	0.291	0.709	
Follow-Up Headway, s	2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500	
Critical Headway, s	4.050	4.050	4.050	4.050	4.050	4.050	4.050	4.050	
Entry Flow, veh/h	355	400	897	1012	159	19	32	78	
Cap Entry Lane, veh/h	1398	1398	1248	1248	814	814	291	291	
Entry HV Adj Factor	0.979	0.980	0.981	0.980	0.981	1.000	0.969	0.974	
Flow Entry, veh/h	348	392	880	992	156	19	31	76	
Cap Entry, veh/h	1369	1370	1224	1223	799	814	282	283	
V/C Ratio	0.254	0.286	0.719	0.811	0.195	0.023	0.110	0.268	
Control Delay, s/veh	4.8	5.1	13.7	18.2	6.6	4.6	14.9	18.6	
LOS	A	A	B	C	A	A	B	C	
95th %tile Queue, veh	1	1	7	10	1	0	0	1	





















HCM 6th Roundabout  
3: Woodmen Hills Dr/Raygor Rd & Briargate Pkwy

2040 Total Traffic  
AM Peak Hour

Intersection									
Intersection Delay, s/veh12.9									
Intersection LOS B									
Approach	EB		WB		NB		SB		
Entry Lanes	2		2		2		2		
Conflicting Circle Lanes	2		2		2		2		
Adj Approach Flow, veh/h	734		1403		425		270		
Demand Flow Rate, veh/h	749		1430		434		275		
Vehicles Circulating, veh/h	134		454		606		1784		
Vehicles Exiting, veh/h	1925		586		277		100		
Ped Vol Crossing Leg, #/h	0		0		0		0		
Ped Cap Adj	1.000		1.000		1.000		1.000		
Approach Delay, s/veh	5.4		15.7		8.4		26.2		
Approach LOS	A		C		A		D		
Lane	Left	Right	Left	Right	Left	Right	Left	Right	
Designated Moves	LT	TR	LT	TR	L	TR	L	TR	
Assumed Moves	LT	TR	LT	TR	L	TR	L	TR	
RT Channelized									
Lane Util	0.470	0.530	0.470	0.530	0.855	0.145	0.178	0.822	
Follow-Up Headway, s	2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500	
Critical Headway, s	4.050	4.050	4.050	4.050	4.050	4.050	4.050	4.050	
Entry Flow, veh/h	352	397	672	758	371	63	49	226	
Cap Entry Lane, veh/h	1297	1297	1012	1012	899	899	360	360	
Entry HV Adj Factor	0.980	0.980	0.981	0.981	0.981	0.975	0.980	0.981	
Flow Entry, veh/h	345	389	659	743	364	61	48	222	
Cap Entry, veh/h	1272	1272	992	992	882	877	352	353	
V/C Ratio	0.271	0.306	0.664	0.749	0.413	0.070	0.136	0.629	
Control Delay, s/veh	5.2	5.6	13.8	17.3	9.0	4.8	12.5	29.1	
LOS	A	A	B	C	A	A	B	D	
95th %tile Queue, veh	1	1	5	7	2	0	0	4	

# Timings 4: Briargate Pkwy & Residential Collector

2040 Total Traffic  
AM Peak Hour

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	36	0	61	0	29	495	20	14	1226	12
Future Volume (vph)	36	0	61	0	29	495	20	14	1226	12
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4		8		2			6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	4	4	8	8	2	2	2	6	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)	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0
Total Split (s)	31.0	31.0	31.0	31.0	69.0	69.0	69.0	69.0	69.0	69.0
Total Split (%)	31.0%	31.0%	31.0%	31.0%	69.0%	69.0%	69.0%	69.0%	69.0%	69.0%
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	Max	Max	Max	Max	Max	Max
Act Effect Green (s)	9.5	9.5	9.5	9.5	69.2	69.2	69.2	69.2	69.2	69.2
Actuated g/C Ratio	0.11	0.11	0.11	0.11	0.81	0.81	0.81	0.81	0.81	0.81
v/c Ratio	0.25	0.38	0.44	0.09	0.11	0.18	0.02	0.02	0.45	0.01
Control Delay	37.8	16.5	44.5	0.3	4.0	2.8	1.4	3.0	4.1	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.8	16.5	44.5	0.3	4.0	2.8	1.4	3.0	4.1	0.9
LOS	D	B	D	A	A	A	A	A	A	A
Approach Delay		22.8		26.5		2.8			4.1	
Approach LOS		C		C		A			A	

## Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 85.6

Natural Cycle: 50

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.45

Intersection Signal Delay: 6.0













Intersection LOS: A

Intersection Capacity Utilization 52.3%

ICU Level of Service A























Analysis Period (min) 15

Splits and Phases: 4: Briargate Pkwy & Residential Collector

					
69 s	31 s	31 s	31 s	31 s	31 s
					
69 s	31 s	31 s	31 s	31 s	31 s

# Timings 5: Towner Ave & Briargate Pkwy

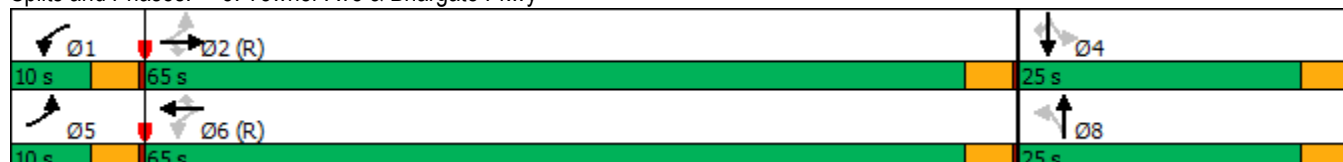
2040 Total Traffic  
AM Peak Hour

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	276	282	15	5	925	112	50	19	67	19	277
Future Volume (vph)	276	282	15	5	925	112	50	19	67	19	277
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	5	2		1	6			8		4	
Permitted Phases	2		2	6		6	8		4		4
Detector Phase	5	2	2	1	6	6	8	8	4	4	4
Switch Phase											
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	10.0	65.0	65.0	10.0	65.0	65.0	25.0	25.0	25.0	25.0	25.0
Total Split (%)	10.0%	65.0%	65.0%	10.0%	65.0%	65.0%	25.0%	25.0%	25.0%	25.0%	25.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None
Act Effect Green (s)	79.0	77.7	77.7	72.5	66.9	66.9	12.3	12.3	12.3	12.3	12.3
Actuated g/C Ratio	0.79	0.78	0.78	0.72	0.67	0.67	0.12	0.12	0.12	0.12	0.12
v/c Ratio	0.62	0.11	0.01	0.01	0.41	0.11	0.31	0.14	0.42	0.09	0.76
Control Delay	11.6	4.0	0.0	3.8	8.9	1.8	42.2	26.6	46.1	36.2	24.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.6	4.0	0.0	3.8	8.9	1.8	42.2	26.6	46.1	36.2	24.2
LOS	B	A	A	A	A	A	D	C	D	D	C
Approach Delay		7.6			8.1			36.4		28.8	
Approach LOS		A			A			D		C	

## Intersection Summary

























Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 12.7
Intersection Capacity Utilization 61.2%
Analysis Period (min) 15
Intersection LOS: B
ICU Level of Service B

Splits and Phases: 5: Towner Ave & Briargate Pkwy



Timings  
6: Meridian Rd & Briargate Pkwy/Stapleton Dr

2040 Total Traffic  
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	168	816	303	411	1290	156	280	228	211	51	743	350
Future Volume (vph)	168	816	303	411	1290	156	280	228	211	51	743	350
Turn Type	Prot	NA	Perm	Prot	NA	Free	Prot	NA	Free	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			Free			Free	6		6
Detector Phase	7	4	4	3	8		5	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)	13.0	34.0	34.0	22.0	43.0		15.0	34.0		10.0	29.0	29.0
Total Split (%)	13.0%	34.0%	34.0%	22.0%	43.0%		15.0%	34.0%		10.0%	29.0%	29.0%
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	Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	None		None	None	None
Act Effect Green (s)	7.9	30.0	30.0	15.9	38.0	99.7	10.0	30.8	99.7	28.8	23.8	23.8
Actuated g/C Ratio	0.08	0.30	0.30	0.16	0.38	1.00	0.10	0.31	1.00	0.29	0.24	0.24
v/c Ratio	0.63	0.78	0.51	0.77	0.98	0.10	0.83	0.21	0.14	0.15	0.90	0.67
Control Delay	55.6	38.4	14.9	50.2	50.7	0.1	65.3	27.0	0.2	20.8	51.7	22.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.6	38.4	14.9	50.2	50.7	0.1	65.3	27.0	0.2	20.8	51.7	22.0
LOS	E	D	B	D	D	A	E	C	A	C	D	C
Approach Delay		35.1			46.3			34.0			41.2	
Approach LOS		D			D			C			D	

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 99.7

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.98

Intersection Signal Delay: 40.5

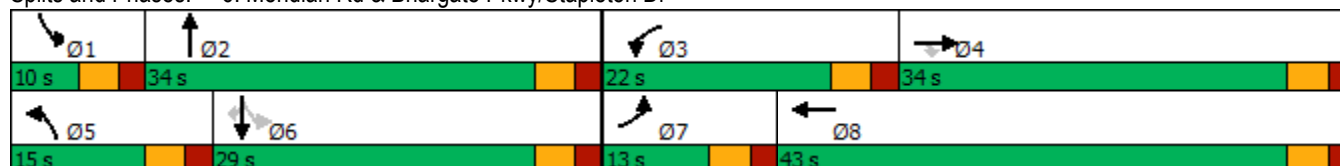
Intersection LOS: D

Intersection Capacity Utilization 85.6%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 6: Meridian Rd & Briargate Pkwy/Stapleton Dr



HCM 6th Roundabout  
13: Woodmen Hills Dr & Residential Collector

2040 Total Traffic  
AM Peak Hour

Intersection

Intersection Delay, s/veh 4.7



















Intersection LOS A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	65	174	257	292
Demand Flow Rate, veh/h	66	177	261	298
Vehicles Circulating, veh/h	353	248	47	78
Vehicles Exiting, veh/h	23	60	372	347
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.4	4.9	4.5	4.9
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	66	177	261	298
Cap Entry Lane, veh/h	963	1071	1315	1274
Entry HV Adj Factor	0.985	0.983	0.983	0.980
Flow Entry, veh/h	65	174	257	292
Cap Entry, veh/h	948	1053	1294	1249
V/C Ratio	0.069	0.165	0.198	0.234
Control Delay, s/veh	4.4	4.9	4.5	4.9
LOS	A	A	A	A
95th %tile Queue, veh	0	1	1	1

Timings  
16: Meridian Rd & Woodmen Hills Dr

2040 Total Traffic  
AM Peak Hour

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	30	54	99	61	80	654	13	36	1406	15
Future Volume (vph)	30	54	99	61	80	654	13	36	1406	15
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		8	5	2		1	6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	4	4	8	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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)	30.0	30.0	30.0	30.0	10.0	60.0	60.0	10.0	60.0	60.0
Total Split (%)	30.0%	30.0%	30.0%	30.0%	10.0%	60.0%	60.0%	10.0%	60.0%	60.0%
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
Total Lost Time (s)		5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag					Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None	None
Act Effect Green (s)		25.0		25.0	48.0	45.3	45.3	47.0	43.3	43.3
Actuated g/C Ratio		0.29		0.29	0.56	0.53	0.53	0.55	0.50	0.50
v/c Ratio		0.61		0.73	0.45	0.36	0.02	0.09	0.81	0.02
Control Delay		24.4		47.3	15.9	12.7	0.0	7.2	22.1	0.1
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		24.4		47.3	15.9	12.7	0.0	7.2	22.1	0.1
LOS		C		D	B	B	A	A	C	A
Approach Delay		24.4		47.3		12.8			21.5	
Approach LOS		C		D		B			C	

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 86.1

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 21.4

Intersection LOS: C

Intersection Capacity Utilization 89.4%

ICU Level of Service E

























Analysis Period (min) 15

Splits and Phases: 16: Meridian Rd & Woodmen Hills Dr

		
10 s	60 s	30 s
		
10 s	60 s	30 s

Timings  
163: Meridian Rd & Woodmen Rd

2040 Total Traffic  
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	472	520	175	150	884	166	328	340	100	288	928	1041
Future Volume (vph)	472	520	175	150	884	166	328	340	100	288	928	1041
Turn Type	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Free	Prot	NA	Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			Free			6			Free			Free
Detector Phase	5	2		1	6	6	3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	11.5		10.0	11.5	11.5	10.0	11.5		10.0	11.5	
Total Split (s)	22.0	45.0		17.0	40.0	40.0	17.0	35.0		23.0	41.0	
Total Split (%)	18.3%	37.5%		14.2%	33.3%	33.3%	14.2%	29.2%		19.2%	34.2%	
Yellow Time (s)	3.0	4.5		3.0	4.5	4.5	3.0	4.5		3.0	4.5	
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)	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	4.0	5.5		4.0	5.5	5.5	4.0	5.5		4.0	5.5	
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	Min		None	Min	Min	None	None		None	None	
Act Effect Green (s)	18.0	40.3	118.2	11.3	33.6	33.6	13.0	31.5	118.2	16.0	34.6	118.2
Actuated g/C Ratio	0.15	0.34	1.00	0.10	0.28	0.28	0.11	0.27	1.00	0.14	0.29	1.00
v/c Ratio	0.92	0.44	0.11	0.47	0.90	0.30	0.89	0.37	0.06	0.63	0.92	0.67
Control Delay	74.4	32.0	0.1	55.6	53.4	6.3	77.9	37.3	0.1	54.7	54.7	2.3
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	74.4	32.0	0.1	55.6	53.4	6.3	77.9	37.3	0.1	54.7	54.7	2.3
LOS	E	C	A	E	D	A	E	D	A	D	D	A
Approach Delay		44.4			47.2			49.8			30.5	
Approach LOS		D			D			D			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 118.2

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 40.0

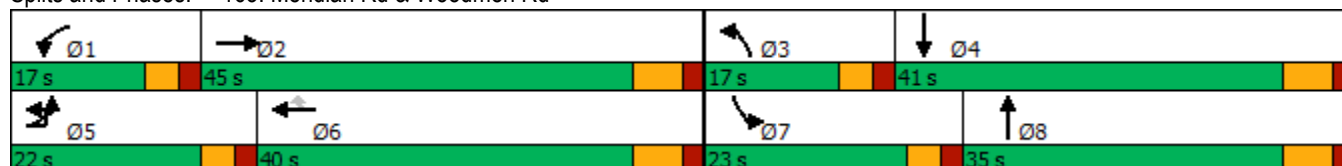
Intersection LOS: D

Intersection Capacity Utilization 88.7%

ICU Level of Service E

Analysis Period (min) 15

























Splits and Phases: 163: Meridian Rd & Woodmen Rd



# Timings

## 1: Banning Lewis Pkwy & Briargate Pkwy

2040 Total Traffic  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	135	1221	595	482	593	135	685	340	953	130	335	130
Future Volume (vph)	135	1221	595	482	593	135	685	340	953	130	335	130
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			Free			Free			Free			Free
Detector Phase	5	2		1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	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	
Total Split (s)	13.0	46.0		23.0	56.0		24.0	30.0		11.0	17.0	
Total Split (%)	11.8%	41.8%		20.9%	50.9%		21.8%	27.3%		10.0%	15.5%	
Yellow Time (s)	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	
Lost Time Adjust (s)	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	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	None		None	None	
Act Effect Green (s)	7.8	40.5	109.2	17.7	50.4	109.2	19.0	25.0	109.2	6.0	12.0	109.2
Actuated g/C Ratio	0.07	0.37	1.00	0.16	0.46	1.00	0.17	0.23	1.00	0.05	0.11	1.00
v/c Ratio	0.58	0.95	0.40	0.89	0.38	0.09	1.17	0.44	0.63	0.73	0.91	0.09
Control Delay	59.3	49.2	0.7	64.0	20.1	0.1	134.9	38.3	1.9	73.3	76.3	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.3	49.2	0.7	64.0	20.1	0.1	134.9	38.3	1.9	73.3	76.3	0.1
LOS	E	D	A	E	C	A	F	D	A	E	E	A
Approach Delay		34.8			35.0			53.4			59.0	
Approach LOS		C			D			D			E	

### Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 109.2

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.17

Intersection Signal Delay: 43.8

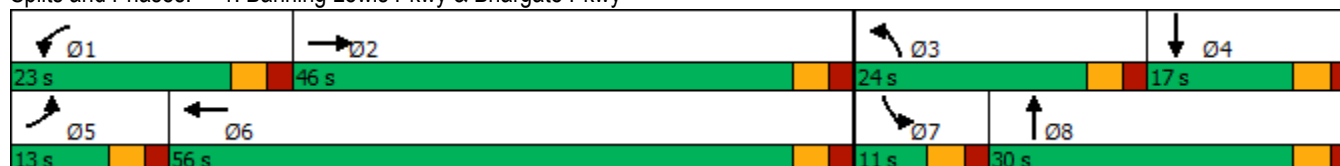
Intersection LOS: D

Intersection Capacity Utilization 93.0%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 1: Banning Lewis Pkwy & Briargate Pkwy



HCM 6th Roundabout  
2: Residential Collector/TAZ 7 & Briargate Pkwy

2040 Total Traffic  
PM Peak Hour

Intersection									
Intersection Delay, s/veh 17.4									
Intersection LOS C									
Approach	EB		WB		NB		SB		
Entry Lanes	2		2		2		2		
Conflicting Circle Lanes	2		2		2		2		
Adj Approach Flow, veh/h	2359		1129		125		72		
Demand Flow Rate, veh/h	2407		1152		127		73		
Vehicles Circulating, veh/h	40		206		2235		1233		
Vehicles Exiting, veh/h	1266		2156		212		125		
Ped Vol Crossing Leg, #/h	0		0		0		0		
Ped Cap Adj	1.000		1.000		1.000		1.000		
Approach Delay, s/veh	21.7		8.0		26.5		7.6		
Approach LOS	C		A		D		A		
Lane	Left	Right	Left	Right	Left	Right	Left	Right	
Designated Moves	LT	TR	LT	TR	L	TR	L	TR	
Assumed Moves	LT	TR	LT	TR	L	TR	L	TR	
RT Channelized									
Lane Util	0.470	0.530	0.470	0.530	0.890	0.110	0.247	0.753	
Follow-Up Headway, s	2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500	
Critical Headway, s	4.050	4.050	4.050	4.050	4.050	4.050	4.050	4.050	
Entry Flow, veh/h	1131	1276	541	611	113	14	18	55	
Cap Entry Lane, veh/h	1396	1396	1227	1227	253	253	552	552	
Entry HV Adj Factor	0.980	0.980	0.981	0.980	0.982	1.000	1.000	0.982	
Flow Entry, veh/h	1109	1250	531	599	111	14	18	54	
Cap Entry, veh/h	1369	1368	1204	1202	249	253	552	542	
V/C Ratio	0.810	0.914	0.441	0.498	0.446	0.055	0.033	0.100	
Control Delay, s/veh	16.7	26.0	7.5	8.4	27.9	15.3	6.9	7.9	
LOS	C	D	A	A	D	C	A	A	
95th %tile Queue, veh	10	16	2	3	2	0	0	0	





















HCM 6th Roundabout  
3: Woodmen Hills Dr/Raygor Rd & Briargate Pkwy

2040 Total Traffic  
PM Peak Hour

Intersection									
Intersection Delay, s/veh16.2									
Intersection LOS C									
Approach	EB		WB		NB		SB		
Entry Lanes	2		2		2		2		
Conflicting Circle Lanes	2		2		2		2		
Adj Approach Flow, veh/h	2113		896		295		185		
Demand Flow Rate, veh/h	2156		914		300		189		
Vehicles Circulating, veh/h	109		467		1853		1076		
Vehicles Exiting, veh/h	1156		1686		412		305		
Ped Vol Crossing Leg, #/h	0		0		0		0		
Ped Cap Adj	1.000		1.000		1.000		1.000		
Approach Delay, s/veh	18.4		9.0		27.6		8.5		
Approach LOS	C		A		D		A		
Lane	Left	Right	Left	Right	Left	Right	Left	Right	
Designated Moves	LT	TR	LT	TR	L	TR	L	TR	
Assumed Moves	LT	TR	LT	TR	L	TR	L	TR	
RT Channelized									
Lane Util	0.470	0.530	0.470	0.530	0.740	0.260	0.201	0.799	
Follow-Up Headway, s	2.500	2.500	2.500	2.500	2.500	2.500	2.500	2.500	
Critical Headway, s	4.050	4.050	4.050	4.050	4.050	4.050	4.050	4.050	
Entry Flow, veh/h	1013	1143	430	484	222	78	38	151	
Cap Entry Lane, veh/h	1323	1323	1001	1001	341	341	624	624	
Entry HV Adj Factor	0.980	0.980	0.979	0.981	0.982	0.986	0.974	0.982	
Flow Entry, veh/h	993	1120	421	475	218	77	37	148	
Cap Entry, veh/h	1297	1296	981	982	335	336	607	612	
V/C Ratio	0.766	0.864	0.429	0.483	0.651	0.229	0.061	0.242	
Control Delay, s/veh	15.0	21.4	8.6	9.5	32.1	15.0	6.6	9.0	
LOS	C	C	A	A	D	C	A	A	
95th %tile Queue, veh	8	12	2	3	4	1	0	1	

# Timings 4: Briargate Pkwy & Residential Collector

2040 Total Traffic  
PM Peak Hour







										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	26	0	44	0	94	1451	73	50	777	44
Future Volume (vph)	26	0	44	0	94	1451	73	50	777	44
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		8	5	2		1	6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	4	4	8	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	20.0	20.0	20.0	20.0	10.0	70.0	70.0	10.0	70.0	70.0
Total Split (%)	20.0%	20.0%	20.0%	20.0%	10.0%	70.0%	70.0%	10.0%	70.0%	70.0%
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	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None	None
Act Effect Green (s)	9.4	9.4	9.4	9.4	41.2	41.8	41.8	39.9	39.3	39.3
Actuated g/C Ratio	0.16	0.16	0.16	0.16	0.69	0.70	0.70	0.67	0.66	0.66
v/c Ratio	0.13	0.12	0.22	0.09	0.19	0.62	0.07	0.17	0.35	0.04
Control Delay	32.8	0.5	33.9	0.5	3.8	9.5	1.8	4.2	7.5	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.8	0.5	33.9	0.5	3.8	9.5	1.8	4.2	7.5	0.7
LOS	C	A	C	A	A	A	A	A	A	A
Approach Delay		10.8		20.2		8.8			7.0	
Approach LOS		B		C		A			A	

## Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 59.9  
 Natural Cycle: 55  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.62  
 Intersection Signal Delay: 8.6  
 Intersection Capacity Utilization 65.9%  
 Analysis Period (min) 15


























Intersection LOS: A  
 ICU Level of Service C

## Splits and Phases: 4: Briargate Pkwy & Residential Collector

		
Ø1	Ø2	Ø4
10 s	70 s	20 s
		
Ø5	Ø6	Ø8
10 s	70 s	20 s

# Timings 5: Towner Ave & Briargate Pkwy

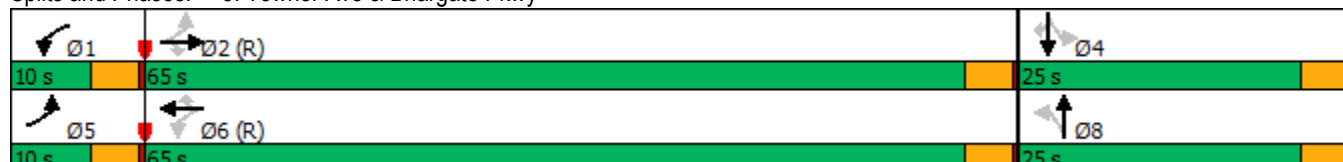
2040 Total Traffic  
PM Peak Hour

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations		 			 			 			
Traffic Volume (vph)	315	1142	50	29	628	131	25	2	108	2	217
Future Volume (vph)	315	1142	50	29	628	131	25	2	108	2	217
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	5	2		1	6			8		4	
Permitted Phases	2		2	6		6	8		4		4
Detector Phase	5	2	2	1	6	6	8	8	4	4	4
Switch Phase											
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	10.0	65.0	65.0	10.0	65.0	65.0	25.0	25.0	25.0	25.0	25.0
Total Split (%)	10.0%	65.0%	65.0%	10.0%	65.0%	65.0%	25.0%	25.0%	25.0%	25.0%	25.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None
Act Effect Green (s)	77.6	72.2	72.2	71.3	65.4	65.4	13.7	13.7	13.7	13.7	13.7
Actuated g/C Ratio	0.78	0.72	0.72	0.71	0.65	0.65	0.14	0.14	0.14	0.14	0.14
v/c Ratio	0.55	0.47	0.05	0.09	0.29	0.13	0.14	0.10	0.61	0.01	0.55
Control Delay	7.7	8.0	2.1	4.0	8.3	1.7	37.1	15.7	53.2	33.5	10.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.7	8.0	2.1	4.0	8.3	1.7	37.1	15.7	53.2	33.5	10.3
LOS	A	A	A	A	A	A	D	B	D	C	B
Approach Delay		7.7			7.1			26.8		24.7	
Approach LOS		A			A			C		C	

## Intersection Summary

































Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.61
Intersection Signal Delay: 9.9
Intersection Capacity Utilization 57.6%
Analysis Period (min) 15
Intersection LOS: A
ICU Level of Service B

Splits and Phases: 5: Towner Ave & Briargate Pkwy



Timings  
6: Meridian Rd & Briargate Pkwy

2040 Total Traffic  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 		 	 		 	 	
Traffic Volume (vph)	465	1135	320	336	965	184	409	458	453	92	266	300
Future Volume (vph)	465	1135	320	336	965	184	409	458	453	92	266	300
Turn Type	Prot	NA	Perm	Prot	NA	Free	Prot	NA	Free	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			Free			Free	6		6
Detector Phase	7	4	4	3	8		5	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	42.0	42.0	18.0	38.0		20.0	29.0		11.0	20.0	20.0
Total Split (%)	22.0%	42.0%	42.0%	18.0%	38.0%		20.0%	29.0%		11.0%	20.0%	20.0%
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	Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	None		None	None	None
Act Effect Green (s)	16.2	35.5	35.5	12.5	31.8	95.2	14.4	23.6	95.2	18.7	12.6	12.6
Actuated g/C Ratio	0.17	0.37	0.37	0.13	0.33	1.00	0.15	0.25	1.00	0.20	0.13	0.13
v/c Ratio	0.81	0.88	0.44	0.76	0.83	0.12	0.80	0.53	0.29	0.41	0.58	0.69
Control Delay	51.0	37.3	7.6	52.8	37.2	0.2	52.8	34.9	0.5	29.7	44.5	16.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.0	37.3	7.6	52.8	37.2	0.2	52.8	34.9	0.5	29.7	44.5	16.6
LOS	D	D	A	D	D	A	D	C	A	C	D	B
Approach Delay		35.7			36.1			28.6			29.7	
Approach LOS		D			D			C			C	

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 95.2

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 33.3

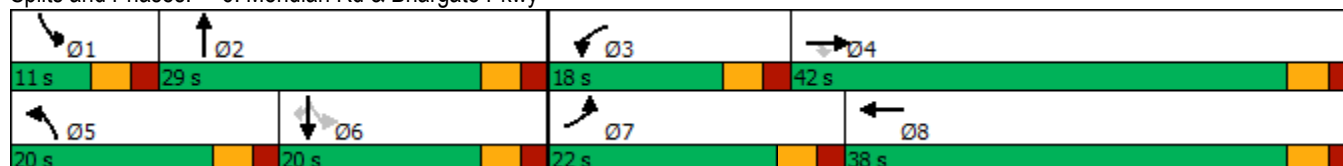
Intersection LOS: C

Intersection Capacity Utilization 76.6%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 6: Meridian Rd & Briargate Pkwy



HCM 6th Roundabout  
13: Woodmen Hills Dr & Residential Collector

2040 Total Traffic  
PM Peak Hour

Intersection

Intersection Delay, s/veh 5.0



















Intersection LOS A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	34	110	284	316
Demand Flow Rate, veh/h	35	113	290	322
Vehicles Circulating, veh/h	341	246	149	81
Vehicles Exiting, veh/h	62	193	227	278
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.1	4.4	5.3	5.1
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	35	113	290	322
Cap Entry Lane, veh/h	975	1074	1185	1270
Entry HV Adj Factor	0.971	0.973	0.980	0.980
Flow Entry, veh/h	34	110	284	316
Cap Entry, veh/h	947	1045	1162	1246
V/C Ratio	0.036	0.105	0.245	0.253
Control Delay, s/veh	4.1	4.4	5.3	5.1
LOS	A	A	A	A
95th %tile Queue, veh	0	0	1	1

Timings  
16: Meridian Rd & Woodmen Hills Dr/Raygor Rd





2040 Total Traffic  
PM Peak Hour

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	6	63	46	51	231	1303	75	18	885	19
Future Volume (vph)	6	63	46	51	231	1303	75	18	885	19
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		8	5	2		1	6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	4	4	8	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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)	35.0	35.0	35.0	35.0	10.0	55.0	55.0	10.0	55.0	55.0
Total Split (%)	35.0%	35.0%	35.0%	35.0%	10.0%	55.0%	55.0%	10.0%	55.0%	55.0%
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
Total Lost Time (s)		5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag					Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None	None
Act Effect Green (s)		11.0		11.0	35.6	34.1	34.1	31.6	26.1	26.1
Actuated g/C Ratio		0.19		0.19	0.60	0.58	0.58	0.54	0.44	0.44
v/c Ratio		0.56		0.51	0.66	0.65	0.08	0.07	0.58	0.03
Control Delay		20.3		33.3	16.9	11.4	2.5	4.9	13.0	0.1
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		20.3		33.3	16.9	11.4	2.5	4.9	13.0	0.1
LOS		C		C	B	B	A	A	B	A
Approach Delay		20.3		33.3		11.8			12.6	
Approach LOS		C		C		B			B	

Intersection Summary

























Cycle Length: 100  
 Actuated Cycle Length: 59  
 Natural Cycle: 60  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.66  
 Intersection Signal Delay: 13.5  
 Intersection LOS: B  
 Intersection Capacity Utilization 74.2%  
 ICU Level of Service D  
 Analysis Period (min) 15

Splits and Phases: 16: Meridian Rd & Woodmen Hills Dr/Raygor Rd

		
Ø1	Ø2	Ø4
10 s	55 s	35 s
		
Ø5	Ø6	Ø8
10 s	55 s	35 s

Timings  
163: Meridian Rd & Woodmen Rd

2040 Total Traffic  
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	785	794	375	225	665	257	465	880	200	480	697	602
Future Volume (vph)	785	794	375	225	665	257	465	880	200	480	697	602
Turn Type	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Free	Prot	NA	Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			Free			6			Free			Free
Detector Phase	5	2		1	6	6	3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	11.5		10.0	11.5	11.5	10.0	11.5		10.0	11.5	
Total Split (s)	32.0	44.0		17.0	29.0	29.0	25.0	37.0		22.0	34.0	
Total Split (%)	26.7%	36.7%		14.2%	24.2%	24.2%	20.8%	30.8%		18.3%	28.3%	
Yellow Time (s)	3.0	4.5		3.0	4.5	4.5	3.0	4.5		3.0	4.5	
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)	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	4.0	5.5		4.0	5.5	5.5	4.0	5.5		4.0	5.5	
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	Min		None	Min	Min	None	None		None	None	
Act Effect Green (s)	28.0	39.0	120.0	12.5	23.5	23.5	20.3	31.5	120.0	18.0	29.2	120.0
Actuated g/C Ratio	0.23	0.32	1.00	0.10	0.20	0.20	0.17	0.26	1.00	0.15	0.24	1.00
v/c Ratio	1.00	0.70	0.24	0.64	0.98	0.50	0.82	0.97	0.13	0.95	0.83	0.39
Control Delay	78.0	39.6	0.4	60.4	77.9	8.6	60.4	66.7	0.2	80.5	52.5	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.0	39.6	0.4	60.4	77.9	8.6	60.4	66.7	0.2	80.5	52.5	0.7
LOS	E	D	A	E	E	A	E	E	A	F	D	A
Approach Delay		47.5			58.9			56.2			42.5	
Approach LOS		D			E			E			D	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.00

Intersection Signal Delay: 50.3

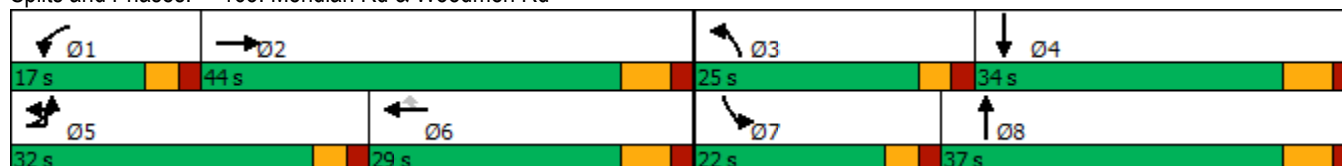
Intersection LOS: D

Intersection Capacity Utilization 94.6%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 163: Meridian Rd & Woodmen Rd



# Markup Summary

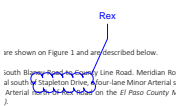
## dsdparsons (1)



**Subject:** Callout  
**Page Label:** 1  
**Author:** dsdparsons  
**Date:** 1/24/2019 11:07:11 AM  
**Color:** █

is there a special district being formed or a "program" to construct Briargate from Stapleton to the west sooner rather than later? PJ has mention this.... I dont know that it needs to be included if not headed that direction....

## dsdrice (21)



**Subject:** Cloud+  
**Page Label:** 3  
**Author:** dsdrice  
**Date:** 1/21/2019 10:37:13 PM  
**Color:** █

Rex



**Subject:** Cloud+  
**Page Label:** 3  
**Author:** dsdrice  
**Date:** 1/21/2019 10:37:22 PM  
**Color:** █

Murphy



**Subject:** Cloud+  
**Page Label:** 3  
**Author:** dsdrice  
**Date:** 1/21/2019 10:38:09 PM  
**Color:** █

north



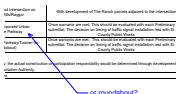
**Subject:** Callout  
**Page Label:** 12  
**Author:** dsdrice  
**Date:** 1/22/2019 7:36:38 AM  
**Color:** █

or development that meets warrants



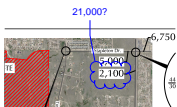
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**Page Label:** 13  
**Author:** dsdrice  
**Date:** 1/22/2019 7:37:32 AM  
**Color:** █

Label WHD



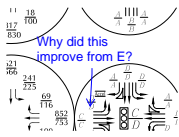
**Subject:** Callout  
**Page Label:** 12  
**Author:** dsdrice  
**Date:** 1/22/2019 7:41:08 AM  
**Color:** █

or roundabout?



**Subject:** Cloud+  
**Page Label:** 15  
**Author:** dsdrice  
**Date:** 1/22/2019 7:42:59 AM  
**Color:** █

21,000?



**Subject:** Callout  
**Page Label:** 16  
**Author:** dsdrice  
**Date:** 1/22/2019 7:48:10 AM  
**Color:** ■

Why did this improve from E?



**Subject:** Text Box  
**Page Label:** 18  
**Author:** dsdrice  
**Date:** 1/23/2019 7:25:02 PM  
**Color:** ■

Make sure long-term adds up to 100%.



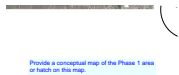
**Subject:** Cloud+  
**Page Label:** 18  
**Author:** dsdrice  
**Date:** 1/23/2019 7:27:50 PM  
**Color:** ■

Is this correct?



**Subject:** Cloud+  
**Page Label:** 18  
**Author:** dsdrice  
**Date:** 1/23/2019 7:28:25 PM  
**Color:** ■

Seems like a big drop?



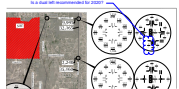
**Subject:** Text Box  
**Page Label:** 19  
**Author:** dsdrice  
**Date:** 1/24/2019 10:34:01 AM  
**Color:** ■

Provide a conceptual map of the Phase 1 area or hatch on this map.



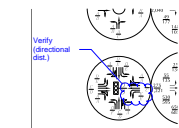
**Subject:** Text Box  
**Page Label:** 9  
**Author:** dsdrice  
**Date:** 1/24/2019 11:00:43 AM  
**Color:** ■

Address mitigation for failing 2020 LOS specifically.



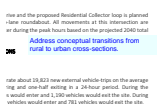
**Subject:** Cloud+  
**Page Label:** 21  
**Author:** dsdrice  
**Date:** 1/24/2019 11:01:04 AM  
**Color:** ■

Is a dual left recommended for 2020?



**Subject:** Cloud+  
**Page Label:** 22  
**Author:** dsdrice  
**Date:** 1/24/2019 11:01:53 AM  
**Color:** ■

Verify (directional dist.)



**Subject:** Text Box  
**Page Label:** 9  
**Author:** dsdrice  
**Date:** 1/24/2019 11:03:20 AM  
**Color:** ■

Address conceptual transitions from rural to urban cross-sections.



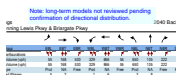
**Subject:** Callout  
**Page Label:** 23  
**Author:** dsdrice  
**Date:** 1/24/2019 11:04:11 AM  
**Color:** ■

urban cross-section?



**Subject:** Text Box  
**Page Label:** 33  
**Author:** dsdrice  
**Date:** 1/24/2019 11:05:13 AM  
**Color:** ■

Provide dates on all counts.



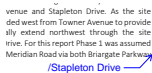
**Subject:** Text Box  
**Page Label:** 72  
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**Date:** 1/24/2019 11:08:28 AM  
**Color:** ■

Note: long-term models not reviewed pending confirmation of directional distribution.



**Subject:** Cloud+  
**Page Label:** 65  
**Author:** dsdrice  
**Date:** 1/24/2019 11:13:24 AM  
**Color:** ■

What would LOS be with dual left?



**Subject:** Callout  
**Page Label:** 3  
**Author:** dsdrice  
**Date:** 1/24/2019 9:24:21 AM  
**Color:** ■

/Stapleton Drive