



Engineering Review

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dsdrice

JeffRice@elpasoco.com

(719) 520-7877

EPC Planning & Community
Development Department

LSC TRANSPORTATION CONSULTANTS, INC.

545 East Pikes Peak Avenue, Suite 210

Colorado Springs, CO 80903

(719) 633-2868

FAX (719) 633-5430

E-mail: lsc@lsctrans.com

Website: <http://www.lsctrans.com>

Bent Grass Residential Filing No. 2

Traffic Impact Study

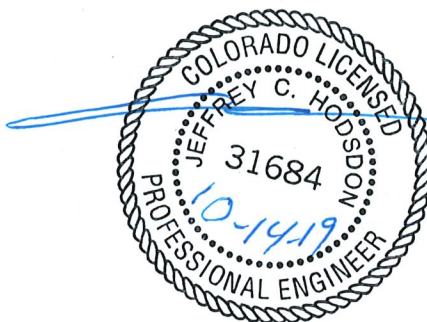
PCD File No.: SF-1914

(LSC #194460)

October 14, 2019

Traffic Engineer's Statement

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



Developer's Statement

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

Provide signature

Date



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

October 14, 2019

Jim Byers
VP of Community Development
Challenger Homes
8605 Explorer Dr, Suite 250
Colorado Springs, CO 80920

RE: Bent Grass Residential Filing No. 2
El Paso County, Colorado
Traffic Impact Analysis
LSC #194460

Dear Jim:

LSC Transportation Consultants, Inc. has prepared this updated traffic impact study for the Bent Grass Residential Filing No. 2. The site is located about one-half mile west of the intersection of Meridian Road and Bent Grass Meadows Drive in El Paso County, Colorado. Figure 1 shows the site location. LSC has completed the following studies in the vicinity of the site:

Bent Grass Subdivision PUD Traffic Impact Analysis October 6, 2006
Bent Grass East Commercial – Preliminary Plan January 25, 2013
Bent Grass East Commercial – Report Supplement #2 March 14, 2013
Bent Grass Subdivision Filing 1 Updated Traffic Impact Analysis July 14, 2014
Bent Grass East Commercial Filing No. 2 Updated Traffic Impact Analysis July 17, 2014
Falcon Dental East Commercial Filing No. 2A March 7, 2016
Bent Grass Meadows Drive/Meridian Road Traffic Signal Warrant Analysis October 2, 2017
Bent Grass East Commercial/Bent Grass Meadows Drive & Meridian Road Transportation Memorandum March 21, 2019
Falcon Marketplace Traffic Impact Analysis October 23, 2017 (September 5, 2018 Revision)

REPORT CONTENTS

The report contains the following:

- The existing roadway and traffic conditions in the site's vicinity including the roadway widths, surface conditions, lane geometries, traffic controls, and posted speed limits, etc.
- The existing traffic volumes on the study area roadways
- The projected average weekday and peak-hour vehicle-trips to be generated by the site at buildout

- The assignment of the projected additional site-generated traffic volumes to the study area roadways and intersections
- The projected short-term and long-term total traffic volumes on the study area roadway network
- The projected levels of service at the intersections of Meridian Road/Bent Grass Meadows Drive, Woodmen frontage road/Bent Grass Meadows Drive, and Woodmen Road/Golden Sage Drive and at the site access points to Bent Grass Meadows Drive
- A vehicle queueing analysis at the key study area intersections
- Recommendations for roadway improvements and phasing of these improvements

LAND USE

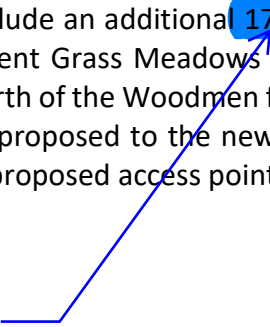
Figure 2 shows the existing, currently proposed, and future land uses in the vicinity of the site. The area south of Bent Grass Meadows Drive includes 104 existing single-family homes that are part of Bent Grass Residential Filing No 1 and the Bent Grass East Commercial development. The Bent Grass East Commercial development is partially developed with a veterinary clinic, a gas station with convenience store, and a dental clinic.

Bent Grass Residential Filing No. 2 is planned to include an additional 178 lots for single family homes just west of the existing Filing No. 1 lots. Bent Grass Meadows Drive is planned to be completed between the existing sections located north of the Woodmen frontage road and west of Meridian. Two full-movement access points are proposed to the new section of Bent Grass Meadows Drive. Figure 2 shows the location of the proposed access points.

EXISTING ROADWAY AND TRAFFIC CONDITIONS

Area Roadways

verify if layout is
updated



The roadways in the study area are identified below, followed by a brief description of each. Figure 1 shows the roadway system.

- **Meridian Road** is shown on the *El Paso County 2040 Major Transportation Corridors Plan* and the *Preserved Corridor Network Plan* as a four-lane Principal Arterial. Meridian Road was recently expanded from two lanes to four lanes between Woodmen Road and Rolling Thunder and may soon be connected to US Highway 24. The posted speed limit is 55 miles per hour (mph).
- **Bent Grass Meadows Drive** is a Non-Residential Collector that currently extends north from the Woodmen North frontage road for about 2,000 feet and west from Meridian Road for about one-half mile. Bent Grass Meadows Drive will be extended further west and then curve south to connect to the existing section north of the Woodmen frontage road with this development. The Bent Grass Meadows Drive/Meridian Road intersection is planned to be signalized in the short-term future once warrants for signalization are satisfied. This is anticipated to occur with the development.

- **Woodmen Road** is shown on the El Paso County 2040 Major Transportation Corridors Plan and the Preserved Corridor Network Plan as a four-lane Expressway in the vicinity of the site. The posted speed limit on Woodmen Road in the vicinity of Golden Sage Road is 55 mph.
- **Woodmen frontage road** is a paved two-lane frontage road along the north side of Woodmen Road. The Woodmen frontage road extends from just west of Meridian Road to its current terminus west of Golden Sage Road. The posted speed limit on the Woodmen frontage road is 30 mph.

Existing Traffic Conditions

Figure 3 shows the existing morning and afternoon peak-hour traffic volumes at the intersections of Meridian Road/Bent Grass Meadows Drive, Woodmen frontage road/Bent Grass Meadows Drive and Woodmen Road/Golden Sage Road. The traffic volumes are from traffic counts conducted September 2018, March 2017, and May 2019. The traffic count reports are attached.

Existing Levels of Service

Level of service (LOS) is a quantitative measure of the level of congestion or 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 2 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)	Average Control Delay (seconds per vehicle) ⁽¹⁾
A	10.0 sec or less	10.0 sec or less
B	10.1-20.0 sec	10.1-15.0 sec
C	20.1-35.0 sec	15.1-25.0 sec
D	35.1-55.0 sec	25.1-35.0 sec
E	55.1-80.0 sec	35.1-50.0 sec
F	80.1 sec or more	50.1 sec or more
(1) For unsignalized intersections if V/C ratio is greater than 1.0 the level of service is LOS F regardless of the projected average control		

The intersections of Meridian Road/Bent Grass Meadows Drive and Woodmen frontage road/Bent Grass Meadows Drive were analyzed to determine the existing levels of service based on the unsignalized method of analysis procedures found in the *Highway Capacity Manual*,

6th Edition by the Transportation Research Board. The intersection of Woodmen Road/Golden Sage Drive was analyzed using Synchro. Figure 3 shows the level of service analysis results. The level of service reports are attached.

The eastbound left-turn movement at the stop sign-controlled intersection of Meridian/Bent Grass Meadows is currently operating at LOS F during the morning peak hour and LOS E during the afternoon peak hour. The eastbound right-turn movement is currently operating at LOS D during the morning peak hour and LOS B during the afternoon peak hour.

All movements at the intersection of the Woodmen frontage road/Bent Grass Meadows Drive are currently operating at LOS B or better during the peak hours.

All movements at the signal-controlled intersection of Woodmen/Golden Sage are currently operating at LOS D or better during the peak hours.

TEMPORARY 7-ELEVEN ACCESS

The access to 7-Eleven on Bent Grass Meadows Drive was permitted and constructed as a temporary access and will be allowed to remain open with continued use subject to reevaluation should the following occur (from the deviation report submitted):

...traffic operational problems caused by increased traffic volumes begin to occur 2) crash experience of 5 or more crashes during a one-year time period of type that could be corrected through access closure or 3) the volume "trigger points" established in this deviation are reached. Should any of these occur, traffic engineering evaluation of the access would be conducted to determine if 1) the operational and/or problems either occurring or imminently likely with additional traffic volumes are caused by motorists turning in and out of the access 2) the problems can be remedied through design and modification of the access or 3) as a last resort, the access must be closed.

Volume trigger points proposed are peak hour volumes using Bent Grass Meadows Drive just west of Meridian Road. A trigger volume of 200 entering and 200 exiting peak hour trips is the point at which reevaluation should occur as per the foregoing. This 200 is comprised on 89 entering and 89 exiting trips generated by the convenience store/gas station and 110 trips entering and 110 trips exiting to be generated by other commercial lots within the Preliminary Plan area.

To develop the triggers identified above, the SimTraffic traffic simulation model used in the Preliminary Plan traffic study was modified for short term conditions with the proposed temporary access point. Traffic volumes in addition to the projected convenience store traffic volumes were loaded into the model and operations were simulated numerous times to identify the most logical volume trigger point. The trigger point has been based on 1) the point at which the eastbound left turn queue extending back from the Meridian/Bent Grass Meadows intersection backed through

the temporary access intersection and average of about five percent of the time during the afternoon peak hour and/or 2) the westbound left turn queue at the temporary site access exceeded one or two vehicles. Queues regularly backing through the site access intersection have the potential to cause different operational and safety problems. Westbound queues at the site access extending back more than one or two vehicle lengths for a period of time can restrict the available distance for traffic turning from Meridian onto Bent Grass to maneuver to the right of these queued left turning vehicles or stop safely at the back of the left turn queue. This queue should be monitored most closely, however the simulation model indicated limited queue occurrence and short queue length and duration due to low opposing volumes arriving from the west along Bent Grass Meadows Drive. This analysis is based on several analysis parameters. These can be found in the attached Synchro analysis sheets. The results can be seen in the attached SimTraffic analysis results printouts. The analysis model used two-stage left turns from Bent Grass Meadows to northbound Meridian Road.

As shown on Figure 4, 402 vehicles were counted on Bent Grass Meadows Drive just west of Meridian Road (219 eastbound vehicles and 183 westbound vehicles) during the morning peak hour.

BACKGROUND TRAFFIC

Background traffic is the traffic estimated to be on the roadways without the Bent Grass Residential Filing No. 2 traffic. The short-term (Year 2020) background traffic volumes are shown in Figure 4. The background traffic volumes are based on the existing traffic volumes shown in Figure 3 with a portion of the volumes assumed to be rerouted with the construction of Bent Grass Meadows Drive between the existing sections located north of the Woodmen frontage road and west of Meridian Road. The short-term background traffic volumes also include additional traffic projected to be generated by buildout of the Bent Grass East Commercial development. Through traffic on Meridian Road was assumed to grow based on two percent growth per year.

Figure 5 shows the projected 2040 background traffic volumes. These volumes were estimated by LSC, based on previous work completed in the area by LSC including other Bent Grass Meadows developments and the Falcon Marketplace. The 2040 background traffic volumes assume buildout of the area north of Woodmen Road and west of Meridian Road. Appendix Table 1 shows the trip generation estimates for all existing and future land uses assumed to be built out in this area by 2040.

TRIP GENERATION

Estimates of the vehicle-trips generated by Bent Grass Residential Filing No. 2 have been made using the nationally published trip generation rates found in *Trip Generation, 10th Edition* by the Institute of Transportation Engineers (ITE). The results of the trip generation estimate are shown in Table 2.

Bent Grass Residential Filing No. 2 can be expected to generate about 1,680 vehicle-trips on the average weekday, with about half entering and 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 33 vehicles would enter, and 99 vehicles would exit the site. During the afternoon peak hour, which generally occurs for one hour between 4:15 and 6:15 p.m., about 11 vehicles would enter, and 65 vehicles would exit the site.

TRIP DISTRIBUTION AND ASSIGNMENT

verify with revised layout

The estimated directional distribution of the site-generated traffic volumes on the adjacent roadways is an important factor in determining the site's traffic impacts. Figure 6 shows the directional distribution estimates for the site-generated traffic. The estimates have been based on the following factors: the land use proposed for the site and its location; the existing and planned street and roadway system in the vicinity; and the existing/projected traffic volumes.

Trips with destination and/or origins with area bound by Woodmen Road on the south and Meridian Road on the east have been assigned separately. In the short term, a portion of the trips generated by Bent Grass Residential Filing No. 2 are estimated to travel to and from Bent Grass East Commercial development located on the southwest corner of Meridian Road and Bent Grass Meadows Drive. In the future, an additional portion of the trips by Bent Grass Residential Filing No. 2 are estimated to travel to and from the future elementary school located just east of the site, to and from the future retail development planned on the northwest corner of Meridian Road and Bent Grass Meadows Drive, and to and from the Falcon Marketplace to be located on the northwest corner of Woodmen Road and Meridian Road. Appendix Tables 1 and 2 show the internal trip assumptions and calculations.

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. Figure 7 shows the short-term site-generated traffic volume estimates. The short-term site-generated traffic volumes assume Bent Grass Meadows Drive has been constructed between Meridian Road and the Woodmen frontage road.

Figure 8 shows the long-term site-generated traffic volumes. The long-term site-generated traffic volumes assume buildout of the areas north of Woodmen Road and west of Meridian Road.

TOTAL TRAFFIC

Figure 9 shows the projected short-term total traffic volumes at the site access points and key area intersections. The short-term total traffic volumes are the sum of the short-term background traffic volumes from Figure 4 plus the short-term site-generated traffic volumes from Figure 7.

Figure 10 shows the projected 2040 total traffic volumes at the site access points and key area intersections. The 2040 total traffic volumes are the sum of the 2040 background traffic volumes from Figure 5 plus the long-term site-generated traffic volumes from Figure 8.

PROJECTED LEVELS OF SERVICE

The site access points, and key area intersections were analyzed to determine the projected levels of service based on the unsignalized method of analysis procedures found in *the Highway Capacity Manual, 6th Edition* by the Transportation Research Board or using Synchro. Figures 4, 5, 9, and 10 show the level of service analysis results. The level of service technical reports are attached.

Meridian/Bent Grass Meadows

The intersection of Meridian/Bent Grass Meadows is currently two-way, stop sign controlled. It is our understanding that this intersection will be required to be converted to traffic signal control with any additional development within Bent Grass East Commercial located southwest of this intersection. It is likely that this intersection would need to be converted to signal control, even without additional development, once Bent Grass Meadows Drive is constructed between the two existing sections north of the Woodmen frontage road and west of Meridian Road. As a signal-controlled intersection, all movements are projected to operate at LOS D or better during the peak hours based on both short-term and 2040 total traffic volumes.

Per El Paso County requirement, the following are three potential alternatives to a conventional, signalized, full-movement intersection, for which analysis results are presented in the preceding paragraph. These include modern roundabout, unsignalized channelized T-type intersection, and a channelized T-type intersection with a directional traffic signal. Table 3 shows a comparison of the level of service for each of the options.

Modern Roundabout Intersection

A modern roundabout intersection at Bent Grass Meadows Drive/Meridian Road would be a multi-lane roundabout.

Advantages

- The delay for the side-street left turn (eastbound approach) would improve from LOS F to LOS C in the short term.
- Generally, modern roundabouts have safety advantages over signal-controlled intersections. This is because crashes tend to be lower speed, there are fewer conflict points, and the types (angle) of crashes tend to be those which generally result in less severe accidents. Granted, conventional T-intersections have significantly fewer conflict points than four-leg conventional intersections.
- A roundabout may be more aesthetically appealing than a traditional signal-controlled intersection and may have generally lower traffic noise levels.

- Long-term operation and maintenance cost is likely to be lower with a roundabout than a traffic signal.

Disadvantages

- It would likely be difficult, if not impossible, to fit a multi-lane roundabout at this location given the limited ROW available on the east side of the intersection.
- The projected afternoon level of service for the northbound through movement is projected to be worse with the roundabout than with signal control.
- The travel speed through the intersection compared with a signalized intersection during the signal green phase would be slower for through traffic on Meridian Road. This may adversely affect travel times along the corridor. Also, if and when signalized intersections in the Meridian Road corridor are put into coordination, a roundabout would likely disrupt coordination.

Channelized-T Intersection

The channelized-T type intersection allows for an intersection with generally lower overall and side-street delay than with a conventional T-intersection and with fewer stops for the through traffic on the major roadway when compared to a conventional signalized T-intersection. An example of a channelized-T type intersection is at the intersection of US Highway 24 and Garrett Road near Falcon (El Paso County). That particular intersection is signalized with a “directional signal,” but a channelized-T at some locations can also operate as an unsignalized intersection with stop sign control on the minor street (Note: the analysis for this intersection indicates LOS F for the side-street left turn if not signalized). The raised median configuration would allow for “free” (no stopping) movement for the northbound through movement through the intersection. The eastbound left turn would cross the southbound lanes and into a channelized northbound left-turn acceleration lane for merging into northbound through traffic. This left-turn acceleration lane would need to be added on Meridian Road.

Advantages

- The intersection of Meridian/Bent Grass Meadows could likely operate at a satisfactory level of service as a stop sign-controlled intersection for longer as an unsignalized, channelized-T intersection than if it were to remain a conventional-T intersection.
- Signal control would be required to maintain an acceptable level of service, the channelized-T configuration would result in lower delay for through traffic especially for the northbound traffic which would operate as a free movement. The overall intersection delay is projected to be better with a channelized-T intersection.

- There is the potential, depending on the time of day and traffic volumes, to allow for a longer side-street signal phase due to one-way signal progression and no red phase for northbound traffic.

Disadvantages

- The channelized-T configuration may only be viable until (and if) a dual eastbound left turn lane is needed and/or Meridian Road is widened to six lanes (however, either may not occur for many years).
- The channelized-T configuration may be confusing for some drivers and the merging movement into northbound traffic requires a more complex movement than with a signal. However, most motorists entering the intersection from the west would be regular users and would quickly learn to navigate the intersection.
- A channelized-T intersection would require the construction of raised channelizing medians on Meridian Road and the ongoing maintenance of those medians. This would add significant cost to the project.
- The section of Meridian Road between this intersection and the Woodmen Hills Drive/Meridian Road intersection would need to be designed to accommodate a northbound left-turn acceleration lane from Bent Grass Meadows Drive with a taper and a northbound left-turn lane approaching Woodmen Hills Drive with a taper. Based on a posted speed limit of 55 mph, the El Paso County *Engineering Criteria Manual* (ECM) requires a 960-foot-long acceleration lane plus a 222-foot taper. Based on a design speed of 60 mph, the ECM requires a 290-foot-long left-turn deceleration lane approaching Woodmen Hills Drive plus storage length. The current lane length is about 700 feet plus a standard-length taper. The total length of the acceleration lane, lane tapers, and existing northbound left-turn lane for Woodmen Hills would be between 2,100 feet (1,880 if a continuous lane with a shared 222' taper length). The total distance between the intersections is about 2,000 feet (centerline to centerline).
- A channelized-T can be more difficult for pedestrians than a conventional signalized intersection. However, there may be ways to better accommodate pedestrians – such as adding a pedestrian-only phase for southbound traffic. More research would be needed regarding pedestrian accommodation.

Woodmen/Golden Sage

All movements at the intersection of Woodmen/Golden Sage are projected to operate at LOS D or better during the peak hours based on the projected short-term total traffic volumes. By 2040 the southbound and eastbound 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.

Signal and double NB
right with LOS C is
shown on Figure 4

Woodmen frontage road/Golden Sage

The intersection of the Woodmen frontage road/Golden Sage is currently stop sign controlled. All movements at this intersection are projected to operate at LOS B or better during the peak hours based on the projected short-term total traffic volumes. By 2040 the westbound approach is projected to operate at LOS E during the morning peak hour and LOS F during the afternoon peak hour. All movements are projected to operate at LOS C or better if this intersection is converted to either traffic signal control or reconstructed as a modern roundabout.

Analyze pros/cons between RAB and signal.

Woodmen frontage road/Bent Grass Meadows

All movements at the stop sign-controlled intersection of the Woodmen frontage road/Bent Grass Meadows are projected to operate at LOS C or better during the peak hours, based on the projected short-term and 2040 total traffic volumes.

Address Woodmen/Falcon Market Place RAB which
is pending approval and would capture some WB
traffic heading to this site.

Site Access Points

Both full-movement site access points to Bent Grass Meadows Drive are projected to operate at LOS B or better for all movements as stop sign-controlled intersections based on the short-term and 2040 total traffic volumes.

VEHICLE QUEUING ANALYSIS

A queuing analysis was performed using Synchro/SimTraffic for the key approach turning movements at the key area intersections to determine the projected queue lengths based on the projected total traffic volumes. The short-term and 2040 total peak-hour traffic volumes were entered into the Synchro model. The simulation was run five times. The queuing reports are attached.

The projected maximum northbound left-turn queue on Meridian Road approaching Bent Grass Meadows Drive is about 238 feet based on the short-term total afternoon peak hour volume and 496 feet based on the 2040 total afternoon peak hour volume. This queue could be accommodated by the existing 700-foot left-turn lane.

CONCLUSIONS AND RECOMMENDATIONS

Trip Generation

- Bent Grass Residential Filing No. 2 can be expected to generate about 1,680 vehicle-trips on the average weekday, with about half entering and half exiting in a 24-hour period. During the morning peak hour, about 33 vehicles would enter, and 99 vehicles would exit the site. During the afternoon peak hour about 111 additional vehicles would enter, and 65 vehicles would exit the site.

Signal and double NB right with LOS C is shown on Figure 4. Address roundabout pros/cons.

Level of Service

- The eastbound left-turn movement at the stop sign-controlled intersection of Meridian/Bent Grass Meadows is currently operating at LOS F during the morning peak hour and LOS E during the afternoon peak hour. If signalized, all movements are projected to operate at LOS D or better during the peak hours based on the projected short-term and 2040 total traffic volumes. The Level of Service section above also discusses potential alternative traffic control options.
- All movements at the intersection of Woodmen/Golden Sage are projected to operate at LOS D or better during the peak hours based on the projected short-term total traffic volumes. By 2040 the southbound and eastbound left-turn movements are projected to operate at LOS E during the morning peak hour.
- All movements at the stop sign-controlled intersection of the Woodmen frontage road/Golden Sage are projected to operate at LOS B or better during the peak hours based on the projected short-term total traffic volumes. By 2040 alternate intersection, control such as a traffic signal or a modern roundabout will likely be needed to maintain an acceptable level of service for this intersection.
- The intersection of the Woodmen frontage road/Bent Grass Meadows and the site access points to Bent Grass Meadows are projected to operate at LOS C or better for all movements during the peak hours at stop sign-controlled intersections based on the projected short-term and 2040 total traffic volumes.

Temporary 7-Eleven Access Evaluation

- The access to 7-Eleven on Bent Grass Meadows Drive was permitted and constructed as a temporary access and will be allowed to remain open with continued use subject to reevaluation. A trigger volume of 200 entering and 200 exiting peak hour trips using Bent Grass Meadows Drive just west of Meridian Road was established as the point at which reevaluation should occur as per the foregoing. As shown on Figure 4, 402 vehicles were counted on Bent Grass Meadows Drive just west of Meridian Road (219 eastbound vehicles and 183 westbound vehicles) during the morning peak hour. The temporary access will likely need to be closed with either additional development

within the Bent Grass East Commercial or the completion of Bent Grass Meadows Drive between the two existing sections.

Roadway Improvements

- Table 4 identifies the future roadway improvements that will be needed in the vicinity of the site. Table 4 also gives a recommended trigger for when each improvement will be needed.
- There is currently a 700-foot long single northbound left-turn lane on Meridian Road approaching Bent Grass Meadows Drive. A vehicle queueing analysis indicates that this intersection could continue to operate with a single left-turn lane, based on the short-term and 2040 total traffic volumes.

* * * * *

Please contact me if you have any questions or need further assistance.

Sincerely,

LSC TRANSPORTATION CONSULTANTS, INC.

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

JCH:KDF/jas

Enclosures: Tables 1, 3, 4, and 5
Appendix Tables 1 and 2
Figures 1-10
Traffic Count Report
Level of Service Reports
Queueing Reports

Table 2
Trip Generation Estimate
Bent Grass Residential Filing No. 2

Land Use Code	Land Use Description	Trip Generation Units	Trip Generation Rates ⁽¹⁾						Total Trips Generated					
			Average Weekday Traffic	Morning Peak Hour		Afternoon Peak Hour		Average Weekday Traffic	Morning Peak Hour		Afternoon Peak Hour			
				In	Out	In	Out		In	Out	In	Out		
210	Single-Family Detached Housing	178 DU ⁽²⁾	9.44	0.19	0.56	0.62	0.37	1,680	33	99	111	65		
Notes: (1) Source: "Trip Generation, 10th Edition, 2017" by the Institute of Transportation Engineers (ITE) (2) DU = dwelling unit														
Source: LSC Transportation Consultants, Inc.														

Verify

Table 3
Level of Service Comparison
 Bent Grass Meadows Drive/Meridian Road

Short-Term Total Traffic									2040 Total Traffic						
Scenario		AM Peak							AM Peak						
		Eastbound		Northbound		Southbound		Overall	Eastbound		Northbound		Southbound		Overall
		Left	Right	Left	Through	Through	Right		Left	Right	Left	Through	Through	Right	
Stop-Sign Control With Channelized "T" Configuration	Delay	1213.2	67.2	35.8	Free	Free	Free	---	>20000	193.9	214	Free	Free	Free	---
	LOS	F	F	E					F	F	F				
Modern Roundabout	Delay	17.2	37	5.9	6.4	15	20.9	16.6	35.1	107.9	7.3	8.1	31	56	40
	LOS	C	E	A	A	C	C	C	E	F	A	A	D	F	E
Conventional Signal Control	Delay	40.7	20	28.4	4.5	20.9	2.3	17	---	---	---	---	---	---	---
	LOS	D	B	C	A	C	A	B	---	---	---	---	---	---	---
Conventional Signal Control With Free Eastbound Right	Delay	41.6	0.3	28.5	4.4	20.4	2.2	15	54.1	0.4	53.7	3.3	31.2	3.5	24.5
	LOS	D	A	C	A	C	A	B	D	A	D	A	C	A	C
Signal Control With Channelized "T" Configuration	Delay	40.6	19.9	28.5	Free	20.9	2.3	16.1	54.1	0.4	53.7	Free	31.2	3.5	23.9
	LOS	D	B	C		C	A	B	D	A	D		C	A	C

PM Peak									PM Peak						
Scenario		Eastbound		Northbound		Southbound		Overall	Eastbound		Northbound		Southbound		Overall
		Left	Right	Left	Through	Through	Right		Left	Right	Left	Through	Through	Right	
Stop-Sign Control With Channelized "T" Configuration	Delay	381.7	17.0	14.5	Free	Free	Free	---	13886.2	50.9	55.5	Free	Free	Free	---
	LOS	F	C	B					F	F	F				
Modern Roundabout	Delay	8.9	10.1	11.3	13.8	7.7	8.7	10.7	52.4	25.6	47.8	85.8	14	17.5	45.1
	LOS	A	B	B	B	A	A	B	F	D	E	F	B	C	E
Conventional Signal Control	Delay	46.4	8.1	11.5	7.5	13.9	2.5	12.2	---	---	---	---	---	---	---
	LOS	D	A	B	A	B	A	B	---	---	---	---	---	---	---
Conventional Signal Control With Free Eastbound Right	Delay	46.4	0.3	11.5	7.5	13.9	2.5	11.5	54.2	9	51	9.5	33.9	4.0	25.8
	LOS	D	A	B	A	B	A	B	D	A	D	A	C	A	C
Signal Control With Channelized "T" Configuration	Delay	46.4	8.1	11.1	Free	14.2	2.5	9.4	54.2	9	51	Free	33.9	4.0	22.6
	LOS	D	A	B		B	A	A	D	A	D		C	A	C

Source: LSC Transportation Consultants, Inc.

Table 4 Improvements Bent Grass Residential Filing No. 2				
Description		Trigger	Timing	Responsibility
Meridian Road/Bent Grass Meadows Road				
Signalize Meridian/Bent Grass Meadows	Remove existing stop-sign and replace with traffic signal control.	When warrant(s) are met -- 2 of the 3 conditions of the "Crash Experience" warrant are currently met. The current number of reported crashes (susceptible to correction with a signal) exceeds the threshold as do the associated traffic volume thresholds.	With opening of the approved expansion of the veterinary clinic or Once El Paso County determines that the remaining condition within the Crash Experience Warrant has been met (determines that alternatives have failed to reduce crash frequency) and determines that a signal should be installed.	Bent Grass Metro District
Right-turn acceleration lane on Meridian at Bent Grass Meadows	ECM criteria indicates the acceleration lane would need to be 960 feet long plus a 222-foot taper based on the design speed of 60 mph. Note that Owl Lane is located approximately 925 feet south of Bent Grass Meadows Drive. Therefore, the lane would be a continuous acceleration/deceleration lane between Bent Grass Meadows Drive and Owl Lane.	ECM criteria has been exceeded. A deviation was previously approved waiving this requirement with the development of Bent Grass Residential Filing 1 and Bent Grass East Commercial Filing 2A. Additional development will either require the submittal and approval of a new deviation or construction of this improvement. (Notes: The installation of the traffic signal will regularly stop southbound traffic allowing eastbound right turns to enter southbound Meridian Road without an acceleration lane. The LOS analysis indicates significant improvement of the LOS with the signal. The crash data does not indicate a safety issue with the current eastbound right movement without the accel lane. Several costly improvements may be needed to build the accel lane -- including burying the overhead power lines south to Owl Place, reconstructing the ditch section along the west side of Meridian Road, and reworking the radius at Meridian Road. This intersection is similar to the Meridian/Woodmen Hills, Meridian/Stapleton, and Meridian/Londonderry intersections to the north in that [or "to the extent that"] southbound right acceleration lanes have not been added. If the County ultimately wants a raised right-turn island on this southwest corner of the Bent Grass Meadows/Meridian Road intersection in conjunction with an accel lane, this would likely need to be accomplished later with the overall widening of Bent Grass Meadows just west of Meridian Road.	Accel lane construction or a deviation -- with any development beyond the approved expansion of the veterinary clinic and expansion of parking for the dental clinic.	Bent Grass Metro District
Bent Grass Meadows Dr				
Construct Bent Grass Meadows Drive between the existing sections located north of the Woodmen frontage road and west of Meridian Road	Construct Bent Grass Meadows Drive as a Non-Residential Collector	With any development west of Bent Grass Residential Filing No. 1	With the currently proposed Bent Grass Residential Filing No. 2	Bent Grass Developer/District
Restrict westbound left-turn at 7-Eleven access	Remove the striping for the left-turn bay at the 7-Eleven access, restripe for two sets of dual yellow lines as shown in Figure 9. If trigger for closure of westbound left-in is reached prior to the trigger for access closure, install No Left Turn signs and reflective, plastic delineators within the painted center median across the 7-Eleven access.	When westbound left-turn queue exceeds the length of the existing lane.	"With 50% percent development of the remaining vacant parcels within Bent Grass East Commercial beyond the approved expansion of the veterinary clinic and expansion of parking for the dental clinic. or With the completion of Bent Grass Meadows Dr between the Woodmen frontage road and Meridian Road	Bent Grass Metro District
Close 7-Eleven Access	Remove the existing curb cut.	When the eastbound right-turn queue approaching Meridian Road blocks the access and/or if motorists exiting from the 7-Eleven access and turning into the eastbound left-turn lane approaching Meridian Road regularly impede/block the adjacent eastbound right-turn lane approaching Meridian Road.	With 50% percent development of the remaining vacant parcels within Bent Grass East Commercial beyond the approved expansion of the veterinary clinic and expansion of parking for the dental clinic. or With the completion of Bent Grass Meadows Dr between the Woodmen frontage road and Meridian Road	Bent Grass Metro District
Woodmen frontage road/Bent Grass Meadows Dr				
Eastbound left-turn lane on Woodmen frontage road approaching Bent Grass Meadows Dr.	ECM criteria indicates the left-turn lane would need to be 315 feet long (155 feet of deceleration length plus 160 feet of storage length) plus a 160-foot taper based on the design speed of 40 mph.	When the eastbound left-turn volume exceeds 25 vehicles per hour	With the completion of Bent Grass Meadows Dr between the Woodmen frontage road and Meridian Road	Bent Grass Developer/District
Woodmen/Golden Sage				
Lengthening of the current eastbound single left-turn deceleration lane on Woodmen approaching Golden Sage Road	Provide a 240-foot transition taper (20:1 taper ratio), 290 feet of deceleration distance plus sufficient vehicle stacking distance. CURRENT: 175-foot taper plus a 465-foot left-turn lane which translates to a 175-foot taper, 290-foot deceleration distance, and 175 feet of stacking distance. SHORT TERM: Adequate stacking is available in the current turn lane - calculated queue length 204 feet. LONG TERM: Lengthen single left-turn lane and/or future implementation of dual left-turn lanes (if capacity needs dictate). If a dual left is implemented in the future, consideration will need to be given to the configuration on Golden Sage and at the Golden Sage/Woodmen Frontage Road intersection to receive the dual left-turn movement.	The estimated "trigger" of 40 PM peak hour eastbound left turns above the estimated short term total volume (from Figure 16a of the TIS) approximately translates to and additional 589 directional ADT for residential trips making this turning movement (based on the ITE single family trip ratio). This estimated threshold may be reached with a combination of site-generated trips and background trips.	AS NEEDED TO MAINTAIN ADEQUATE LEVEL OF SERVICE AND VEHICLE STACKING DISTANCE. " This is estimated to be when the eastbound left turn turning volume reaches approximately 200 vehicles per hour during the PM peak. This translates to about 40 vehicles per hour over the estimated short term total volume from Figure 16a of the Falcon Marketplace TIS. Note: Short term total volumes assume the Meridian extension to Highway 24 to be open.	Bent Grass Developer/District - Bent Grass will pay its pro-rata share by (based on total traffic volumes) of the cost of the improvement. Note: Other potential responsibility for participation: In addition to the yet-to-be developed properties within the Bent Grass Metro District service area and the Falcon Marketplace development, other future developers of currently vacant lane within the "travel shed" of the north leg (and potentially the south leg) of the Golden Sage/Woodmen and Golden Sage/Woodmen N. Frontage Road intersection may also be assigned as responsible participants in future or completed (if a cost recovery agreement is put in place) traffic/roadway improvements.
Southbound exclusive right-turn lane on Golden Sage Road approaching Woodmen Road	A continuous right-turn lane within the 150 feet between the Woodmen Frontage Road and Woodmen Road	The estimated "trigger" of 5-30 AM peak hour southbound right turns above the estimated short term total volume (from Figure 16a of the Falcon Marketplace TIS) approximately translates to an additional 85-510 directional ADT for residential trips making this turning movement (based on the ITE single family trip ratio). This estimated threshold may be reached with a combination of site-generated trips and background trips.	AS NEEDED TO MAINTAIN ADEQUATE LEVEL OF SERVICE AND VEHICLE STACKING DISTANCE. " A preliminary trigger could be a southbound right turn volume of about 150-175 vehicles per hour. This translates to about 5 to 30 vehicles per hour over the projected short term volume from Figure 16a of the Falcon Marketplace TIS. This may be conservative due to the westbound right turn acceleration lane on Woodmen Road. Additional study may indicate a higher threshold based on empirical data collection and analysis.	Bent Grass Developer/District - Bent Grass will pay its pro-rata share by (based on total traffic volumes) of the cost of the improvement.Note: Other potential responsibility for participation: In addition to the yet-to-be developed properties within the Bent Grass Metro District service area and the Falcon Marketplace development, other future developers of currently vacant lane within the "travel shed" of the north leg (and potentially the south leg) of the Golden Sage/Woodmen and Golden Sage/Woodmen N. Frontage Road intersection may also be assigned as responsible participants in future or completed (if a cost recovery agreement is put in place) traffic/roadway improvements
Signalization of Golden Sage Road/Woodmen Frontage Road or reconstruction as a modern roundabout; Future additional laneage may be necessary at this intersection to accommodate vehicle queues and for traffic operations.	Remove existing stop-signs and replace with traffic signal control or reconstruct as modern roundabout	If/when needed to maintain acceptable level of service/traffic operations and/or to control vehicle queues. Fair-share participation by the development or the district on behalf of the district members.	If/when needed to maintain acceptable level of service/traffic operations and/or to control vehicle queues.	Bent Grass Developer/District - Bent Grass will pay its pro-rata share by (based on total traffic volumes) of the cost of the improvement. Note: Other potential responsibility for participation: In addition to the yet-to-be developed properties within the Bent Grass Metro District service area and the Falcon Marketplace development, other future developers of currently vacant lane within the "travel shed" of the north leg (and potentially the south leg) of the Golden Sage/Woodmen and Golden Sage/Woodmen N. Frontage Road intersection may also be assigned as responsible participants in future or completed (if a cost recovery agreement is put in place) traffic/roadway improvements.

Source: LSC Transportation Consultants, Inc.

Please add number or letter identifiers for each improvement.

Shown on short-term Figure 4. Does completion of BGMD trigger the improvement?

What is the pro-rata percentage and dollar amount for this final plat?

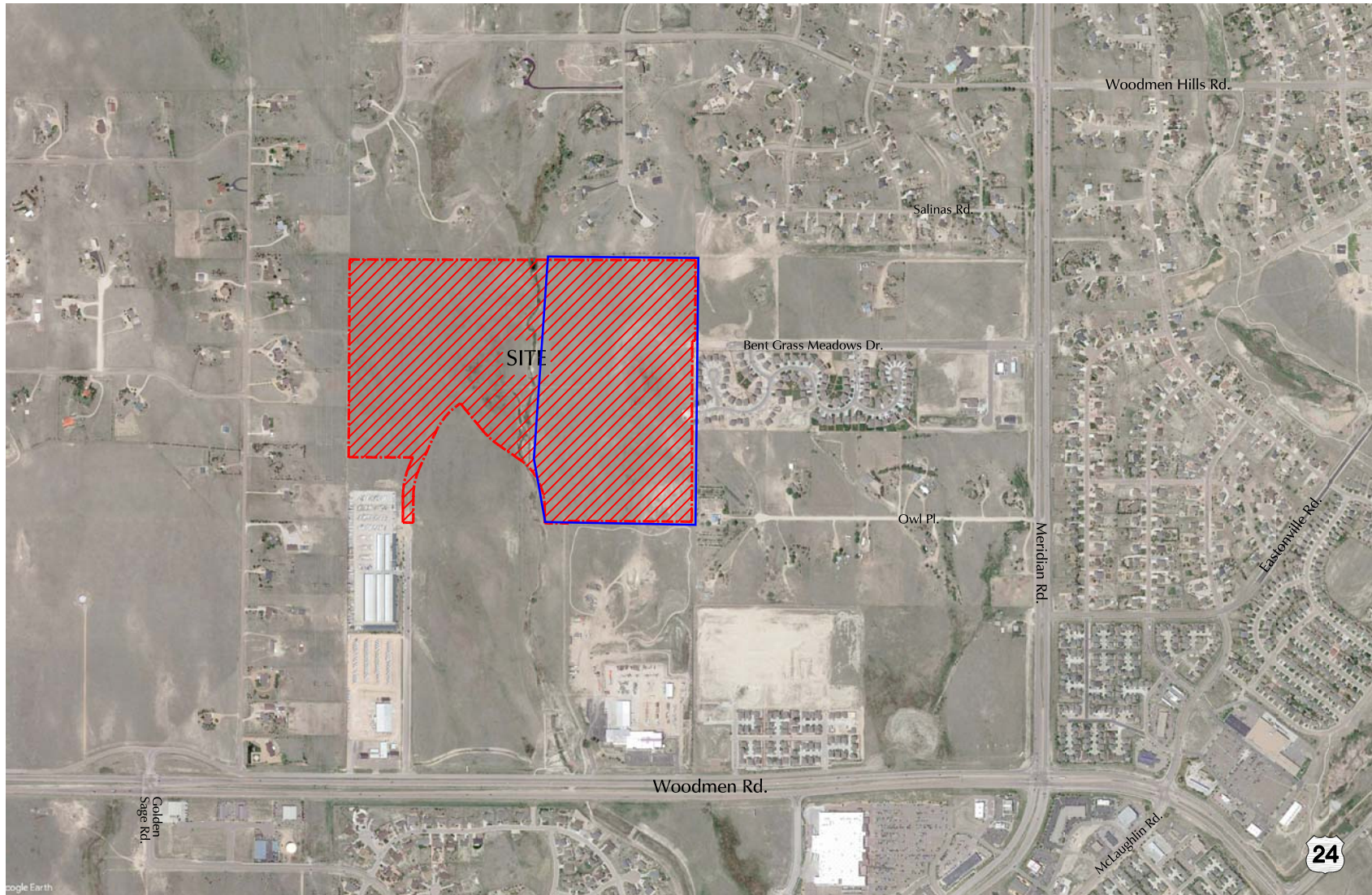
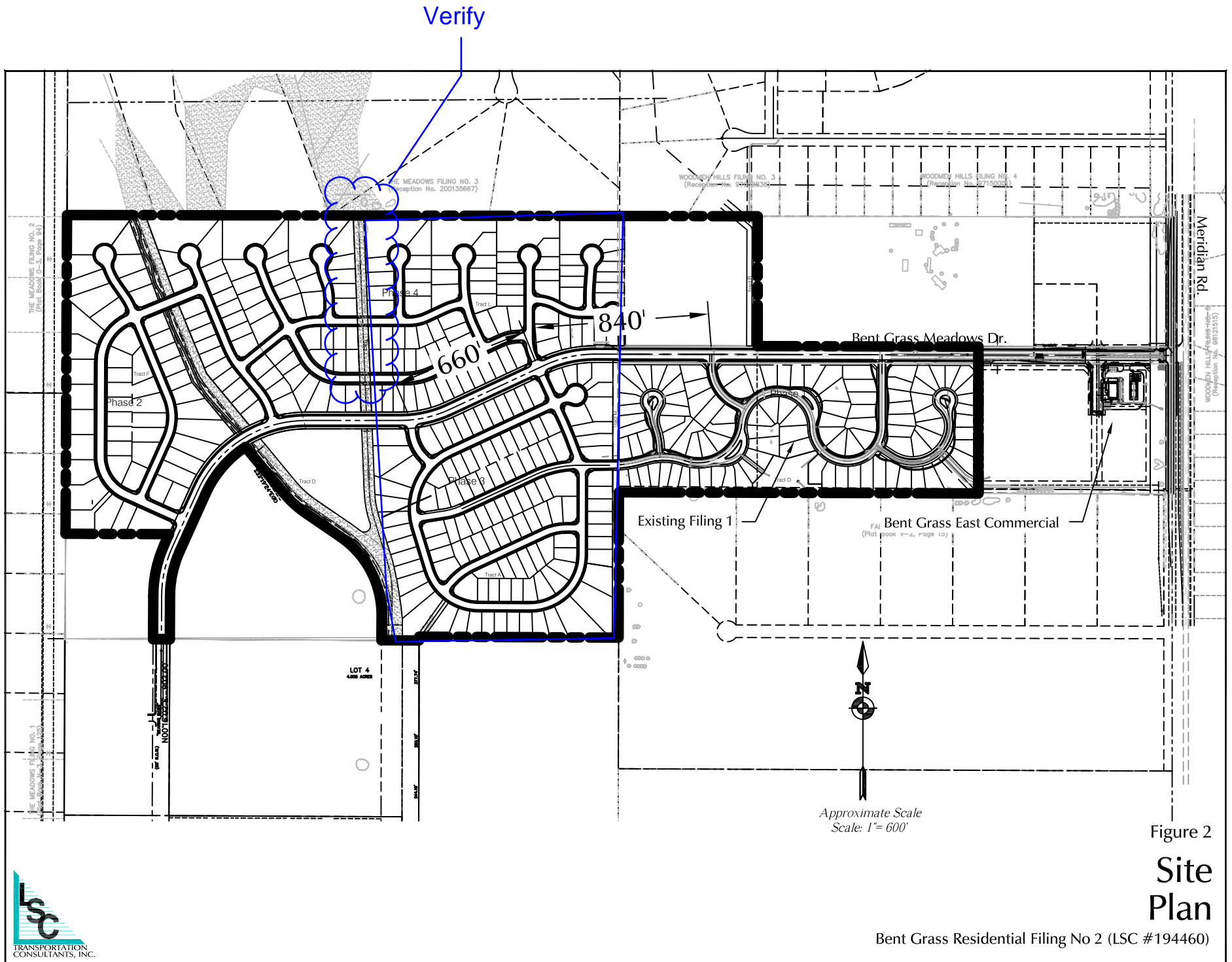
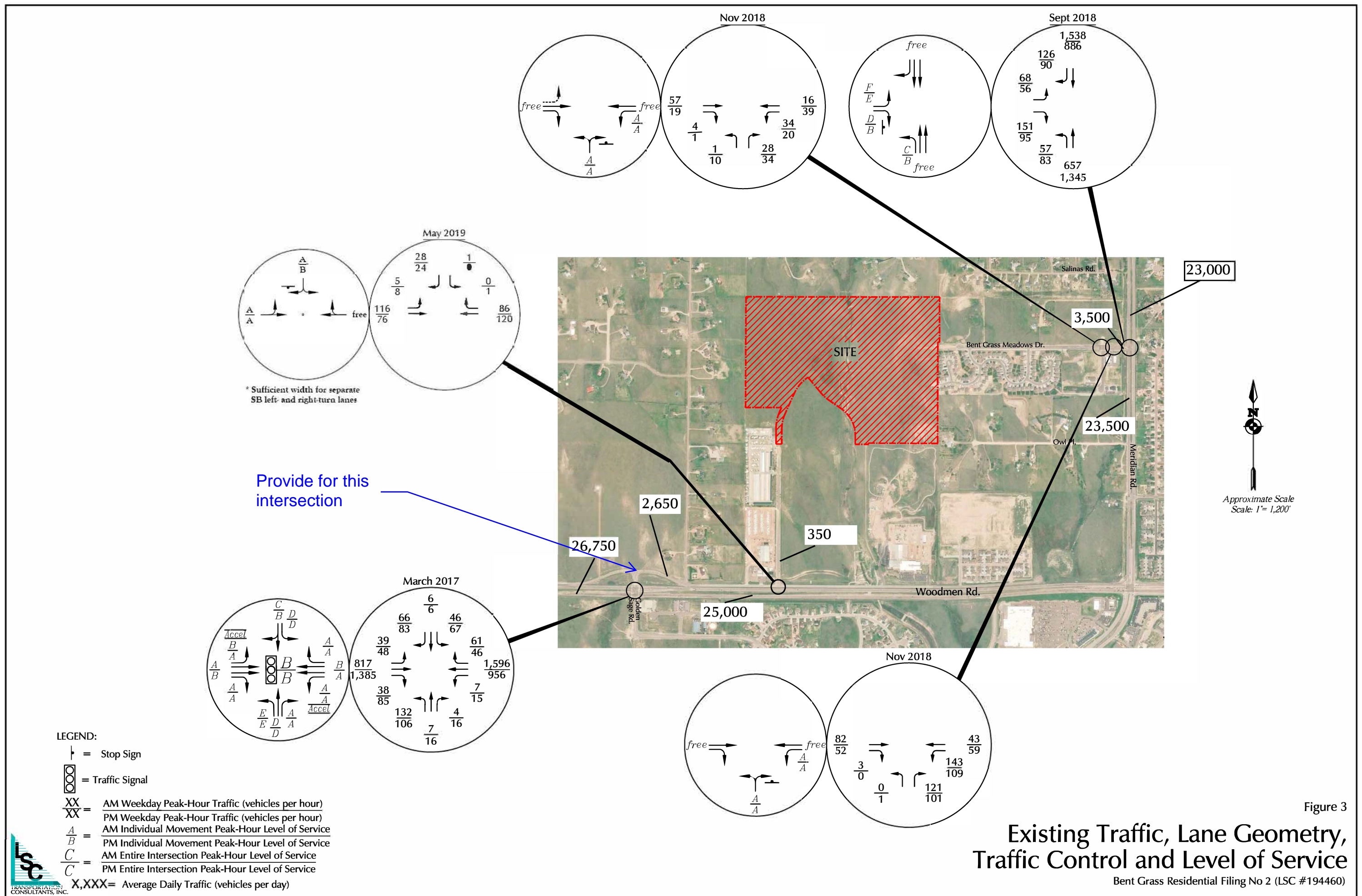


Figure 1

Vicinity Map

Bent Grass Residential Filing No 2 (LSC #194460)





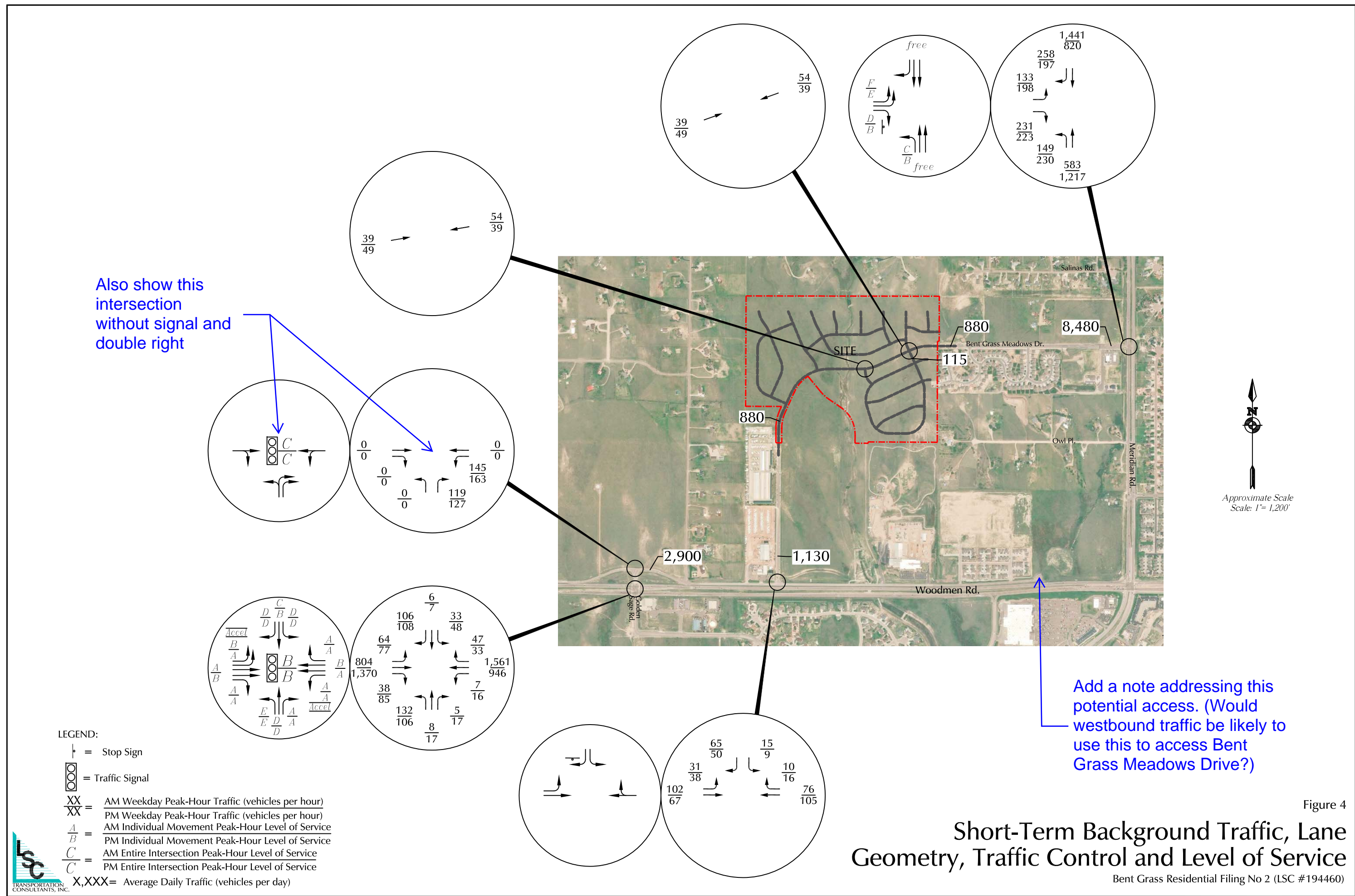


Figure 4
Short-Term Background Traffic, Lane Geometry, Traffic Control and Level of Service
 Bent Grass Residential Filing No 2 (LSC #194460)

This needs to be a roundabout. What would roundabout LOS be?

LEGEND:

⊥ = Stop Sign

⊞ = Traffic Signal

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

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

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

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

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

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

X,XXX= Average Daily Traffic (vehicles per day)

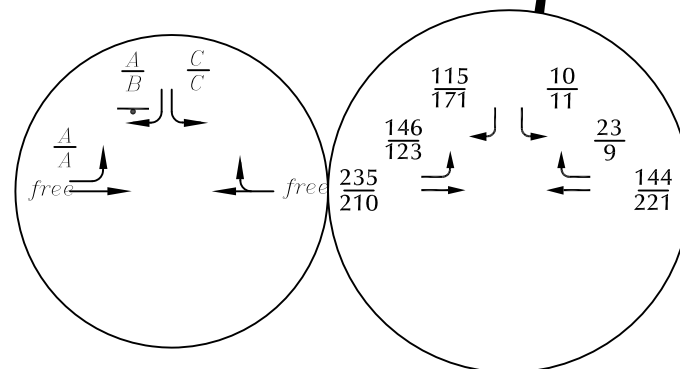
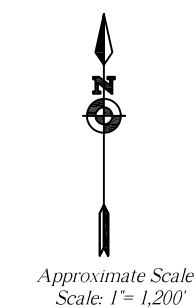
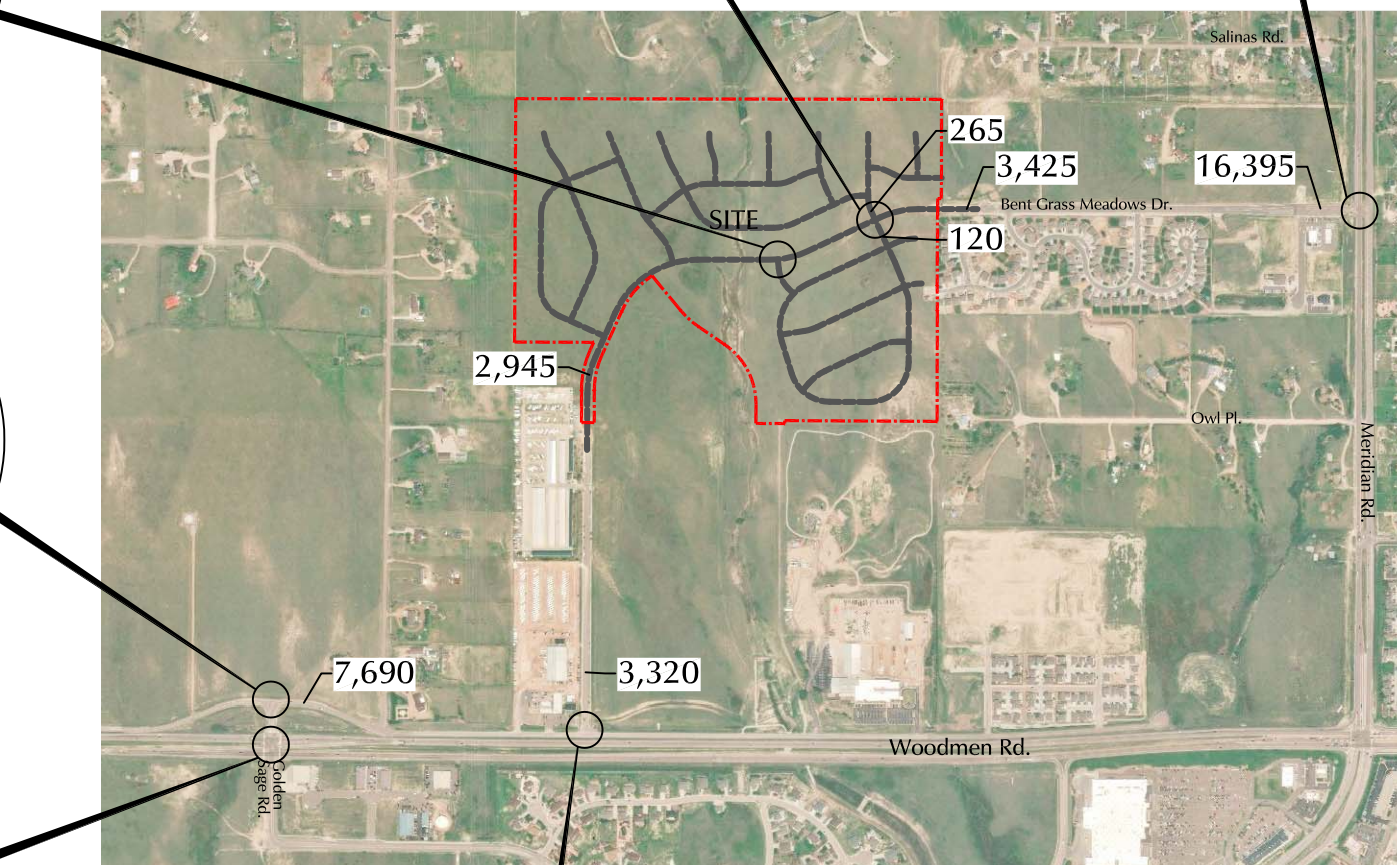
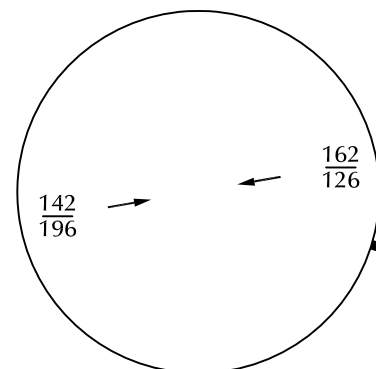
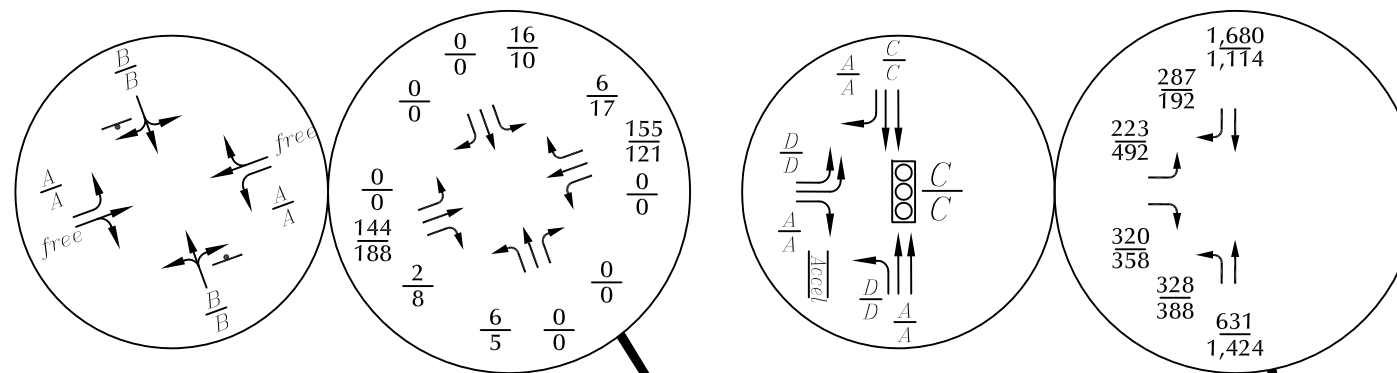
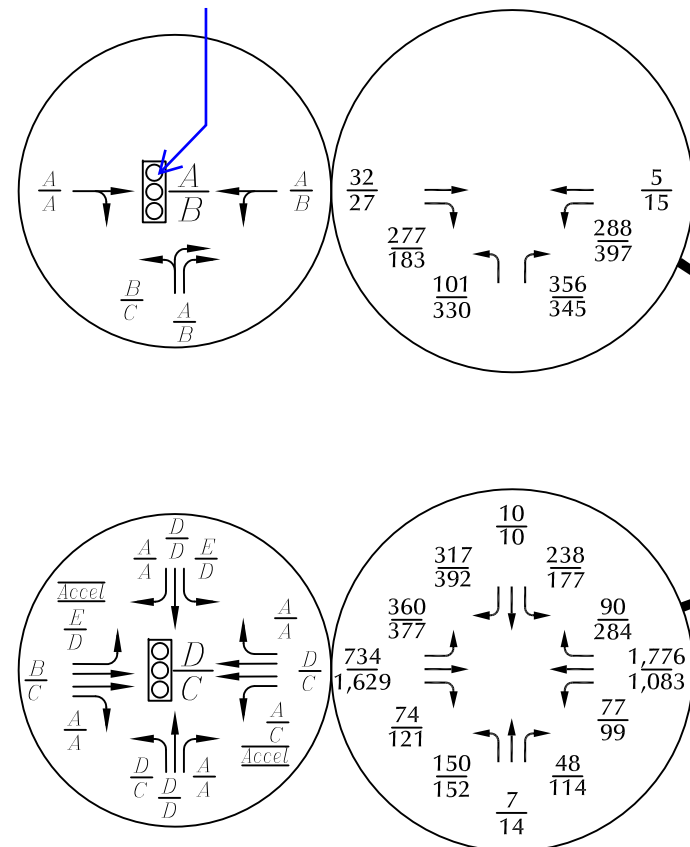


Figure 5
Year 2040 Background Traffic, Lane Geometry, Traffic Control and Level of Service
 Bent Grass Residential Filing No 2 (LSC #194460)

This seems high

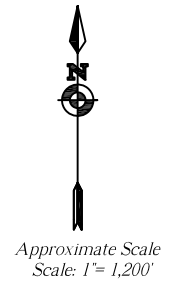
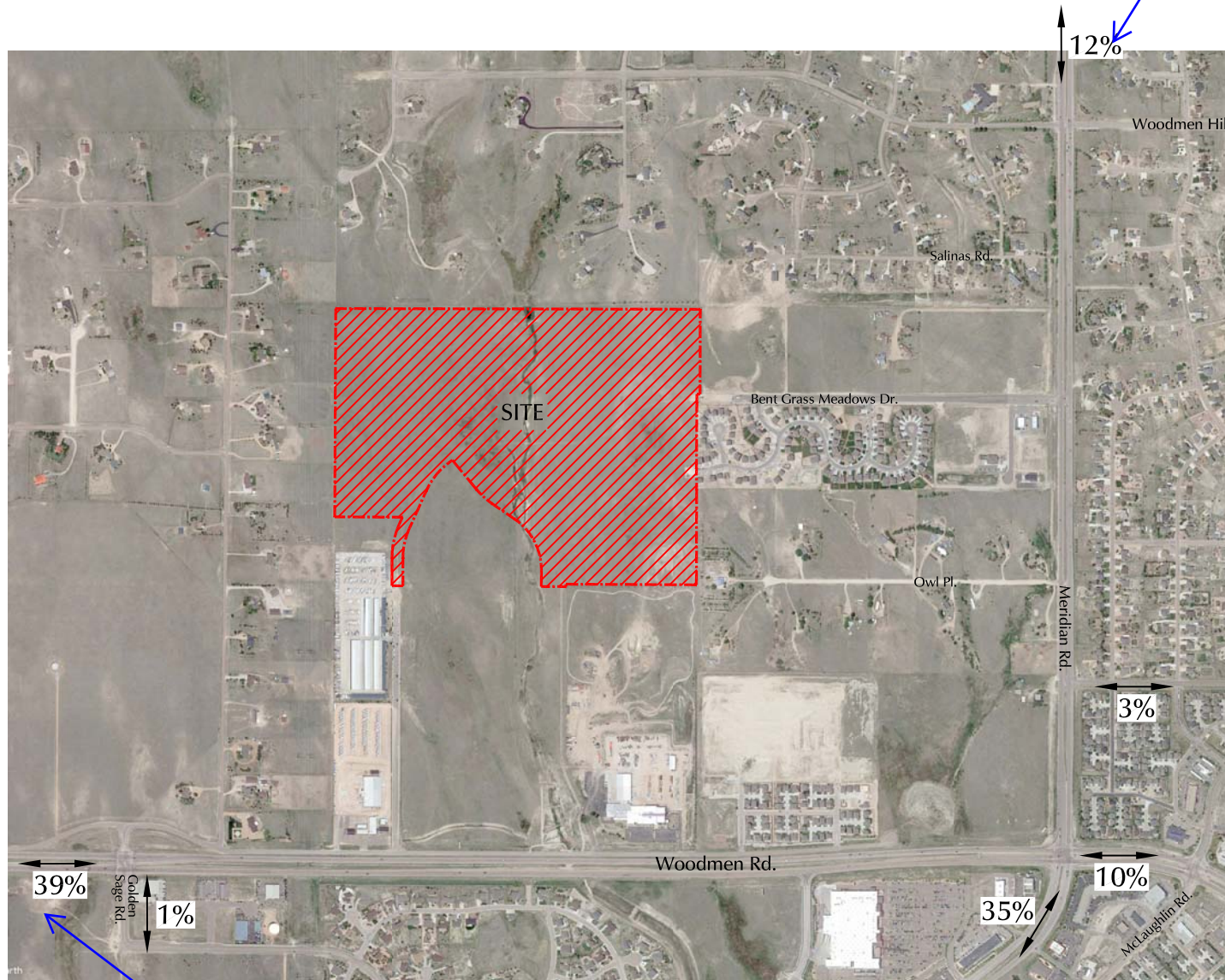


Figure 6

Directional Distribution of Site-Generated Traffic

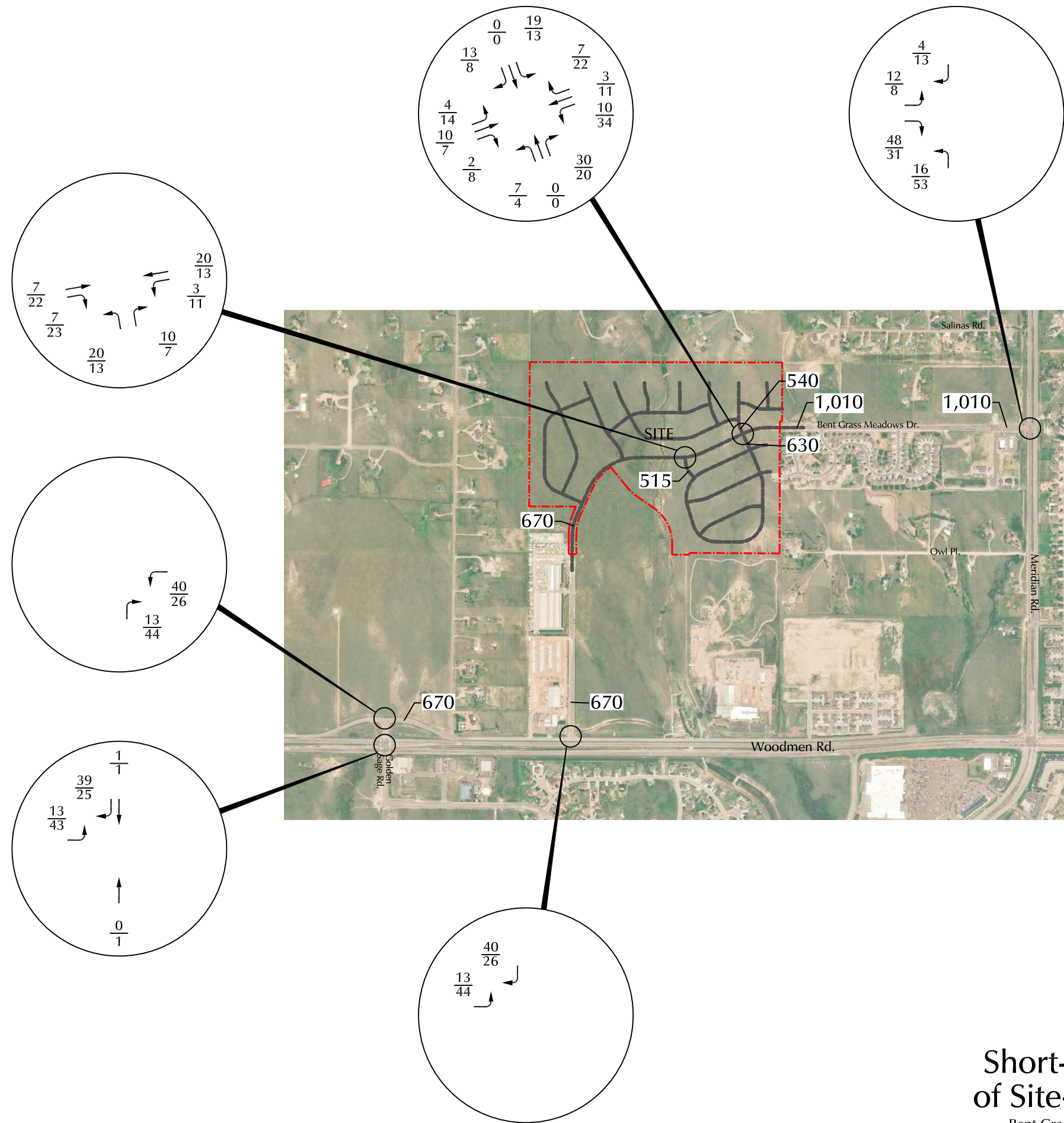
Bent Grass Residential Filing No 2 (LSC #194460)



LEGEND:

XX% = Percent Directional Distribution

low?



Approximate Scale
Scale: 1"= 1,200'


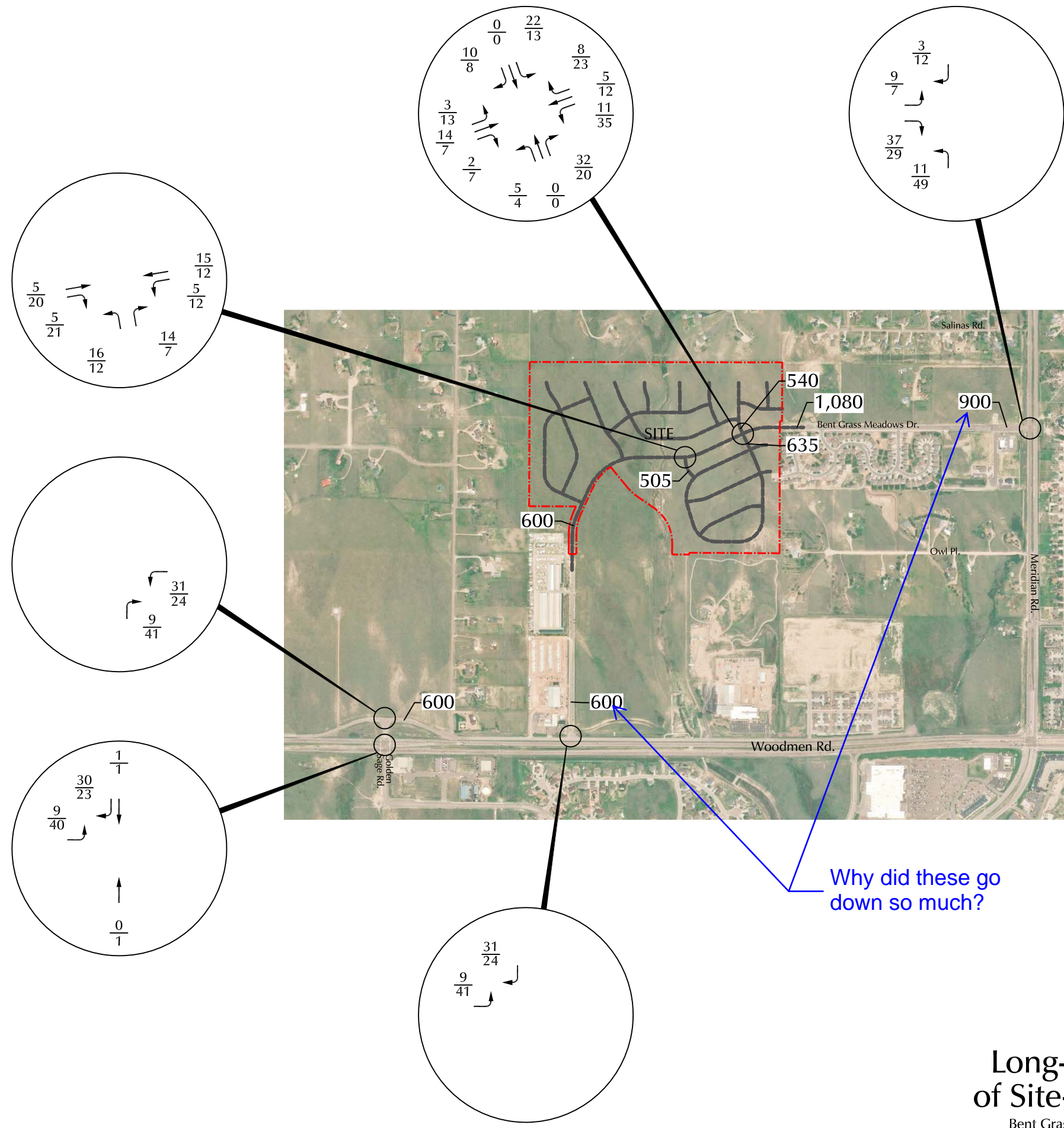
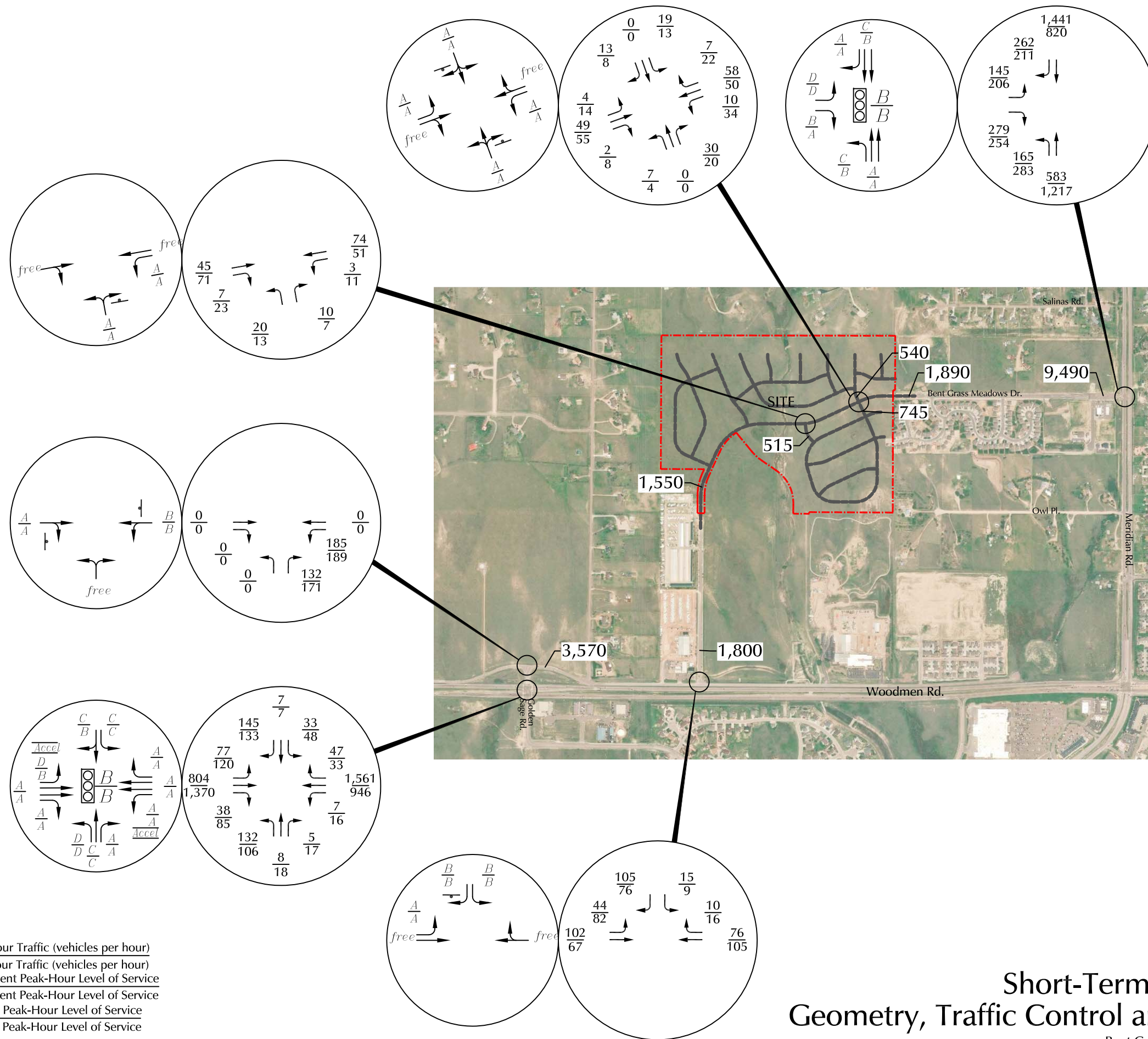
LEGEND:
 $\frac{XX}{XX}$ = AM Weekday Peak-Hour Traffic (vehicles per hour)
 $\frac{XX}{XX}$ = PM Weekday Peak-Hour Traffic (vehicles per hour)
 X,XXX= Average Daily Traffic (vehicles per day)

Figure 7
**Short-Term Assignment
 of Site-Generated Traffic**
 Bent Grass Residential Filing No 2 (LSC #194460)



Approximate Scale
Scale: 1"= 1,200'

Why did these go down so much?



Approximate Scale
Scale: 1"= 1,200'

LEGEND:

- = Stop Sign
- = Traffic Signal
- $\frac{XX}{XX}$ = AM Weekday Peak-Hour Traffic (vehicles per hour)
PM Weekday Peak-Hour Traffic (vehicles per hour)
- $\frac{A}{B}$ = AM Individual Movement Peak-Hour Level of Service
PM Individual Movement Peak-Hour Level of Service
- $\frac{C}{C}$ = AM Entire Intersection Peak-Hour Level of Service
PM Entire Intersection Peak-Hour Level of Service
- X,XXX= Average Daily Traffic (vehicles per day)

Figure 9
Short-Term Total Traffic, Lane Geometry, Traffic Control and Level of Service
Bent Grass Residential Filing No 2 (LSC #194460)



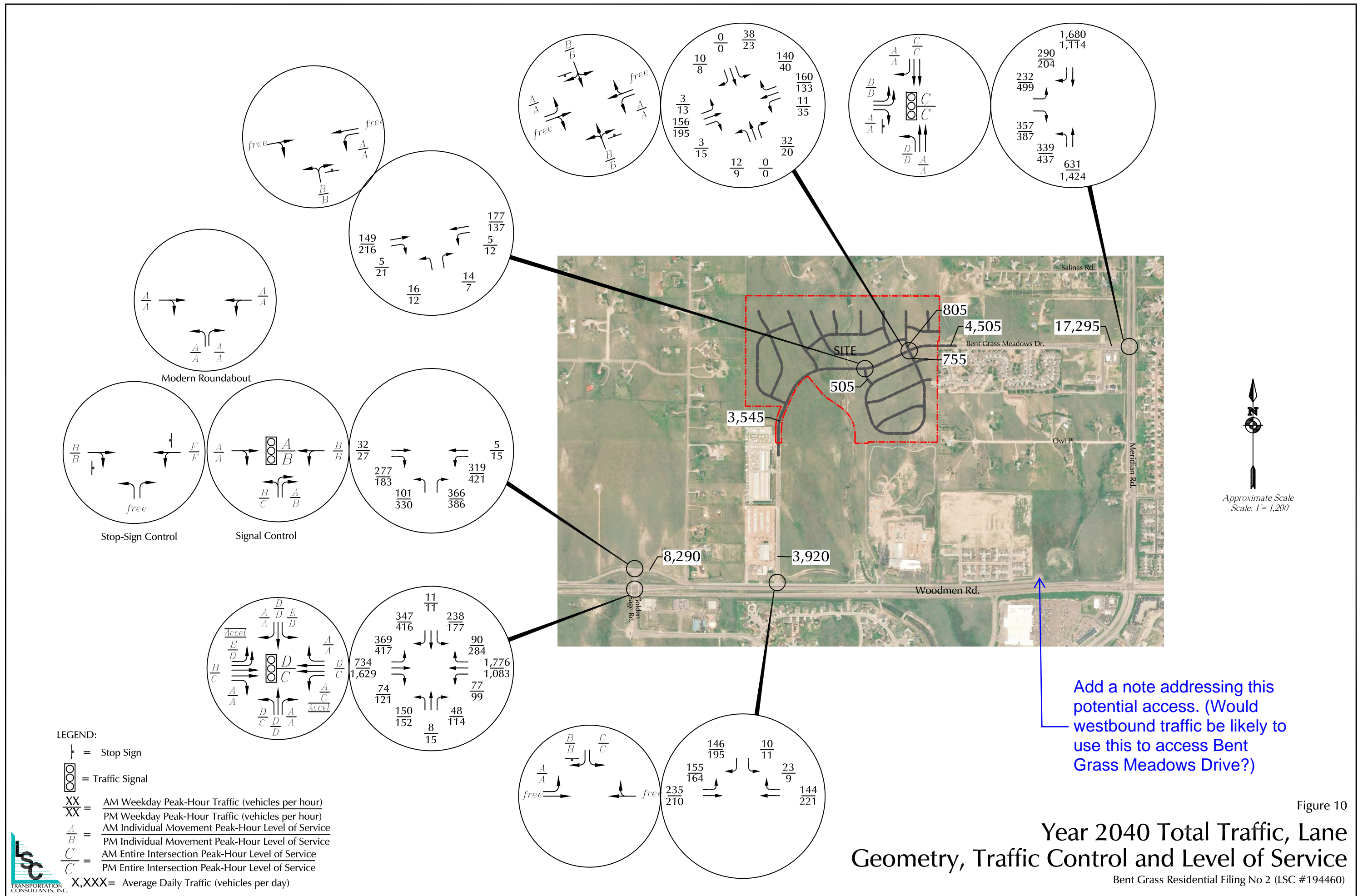


Figure 10
Year 2040 Total Traffic, Lane Geometry, Traffic Control and Level of Service
 Bent Grass Residential Filing No 2 (LSC #194460)

If this connects to a school site will it really be local low volume?

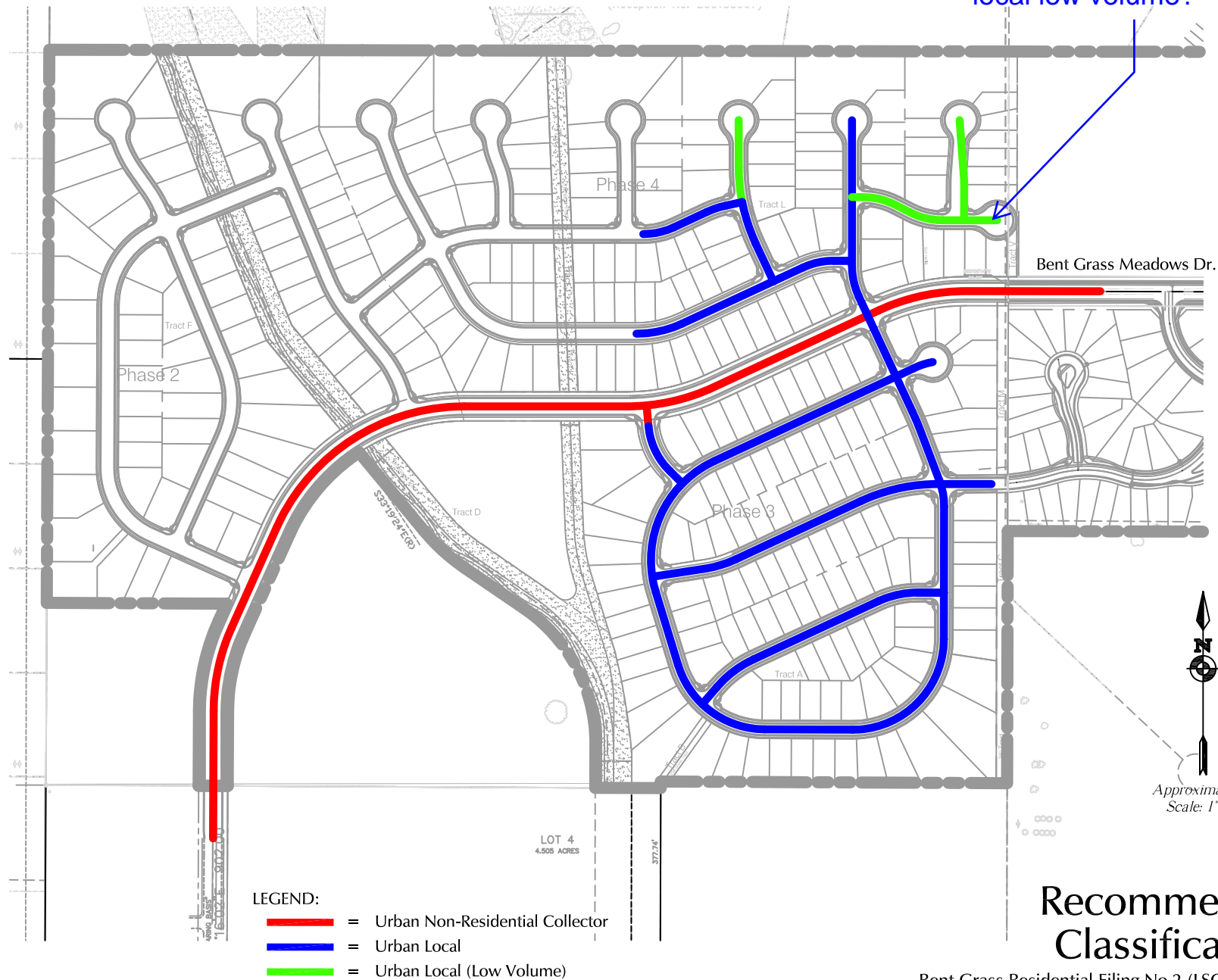


Figure 11

Recommended Classifications

Bent Grass Residential Filing No 2 (LSC #194460)

Appendix Table 1
Bent Grass Residential Filling No. 2
Study Area Trip Generation Estimate

Notes:

- (1) Source: "Trip Generation, 10th Edition, 2017" by the Institute of Transportation Engineers (ITE)
- (2) Source: "Trip Generation Handbook - An ITE Proposed Recommended Practice, Second Edition" by ITE
- (3) DU = dwelling unit
- (4) KSF = thousand square feet
- (5) Trip generation based on peak-hour intersection turning movement counts by LSC in May 2019
- (6) Trip generation based on information based on peak-hour intersection turning movement counts by LSC May 2019
- (7) Daily and morning peak-hour trip generation rates for Pet Supply Superstore are estimates by LSC
- (8) VFP = vehicle fueling position
- (9) The AM peak-hour trip generation rates have been reduced by LSC as the proposed fast-food restaurant does not serve breakfast
- (10) Based on the NCHRP 684 Internal Trip Capture Estimate Tool

Source: LSC Transportation Consultants, Inc.

Source: LSC Transportation Consultants, Inc.

**Appendix Table 2
Bent Grass Residential Fil No. 2
Internal Trip Estimate**

Land Use	Raw ITE Trip Generation (Individual Driveway)						Percent Internal Trips					Total Internal Trips					
	Daily	AM Peak Hour		PM Peak Hour			Daily	AM Peak Hour		PM Peak Hour		Daily	AM Peak Hour		PM Peak Hour		
		In	Out	In	Out			In	Out	In	Out		In	Out			
Single-Family Detached Housing	7,770	153	458	515	301	School Other Total	5%	21%	16%	4%	3%	473	39	91	22	10	
Multifamily Housing (Low-Rise)	1,998	29	97	96	57		5%	5%	2%	3%	5%	456	9	13	21	19	
							10%	26%	19%	7%	8%	929	48	104	43	29	
	9,768	182	555	611	358												
Elementary School	945	181	154	41	44		50%	50%	25%	25%	50%	473	91	39	10	22	
Retail/Office	45,620	1,295	889	1,942	2,057		1%	1%	1%	1%	1%	456	13	9	19	21	
Industrial/Manufacturing	5,044	543	137	144	484		0%	0%	0%	0%	0%	0	0	0	0	0	
TOTAL Non-Residential	51,609	2,019	1,180	2,127	2,585							929	104	48	29	43	
TOTAL	61,377	2,201	1,735	2,738	2,943							1,858	152	152	72	72	

Notes:



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719-633-2868

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Site Code

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Groups Printed- Unshifted

	Bent Grass Meadows Southbound					Woodmen Frontage Rd Westbound					Northbound					Woodmen Frontage Rd Eastbound					
Start Time	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Int. Total
06:30 AM	1	0	20	0	21	0	14	0	0	14	0	0	0	0	0	0	37	0	0	37	72
06:45 AM	0	0	6	0	6	0	15	0	0	15	0	0	0	0	0	1	49	0	0	50	71
Total	1	0	26	0	27	0	29	0	0	29	0	0	0	0	0	1	86	0	0	87	143
07:00 AM	0	0	0	0	0	0	24	0	0	24	0	0	0	0	0	0	14	0	0	14	38
07:15 AM	0	0	2	0	2	0	33	0	0	33	0	0	0	0	0	4	16	0	0	20	55
07:30 AM	0	0	3	0	3	0	24	0	0	24	0	0	0	0	0	2	6	0	0	8	35
07:45 AM	0	0	2	0	2	0	23	0	0	23	0	0	0	0	0	0	8	0	0	8	33
Total	0	0	7	0	7	0	104	0	0	104	0	0	0	0	0	6	44	0	0	50	161
08:00 AM	0	0	1	0	1	0	12	0	0	12	0	0	0	0	0	2	9	0	0	11	24
08:15 AM	0	0	13	0	13	0	14	0	0	14	0	0	0	0	0	0	11	0	0	11	38



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	Bent Grass Meadows Southbound					Woodmen Frontage Rd Westbound					Northbound					Woodmen Frontage Rd Eastbound					
Start Time	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Left	Through	Right	Peds	App. Total	Int. Total
04:00 PM	0	0	2	0	2	0	13	0	0	13	0	0	0	0	0	3	14	0	0	17	32
04:15 PM	0	0	4	0	4	0	11	0	0	11	0	0	0	0	0	1	21	0	0	22	37
04:30 PM	0	0	20	0	20	0	10	0	0	10	0	0	0	0	0	3	16	0	0	19	49
04:45 PM	0	0	12	0	12	0	10	1	0	11	0	0	0	0	0	2	24	0	0	26	49
Total	0	0	38	0	38	0	44	1	0	45	0	0	0	0	0	9	75	0	0	84	167
05:00 PM	0	0	7	0	7	0	10	0	0	10	0	0	0	0	0	0	18	0	0	18	35
05:15 PM	0	0	3	0	3	0	17	0	0	17	0	0	0	0	0	3	17	0	0	20	40
05:30 PM	0	0	2	0	2	0	83	1	0	84	0	0	0	0	0	3	17	0	0	20	106
05:45 PM	0	0	3	0	3	0	25	0	0	25	0	0	0	0	0	1	16	0	0	17	45
Total	0	0	15	0	15	0	135	1	0	136	0	0	0	0	0	7	68	0	0	75	226

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

LSC Transportation Consultants, Inc. **Colorado Springs, CO 80903** : Golden Sage Rd - Woodmen Rd AM
 (719) 633-2868 Site Code : 00164350
 Start Date : 03/08/2017
 Page No : 1

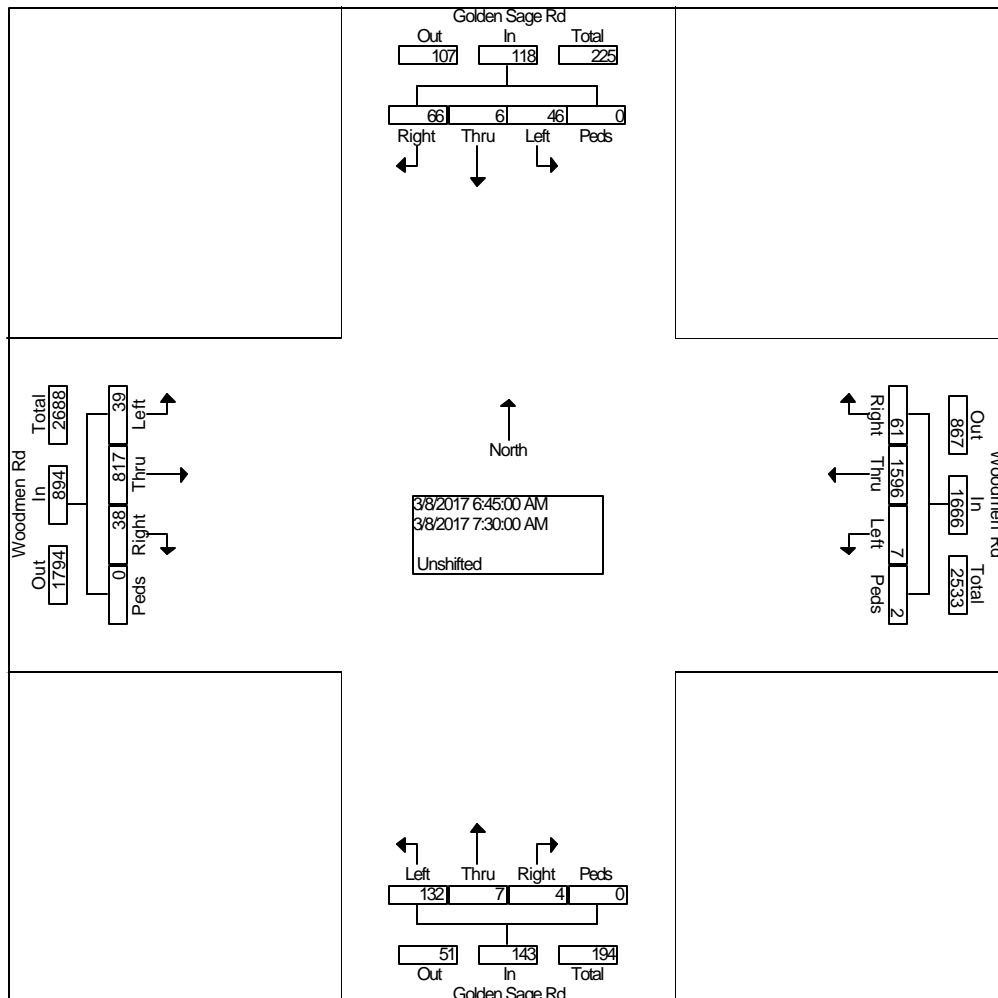
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Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	10	0	11	0	32	368	0	0	1	4	18	0	3	151	27	0	625
06:45 AM	15	0	11	0	28	307	0	0	0	1	31	0	10	186	16	0	605
Total	25	0	22	0	60	675	0	0	1	5	49	0	13	337	43	0	1230
07:00 AM	13	2	11	0	6	459	1	0	2	3	34	0	10	212	10	0	763
07:15 AM	17	3	13	0	15	434	3	1	2	2	38	0	10	211	5	0	754
07:30 AM	21	1	11	0	12	396	3	1	0	1	29	0	8	208	8	0	699
07:45 AM	12	2	3	0	4	289	3	0	2	0	27	0	17	166	14	0	539
Total	63	8	38	0	37	1578	10	2	6	6	128	0	45	797	37	0	2755
08:00 AM	8	1	2	0	6	256	1	0	1	1	15	0	10	154	11	0	466
08:15 AM	9	0	8	0	16	326	3	0	0	0	17	0	2	153	18	0	552
Grand Total	105	9	70	0	119	2835	14	2	8	12	209	0	70	1441	109	0	5003
Apprch %	57.1	4.9	38.0	0.0	4.0	95.5	0.5	0.1	3.5	5.2	91.3	0.0	4.3	89.0	6.7	0.0	
Total %	2.1	0.2	1.4	0.0	2.4	56.7	0.3	0.0	0.2	0.2	4.2	0.0	1.4	28.8	2.2	0.0	

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File Name : Golden Sage Rd - Woodmen Rd AM
 Site Code : 00164350
 Start Date : 03/08/2017
 Page No : 2

	Golden Sage Rd From North					Woodmen Rd From East					Golden Sage Rd From South					Woodmen Rd From West					
Start Time	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Int. Total
Peak Hour From 06:30 AM to 08:15 AM - Peak 1 of 1																					
Intersection	06:45 AM																				
Volume	66	6	46	0	118	61	15	7	2	1666	4	7	13	0	143	38	81	39	0	894	2821
Percent	55.9	5.1	39.0	0.0		3.7	95.8	0.4	0.1		2.8	4.9	92.3	0.0		4.3	91.4	4.4	0.0		
07:00 Volume	13	2	11	0	26	6	45	1	0	466	2	3	34	0	39	10	21	10	0	232	763
Peak Factor																					0.924
High Int.	07:15 AM					07:00 AM					07:15 AM					07:00 AM					
Volume	17	3	13	0	33	6	45	1	0	466	2	2	38	0	42	10	21	10	0	232	
Peak Factor					0.894					0.894					0.851					0.963	



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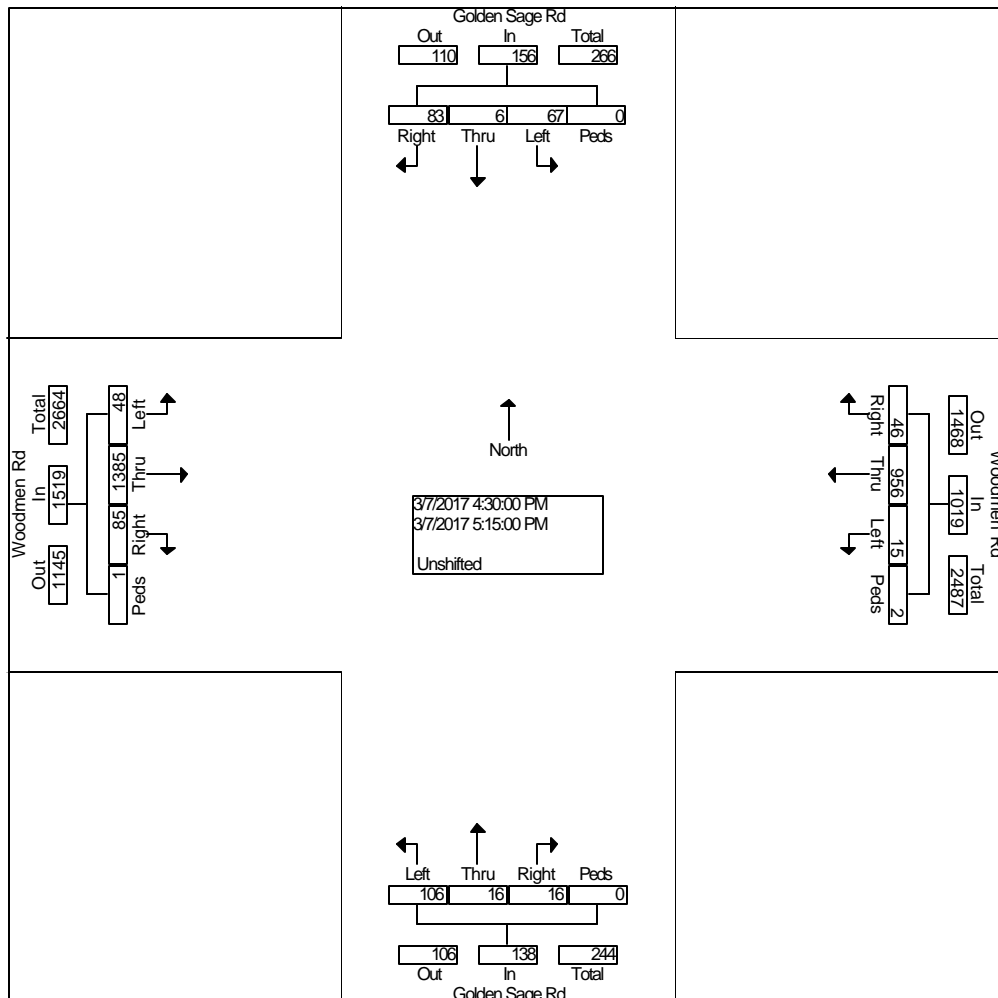
Groups Printed- Unshifted

	Golden Sage Rd From North				Woodmen Rd From East				Golden Sage Rd From South				Woodmen Rd From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:00 PM	16	3	7	0	9	243	5	0	2	2	21	0	14	319	25	0	666
04:15 PM	19	4	18	0	10	234	1	1	3	2	16	0	28	324	15	0	675
04:30 PM	14	0	16	0	10	249	1	0	3	4	15	0	18	340	16	0	686
04:45 PM	21	1	15	0	16	233	2	1	3	4	27	0	20	313	10	0	666
Total	70	8	56	0	45	959	9	2	11	12	79	0	80	1296	66	0	2693
05:00 PM	17	3	15	0	14	264	2	0	2	3	24	0	20	355	13	0	732
05:15 PM	31	2	21	0	6	210	10	1	8	5	40	0	27	377	9	1	748
05:30 PM	30	2	40	0	7	178	2	1	5	3	14	0	17	381	6	0	686
05:45 PM	9	3	13	0	6	172	1	0	1	2	14	0	16	294	7	0	538
Total	87	10	89	0	33	824	15	2	16	13	92	0	80	1407	35	1	2704
Grand Total	157	18	145	0	78	1783	24	4	27	25	171	0	160	2703	101	1	5397
Apprch %	49.1	5.6	45.3	0.0	4.1	94.4	1.3	0.2	12.1	11.2	76.7	0.0	5.4	91.2	3.4	0.0	
Total %	2.9	0.3	2.7	0.0	1.4	33.0	0.4	0.1	0.5	0.5	3.2	0.0	3.0	50.1	1.9	0.0	

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Project Name : Golden Sage Rd - Woodmen Rd PM
 Site Code : 00164350
 Start Date : 03/07/2017
 Page No : 2

	Golden Sage Rd From North					Woodmen Rd From East					Golden Sage Rd From South					Woodmen Rd From West					
Start Time	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Int. Total
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Intersection	04:30 PM																				
Volume	83	6	67	0	156	46	95	15	2	1019	16	16	10	0	138	85	13	48	1	1519	2832
Percent	53.2	3.8	42.9	0.0		4.5	93.8	1.5	0.2		11.6	11.6	76.8	0.0		5.6	91.2	3.2	0.1		
05:15 Volume	31	2	21	0	54	6	210	10	1	227	8	5	40	0	53	27	37	9	1	414	748
Peak Factor																					0.947
High Int.	05:15 PM					05:00 PM					05:15 PM					05:15 PM					
Volume	31	2	21	0	54	14	264	2	0	280	8	5	40	0	53	27	37	9	1	414	
Peak Factor	0.722										0.910					0.651					0.917



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File Name : Meridian Rd - Bent Grass Meadows Dr AM 9-18

Site Code : 154561

Start Date : 9/12/2018

Page No : 1

Groups Printed- Unshifted

	Meridian Rd Southbound				Westbound				Meridian Rd Northbound				Bent Grass Meadows Dr Eastbound				Int. Total
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
06:30	0	286	26	0	0	0	0	0	10	71	0	0	7	0	32	0	432
06:45	0	319	36	1	0	0	0	0	15	137	0	0	10	0	38	0	556
Total	0	605	62	1	0	0	0	0	25	208	0	0	17	0	70	0	988
07:00	0	426	24	0	0	0	0	0	9	121	0	0	13	0	37	0	630
07:15	0	443	29	0	0	0	0	0	13	195	0	0	16	0	41	0	737
07:30	0	372	33	0	0	0	0	0	19	179	0	0	17	0	30	0	650
07:45	0	297	40	0	0	0	0	0	16	162	0	0	22	0	43	0	580
Total	0	1538	126	0	0	0	0	0	57	657	0	0	68	0	151	0	2597
08:00	0	256	19	0	0	0	0	0	21	154	0	0	17	0	21	0	488
08:15	0	284	25	0	0	0	0	0	10	136	0	0	21	0	27	0	503
Grand Total	0	2683	232	1	0	0	0	0	113	1155	0	0	123	0	269	0	4576
Apprch %	0	92	8	0	0	0	0	0	8.9	91.1	0	0	31.4	0	68.6	0	
Total %	0	58.6	5.1	0	0	0	0	0	2.5	25.2	0	0	2.7	0	5.9	0	

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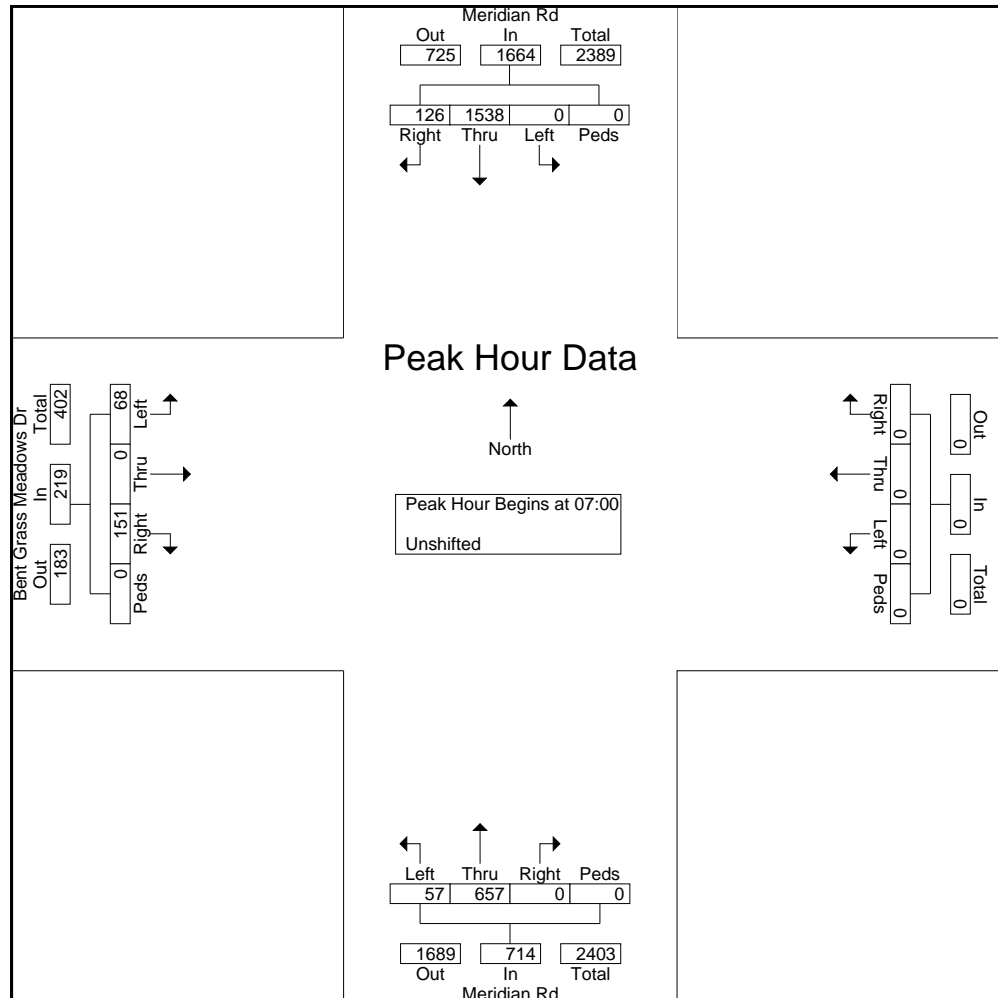
File Name : Meridian Rd - Bent Grass Meadows Dr AM 9-18

Site Code : 154561

Start Date : 9/12/2018

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	Meridian Rd Southbound					Westbound					Meridian Rd Northbound					Bent Grass Meadows 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	0	426	24	0	450	0	0	0	0	0	9	121	0	0	130	13	0	37	0	50	630
07:15	0	443	29	0	472	0	0	0	0	0	13	195	0	0	208	16	0	41	0	57	737
07:30	0	372	33	0	405	0	0	0	0	0	19	179	0	0	198	17	0	30	0	47	650
07:45	0	297	40	0	337	0	0	0	0	0	16	162	0	0	178	22	0	43	0	65	580
Total Volume	0	1538	126	0	1664	0	0	0	0	0	57	657	0	0	714	68	0	151	0	219	2597
% App. Total	0	92.4	7.6	0		0	0	0	0		8	92	0	0		31.1	0	68.9	0		
PHF	.000	.868	.788	.000	.881	.000	.000	.000	.000	.000	.750	.842	.000	.000	.858	.773	.000	.878	.000	.842	.881



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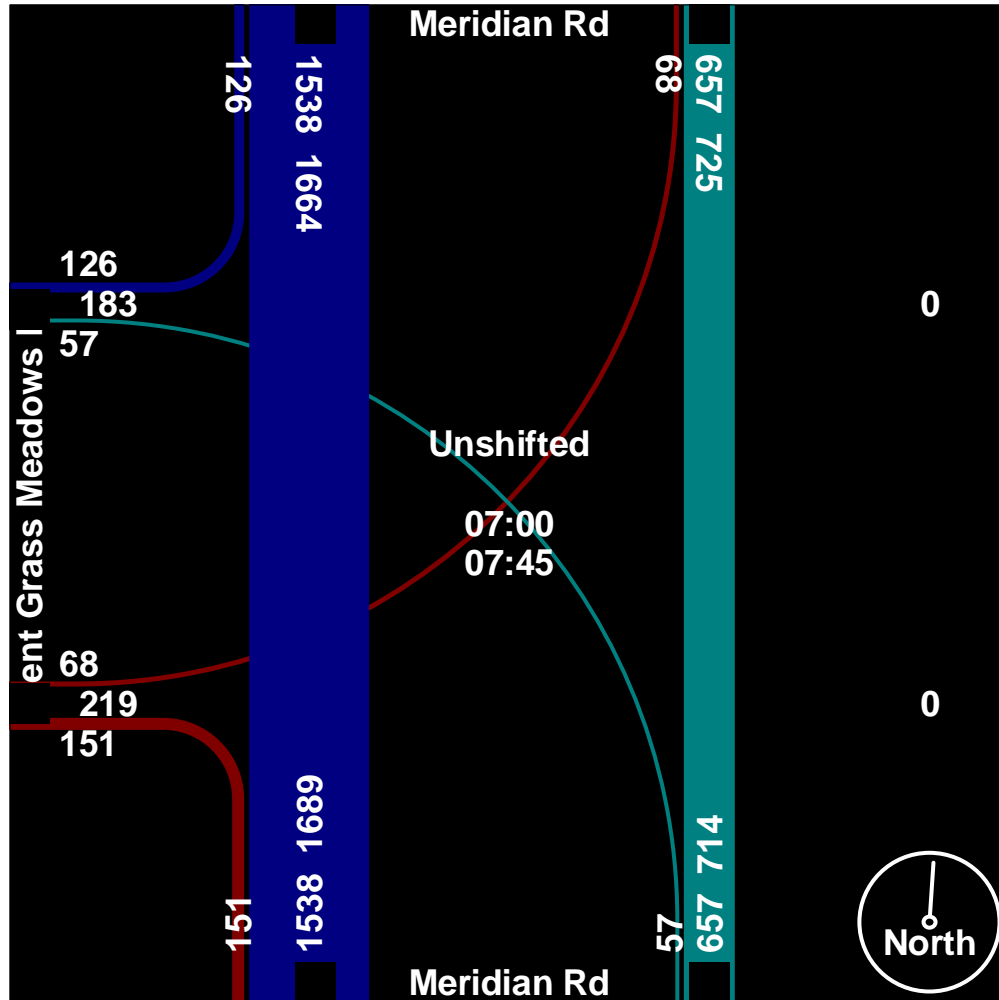
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File Name : Meridian Rd - Bent Grass Meadows Dr AM 9-18

Site Code : 154561

Start Date : 9/12/2018

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File Name : Meridian Rd - Bent Grass Meadows PM 9-18

Site Code : 154561

Start Date : 9/12/2018

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Groups Printed- Unshifted

	Meridian Rd Southbound				Westbound				Meridian Rd Northbound				Bent Grass Meadows Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
16:15	0	192	21	0	0	0	0	0	20	295	0	0	15	0	25	0	568
16:30	0	213	19	0	0	0	0	0	22	344	0	0	12	0	15	0	625
16:45	0	197	19	0	0	0	0	0	19	332	0	0	20	0	23	0	610
Total	0	602	59	0	0	0	0	0	61	971	0	0	47	0	63	0	1803
17:00	0	223	27	0	0	0	0	0	16	347	0	0	11	0	25	0	649
17:15	0	214	19	0	0	0	0	0	25	348	0	0	16	0	28	0	650
17:30	0	252	25	0	0	0	0	0	23	318	0	0	9	0	19	0	646
17:45	0	179	27	0	0	0	0	0	19	328	0	0	15	0	22	0	590
Total	0	868	98	0	0	0	0	0	83	1341	0	0	51	0	94	0	2535
18:00	0	169	25	0	0	0	0	0	18	321	0	0	11	0	28	0	572
Grand Total	0	1639	182	0	0	0	0	0	162	2633	0	0	109	0	185	0	4910
Apprch %	0	90	10	0	0	0	0	0	5.8	94.2	0	0	37.1	0	62.9	0	
Total %	0	33.4	3.7	0	0	0	0	0	3.3	53.6	0	0	2.2	0	3.8	0	

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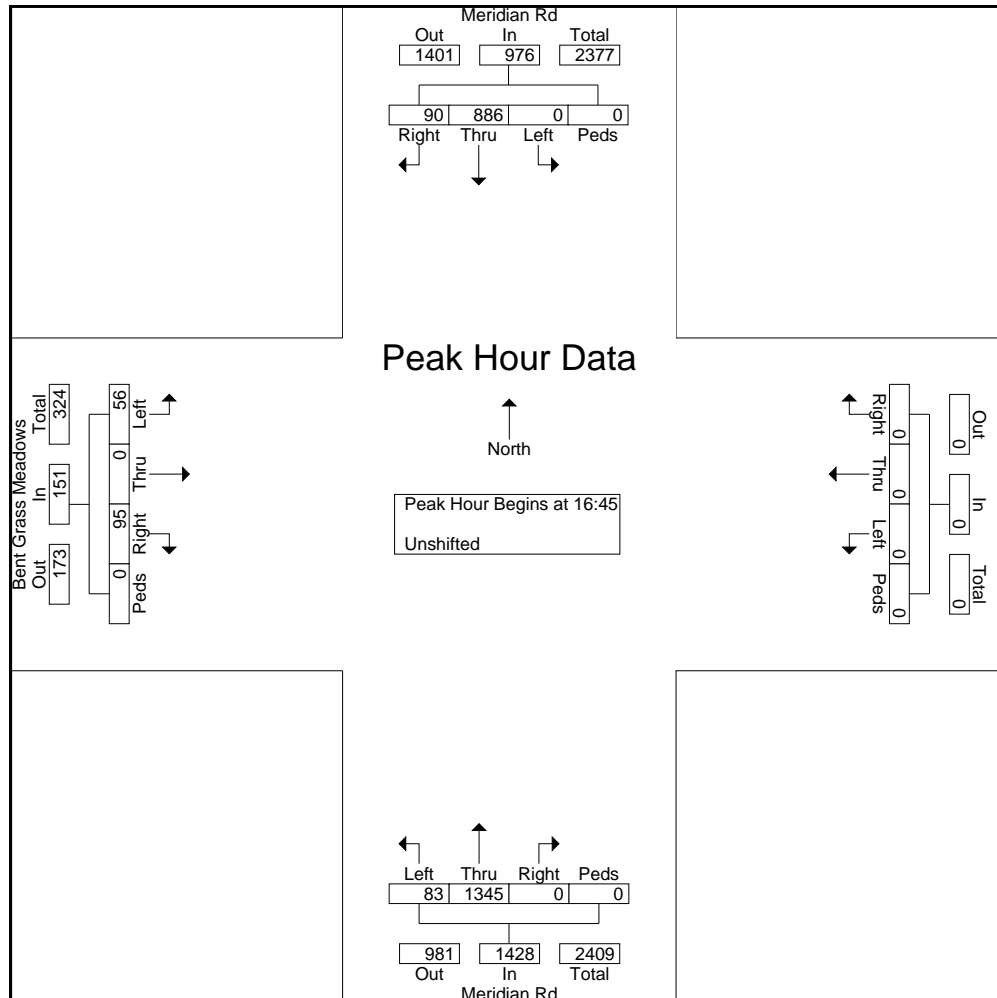
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	Meridian Rd Southbound					Westbound					Meridian Rd Northbound					Bent Grass Meadows Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 16:15 to 18:00 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:45																					
16:45	0	197	19	0	216	0	0	0	0	0	19	332	0	0	351	20	0	23	0	43	610
17:00	0	223	27	0	250	0	0	0	0	0	16	347	0	0	363	11	0	25	0	36	649
17:15	0	214	19	0	233	0	0	0	0	0	25	348	0	0	373	16	0	28	0	44	650
17:30	0	252	25	0	277	0	0	0	0	0	23	318	0	0	341	9	0	19	0	28	646
Total Volume	0	886	90	0	976	0	0	0	0	0	83	1345	0	0	1428	56	0	95	0	151	2555
% App. Total	0	90.8	9.2	0		0	0	0	0		5.8	94.2	0	0		37.1	0	62.9	0		
PHF	.000	.879	.833	.000	.881	.000	.000	.000	.000	.000	.830	.966	.000	.000	.957	.700	.000	.848	.000	.858	.983



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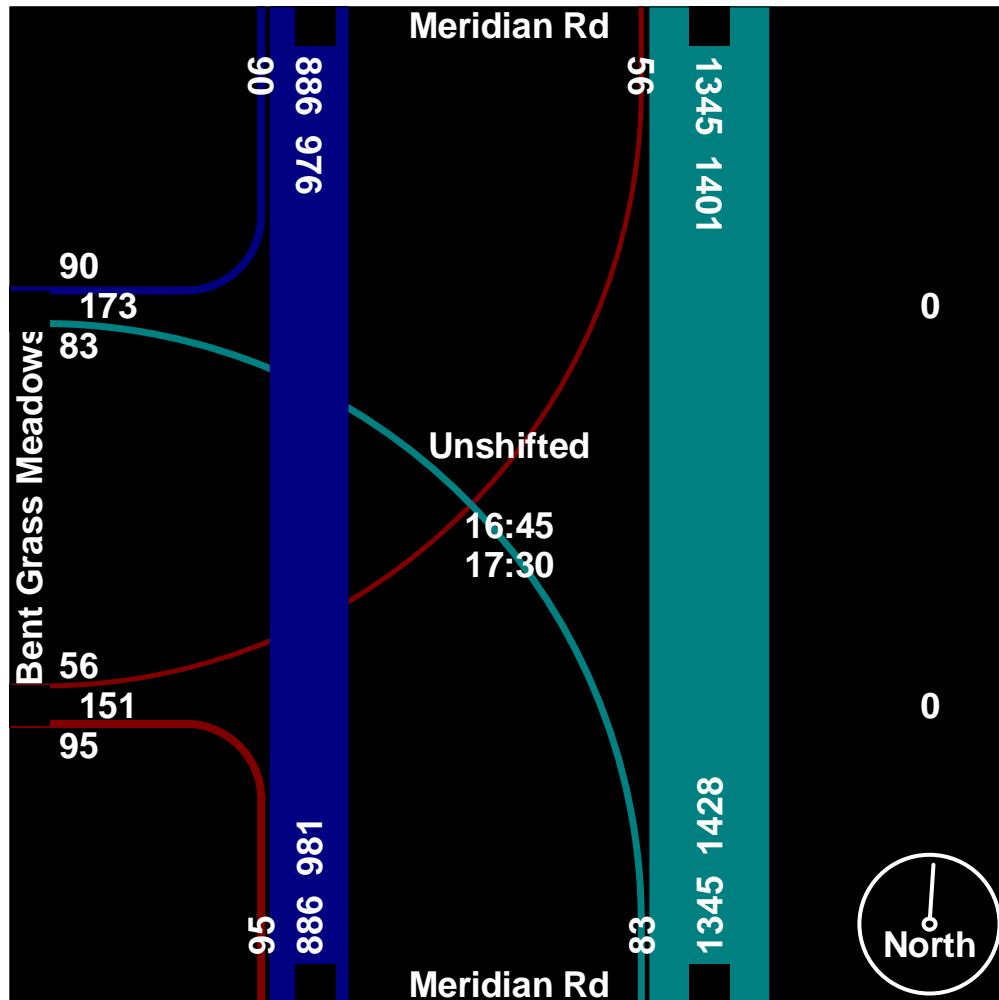
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File Name : Meridian Rd - Bent Grass Meadows PM 9-18

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




















HCM 6th TWSC
3: Meridian Rd & Bent Grass Meadows Dr

Existing Traffic
AM Peak Hour

Intersection						
Int Delay, s/veh	5.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	68	151	57	657	1538	126
Future Vol, veh/h	68	151	57	657	1538	126
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	700	-	-	330
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	86	86	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	71	157	66	764	1748	143
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2262	874	1891	0	-	0
Stage 1	1748	-	-	-	-	-
Stage 2	514	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	~ 35	293	312	-	-	-
Stage 1	125	-	-	-	-	-
Stage 2	565	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 28	293	312	-	-	-
Mov Cap-2 Maneuver	82	-	-	-	-	-
Stage 1	99	-	-	-	-	-
Stage 2	565	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	68.5	1.6		0		
HCM LOS	F					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	312	-	82	293	-	-
HCM Lane V/C Ratio	0.212	-	0.864	0.537	-	-
HCM Control Delay (s)	19.6	-	152.4	30.7	-	-
HCM Lane LOS	C	-	F	D	-	-
HCM 95th %tile Q(veh)	0.8	-	4.5	3	-	-
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						

Timings
25: Golden Sage & Woodmen

Existing Traffic
AM Peak Hour

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	43	545	26	3	1230	50	106	7	2	27	11
Future Volume (vph)	43	545	26	3	1230	50	106	7	2	27	11
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA
Protected Phases		2			6			8			4
Permitted Phases	2		2	6		6	8		8	4	
Detector Phase	2	2	2	6	6	6	8	8	8	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)	11.0	11.0	11.0	11.0	11.0	11.0	21.5	21.5	21.5	21.5	21.5
Total Split (s)	65.0	65.0	65.0	65.0	65.0	65.0	25.0	25.0	25.0	25.0	25.0
Total Split (%)	72.2%	72.2%	72.2%	72.2%	72.2%	72.2%	27.8%	27.8%	27.8%	27.8%	27.8%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	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	-3.0	-3.0	-1.0	-3.0	-3.0	-1.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	4.0	4.0	6.0	4.0	4.0	4.5	5.5	5.5	5.5	5.5
Lead/Lag											
Lead-Lag Optimize?											
Recall Mode	Max	Max	Max	Max	Max	Max	None	None	None	None	None
Act Effect Green (s)	62.7	65.1	65.1	63.5	65.1	65.1	13.4	12.4	12.4	12.0	12.0
Actuated g/C Ratio	0.75	0.78	0.78	0.76	0.78	0.78	0.16	0.15	0.15	0.14	0.14
v/c Ratio	0.17	0.21	0.02	0.00	0.50	0.04	0.53	0.03	0.01	0.13	0.19
Control Delay	7.7	3.8	1.5	4.7	5.6	1.4	41.1	29.1	0.0	31.3	14.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.7	3.8	1.5	4.7	5.6	1.4	41.1	29.1	0.0	31.3	14.5
LOS	A	A	A	A	A	A	D	C	A	C	B
Approach Delay		3.9			5.4			39.7			20.3
Approach LOS		A			A			D			C

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 83.5

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.53

Intersection Signal Delay: 7.4

Intersection LOS: A

Intersection Capacity Utilization 54.5%

ICU Level of Service A





Analysis Period (min) 15

Splits and Phases: 25: Golden Sage & Woodmen



HCM 6th TWSC
40: frontage rd & Bent Grass Meadows Dr

Existing Traffic
AM Peak Hour

Intersection						
Int Delay, s/veh	2.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	116	86	0	1	28
Future Vol, veh/h	5	116	86	0	1	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	155	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	82	82	100	100	35	35
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	141	86	0	3	80







Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	86	0	-	0	239
Stage 1	-	-	-	-	86
Stage 2	-	-	-	-	153
Critical Hdwy	4.12	-	-	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	2.218	-	-	-	3.518
Pot Cap-1 Maneuver	1510	-	-	-	749
Stage 1	-	-	-	-	937
Stage 2	-	-	-	-	875
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1510	-	-	-	746
Mov Cap-2 Maneuver	-	-	-	-	746
Stage 1	-	-	-	-	933
Stage 2	-	-	-	-	875

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1510	-	-	-	963
HCM Lane V/C Ratio	0.004	-	-	-	0.086
HCM Control Delay (s)	7.4	-	-	-	9.1
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.3























HCM 6th TWSC
3: Meridian Rd & Bent Grass Meadows Dr

Existing Traffic
PM Peak Hour

Intersection						
Int Delay, s/veh	1.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	56	95	83	1345	886	90
Future Vol, veh/h	56	95	83	1345	886	90
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	700	-	-	330
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	96	96	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	65	110	86	1401	886	90
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1759	443	976	0	-	0
Stage 1	886	-	-	-	-	-
Stage 2	873	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	76	562	703	-	-	-
Stage 1	363	-	-	-	-	-
Stage 2	369	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	67	562	703	-	-	-
Mov Cap-2 Maneuver	167	-	-	-	-	-
Stage 1	319	-	-	-	-	-
Stage 2	369	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	22.9	0.6		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	703	-	167	562	-	-
HCM Lane V/C Ratio	0.123	-	0.39	0.197	-	-
HCM Control Delay (s)	10.8	-	39.7	13	-	-
HCM Lane LOS	B	-	E	B	-	-
HCM 95th %tile Q(veh)	0.4	-	1.7	0.7	-	-

Timings
25: Golden Sage & Woodmen

Existing Traffic
PM Peak Hour

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	48	1385	85	15	956	46	106	16	16	67	6
Future Volume (vph)	48	1385	85	15	956	46	106	16	16	67	6
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA
Protected Phases		2			6			8			4
Permitted Phases	2		2	6		6	8		8	4	
Detector Phase	2	2	2	6	6	6	8	8	8	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)	11.0	11.0	11.0	11.0	11.0	11.0	21.5	21.5	21.5	21.5	21.5
Total Split (s)	65.0	65.0	65.0	65.0	65.0	65.0	25.0	25.0	25.0	25.0	25.0
Total Split (%)	72.2%	72.2%	72.2%	72.2%	72.2%	72.2%	27.8%	27.8%	27.8%	27.8%	27.8%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	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	-3.0	-3.0	-1.0	-3.0	-3.0	-1.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	4.0	4.0	6.0	4.0	4.0	4.5	5.5	5.5	5.5	5.5
Lead/Lag											
Lead-Lag Optimize?											
Recall Mode	Max	Max	Max	Max	Max	Max	None	None	None	None	None
Act Effect Green (s)	58.1	61.1	61.1	59.1	61.1	61.1	16.3	15.3	15.3	15.3	15.3
Actuated g/C Ratio	0.68	0.71	0.71	0.69	0.71	0.71	0.19	0.18	0.18	0.18	0.18
v/c Ratio	0.14	0.60	0.08	0.09	0.38	0.04	0.68	0.08	0.08	0.38	0.32
Control Delay	7.2	8.0	1.3	7.2	5.9	1.6	47.2	29.1	4.1	35.3	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.2	8.0	1.3	7.2	5.9	1.6	47.2	29.1	4.1	35.3	9.5
LOS	A	A	A	A	A	A	D	C	A	D	A
Approach Delay		7.6			5.7			40.0			20.6
Approach LOS		A			A			D			C

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 86

Natural Cycle: 55

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 10.1

Intersection LOS: B

Intersection Capacity Utilization 58.7%

ICU Level of Service B





Analysis Period (min) 15

Splits and Phases: 25: Golden Sage & Woodmen



HCM 6th TWSC
40: frontage rd & Bent Grass Meadows Dr













Existing Traffic
PM Peak Hour

Intersection						
Int Delay, s/veh	0.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	8	76	120	1	0	24
Future Vol, veh/h	8	76	120	1	0	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	155	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	36	36	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	76	333	3	0	24
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	336	0	-	0	427	335
Stage 1	-	-	-	-	335	-
Stage 2	-	-	-	-	92	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1223	-	-	-	584	707
Stage 1	-	-	-	-	725	-
Stage 2	-	-	-	-	932	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1223	-	-	-	580	707
Mov Cap-2 Maneuver	-	-	-	-	580	-
Stage 1	-	-	-	-	720	-
Stage 2	-	-	-	-	932	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.8	0		10.3		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1223	-	-	-	707	
HCM Lane V/C Ratio	0.007	-	-	-	0.034	
HCM Control Delay (s)	8	-	-	-	10.3	
HCM Lane LOS	A	-	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.1	

Timings 3: Meridian Rd & Bent Grass Meadows Dr

Short-Term Background Traffic

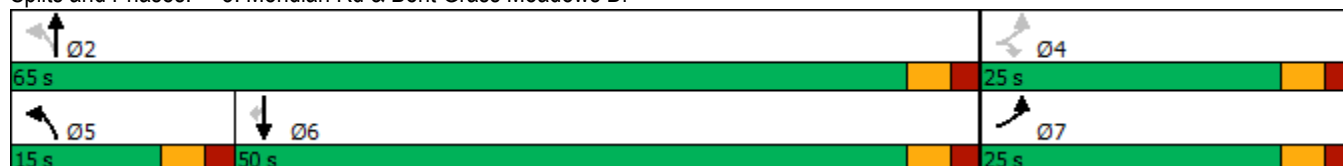
AM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	133	231	149	583	1441	258
Future Volume (vph)	133	231	149	583	1441	258
Turn Type	pm+pt	Perm	pm+pt	NA	NA	Perm
Protected Phases	7		5	2	6	
Permitted Phases	4	4	2			6
Detector Phase	7	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	10.0	23.0	23.0	23.0
Total Split (s)	25.0	25.0	15.0	65.0	50.0	50.0
Total Split (%)	27.8%	27.8%	16.7%	72.2%	55.6%	55.6%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	Max	Max	Max
Act Effect Green (s)	11.6	11.6	60.1	60.1	46.8	46.8
Actuated g/C Ratio	0.14	0.14	0.74	0.74	0.57	0.57
v/c Ratio	0.55	0.60	0.64	0.26	0.81	0.28
Control Delay	41.1	13.8	24.2	4.2	19.2	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.1	13.8	24.2	4.2	19.2	2.2
LOS	D	B	C	A	B	A
Approach Delay	23.8			8.2	16.6	
Approach LOS	C			A	B	

Intersection Summary























Cycle Length: 90	
Actuated Cycle Length: 81.7	
Natural Cycle: 75	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 15.2	Intersection LOS: B
Intersection Capacity Utilization 68.0%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 3: Meridian Rd & Bent Grass Meadows Dr



Timings 25: Golden Sage & Woodmen

Short-Term Background Traffic
AM Peak Hour

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	64	804	38	7	1561	47	132	8	5	33	6
Future Volume (vph)	64	804	38	7	1561	47	132	8	5	33	6
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA
Protected Phases		2			6			8			4
Permitted Phases	2		2	6		6	8		8	4	
Detector Phase	2	2	2	6	6	6	8	8	8	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)	11.0	11.0	11.0	11.0	11.0	11.0	21.5	21.5	21.5	21.5	21.5
Total Split (s)	65.0	65.0	65.0	65.0	65.0	65.0	25.0	25.0	25.0	25.0	25.0
Total Split (%)	72.2%	72.2%	72.2%	72.2%	72.2%	72.2%	27.8%	27.8%	27.8%	27.8%	27.8%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	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	-3.0	-3.0	-1.0	-3.0	-3.0	-1.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	4.0	4.0	6.0	4.0	4.0	4.5	5.5	5.5	5.5	5.5
Lead/Lag											
Lead-Lag Optimize?											
Recall Mode	Max	Max	Max	Max	Max	Max	None	None	None	None	None
Act Effect Green (s)	58.1	61.1	61.1	59.1	61.1	61.1	15.2	14.2	14.2	14.2	14.2
Actuated g/C Ratio	0.68	0.72	0.72	0.70	0.72	0.72	0.18	0.17	0.17	0.17	0.17
v/c Ratio	0.61	0.33	0.03	0.02	0.69	0.05	0.62	0.03	0.02	0.14	0.38
Control Delay	39.2	5.2	1.7	5.3	9.1	1.5	44.5	28.6	0.0	30.7	25.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.2	5.2	1.7	5.3	9.1	1.5	44.5	28.6	0.0	30.7	25.9
LOS	D	A	A	A	A	A	D	C	A	C	C
Approach Delay		7.5			8.8			42.2			27.0
Approach LOS		A			A			D			C

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 84.9

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 11.0

Intersection LOS: B

Intersection Capacity Utilization 74.4%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 25: Golden Sage & Woodmen



HCM 6th TWSC
26: Golden Sage Rd & Woodmen Frontage Rd






Short-Term Background Traffic
AM Peak Hour

Intersection												
Int Delay, s/veh	4.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱			↱			↱			↱	
Traffic Vol, veh/h	0	0	0	145	0	0	0	0	119	0	1	0
Future Vol, veh/h	0	0	0	145	0	0	0	0	119	0	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	100	92	92	95	92	59	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	145	0	0	0	0	202	0	1	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	-	203	1	102	102	-	1	0	0	202	0	0
Stage 1	-	1	-	101	101	-	-	-	-	-	-	-
Stage 2	-	202	-	1	1	-	-	-	-	-	-	-
Critical Hdwy	-	6.52	6.22	7.12	6.52	-	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	-	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	-	4.018	3.318	3.518	4.018	-	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	0	693	1084	879	788	0	1622	-	-	1370	-	-
Stage 1	0	895	-	905	811	0	-	-	-	-	-	-
Stage 2	0	734	-	1022	895	0	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	693	1084	879	788	-	1622	-	-	1370	-	-
Mov Cap-2 Maneuver	-	693	-	879	788	-	-	-	-	-	-	-
Stage 1	-	895	-	905	811	-	-	-	-	-	-	-
Stage 2	-	734	-	1022	895	-	-	-	-	-	-	-















Approach	EB	WB	NB	SB
HCM Control Delay, s	0	9.9	0	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1622	-	-	- 879	1370	-	-
HCM Lane V/C Ratio	-	-	-	- 0.165	-	-	-
HCM Control Delay (s)	0	-	-	0 9.9	0	-	-
HCM Lane LOS	A	-	-	A A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	- 0.6	0	-	-

Intersection						
Int Delay, s/veh	5.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	31	102	76	10	15	65
Future Vol, veh/h	31	102	76	10	15	65
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	155	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	82	82	100	100	35	35
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	38	124	76	10	43	186
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	86	0	-	0	281	81
Stage 1	-	-	-	-	81	-
Stage 2	-	-	-	-	200	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1510	-	-	-	709	979
Stage 1	-	-	-	-	942	-
Stage 2	-	-	-	-	834	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1510	-	-	-	691	979
Mov Cap-2 Maneuver	-	-	-	-	691	-
Stage 1	-	-	-	-	918	-
Stage 2	-	-	-	-	834	-
Approach	EB	WB		SB		
HCM Control Delay, s	1.7	0		9.7		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1510	-	-	-	691	979
HCM Lane V/C Ratio	0.025	-	-	-	0.062	0.19
HCM Control Delay (s)	7.4	-	-	-	10.6	9.5
HCM Lane LOS	A	-	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2	0.7

Timings 3: Meridian Rd & Bent Grass Meadows Dr

Short-Term Background Traffic
PM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				 	 	
Traffic Volume (vph)	198	223	230	1217	820	197
Future Volume (vph)	198	223	230	1217	820	197
Turn Type	pm+pt	Perm	pm+pt	NA	NA	Perm
Protected Phases	7		5	2	6	
Permitted Phases	4	4	2			6
Detector Phase	7	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	10.0	23.0	23.0	23.0
Total Split (s)	25.0	25.0	15.0	65.0	50.0	50.0
Total Split (%)	27.8%	27.8%	16.7%	72.2%	55.6%	55.6%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	Max	Max	Max
Act Effect Green (s)	15.7	15.7	60.1	60.1	46.2	46.2
Actuated g/C Ratio	0.18	0.18	0.70	0.70	0.54	0.54
v/c Ratio	0.71	0.52	0.51	0.51	0.43	0.21
Control Delay	45.5	8.0	9.0	7.3	13.5	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.5	8.0	9.0	7.3	13.5	2.5
LOS	D	A	A	A	B	A
Approach Delay	25.7			7.6	11.4	
Approach LOS	C			A	B	

Intersection Summary























Cycle Length: 90
 Actuated Cycle Length: 85.8
 Natural Cycle: 60
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.71
 Intersection Signal Delay: 11.8
 Intersection LOS: B
 Intersection Capacity Utilization 58.9%
 ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 3: Meridian Rd & Bent Grass Meadows Dr



Timings 25: Golden Sage & Woodmen

Short-Term Background Traffic
PM Peak Hour

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	77	1370	85	16	946	33	106	17	17	48	7
Future Volume (vph)	77	1370	85	16	946	33	106	17	17	48	7
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA
Protected Phases		2			6			8			4
Permitted Phases	2		2	6		6	8		8	4	
Detector Phase	2	2	2	6	6	6	8	8	8	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)	11.0	11.0	11.0	11.0	11.0	11.0	21.5	21.5	21.5	21.5	21.5
Total Split (s)	60.0	60.0	60.0	60.0	60.0	60.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	66.7%	66.7%	66.7%	66.7%	66.7%	66.7%	33.3%	33.3%	33.3%	33.3%	33.3%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	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	-3.0	-3.0	-1.0	-3.0	-3.0	-1.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	4.0	4.0	6.0	4.0	4.0	4.5	5.5	5.5	5.5	5.5
Lead/Lag											
Lead-Lag Optimize?											
Recall Mode	Max	Max	Max	Max	Max	Max	None	None	None	None	None
Act Effect Green (s)	53.3	56.3	56.3	54.3	56.3	56.3	18.2	17.2	17.2	17.2	17.2
Actuated g/C Ratio	0.64	0.68	0.68	0.65	0.68	0.68	0.22	0.21	0.21	0.21	0.21
v/c Ratio	0.26	0.62	0.08	0.11	0.39	0.03	0.64	0.07	0.07	0.24	0.36
Control Delay	10.7	9.8	1.7	9.3	7.2	2.4	41.2	25.6	3.5	28.6	8.2
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	10.7	9.8	1.7	9.3	7.2	2.4	41.2	25.6	3.5	28.6	8.2
LOS	B	A	A	A	A	A	D	C	A	C	A
Approach Delay		9.4			7.0			34.8			14.2
Approach LOS		A			A			C			B

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 83

Natural Cycle: 55

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 10.7

Intersection LOS: B

Intersection Capacity Utilization 66.7%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 25: Golden Sage & Woodmen



HCM 6th TWSC
26: Golden Sage Rd & Woodmen Frontage Rd

Short-Term Background Traffic
PM Peak Hour

Intersection												
Int Delay, s/veh	4.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶			↷			↷			↶	
Traffic Vol, veh/h	0	0	0	163	0	0	0	0	127	0	0	0
Future Vol, veh/h	0	0	0	163	0	0	0	0	127	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	100	92	92	95	92	59	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	163	0	0	0	0	215	0	0	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	-	216	1	109	109	-	1	0	0	215	0	0
Stage 1	-	1	-	108	108	-	-	-	-	-	-	-
Stage 2	-	215	-	1	1	-	-	-	-	-	-	-
Critical Hdwy	-	6.52	6.22	7.12	6.52	-	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	-	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	-	4.018	3.318	3.518	4.018	-	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	0	682	1084	870	781	0	1622	-	-	1355	-	-
Stage 1	0	895	-	897	806	0	-	-	-	-	-	-
Stage 2	0	725	-	1022	895	0	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	682	1084	870	781	-	1622	-	-	1355	-	-
Mov Cap-2 Maneuver	-	682	-	870	781	-	-	-	-	-	-	-
Stage 1	-	895	-	897	806	-	-	-	-	-	-	-
Stage 2	-	725	-	1022	895	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	10.1	0	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1622	-	-	- 870	1355	-	-
HCM Lane V/C Ratio	-	-	-	- 0.187	-	-	-
HCM Control Delay (s)	0	-	-	0 10.1	0	-	-
HCM Lane LOS	A	-	-	A B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	- 0.7	0	-	-






HCM 6th TWSC
40: frontage rd & Bent Grass Meadows Dr

Short-Term Background Traffic
PM Peak Hour

Intersection

Int Delay, s/veh 1.8

Movement EBL EBT WBT WBR SBL SBR

Lane Configurations						
Traffic Vol, veh/h	38	67	105	16	9	50
Future Vol, veh/h	38	67	105	16	9	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	155	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	36	36	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	38	67	292	44	9	50

Major/Minor Major1 Major2 Minor2

Conflicting Flow All	336	0	-	0	457	314
Stage 1	-	-	-	-	314	-
Stage 2	-	-	-	-	143	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1223	-	-	-	562	726
Stage 1	-	-	-	-	741	-
Stage 2	-	-	-	-	884	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1223	-	-	-	545	726
Mov Cap-2 Maneuver	-	-	-	-	545	-
Stage 1	-	-	-	-	718	-
Stage 2	-	-	-	-	884	-

Approach EB WB SB













HCM Control Delay, s	2.9	0	10.5
HCM LOS			B

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1 SBLn2

Capacity (veh/h)	1223	-	-	-	545	726
HCM Lane V/C Ratio	0.031	-	-	-	0.017	0.069
HCM Control Delay (s)	8	-	-	-	11.7	10.3
HCM Lane LOS	A	-	-	-	B	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1	0.2

Timings 3: Meridian Rd & Bent Grass Meadows Dr

Short-Term Total Traffic
AM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	145	279	165	583	1441	262
Future Volume (vph)	145	279	165	583	1441	262
Turn Type	pm+pt	Perm	pm+pt	NA	NA	Perm
Protected Phases	7		5	2	6	
Permitted Phases	4	4	2			6
Detector Phase	7	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	10.0	23.0	23.0	23.0
Total Split (s)	25.0	25.0	15.0	65.0	50.0	50.0
Total Split (%)	27.8%	27.8%	16.7%	72.2%	55.6%	55.6%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	Max	Max	Max
Act Effect Green (s)	12.5	12.5	60.1	60.1	46.3	46.3
Actuated g/C Ratio	0.15	0.15	0.73	0.73	0.56	0.56
v/c Ratio	0.56	0.70	0.69	0.26	0.83	0.29
Control Delay	40.7	20.0	28.4	4.5	20.9	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.7	20.0	28.4	4.5	20.9	2.3
LOS	D	B	C	A	C	A
Approach Delay	27.0			9.8	18.0	
Approach LOS	C			A	B	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 82.7

Natural Cycle: 75

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 17.0

Intersection LOS: B

Intersection Capacity Utilization 69.5%

ICU Level of Service C























Analysis Period (min) 15

Splits and Phases: 3: Meridian Rd & Bent Grass Meadows Dr



Timings
25: Golden Sage & Woodmen

Short-Term Total Traffic
AM Peak Hour

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	77	804	38	7	1561	47	132	8	5	33	7
Future Volume (vph)	77	804	38	7	1561	47	132	8	5	33	7
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA
Protected Phases		2			6			8			4
Permitted Phases	2		2	6		6	8		8	4	
Detector Phase	2	2	2	6	6	6	8	8	8	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)	11.0	11.0	11.0	11.0	11.0	11.0	21.5	21.5	21.5	21.5	21.5
Total Split (s)	65.0	65.0	65.0	65.0	65.0	65.0	25.0	25.0	25.0	25.0	25.0
Total Split (%)	72.2%	72.2%	72.2%	72.2%	72.2%	72.2%	27.8%	27.8%	27.8%	27.8%	27.8%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	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	-3.0	-3.0	-1.0	-3.0	-3.0	-1.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	4.0	4.0	6.0	4.0	4.0	4.5	5.5	5.5	5.5	5.5
Lead/Lag											
Lead-Lag Optimize?											
Recall Mode	Max	Max	Max	Max	Max	Max	None	None	None	None	None
Act Effect Green (s)	58.1	61.1	61.1	59.1	61.1	61.1	15.8	14.8	14.8	14.8	14.8
Actuated g/C Ratio	0.68	0.71	0.71	0.69	0.71	0.71	0.18	0.17	0.17	0.17	0.17
v/c Ratio	0.68	0.33	0.03	0.02	0.69	0.05	0.67	0.03	0.02	0.14	0.50
Control Delay	48.0	5.4	1.7	5.4	9.4	1.6	48.3	28.4	0.0	30.4	30.4
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	48.0	5.4	1.7	5.4	9.4	1.6	48.3	28.4	0.0	30.4	30.4
LOS	D	A	A	A	A	A	D	C	A	C	C
Approach Delay		8.5			9.2			45.6			30.4
Approach LOS		A			A			D			C

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 85.5

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 12.1

Intersection LOS: B

Intersection Capacity Utilization 81.1%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 25: Golden Sage & Woodmen



HCM 6th TWSC
26: Golden Sage Rd & Woodmen Frontage Rd

Short-Term Total Traffic
AM Peak Hour

Intersection												
Int Delay, s/veh	4.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱			↱			↱			↱	
Traffic Vol, veh/h	0	0	0	185	0	0	0	0	132	0	0	0
Future Vol, veh/h	0	0	0	185	0	0	0	0	132	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	100	92	92	95	92	59	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	185	0	0	0	0	224	0	0	0






Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	-	225	1	113	113	-	1	0	0	224	0	0
Stage 1	-	1	-	112	112	-	-	-	-	-	-	-
Stage 2	-	224	-	1	1	-	-	-	-	-	-	-
Critical Hdwy	-	6.52	6.22	7.12	6.52	-	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	-	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	-	4.018	3.318	3.518	4.018	-	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	0	674	1084	864	777	0	1622	-	-	1345	-	-
Stage 1	0	895	-	893	803	0	-	-	-	-	-	-
Stage 2	0	718	-	1022	895	0	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	674	1084	864	777	-	1622	-	-	1345	-	-
Mov Cap-2 Maneuver	-	674	-	864	777	-	-	-	-	-	-	-
Stage 1	-	895	-	893	803	-	-	-	-	-	-	-
Stage 2	-	718	-	1022	895	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	10.3	0	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1622	-	-	- 864	1345	-	-
HCM Lane V/C Ratio	-	-	-	- 0.214	-	-	-
HCM Control Delay (s)	0	-	-	0 10.3	0	-	-
HCM Lane LOS	A	-	-	A B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	- 0.8	0	-	-






HCM 6th TWSC
40: frontage rd & Bent Grass Meadows Dr

Short-Term Total Traffic
AM Peak Hour

Intersection						
Int Delay, s/veh	6.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	44	102	76	10	15	105
Future Vol, veh/h	44	102	76	10	15	105
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	155	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	82	82	100	100	35	35
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	54	124	76	10	43	300
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	86	0	-	0	313	81
Stage 1	-	-	-	-	81	-
Stage 2	-	-	-	-	232	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1510	-	-	-	680	979
Stage 1	-	-	-	-	942	-
Stage 2	-	-	-	-	807	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1510	-	-	-	656	979
Mov Cap-2 Maneuver	-	-	-	-	656	-
Stage 1	-	-	-	-	908	-
Stage 2	-	-	-	-	807	-
Approach	EB	WB		SB		
HCM Control Delay, s	2.3	0		10.4		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1510	-	-	-	656	979
HCM Lane V/C Ratio	0.036	-	-	-	0.065	0.306
HCM Control Delay (s)	7.5	-	-	-	10.9	10.3
HCM Lane LOS	A	-	-	-	B	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2	1.3

Intersection







Int Delay, s/veh 1.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	45	7	3	74	20	10
Future Vol, veh/h	45	7	3	74	20	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	155	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	49	8	3	80	22	11

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	57
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1547
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1547
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-













Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	877	-	-	1547	-
HCM Lane V/C Ratio	0.037	-	-	0.002	-
HCM Control Delay (s)	9.3	-	-	7.3	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection												
Int Delay, s/veh	3.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	49	2	10	58	7	7	0	30	19	0	13
Future Vol, veh/h	4	49	2	10	58	7	7	0	30	19	0	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	155	-	-	155	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	53	2	11	63	8	8	0	33	21	0	14
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	71	0	0	55	0	0	158	155	54	168	152	67
Stage 1	-	-	-	-	-	-	62	62	-	89	89	-
Stage 2	-	-	-	-	-	-	96	93	-	79	63	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1529	-	-	1550	-	-	808	737	1013	796	740	997
Stage 1	-	-	-	-	-	-	949	843	-	918	821	-
Stage 2	-	-	-	-	-	-	911	818	-	930	842	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1529	-	-	1550	-	-	791	730	1013	765	733	997
Mov Cap-2 Maneuver	-	-	-	-	-	-	791	730	-	765	733	-
Stage 1	-	-	-	-	-	-	946	840	-	915	815	-
Stage 2	-	-	-	-	-	-	892	812	-	898	839	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			1			8.9			9.4		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	962	1529	-	-	1550	-	-	845				
HCM Lane V/C Ratio	0.042	0.003	-	-	0.007	-	-	0.041				
HCM Control Delay (s)	8.9	7.4	-	-	7.3	-	-	9.4				
HCM Lane LOS	A	A	-	-	A	-	-	A				
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1				

Timings 3: Meridian Rd & Bent Grass Meadows Dr

Short-Term Total Traffic
PM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	206	254	283	1217	820	211
Future Volume (vph)	206	254	283	1217	820	211
Turn Type	pm+pt	Perm	pm+pt	NA	NA	Perm
Protected Phases	7		5	2	6	
Permitted Phases	4	4	2			6
Detector Phase	7	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	10.0	23.0	23.0	23.0
Total Split (s)	25.0	25.0	15.0	65.0	50.0	50.0
Total Split (%)	27.8%	27.8%	16.7%	72.2%	55.6%	55.6%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	Max	Max	Max
Act Effect Green (s)	16.1	16.1	60.1	60.1	45.8	45.8
Actuated g/C Ratio	0.19	0.19	0.70	0.70	0.53	0.53
v/c Ratio	0.73	0.55	0.62	0.51	0.44	0.22
Control Delay	46.4	8.1	11.5	7.5	13.9	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.4	8.1	11.5	7.5	13.9	2.5
LOS	D	A	B	A	B	A
Approach Delay	25.2			8.2	11.6	
Approach LOS	C			A	B	

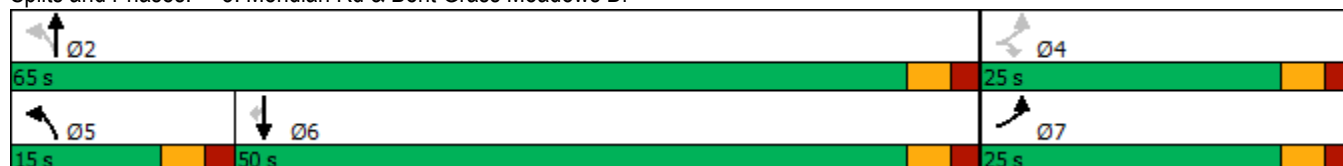
Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 86.2
Natural Cycle: 60
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 12.2
Intersection Capacity Utilization 62.3%
Analysis Period (min) 15

Intersection LOS: B























ICU Level of Service B

Splits and Phases: 3: Meridian Rd & Bent Grass Meadows Dr



Timings 25: Golden Sage & Woodmen

Short-Term Total Traffic
PM Peak Hour

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	120	1370	85	16	946	33	106	18	17	48	7
Future Volume (vph)	120	1370	85	16	946	33	106	18	17	48	7
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA
Protected Phases		2			6			8			4
Permitted Phases	2		2	6		6	8		8	4	
Detector Phase	2	2	2	6	6	6	8	8	8	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)	11.0	11.0	11.0	11.0	11.0	11.0	21.5	21.5	21.5	21.5	21.5
Total Split (s)	60.0	60.0	60.0	60.0	60.0	60.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	66.7%	66.7%	66.7%	66.7%	66.7%	66.7%	33.3%	33.3%	33.3%	33.3%	33.3%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	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	-3.0	-3.0	-1.0	-3.0	-3.0	-1.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	4.0	4.0	6.0	4.0	4.0	4.5	5.5	5.5	5.5	5.5
Lead/Lag											
Lead-Lag Optimize?											
Recall Mode	Max	Max	Max	Max	Max	Max	None	None	None	None	None
Act Effect Green (s)	53.3	56.3	56.3	54.3	56.3	56.3	18.2	17.2	17.2	17.2	17.2
Actuated g/C Ratio	0.64	0.68	0.68	0.65	0.68	0.68	0.22	0.21	0.21	0.21	0.21
v/c Ratio	0.41	0.62	0.08	0.11	0.39	0.03	0.73	0.07	0.07	0.24	0.44
Control Delay	13.7	9.8	1.7	9.3	7.2	2.4	49.1	25.7	3.5	28.6	11.4
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	13.7	9.8	1.7	9.3	7.2	2.4	49.1	25.7	3.5	28.6	11.4
LOS	B	A	A	A	A	A	D	C	A	C	B
Approach Delay		9.6			7.0			40.6			15.8
Approach LOS		A			A			D			B

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 83

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 11.4

Intersection LOS: B

Intersection Capacity Utilization 72.3%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 25: Golden Sage & Woodmen



HCM 6th TWSC
26: Golden Sage Rd & Woodmen Frontage Rd

Short-Term Total Traffic
PM Peak Hour

Intersection												
Int Delay, s/veh	4.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱			↱			↱			↱	
Traffic Vol, veh/h	0	0	0	189	0	0	0	0	171	0	0	0
Future Vol, veh/h	0	0	0	189	0	0	0	0	171	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	100	92	92	95	92	59	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	189	0	0	0	0	290	0	0	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	-	291	1	146	146	-	1	0	0	290	0	0
Stage 1	-	1	-	145	145	-	-	-	-	-	-	-
Stage 2	-	290	-	1	1	-	-	-	-	-	-	-
Critical Hdwy	-	6.52	6.22	7.12	6.52	-	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	-	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	-	4.018	3.318	3.518	4.018	-	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	0	619	1084	823	745	0	1622	-	-	1272	-	-
Stage 1	0	895	-	858	777	0	-	-	-	-	-	-
Stage 2	0	672	-	1022	895	0	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	-	619	1084	823	745	-	1622	-	-	1272	-	-
Mov Cap-2 Maneuver	-	619	-	823	745	-	-	-	-	-	-	-
Stage 1	-	895	-	858	777	-	-	-	-	-	-	-
Stage 2	-	672	-	1022	895	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	10.7	0	0
HCM LOS	A	B		






Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1622	-	-	- 823	1272	-	-
HCM Lane V/C Ratio	-	-	-	- 0.23	-	-	-
HCM Control Delay (s)	0	-	-	0 10.7	0	-	-
HCM Lane LOS	A	-	-	A B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	- 0.9	0	-	-

HCM 6th TWSC
40: frontage rd & Bent Grass Meadows Dr

Short-Term Total Traffic
PM Peak Hour

Intersection






Int Delay, s/veh 2.8







Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	82	67	105	16	9	76
Future Vol, veh/h	82	67	105	16	9	76
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	155	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	36	36	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	82	67	292	44	9	76

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	336	0	0 545 314
Stage 1	-	-	- - 314 -
Stage 2	-	-	- - 231 -
Critical Hdwy	4.12	-	- - 6.42 6.22
Critical Hdwy Stg 1	-	-	- - 5.42 -
Critical Hdwy Stg 2	-	-	- - 5.42 -
Follow-up Hdwy	2.218	-	- - 3.518 3.318
Pot Cap-1 Maneuver	1223	-	- - 499 726
Stage 1	-	-	- - 741 -
Stage 2	-	-	- - 807 -
Platoon blocked, %		-	- -
Mov Cap-1 Maneuver	1223	-	- - 466 726
Mov Cap-2 Maneuver	-	-	- - 466 -
Stage 1	-	-	- - 691 -
Stage 2	-	-	- - 807 -

Approach	EB	WB	SB
HCM Control Delay, s	4.5	0	10.8
HCM LOS			B
















Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1223	-	-	-	466	726
HCM Lane V/C Ratio	0.067	-	-	-	0.019	0.105
HCM Control Delay (s)	8.2	-	-	-	12.9	10.5
HCM Lane LOS	A	-	-	-	B	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.1	0.3

Intersection						
Int Delay, s/veh	1.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	71	23	11	51	13	7
Future Vol, veh/h	71	23	11	51	13	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	155	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	77	25	12	55	14	8
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	102	0	169	90
Stage 1	-	-	-	-	90	-
Stage 2	-	-	-	-	79	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1490	-	821	968
Stage 1	-	-	-	-	934	-
Stage 2	-	-	-	-	944	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1490	-	814	968
Mov Cap-2 Maneuver	-	-	-	-	796	-
Stage 1	-	-	-	-	927	-
Stage 2	-	-	-	-	944	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1.3		9.4	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	849	-	-	1490	-	
HCM Lane V/C Ratio	0.026	-	-	0.008	-	
HCM Control Delay (s)	9.4	-	-	7.4	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q(veh)	0.1	-	-	0	-	

Intersection												
Int Delay, s/veh	3.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	55	8	34	50	22	4	0	20	13	0	8
Future Vol, veh/h	14	55	8	34	50	22	4	0	20	13	0	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	155	-	-	155	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	60	9	37	54	24	4	0	22	14	0	9
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	78	0	0	69	0	0	240	247	65	246	239	66
Stage 1	-	-	-	-	-	-	95	95	-	140	140	-
Stage 2	-	-	-	-	-	-	145	152	-	106	99	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1520	-	-	1532	-	-	714	655	999	708	662	998
Stage 1	-	-	-	-	-	-	912	816	-	863	781	-
Stage 2	-	-	-	-	-	-	858	772	-	900	813	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1520	-	-	1532	-	-	690	633	999	675	639	998
Mov Cap-2 Maneuver	-	-	-	-	-	-	690	633	-	675	639	-
Stage 1	-	-	-	-	-	-	903	808	-	854	762	-
Stage 2	-	-	-	-	-	-	830	753	-	872	805	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.3			2.4			9			9.8		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	930	1520	-	-	1532	-	-	770				
HCM Lane V/C Ratio	0.028	0.01	-	-	0.024	-	-	0.03				
HCM Control Delay (s)	9	7.4	-	-	7.4	-	-	9.8				
HCM Lane LOS	A	A	-	-	A	-	-	A				
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	0.1				

Timings 3: Meridian Rd & Bent Grass Meadows Dr

2040 Background Traffic
AM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	 			 	 	
Traffic Volume (vph)	223	320	328	631	1680	287
Future Volume (vph)	223	320	328	631	1680	287
Turn Type	Prot	Free	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		Free	2			6
Detector Phase	4		5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0
Minimum Split (s)	10.0		10.0	10.0	10.0	10.0
Total Split (s)	25.0		31.0	95.0	64.0	64.0
Total Split (%)	20.8%		25.8%	79.2%	53.3%	53.3%
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None		None	Max	Max	Max
Act Effct Green (s)	13.2	113.3	90.1	90.1	63.1	63.1
Actuated g/C Ratio	0.12	1.00	0.80	0.80	0.56	0.56
v/c Ratio	0.60	0.22	0.87	0.24	0.93	0.31
Control Delay	54.1	0.3	53.6	3.4	34.0	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.1	0.3	53.6	3.4	34.0	3.8
LOS	D	A	D	A	C	A
Approach Delay	22.4			20.6	29.6	
Approach LOS	C			C	C	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 113.3
Natural Cycle: 90
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 25.9
Intersection Capacity Utilization 83.5%
Analysis Period (min) 15





























Intersection LOS: C
ICU Level of Service E

Splits and Phases: 3: Meridian Rd & Bent Grass Meadows Dr



Timings
25: Golden Sage 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)	360	734	74	77	1776	90	150	7	48	238	10	317
Future Volume (vph)	360	734	74	77	1776	90	150	7	48	238	10	317
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6	8		8	4		Free
Detector Phase	5	2	2	1	6	6	3	8	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	5.0	5.0	
Minimum Split (s)	10.0	12.0	12.0	10.0	12.0	12.0	10.0	10.0	10.0	10.0	10.0	
Total Split (s)	18.0	71.0	71.0	10.0	63.0	63.0	24.0	15.0	15.0	24.0	15.0	
Total Split (%)	15.0%	59.2%	59.2%	8.3%	52.5%	52.5%	20.0%	12.5%	12.5%	20.0%	12.5%	
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	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	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-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	6.0	4.0	6.0	6.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	
Act Effect Green (s)	14.1	67.6	67.6	65.3	57.3	57.3	26.7	7.2	7.2	20.3	7.3	112.8
Actuated g/C Ratio	0.12	0.60	0.60	0.58	0.51	0.51	0.24	0.06	0.06	0.18	0.06	1.00
v/c Ratio	0.89	0.35	0.08	0.18	1.01	0.11	0.39	0.06	0.19	0.79	0.09	0.21
Control Delay	72.7	13.5	1.1	8.6	52.5	0.5	37.8	52.3	1.6	61.2	52.9	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.0	0.0	0.0
Total Delay	72.7	13.5	1.1	8.6	52.5	0.5	37.8	52.3	1.6	75.2	52.9	0.3
LOS	E	B	A	A	D	A	D	D	A	E	D	A
Approach Delay		31.3			48.2			29.7			32.8	
Approach LOS		C			D			C			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 112.8

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.01

Intersection Signal Delay: 39.9

Intersection LOS: D

Intersection Capacity Utilization 90.9%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 25: Golden Sage Rd & Woodmen Rd

 Ø1	 Ø2	 Ø3	 Ø4
10 s	71 s	24 s	15 s
 Ø5	 Ø6	 Ø7	 Ø8
18 s	63 s	24 s	15 s

Timings
26: Golden Sage Rd & Woodmen Frontage Rd

2040 Background Traffic
AM Peak Hour






	→	↖	←	↗	↘
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations	↰		↱	↰	↱
Traffic Volume (vph)	32	288	5	101	356
Future Volume (vph)	32	288	5	101	356
Turn Type	NA	pm+pt	NA	Prot	Over
Protected Phases	4	3	8	2	3
Permitted Phases		8			
Detector Phase	4	3	8	2	3
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0
Total Split (s)	10.0	30.0	40.0	80.0	30.0
Total Split (%)	8.3%	25.0%	33.3%	66.7%	25.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lead			Lead
Lead-Lag Optimize?	Yes	Yes			Yes
Recall Mode	None	None	None	Min	None
Act Effect Green (s)	12.0		24.1	10.7	7.8
Actuated g/C Ratio	0.28		0.56	0.25	0.18
v/c Ratio	0.50		0.57	0.50	0.51
Control Delay	6.3		9.8	13.3	8.1
Queue Delay	0.0		0.0	0.0	0.0
Total Delay	6.3		9.8	13.3	8.1
LOS	A		A	B	A
Approach Delay	6.3		9.8	10.8	
Approach LOS	A		A	B	







Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 43.2
 Natural Cycle: 45
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.57
 Intersection Signal Delay: 9.2
 Intersection LOS: A
 Intersection Capacity Utilization 57.9%
 ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 26: Golden Sage Rd & Woodmen Frontage Rd














↰ Ø2	↱ Ø3	→ Ø4
80 s	30 s	10 s
	↰ Ø8	
	40 s	

Intersection						
Int Delay, s/veh	3.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	146	235	144	23	10	115
Future Vol, veh/h	146	235	144	23	10	115
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	155	-	-	-	155	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	159	255	157	25	11	125
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	182	0	-	0	743	170
Stage 1	-	-	-	-	170	-
Stage 2	-	-	-	-	573	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1393	-	-	-	383	874
Stage 1	-	-	-	-	860	-
Stage 2	-	-	-	-	564	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1393	-	-	-	339	874
Mov Cap-2 Maneuver	-	-	-	-	339	-
Stage 1	-	-	-	-	762	-
Stage 2	-	-	-	-	564	-
Approach	EB	WB		SB		
HCM Control Delay, s	3	0		10.3		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1393	-	-	-	339	874
HCM Lane V/C Ratio	0.114	-	-	-	0.032	0.143
HCM Control Delay (s)	7.9	-	-	-	16	9.8
HCM Lane LOS	A	-	-	-	C	A
HCM 95th %tile Q(veh)	0.4	-	-	-	0.1	0.5

Intersection												
Int Delay, s/veh	0.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	142	2	0	155	6	6	0	0	16	0	0
Future Vol, veh/h	0	142	2	0	155	6	6	0	0	16	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	155	-	-	155	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	154	2	0	168	7	7	0	0	17	0	0
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	175	0	0	156	0	0	327	330	155	327	328	172
Stage 1	-	-	-	-	-	-	155	155	-	172	172	-
Stage 2	-	-	-	-	-	-	172	175	-	155	156	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1401	-	-	1424	-	-	626	589	891	626	591	872
Stage 1	-	-	-	-	-	-	847	769	-	830	756	-
Stage 2	-	-	-	-	-	-	830	754	-	847	769	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1401	-	-	1424	-	-	626	589	891	626	591	872
Mov Cap-2 Maneuver	-	-	-	-	-	-	626	589	-	626	591	-
Stage 1	-	-	-	-	-	-	847	769	-	830	756	-
Stage 2	-	-	-	-	-	-	830	754	-	847	769	-
Approach	EB		WB				NB			SB		
HCM Control Delay, s	0		0				10.8			10.9		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	626	1401	-	-	1424	-	-	626				
HCM Lane V/C Ratio	0.01	-	-	-	-	-	-	0.028				
HCM Control Delay (s)	10.8	0	-	-	0	-	-	10.9				
HCM Lane LOS	B	A	-	-	A	-	-	B				
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1				

Timings
3: Bent Grass Meadows Dr

2040 Background Traffic
PM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	 					
Traffic Volume (vph)	492	358	388	1424	1114	192
Future Volume (vph)	492	358	388	1424	1114	192
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	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
Total Split (s)	31.0	31.0	37.0	89.0	52.0	52.0
Total Split (%)	25.8%	25.8%	30.8%	74.2%	43.3%	43.3%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	Max	Max	Max
Act Effct Green (s)	23.0	23.0	84.0	84.0	52.3	52.3
Actuated g/C Ratio	0.20	0.20	0.72	0.72	0.45	0.45
v/c Ratio	0.79	0.62	0.87	0.61	0.77	0.25
Control Delay	54.3	8.8	47.9	9.9	32.9	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.3	8.8	47.9	9.9	32.9	4.0
LOS	D	A	D	A	C	A
Approach Delay	35.1			18.0	28.7	
Approach LOS	D			B	C	

Intersection Summary

























Cycle Length: 120
 Actuated Cycle Length: 117
 Natural Cycle: 70
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.87
 Intersection Signal Delay: 25.2
 Intersection LOS: C
 Intersection Capacity Utilization 78.8%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 3: Bent Grass Meadows Dr



Timings
25: Golden Sage 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)	377	1629	121	99	1083	284	152	14	114	177	10	392
Future Volume (vph)	377	1629	121	99	1083	284	152	14	114	177	10	392
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6	8		8	4		Free
Detector Phase	5	2	2	1	6	6	3	8	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	5.0	5.0	
Minimum Split (s)	10.0	12.0	12.0	10.0	12.0	12.0	10.0	10.0	10.0	10.0	10.0	
Total Split (s)	23.0	64.0	64.0	10.0	51.0	51.0	31.0	15.0	15.0	31.0	15.0	
Total Split (%)	19.2%	53.3%	53.3%	8.3%	42.5%	42.5%	25.8%	12.5%	12.5%	25.8%	12.5%	
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	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	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-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	6.0	4.0	6.0	6.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	
Act Effect Green (s)	17.1	56.2	56.2	53.2	45.2	45.2	27.2	7.4	7.4	19.0	7.8	104.7
Actuated g/C Ratio	0.16	0.54	0.54	0.51	0.43	0.43	0.26	0.07	0.07	0.18	0.07	1.00
v/c Ratio	0.71	0.87	0.14	0.59	0.72	0.35	0.36	0.11	0.44	0.58	0.08	0.26
Control Delay	49.8	28.3	2.8	31.2	29.0	3.7	33.3	49.9	7.2	45.7	48.1	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Total Delay	49.8	28.3	2.8	31.2	29.0	3.7	33.3	49.9	7.2	46.0	48.1	0.4
LOS	D	C	A	C	C	A	C	D	A	D	D	A
Approach Delay		30.7			24.1			23.6			15.2	
Approach LOS		C			C			C			B	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 104.7

Natural Cycle: 70

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 26.0

Intersection LOS: C

Intersection Capacity Utilization 78.7%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 25: Golden Sage Rd & Woodmen Rd



Timings
26: Golden Sage Rd & Woodmen Frontage Rd

2040 Background Traffic
PM Peak Hour






	→	↖	←	↗	↘
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations	↰		↱	↰	↱
Traffic Volume (vph)	27	397	15	330	345
Future Volume (vph)	27	397	15	330	345
Turn Type	NA	pm+pt	NA	Prot	Over
Protected Phases	4	3	8	2	3
Permitted Phases		8			
Detector Phase	4	3	8	2	3
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0
Total Split (s)	10.0	30.0	40.0	80.0	30.0
Total Split (%)	8.3%	25.0%	33.3%	66.7%	25.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lead			Lead
Lead-Lag Optimize?	Yes	Yes			Yes
Recall Mode	None	None	None	Min	None
Act Effect Green (s)	23.9		36.2	19.5	8.3
Actuated g/C Ratio	0.38		0.57	0.31	0.13
v/c Ratio	0.30		0.71	0.71	0.68
Control Delay	5.7		16.6	26.7	11.5
Queue Delay	0.0		0.0	0.0	0.0
Total Delay	5.7		16.6	26.7	11.5
LOS	A		B	C	B
Approach Delay	5.7		16.6	19.7	
Approach LOS	A		B	B	







Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 63.7
 Natural Cycle: 55
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.71
 Intersection Signal Delay: 16.5
 Intersection LOS: B
 Intersection Capacity Utilization 70.8%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 26: Golden Sage Rd & Woodmen Frontage Rd

↰ Ø2	↱ Ø3	→ Ø4
80 s	30 s	10 s
	↰ Ø8	
	40 s	

Intersection						
Int Delay, s/veh	4.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	123	210	221	9	11	171
Future Vol, veh/h	123	210	221	9	11	171
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	155	-	-	-	155	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	134	228	240	10	12	186
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	250	0	-	0	741	245
Stage 1	-	-	-	-	245	-
Stage 2	-	-	-	-	496	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1316	-	-	-	384	794
Stage 1	-	-	-	-	796	-
Stage 2	-	-	-	-	612	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1316	-	-	-	345	794
Mov Cap-2 Maneuver	-	-	-	-	345	-
Stage 1	-	-	-	-	715	-
Stage 2	-	-	-	-	612	-
Approach	EB	WB		SB		
HCM Control Delay, s	3	0		11.2		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1316	-	-	-	345	794
HCM Lane V/C Ratio	0.102	-	-	-	0.035	0.234
HCM Control Delay (s)	8	-	-	-	15.8	10.9
HCM Lane LOS	A	-	-	-	C	B
HCM 95th %tile Q(veh)	0.3	-	-	-	0.1	0.9

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	188	8	0	121	17	5	0	0	10	0	0
Future Vol, veh/h	0	188	8	0	121	17	5	0	0	10	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	155	-	-	155	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	204	9	0	132	18	5	0	0	11	0	0


Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	150	0	0	213	0	0	350	359	209	350	354	141
Stage 1	-	-	-	-	-	-	209	209	-	141	141	-
Stage 2	-	-	-	-	-	-	141	150	-	209	213	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1431	-	-	1357	-	-	605	568	831	605	571	907
Stage 1	-	-	-	-	-	-	793	729	-	862	780	-
Stage 2	-	-	-	-	-	-	862	773	-	793	726	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1431	-	-	1357	-	-	605	568	831	605	571	907
Mov Cap-2 Maneuver	-	-	-	-	-	-	605	568	-	605	571	-
Stage 1	-	-	-	-	-	-	793	729	-	862	780	-
Stage 2	-	-	-	-	-	-	862	773	-	793	726	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	11	11.1
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	605	1431	-	-	1357	-	-	605
HCM Lane V/C Ratio	0.009	-	-	-	-	-	-	0.018
HCM Control Delay (s)	11	0	-	-	0	-	-	11.1
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

Timings 3: Meridian Rd & Bent Grass Meadows Dr

2040 Total Traffic
AM Peak Hour





						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰↰	↱	↰	↱↱	↱↱	↰
Traffic Volume (vph)	232	357	339	631	1680	290
Future Volume (vph)	232	357	339	631	1680	290
Turn Type	Prot	Free	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		Free	2			6
Detector Phase	4		5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0
Minimum Split (s)	10.0		10.0	10.0	10.0	10.0
Total Split (s)	25.0		31.0	95.0	64.0	64.0
Total Split (%)	20.8%		25.8%	79.2%	53.3%	53.3%
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None		None	Max	Max	Max
Act Effect Green (s)	13.3	113.4	90.1	90.1	63.1	63.1
Actuated g/C Ratio	0.12	1.00	0.79	0.79	0.56	0.56
v/c Ratio	0.61	0.24	0.87	0.24	0.90	0.30
Control Delay	54.1	0.4	53.7	3.3	31.2	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.1	0.4	53.7	3.3	31.2	3.5
LOS	D	A	D	A	C	A
Approach Delay	21.5			21.0	27.2	
Approach LOS	C			C	C	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 113.4
Natural Cycle: 75
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 24.5
Intersection Capacity Utilization 84.3%
Analysis Period (min) 15





























Intersection LOS: C
ICU Level of Service E

Splits and Phases: 3: Meridian Rd & Bent Grass Meadows Dr

 Ø2 95 s	 Ø4 25 s
 Ø5 31 s	 Ø6 64 s

Timings
25: Golden Sage 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)	369	734	74	77	1776	90	150	8	48	238	11	347
Future Volume (vph)	369	734	74	77	1776	90	150	8	48	238	11	347
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6	8		8	4		Free
Detector Phase	5	2	2	1	6	6	3	8	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	5.0	5.0	
Minimum Split (s)	10.0	12.0	12.0	10.0	12.0	12.0	10.0	10.0	10.0	10.0	10.0	
Total Split (s)	18.0	71.0	71.0	10.0	63.0	63.0	24.0	15.0	15.0	24.0	15.0	
Total Split (%)	15.0%	59.2%	59.2%	8.3%	52.5%	52.5%	20.0%	12.5%	12.5%	20.0%	12.5%	
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	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	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-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	6.0	4.0	6.0	6.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	
Act Effect Green (s)	14.1	67.5	67.5	65.3	57.2	57.2	26.7	7.2	7.2	20.3	7.4	112.8
Actuated g/C Ratio	0.12	0.60	0.60	0.58	0.51	0.51	0.24	0.06	0.06	0.18	0.07	1.00
v/c Ratio	0.91	0.35	0.08	0.18	1.01	0.11	0.39	0.07	0.19	0.79	0.10	0.23
Control Delay	75.7	13.6	1.1	8.6	52.6	0.6	37.8	52.4	1.6	61.1	53.0	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.0	0.0	0.0
Total Delay	75.7	13.6	1.1	8.6	52.6	0.6	37.8	52.4	1.6	75.1	53.0	0.3
LOS	E	B	A	A	D	A	D	D	A	E	D	A
Approach Delay		32.6			48.3			29.8			31.2	
Approach LOS		C			D			C			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 112.8

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.01

Intersection Signal Delay: 40.0


Intersection LOS: D

Intersection Capacity Utilization 91.1%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 25: Golden Sage Rd & Woodmen Rd

											
10 s	71 s		24 s	15 s		24 s	15 s		24 s	15 s	
											
18 s	63 s		24 s	15 s		24 s	15 s		24 s	15 s	

See comments regarding
roundabout design.

Timings

26: Golden Sage Rd & Woodmen Frontage Rd

2040 Total Traffic

AM Peak Hour

	→	↖	←	↙	↗
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations	↗		↖	↙	↗
Traffic Volume (vph)	32	319	5	101	366
Future Volume (vph)	32	319	5	101	366
Turn Type	NA	pm+pt	NA	Prot	Over
Protected Phases	4	3	8	2	3
Permitted Phases		8			
Detector Phase	4	3	8	2	3
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0
Total Split (s)	10.0	30.0	40.0	80.0	30.0
Total Split (%)	8.3%	25.0%	33.3%	66.7%	25.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lead			Lead
Lead-Lag Optimize?	Yes	Yes			Yes
Recall Mode	None	None	None	Min	None
Act Effect Green (s)	15.0		27.1	10.9	7.9
Actuated g/C Ratio	0.32		0.58	0.23	0.17
v/c Ratio	0.46		0.61	0.53	0.53
Control Delay	5.6		10.1	14.7	8.6
Queue Delay	0.0		0.0	0.0	0.0
Total Delay	5.6		10.1	14.7	8.6
LOS	A		B	B	A
Approach Delay	5.6		10.1	11.7	
Approach LOS	A		B	B	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 46.5

Natural Cycle: 50

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 9.5

Intersection LOS: A

Intersection Capacity Utilization 59.8%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 26: Golden Sage Rd & Woodmen Frontage Rd

↙ Ø2	↖ Ø3	→ Ø4
80 s	30 s	10 s
	↙ Ø8	
	40 s	

HCM 6th Roundabout
26: Golden Sage Rd & Woodmen Frontage Rd

2040 Total Traffic
AM Peak Hour

Intersection				
Intersection Delay, s/veh	5.7			
Intersection LOS	A			
Approach	EB	WB	NB	
Entry Lanes	1	1	2	
Conflicting Circle Lanes	1	1	1	
Adj Approach Flow, veh/h	326	341	491	
Demand Flow Rate, veh/h	333	348	501	
Vehicles Circulating, veh/h	343	108	35	
Vehicles Exiting, veh/h	113	428	641	
Ped Vol Crossing Leg, #/h	0	0	0	
Ped Cap Adj	1.000	1.000	1.000	
Approach Delay, s/veh	7.4	5.5	4.8	
Approach LOS	A	A	A	
Lane	Left	Left	Left	Right
Designated Moves	TR	LT	L	TR
Assumed Moves	TR	LT	L	TR
RT Channelized				
Lane Util	1.000	1.000	0.216	0.784
Follow-Up Headway, s	2.609	2.609	2.535	2.535
Critical Headway, s	4.976	4.976	4.544	4.544
Entry Flow, veh/h	333	348	108	393
Cap Entry Lane, veh/h	973	1236	1376	1376
Entry HV Adj Factor	0.980	0.980	0.981	0.980
Flow Entry, veh/h	326	341	106	385
Cap Entry, veh/h	953	1211	1350	1348
V/C Ratio	0.342	0.282	0.079	0.286
Control Delay, s/veh	7.4	5.5	3.3	5.2
LOS	A	A	A	A
95th %tile Queue, veh	2	1	0	1

HCM 6th TWSC
26: Golden Sage Rd & Woodmen Frontage Rd

2040 Total Traffic
AM Peak Hour

Intersection												
Int Delay, s/veh	28.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↱			↱	↱		↰	
Traffic Vol, veh/h	0	32	277	319	5	0	101	0	366	0	0	0
Future Vol, veh/h	0	32	277	319	5	0	101	0	366	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	Free	-	-	None
Storage Length	-	-	-	-	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	95	95	95	95	92	95	92	95	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	34	292	336	5	0	106	0	385	0	0	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	-	213	1	376	213	-	1	0	-	0	0	0
Stage 1	-	1	-	212	212	-	-	-	-	-	-	-
Stage 2	-	212	-	164	1	-	-	-	-	-	-	-
Critical Hdwy	-	6.52	6.22	7.12	6.52	-	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	-	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	-	4.018	3.318	3.518	4.018	-	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	0	684	1084	581	684	0	1622	-	0	-	-	-
Stage 1	0	895	-	790	727	0	-	-	0	-	-	-
Stage 2	0	727	-	838	895	0	-	-	0	-	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	-	640	1084	388	640	-	1622	-	-	-	-	-
Mov Cap-2 Maneuver	-	640	-	388	640	-	-	-	-	-	-	-
Stage 1	-	895	-	739	680	-	-	-	-	-	-	-
Stage 2	-	680	-	590	895	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.2	52.6	7.4	0
HCM LOS	B	F		






Minor Lane/Major Mvmt	NBL	NBT	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1622	-	1011	390	-	-
HCM Lane V/C Ratio	0.066	-	0.322	0.874	-	-
HCM Control Delay (s)	7.4	0	10.2	52.6	0	-
HCM Lane LOS	A	A	B	F	A	-
HCM 95th %tile Q(veh)	0.2	-	1.4	8.7	-	-

HCM 6th TWSC
40: frontage rd & Bent Grass Meadows Dr

2040 Total Traffic
AM Peak Hour

Intersection

Int Delay, s/veh 4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	155	235	144	23	10	146
Future Vol, veh/h	155	235	144	23	10	146
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	155	-	-	-	155	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	168	255	157	25	11	159

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	182	0	0 761 170
Stage 1	-	-	- - 170 -
Stage 2	-	-	- - 591 -
Critical Hdwy	4.12	-	- - 6.42 6.22
Critical Hdwy Stg 1	-	-	- - 5.42 -
Critical Hdwy Stg 2	-	-	- - 5.42 -
Follow-up Hdwy	2.218	-	- - 3.518 3.318
Pot Cap-1 Maneuver	1393	-	- - 373 874
Stage 1	-	-	- - 860 -
Stage 2	-	-	- - 553 -
Platoon blocked, %		-	- -
Mov Cap-1 Maneuver	1393	-	- - 328 874
Mov Cap-2 Maneuver	-	-	- - 328 -
Stage 1	-	-	- - 756 -
Stage 2	-	-	- - 553 -

Approach	EB	WB	SB
HCM Control Delay, s	3.2	0	10.4
HCM LOS			B






Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1393	-	-	-	328	874
HCM Lane V/C Ratio	0.121	-	-	-	0.033	0.182
HCM Control Delay (s)	7.9	-	-	-	16.4	10
HCM Lane LOS	A	-	-	-	C	B
HCM 95th %tile Q(veh)	0.4	-	-	-	0.1	0.7

HCM 6th TWSC
203: Lynch Rd & Bent Grass Meadows Dr

2040 Total Traffic
AM Peak Hour

Intersection

Int Delay, s/veh 0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	149	5	5	177	16	14
Future Vol, veh/h	149	5	5	177	16	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	155	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	162	5	5	192	17	15







Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	167
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1411
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1411
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	10
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	755	-	-	1411	-
HCM Lane V/C Ratio	0.043	-	-	0.004	-
HCM Control Delay (s)	10	-	-	7.6	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

HCM 6th TWSC
204: Berwyn Dr & Bent Grass Meadows Dr

2040 Total Traffic
AM Peak Hour

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	156	3	11	160	14	12	0	32	38	0	10
Future Vol, veh/h	3	156	3	11	160	14	12	0	32	38	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	155	-	-	155	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	170	3	12	174	15	13	0	35	41	0	11
















Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	189	0	0	173	0	0	389	391	172	401	385	182
Stage 1	-	-	-	-	-	-	178	178	-	206	206	-
Stage 2	-	-	-	-	-	-	211	213	-	195	179	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1385	-	-	1404	-	-	570	545	872	560	549	861
Stage 1	-	-	-	-	-	-	824	752	-	796	731	-
Stage 2	-	-	-	-	-	-	791	726	-	807	751	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1385	-	-	1404	-	-	558	539	872	533	543	861
Mov Cap-2 Maneuver	-	-	-	-	-	-	558	539	-	533	543	-
Stage 1	-	-	-	-	-	-	822	750	-	794	724	-
Stage 2	-	-	-	-	-	-	774	719	-	773	749	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.5			10.1			11.8		
HCM LOS							B			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	756	1385	-	-	1404	-	-	579
HCM Lane V/C Ratio	0.063	0.002	-	-	0.009	-	-	0.09
HCM Control Delay (s)	10.1	7.6	-	-	7.6	-	-	11.8
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.3

Timings 3: Meridian Rd & Bent Grass Meadows Dr

2040 Total Traffic
PM Peak Hour

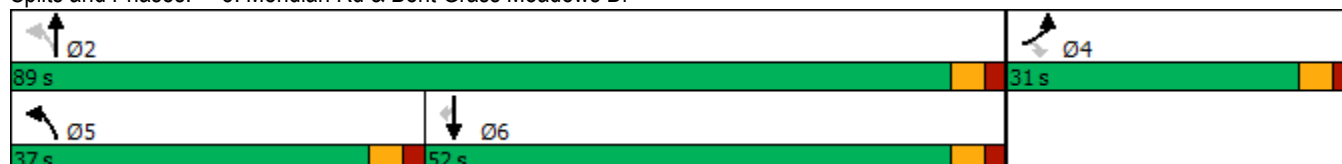
						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	 			 	 	
Traffic Volume (vph)	499	387	437	1424	1114	204
Future Volume (vph)	499	387	437	1424	1114	204
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	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
Total Split (s)	31.0	31.0	37.0	89.0	52.0	52.0
Total Split (%)	25.8%	25.8%	30.8%	74.2%	43.3%	43.3%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	Max	Max	Max
Act Effct Green (s)	22.7	22.7	84.1	84.1	50.4	50.4
Actuated g/C Ratio	0.19	0.19	0.72	0.72	0.43	0.43
v/c Ratio	0.79	0.64	0.90	0.59	0.77	0.27
Control Delay	53.8	8.9	51.0	9.5	33.9	4.0
Queue Delay	0.3	0.0	0.0	0.0	0.0	0.0
Total Delay	54.2	9.0	51.0	9.5	33.9	4.0
LOS	D	A	D	A	C	A
Approach Delay	34.4			19.2	29.2	
Approach LOS	C			B	C	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 116.8
Natural Cycle: 65
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 25.8
Intersection Capacity Utilization 81.7%
Analysis Period (min) 15

























Intersection LOS: C
ICU Level of Service D

Splits and Phases: 3: Meridian Rd & Bent Grass Meadows Dr



Timings
25: Golden Sage 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)	417	1629	121	99	1083	284	152	15	114	177	11	416
Future Volume (vph)	417	1629	121	99	1083	284	152	15	114	177	11	416
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6	8		8	4		Free
Detector Phase	5	2	2	1	6	6	3	8	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	5.0	5.0	
Minimum Split (s)	10.0	12.0	12.0	10.0	12.0	12.0	10.0	10.0	10.0	10.0	10.0	
Total Split (s)	23.0	64.0	64.0	10.0	51.0	51.0	31.0	15.0	15.0	31.0	15.0	
Total Split (%)	19.2%	53.3%	53.3%	8.3%	42.5%	42.5%	25.8%	12.5%	12.5%	25.8%	12.5%	
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	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	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-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	6.0	4.0	6.0	6.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	
Act Effect Green (s)	17.9	56.3	56.3	52.5	44.4	44.4	27.2	7.5	7.5	19.0	7.8	104.8
Actuated g/C Ratio	0.17	0.54	0.54	0.50	0.42	0.42	0.26	0.07	0.07	0.18	0.07	1.00
v/c Ratio	0.75	0.87	0.14	0.59	0.74	0.35	0.36	0.12	0.44	0.58	0.09	0.28
Control Delay	51.0	28.3	2.9	30.7	29.8	3.8	33.3	49.9	7.2	45.6	48.2	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Total Delay	51.0	28.3	2.9	30.7	29.8	3.8	33.3	49.9	7.2	46.0	48.2	0.4
LOS	D	C	A	C	C	A	C	D	A	D	D	A
Approach Delay		31.4			24.7			23.6			14.7	
Approach LOS		C			C			C			B	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 104.8

Natural Cycle: 70

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 26.4

Intersection LOS: C

Intersection Capacity Utilization 78.7%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 25: Golden Sage Rd & Woodmen Rd



Timings
26: Golden Sage Rd & Woodmen Frontage Rd

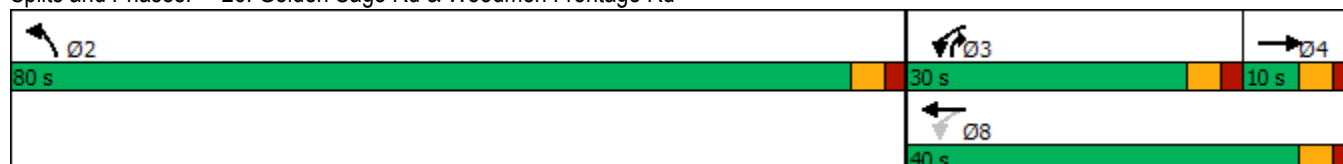
2040 Total Traffic
PM Peak Hour

	→	↖	←	↗	↘
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations	↰		↱	↰	↱
Traffic Volume (vph)	27	421	15	330	386
Future Volume (vph)	27	421	15	330	386
Turn Type	NA	pm+pt	NA	Prot	Over
Protected Phases	4	3	8	2	3
Permitted Phases		8			
Detector Phase	4	3	8	2	3
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0
Total Split (s)	10.0	30.0	40.0	80.0	30.0
Total Split (%)	8.3%	25.0%	33.3%	66.7%	25.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lead			Lead
Lead-Lag Optimize?	Yes	Yes			Yes
Recall Mode	None	None	None	Min	None
Act Effect Green (s)	23.7		36.2	20.0	8.4
Actuated g/C Ratio	0.37		0.56	0.31	0.13
v/c Ratio	0.30		0.76	0.71	0.71
Control Delay	5.9		19.4	26.7	11.8
Queue Delay	0.0		0.0	0.0	0.0
Total Delay	5.9		19.4	26.7	11.8
LOS	A		B	C	B
Approach Delay	5.9		19.4	19.6	
Approach LOS	A		B	B	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 64.2
 Natural Cycle: 55
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.76
 Intersection Signal Delay: 17.4
 Intersection LOS: B
 Intersection Capacity Utilization 73.0%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 26: Golden Sage Rd & Woodmen Frontage Rd



HCM 6th Roundabout
26: Golden Sage Rd & Woodmen Frontage Rd

2040 Total Traffic
PM Peak Hour

Intersection				
Intersection Delay, s/veh	6.9			
Intersection LOS	A			
Approach	EB	WB	NB	
Entry Lanes	1	1	2	
Conflicting Circle Lanes	1	1	1	
Adj Approach Flow, veh/h	221	459	753	
Demand Flow Rate, veh/h	226	468	768	
Vehicles Circulating, veh/h	452	354	29	
Vehicles Exiting, veh/h	370	443	649	
Ped Vol Crossing Leg, #/h	0	0	0	
Ped Cap Adj	1.000	1.000	1.000	
Approach Delay, s/veh	7.0	9.8	5.1	
Approach LOS	A	A	A	
Lane	Left	Left	Left	Right
Designated Moves	TR	LT	L	TR
Assumed Moves	TR	LT	L	TR
RT Channelized				
Lane Util	1.000	1.000	0.461	0.539
Follow-Up Headway, s	2.609	2.609	2.535	2.535
Critical Headway, s	4.976	4.976	4.544	4.544
Entry Flow, veh/h	226	468	354	414
Cap Entry Lane, veh/h	870	962	1383	1383
Entry HV Adj Factor	0.980	0.980	0.980	0.981
Flow Entry, veh/h	221	459	347	406
Cap Entry, veh/h	853	943	1356	1356
V/C Ratio	0.260	0.487	0.256	0.299
Control Delay, s/veh	7.0	9.8	4.8	5.3
LOS	A	A	A	A
95th %tile Queue, veh	1	3	1	1

HCM 6th TWSC
26: Golden Sage Rd & Woodmen Frontage Rd

2040 Total Traffic
PM Peak Hour

Intersection												
Int Delay, s/veh	306											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↰			↰	↰		↰	
Traffic Vol, veh/h	0	27	183	421	15	0	330	0	386	0	0	0
Future Vol, veh/h	0	27	183	421	15	0	330	0	386	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	Free	-	-	None
Storage Length	-	-	-	-	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	95	95	95	95	92	95	92	95	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	28	193	443	16	0	347	0	406	0	0	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	-	695	1	806	695	-	1	0	-	0	0	0
Stage 1	-	1	-	694	694	-	-	-	-	-	-	-
Stage 2	-	694	-	112	1	-	-	-	-	-	-	-
Critical Hdwy	-	6.52	6.22	7.12	6.52	-	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	-	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	-	4.018	3.318	3.518	4.018	-	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	0	366	1084	~ 300	366	0	1622	-	0	-	-	-
Stage 1	0	895	-	~ 433	444	0	-	-	0	-	-	-
Stage 2	0	444	-	893	895	0	-	-	0	-	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	-	288	1084	~ 191	288	-	1622	-	-	-	-	-
Mov Cap-2 Maneuver	-	288	-	~ 191	288	-	-	-	-	-	-	-
Stage 1	-	895	-	~ 340	349	-	-	-	-	-	-	-
Stage 2	-	349	-	711	895	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.2	\$ 674.4	7.8	0
HCM LOS	B	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1622	-	800	193	-	-	-
HCM Lane V/C Ratio	0.214	-	0.276	2.378	-	-	-
HCM Control Delay (s)	7.8	0	11.2	\$ 674.4	0	-	-
HCM Lane LOS	A	A	B	F	A	-	-
HCM 95th %tile Q(veh)	0.8	-	1.1	37.8	-	-	-






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

HCM 6th TWSC
40: frontage rd & Bent Grass Meadows Dr

2040 Total Traffic
PM Peak Hour

Intersection

Int Delay, s/veh 4.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	164	210	221	9	11	195
Future Vol, veh/h	164	210	221	9	11	195
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	155	-	-	-	155	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	178	228	240	10	12	212






Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	250	0	0 829 245
Stage 1	-	-	- 245 -
Stage 2	-	-	- 584 -
Critical Hdwy	4.12	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.218	-	- 3.518 3.318
Pot Cap-1 Maneuver	1316	-	- 340 794
Stage 1	-	-	- 796 -
Stage 2	-	-	- 557 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1316	-	- 294 794
Mov Cap-2 Maneuver	-	-	- 294 -
Stage 1	-	-	- 689 -
Stage 2	-	-	- 557 -

Approach	EB	WB	SB
HCM Control Delay, s	3.6	0	11.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1316	-	-	-	294	794
HCM Lane V/C Ratio	0.135	-	-	-	0.041	0.267
HCM Control Delay (s)	8.2	-	-	-	17.8	11.2
HCM Lane LOS	A	-	-	-	C	B
HCM 95th %tile Q(veh)	0.5	-	-	-	0.1	1.1







HCM 6th TWSC
203: Lynch Rd & Bent Grass Meadows Dr

2040 Total Traffic
PM Peak Hour

Intersection						
Int Delay, s/veh	0.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	216	21	12	137	12	7
Future Vol, veh/h	216	21	12	137	12	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	155	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	235	23	13	149	13	8
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	258	0	422	247
Stage 1	-	-	-	-	247	-
Stage 2	-	-	-	-	175	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1307	-	588	792
Stage 1	-	-	-	-	794	-
Stage 2	-	-	-	-	855	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1307	-	582	792
Mov Cap-2 Maneuver	-	-	-	-	636	-
Stage 1	-	-	-	-	786	-
Stage 2	-	-	-	-	855	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.6		10.4	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	686	-	-	1307	-	
HCM Lane V/C Ratio	0.03	-	-	0.01	-	
HCM Control Delay (s)	10.4	-	-	7.8	-	
HCM Lane LOS	B	-	-	A	-	
HCM 95th %tile Q(veh)	0.1	-	-	0	-	

HCM 6th TWSC
204: Berwyn Dr & Bent Grass Meadows Dr

2040 Total Traffic
PM Peak Hour

Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	195	15	35	133	40	9	0	20	23	0	8
Future Vol, veh/h	13	195	15	35	133	40	9	0	20	23	0	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	155	-	-	155	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	212	16	38	145	43	10	0	22	25	0	9






Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	188	0	0	228	0	0	495	512	220	502	499	167
Stage 1	-	-	-	-	-	-	248	248	-	243	243	-
Stage 2	-	-	-	-	-	-	247	264	-	259	256	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1386	-	-	1340	-	-	485	465	820	480	473	877
Stage 1	-	-	-	-	-	-	756	701	-	761	705	-
Stage 2	-	-	-	-	-	-	757	690	-	746	696	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1386	-	-	1340	-	-	466	447	820	454	455	877
Mov Cap-2 Maneuver	-	-	-	-	-	-	466	447	-	454	455	-
Stage 1	-	-	-	-	-	-	748	694	-	753	685	-
Stage 2	-	-	-	-	-	-	728	671	-	719	689	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			1.3			10.7			12.4		
HCM LOS							B			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	664	1386	-	-	1340	-	-	519
HCM Lane V/C Ratio	0.047	0.01	-	-	0.028	-	-	0.065
HCM Control Delay (s)	10.7	7.6	-	-	7.8	-	-	12.4
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	0.2

HCM 6th TWSC
3: Meridian Rd & Bent Grass Meadows Dr

Short-Term Total Traffic (With Channelized "T")
AM Peak Hour

Intersection						
Int Delay, s/veh	81.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	145	279	165	0	1441	262
Future Vol, veh/h	145	279	165	0	1441	262
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	330
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	86	86	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	151	291	192	0	1638	298

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2022	819	1936	0	-	0
Stage 1	1638	-	-	-	-	-
Stage 2	384	-	-	-	-	-
Critical Hdwy	6.63	6.93	4.13	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	~ 57	319	301	-	-	-
Stage 1	~ 145	-	-	-	-	-
Stage 2	688	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 21	319	301	-	-	-
Mov Cap-2 Maneuver	~ 46	-	-	-	-	-
Stage 1	~ 52	-	-	-	-	-
Stage 2	688	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	459.1	35.8	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	301	-	46	319	-	-
HCM Lane V/C Ratio	0.637	-	3.284	0.911	-	-
HCM Control Delay (s)	35.8	\$	1213.2	67.2	-	-
HCM Lane LOS	E	A	F	F	-	-
HCM 95th %tile Q(veh)	4.1	-	16.6	8.8	-	-

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

HCM 6th Roundabout
3: Meridian Rd & Bent Grass Meadows Dr

Short-Term Total Traffic
AM Peak Hour













Intersection						
Intersection Delay, s/veh	16.6					
Intersection LOS	C					
Approach	EB		NB		SB	
Entry Lanes	2		2		2	
Conflicting Circle Lanes	2		2		2	
Adj Approach Flow, veh/h	442		870		1936	
Demand Flow Rate, veh/h	451		888		1975	
Vehicles Circulating, veh/h	1671		154		196	
Vehicles Exiting, veh/h	500		1968		846	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	30.3		6.2		18.1	
Approach LOS	D		A		C	
Lane	Left	Right	Left	Right	Left	Right
Designated Moves	L	TR	LT	TR	LT	TR
Assumed Moves	L	TR	LT	TR	LT	TR
RT Channelized						
Lane Util	0.341	0.659	0.470	0.530	0.470	0.530
Follow-Up Headway, s	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
Entry Flow, veh/h	154	297	417	471	928	1047
Cap Entry Lane, veh/h	393	393	1277	1277	1236	1236
Entry HV Adj Factor	0.981	0.980	0.981	0.979	0.981	0.980
Flow Entry, veh/h	151	291	409	461	910	1026
Cap Entry, veh/h	385	385	1253	1251	1212	1212
V/C Ratio	0.392	0.757	0.326	0.369	0.751	0.847
Control Delay, s/veh	17.2	37.0	5.9	6.4	15.0	20.9
LOS	C	E	A	A	C	C
95th %tile Queue, veh	2	6	1	2	8	11

Timings

2020 Total Traffic (With Signalized Channelized T)

3: Meridian Rd & Bent Grass Meadows Dr

AM Peak Hour

							
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø2
Lane Configurations							
Traffic Volume (vph)	145	279	165	583	1441	262	
Future Volume (vph)	145	279	165	583	1441	262	
Turn Type	Prot	Perm	custom	NA	NA	Perm	
Protected Phases	4!		5	Free!	6		2
Permitted Phases		4	2			6	
Detector Phase	4	4	5		6	6	
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	10.0		23.0	23.0	23.0
Total Split (s)	25.0	25.0	15.0		50.0	50.0	65.0
Total Split (%)	27.8%	27.8%	16.7%		55.6%	55.6%	72%
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0	
Lead/Lag			Lead		Lag	Lag	
Lead-Lag Optimize?			Yes		Yes	Yes	
Recall Mode	None	None	None		Max	Max	Max
Act Effect Green (s)	12.6	12.6	60.1	82.7	46.3	46.3	
Actuated g/C Ratio	0.15	0.15	0.73	1.00	0.56	0.56	
v/c Ratio	0.56	0.70	0.69	0.19	0.83	0.29	
Control Delay	40.6	19.9	28.5	0.1	20.9	2.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	40.6	19.9	28.5	0.1	20.9	2.3	
LOS	D	B	C	A	C	A	
Approach Delay	26.9			6.4	18.0		
Approach LOS	C			A	B		

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 82.7

Natural Cycle: 75

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 16.1

Intersection LOS: B

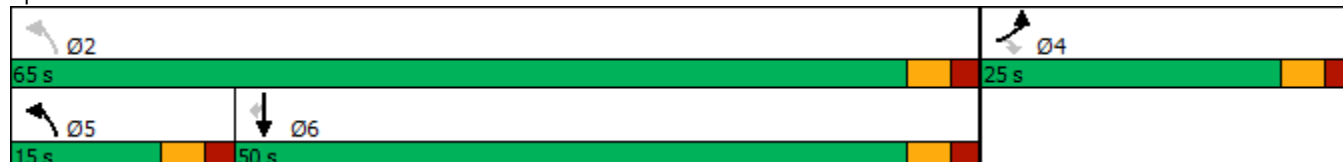
Intersection Capacity Utilization 69.5%

ICU Level of Service C

Analysis Period (min) 15

! Phase conflict between lane groups.

Splits and Phases: 3: Meridian Rd & Bent Grass Meadows Dr















Timings

3: Meridian Rd & Bent Grass Meadows Dr

Short-Term Total Traffic (With SB RT Accel)

AM Peak Hour

							
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø4
Lane Configurations							
Traffic Volume (vph)	145	279	165	583	1441	262	
Future Volume (vph)	145	279	165	583	1441	262	
Turn Type	pm+pt	Free	pm+pt	NA	NA	Perm	
Protected Phases	7		5	2	6		4
Permitted Phases	4	Free	2			6	
Detector Phase	7		5	2	6	6	
Switch Phase							
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0		10.0	23.0	23.0	23.0	23.0
Total Split (s)	25.0		15.0	65.0	50.0	50.0	25.0
Total Split (%)	27.8%		16.7%	72.2%	55.6%	55.6%	28%
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0		5.0	5.0	5.0	5.0	
Lead/Lag			Lead		Lag	Lag	
Lead-Lag Optimize?			Yes		Yes	Yes	
Recall Mode	None		None	Max	Max	Max	None
Act Effct Green (s)	12.3	82.8	60.5	60.5	46.7	46.7	
Actuated g/C Ratio	0.15	1.00	0.73	0.73	0.56	0.56	
v/c Ratio	0.58	0.18	0.69	0.26	0.82	0.29	
Control Delay	41.6	0.3	28.5	4.4	20.4	2.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	41.6	0.3	28.5	4.4	20.4	2.2	
LOS	D	A	C	A	C	A	
Approach Delay	14.4			9.7	17.6		
Approach LOS	B			A	B		

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 82.8

Natural Cycle: 75

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 15.0

Intersection LOS: B

Intersection Capacity Utilization 69.5%

ICU Level of Service C






Analysis Period (min) 15

Splits and Phases: 3: Meridian Rd & Bent Grass Meadows Dr

65 s		25 s	
15 s	50 s	25 s	

HCM 6th TWSC
3: Meridian Rd & Bent Grass Meadows Dr

Short-Term Total Traffic (With Channelized "T")
PM Peak Hour

Intersection						
Int Delay, s/veh	54.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	206	254	283	0	820	211
Future Vol, veh/h	206	254	283	0	820	211
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	330
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	96	96	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	240	295	295	0	820	211

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1410	410	1031	0	-	0
Stage 1	820	-	-	-	-	-
Stage 2	590	-	-	-	-	-
Critical Hdwy	6.63	6.93	4.13	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	~ 140	592	672	-	-	-
Stage 1	394	-	-	-	-	-
Stage 2	553	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 79	592	672	-	-	-
Mov Cap-2 Maneuver	~ 144	-	-	-	-	-
Stage 1	~ 221	-	-	-	-	-
Stage 2	553	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	180.3	14.5	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	672	-	144	592	-	-
HCM Lane V/C Ratio	0.439	-	1.663	0.499	-	-
HCM Control Delay (s)	14.5	0	381.7	17	-	-
HCM Lane LOS	B	A	F	C	-	-
HCM 95th %tile Q(veh)	2.2	-	17.2	2.8	-	-

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

HCM 6th Roundabout
3: Meridian Rd & Bent Grass Meadows Dr

Short-Term Total Traffic
PM Peak Hour













Intersection						
Intersection Delay, s/veh	10.7					
Intersection LOS	B					
Approach	EB		NB		SB	
Entry Lanes	2		2		2	
Conflicting Circle Lanes	2		2		2	
Adj Approach Flow, veh/h	535		1563		1031	
Demand Flow Rate, veh/h	546		1594		1051	
Vehicles Circulating, veh/h	836		245		301	
Vehicles Exiting, veh/h	516		1137		1538	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	9.6		12.6		8.3	
Approach LOS	A		B		A	
Lane	Left	Right	Left	Right	Left	Right
Designated Moves	L	TR	LT	TR	LT	TR
Assumed Moves	L	TR	LT	TR	LT	TR
RT Channelized						
Lane Util	0.449	0.551	0.470	0.530	0.470	0.530
Follow-Up Headway, s	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
Entry Flow, veh/h	245	301	749	845	494	557
Cap Entry Lane, veh/h	752	752	1190	1190	1139	1139
Entry HV Adj Factor	0.980	0.980	0.981	0.980	0.981	0.981
Flow Entry, veh/h	240	295	734	828	484	546
Cap Entry, veh/h	736	737	1167	1167	1117	1117
V/C Ratio	0.326	0.400	0.629	0.710	0.434	0.489
Control Delay, s/veh	8.9	10.1	11.3	13.8	7.8	8.7
LOS	A	B	B	B	A	A
95th %tile Queue, veh	1	2	5	6	2	3

Timings

2020 Total Traffic (With Signalized Channelized T)

3: Meridian Rd & Bent Grass Meadows Dr

PM Peak Hour

							
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø2
Lane Configurations							
Traffic Volume (vph)	206	254	283	1217	820	211	
Future Volume (vph)	206	254	283	1217	820	211	
Turn Type	Prot	Perm	custom	NA	NA	Perm	
Protected Phases	4!		5	Free!	6		2
Permitted Phases		4	2			6	
Detector Phase	4	4	5		6	6	
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	10.0		23.0	23.0	23.0
Total Split (s)	25.0	25.0	15.0		50.0	50.0	65.0
Total Split (%)	27.8%	27.8%	16.7%		55.6%	55.6%	72%
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0	
Lead/Lag			Lead		Lag	Lag	
Lead-Lag Optimize?			Yes		Yes	Yes	
Recall Mode	None	None	None		Max	Max	Max
Act Effect Green (s)	16.1	16.1	60.1	86.2	45.1	45.1	
Actuated g/C Ratio	0.19	0.19	0.70	1.00	0.52	0.52	
v/c Ratio	0.73	0.55	0.61	0.36	0.44	0.23	
Control Delay	46.4	8.1	11.1	0.3	14.2	2.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	46.4	8.1	11.1	0.3	14.2	2.5	
LOS	D	A	B	A	B	A	
Approach Delay	25.2			2.3	11.8		
Approach LOS	C			A	B		

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 86.2

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 9.4

Intersection LOS: A

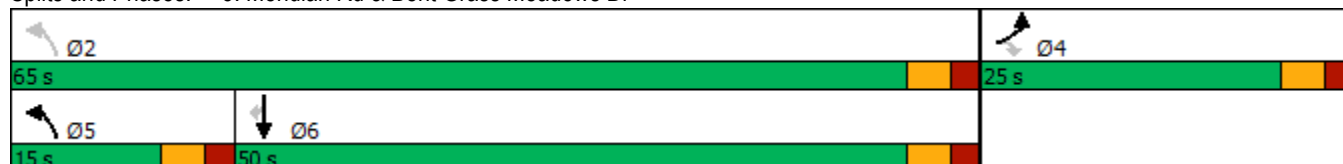
Intersection Capacity Utilization 62.3%

ICU Level of Service B

Analysis Period (min) 15

! Phase conflict between lane groups.

Splits and Phases: 3: Meridian Rd & Bent Grass Meadows Dr



Timings

3: Meridian Rd & Bent Grass Meadows Dr

Short-Term Total Traffic (With SB RT Accel)

PM Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø4
Lane Configurations							
Traffic Volume (vph)	206	254	283	1217	820	211	
Future Volume (vph)	206	254	283	1217	820	211	
Turn Type	pm+pt	Free	pm+pt	NA	NA	Perm	
Protected Phases	7		5	2	6		4
Permitted Phases	4	Free	2			6	
Detector Phase	7		5	2	6	6	
Switch Phase							
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0		10.0	23.0	23.0	23.0	23.0
Total Split (s)	25.0		15.0	65.0	50.0	50.0	25.0
Total Split (%)	27.8%		16.7%	72.2%	55.6%	55.6%	28%
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0		5.0	5.0	5.0	5.0	
Lead/Lag			Lead		Lag	Lag	
Lead-Lag Optimize?			Yes		Yes	Yes	
Recall Mode	None		None	Max	Max	Max	None
Act Effect Green (s)	16.1	86.2	60.1	60.1	45.8	45.8	
Actuated g/C Ratio	0.19	1.00	0.70	0.70	0.53	0.53	
v/c Ratio	0.73	0.19	0.62	0.51	0.44	0.22	
Control Delay	46.4	0.3	11.5	7.5	13.9	2.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	46.4	0.3	11.5	7.5	13.9	2.5	
LOS	D	A	B	A	B	A	
Approach Delay	20.9			8.2	11.6		
Approach LOS	C			A	B		

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 86.2

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 11.5

Intersection LOS: B

Intersection Capacity Utilization 62.3%

ICU Level of Service B






Analysis Period (min) 15

Splits and Phases: 3: Meridian Rd & Bent Grass Meadows Dr



HCM 6th TWSC
3: Meridian Rd & Bent Grass Meadows Dr

2040 Total Traffic (With Channelized "T")
PM Peak Hour

Intersection						
Int Delay, s/veh	25					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	232	357	339	0	1680	290
Future Vol, veh/h	232	357	339	0	1680	290
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	330
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	244	376	357	0	1768	305
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2482	884	2073	0	-	0
Stage 1	1768	-	-	-	-	-
Stage 2	714	-	-	-	-	-
Critical Hdwy	6.63	6.93	4.13	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	~ 28	~ 289	~ 266	-	-	-
Stage 1	~ 123	-	-	-	-	-
Stage 2	484	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	0 ~ 289	~ 266		-	-	-
Mov Cap-2 Maneuver	0	-	-	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	484	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s		214		0		
HCM LOS	-					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	~ 266	-	-	289	-	-
HCM Lane V/C Ratio	1.342	-	-	1.3	-	-
HCM Control Delay (s)	214	0	-	193.9	-	-
HCM Lane LOS	F	A	-	F	-	-
HCM 95th %tile Q(veh)	18.6	-	-	18.5	-	-
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						

HCM 6th Roundabout
3: Meridian Rd & Bent Grass Meadows Dr

Short-Term Total Traffic
AM Peak Hour

Intersection						
Intersection Delay, s/veh	40.0					
Intersection LOS	E					
Approach	EB		NB		SB	
Entry Lanes	2		2		2	
Conflicting Circle Lanes	2		2		2	
Adj Approach Flow, veh/h	620		1021		2073	
Demand Flow Rate, veh/h	633		1041		2114	
Vehicles Circulating, veh/h	1803		249		364	
Vehicles Exiting, veh/h	675		2187		926	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	79.2		7.7		44.2	
Approach LOS	F		A		E	
Lane	Left	Right	Left	Right	Left	Right
Designated Moves	L	TR	LT	TR	LT	TR
Assumed Moves	L	TR	LT	TR	LT	TR
RT Channelized						
Lane Util	0.393	0.607	0.470	0.530	0.470	0.530
Follow-Up Headway, s	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
Entry Flow, veh/h	249	384	489	552	994	1120
Cap Entry Lane, veh/h	354	354	1186	1186	1085	1085
Entry HV Adj Factor	0.980	0.979	0.981	0.980	0.980	0.981
Flow Entry, veh/h	244	376	480	541	974	1099
Cap Entry, veh/h	347	347	1164	1163	1063	1064
V/C Ratio	0.703	1.084	0.412	0.465	0.916	1.032
Control Delay, s/veh	35.1	107.9	7.3	8.1	31.0	56.0
LOS	E	F	A	A	D	F
95th %tile Queue, veh	5	14	2	3	14	23

Timings

2040 Total Traffic (With Signalized Channelized T)

3: Meridian Rd & Bent Grass Meadows Dr

AM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø2
Lane Configurations	↔↔	↔	↔	↕↕	↕↕	↔	
Traffic Volume (vph)	232	357	339	631	1680	290	
Future Volume (vph)	232	357	339	631	1680	290	
Turn Type	Prot	Free	custom	NA	NA	Perm	
Protected Phases	4!		5	Free!	6		2
Permitted Phases		Free	2			6	
Detector Phase	4		5		6	6	
Switch Phase							
Minimum Initial (s)	5.0		5.0		5.0	5.0	5.0
Minimum Split (s)	10.0		10.0		10.0	10.0	10.0
Total Split (s)	25.0		31.0		64.0	64.0	95.0
Total Split (%)	20.8%		25.8%		53.3%	53.3%	79%
Yellow Time (s)	3.0		3.0		3.0	3.0	3.0
All-Red Time (s)	2.0		2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0	
Total Lost Time (s)	5.0		5.0		5.0	5.0	
Lead/Lag			Lead		Lag	Lag	
Lead-Lag Optimize?			Yes		Yes	Yes	
Recall Mode	None		None		Max	Max	Max
Act Effect Green (s)	13.3	113.4	90.1	113.4	63.1	63.1	
Actuated g/C Ratio	0.12	1.00	0.79	1.00	0.56	0.56	
v/c Ratio	0.61	0.24	0.87	0.19	0.90	0.30	
Control Delay	54.1	0.4	53.7	0.1	31.2	3.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	54.1	0.4	53.7	0.1	31.2	3.5	
LOS	D	A	D	A	C	A	
Approach Delay	21.5			18.9	27.2		
Approach LOS	C			B	C		

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 113.4

Natural Cycle: 75

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 23.9

Intersection LOS: C

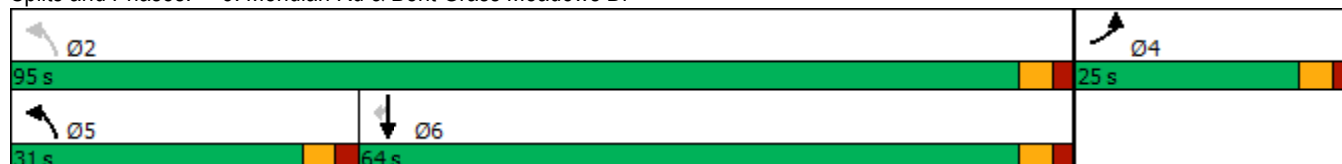
Intersection Capacity Utilization 83.5%

ICU Level of Service E

Analysis Period (min) 15






! Phase conflict between lane groups.

Splits and Phases: 3: Meridian Rd & Bent Grass Meadows Dr



HCM 6th TWSC
3: Meridian Rd & Bent Grass Meadows Dr

2040 Total Traffic (With Channelized "T")
PM Peak Hour

Intersection						
Int Delay, s/veh	2640.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	499	387	437	0	1114	204
Future Vol, veh/h	499	387	437	0	1114	204
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	330
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	525	407	460	0	1173	215
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2093	587	1388	0	-	0
Stage 1	1173	-	-	-	-	-
Stage 2	920	-	-	-	-	-
Critical Hdwy	6.63	6.93	4.13	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	~ 51	454	491	-	-	-
Stage 1	~ 257	-	-	-	-	-
Stage 2	~ 387	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 3	454	491	-	-	-
Mov Cap-2 Maneuver	~ 17	-	-	-	-	-
Stage 1	~ 16	-	-	-	-	-
Stage 2	~ 387	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	\$ 7843	55.5		0		
HCM LOS	F					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	491	-	17	454	-	-
HCM Lane V/C Ratio	0.937	-	30.898	0.897	-	-
HCM Control Delay (s)	55.5	\$ 13886.2	50.9	-	-	-
HCM Lane LOS	F	A	F	F	-	-
HCM 95th %tile Q(veh)	11.3	-	66.5	9.8	-	-
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						













HCM 6th Roundabout
3: Meridian Rd & Bent Grass Meadows Dr

Short-Term Total Traffic
PM Peak Hour

Intersection						
Intersection Delay, s/veh	45.1					
Intersection LOS	E					
Approach	EB		NB		SB	
Entry Lanes	2		2		2	
Conflicting Circle Lanes	2		2		2	
Adj Approach Flow, veh/h	932		1959		1388	
Demand Flow Rate, veh/h	951		1998		1415	
Vehicles Circulating, veh/h	1196		535		469	
Vehicles Exiting, veh/h	688		1611		2064	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	40.7		67.9		15.9	
Approach LOS	E		F		C	
Lane	Left	Right	Left	Right	Left	Right
Designated Moves	L	TR	LT	TR	LT	TR
Assumed Moves	L	TR	LT	TR	LT	TR
RT Channelized						
Lane Util	0.564	0.436	0.470	0.530	0.470	0.530
Follow-Up Headway, s	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
Entry Flow, veh/h	536	415	939	1059	665	750
Cap Entry Lane, veh/h	568	568	950	950	1000	1000
Entry HV Adj Factor	0.979	0.981	0.981	0.980	0.981	0.981
Flow Entry, veh/h	525	407	921	1038	652	735
Cap Entry, veh/h	556	557	931	931	981	980
V/C Ratio	0.944	0.731	0.989	1.115	0.665	0.750
Control Delay, s/veh	52.4	25.6	47.8	85.8	14.0	17.5
LOS	F	D	E	F	B	C
95th %tile Queue, veh	12	6	18	28	5	7

Timings
3: Meridian Rd & Bent Grass Meadows Dr

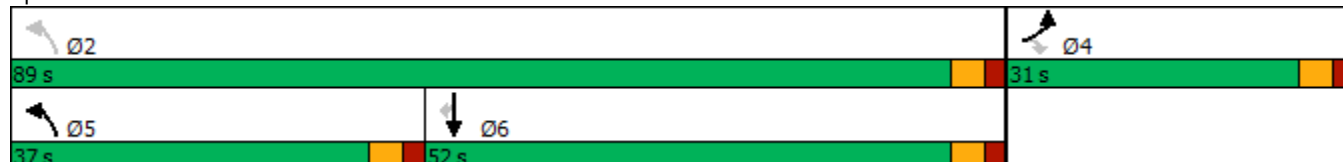
2040 Total Traffic (With Signalized T)
PM Peak Hour

							
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø2
Lane Configurations							
Traffic Volume (vph)	499	387	437	1424	1114	204	
Future Volume (vph)	499	387	437	1424	1114	204	
Turn Type	Prot	Perm	custom	NA	NA	Perm	
Protected Phases	4!		5	Free!	6		2
Permitted Phases		4	2			6	
Detector Phase	4	4	5		6	6	
Switch Phase							
Minimum Initial (s)	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
Total Split (s)	31.0	31.0	37.0		52.0	52.0	89.0
Total Split (%)	25.8%	25.8%	30.8%		43.3%	43.3%	74%
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0	
Lead/Lag			Lead		Lag	Lag	
Lead-Lag Optimize?			Yes		Yes	Yes	
Recall Mode	None	None	None		Max	Max	Max
Act Effct Green (s)	22.7	22.7	84.1	116.8	50.4	50.4	
Actuated g/C Ratio	0.19	0.19	0.72	1.00	0.43	0.43	
v/c Ratio	0.79	0.64	0.90	0.42	0.77	0.27	
Control Delay	53.8	8.9	51.0	0.4	33.9	4.0	
Queue Delay	0.3	0.0	0.0	0.0	0.0	0.0	
Total Delay	54.2	9.0	51.0	0.4	33.9	4.0	
LOS	D	A	D	A	C	A	
Approach Delay	34.4			12.3	29.2		
Approach LOS	C			B	C		

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 116.8
 Natural Cycle: 65
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.90
 Intersection Signal Delay: 22.6
 Intersection LOS: C
 Intersection Capacity Utilization 81.7%
 ICU Level of Service D
 Analysis Period (min) 15
 ! Phase conflict between lane groups.

Splits and Phases: 3: Meridian Rd & Bent Grass Meadows Dr



Queuing and Blocking Report

Intersection: 3: Meridian Rd & Bent Grass Meadows Dr

Movement	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	L	T	T	T	T	R
Maximum Queue (ft)	175	217	190	119	99	396	377	193
Average Queue (ft)	77	100	85	51	36	241	195	54
95th Queue (ft)	140	178	154	98	81	367	336	123
Link Distance (ft)	277	277		1650	1650	723	723	
Upstream Blk Time (%)		0						
Queuing Penalty (veh)		0						
Storage Bay Dist (ft)			700					330
Storage Blk Time (%)							0	0
Queuing Penalty (veh)							1	0

Intersection: 25: Golden Sage & Woodmen

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	L	T	R	L
Maximum Queue (ft)	185	127	132	35	17	217	224	27	149	89	21	77
Average Queue (ft)	75	72	54	5	4	116	101	4	81	8	3	23
95th Queue (ft)	156	118	108	23	14	195	196	16	136	47	14	57
Link Distance (ft)		1641	1641			1652	1652			392		151
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	460			400	465			375	130		185	
Storage Blk Time (%)									2			
Queuing Penalty (veh)									0			

Intersection: 25: Golden Sage & Woodmen

Movement	SB
Directions Served	TR
Maximum Queue (ft)	142
Average Queue (ft)	70
95th Queue (ft)	128
Link Distance (ft)	151
Upstream Blk Time (%)	1
Queuing Penalty (veh)	1
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Zone Summary

Zone wide Queuing Penalty: 2

Queuing and Blocking Report

Intersection: 3: Meridian Rd & Bent Grass Meadows Dr

Movement	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	L	T	T	T	T	R
Maximum Queue (ft)	209	153	238	162	187	245	218	101
Average Queue (ft)	106	58	118	84	77	146	97	44
95th Queue (ft)	176	113	195	150	146	223	193	81
Link Distance (ft)	277	277		1650	1650	723	723	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			700					330
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 25: Golden Sage & Woodmen

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	L	T	R	L
Maximum Queue (ft)	204	220	205	43	48	137	116	17	131	65	35	83
Average Queue (ft)	102	107	96	14	10	67	42	3	62	12	9	35
95th Queue (ft)	194	183	176	36	33	118	88	12	112	48	29	74
Link Distance (ft)		1641	1641			1652	1652			392		151
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	460			400	465			375	130		185	
Storage Blk Time (%)									1			
Queuing Penalty (veh)									0			

Intersection: 25: Golden Sage & Woodmen

Movement	SB
Directions Served	TR
Maximum Queue (ft)	101
Average Queue (ft)	43
95th Queue (ft)	80
Link Distance (ft)	151
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Zone Summary

Zone wide Queuing Penalty: 0

Queuing and Blocking Report

Intersection: 3: Meridian Rd & Bent Grass Meadows Dr

Movement	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	L	T	T	T	T	R
Maximum Queue (ft)	135	150	331	101	85	695	635	355
Average Queue (ft)	73	83	191	40	33	417	369	163
95th Queue (ft)	121	132	301	83	72	635	585	392
Link Distance (ft)	274	274		1658	1658	714	714	
Upstream Blk Time (%)						0	0	
Queuing Penalty (veh)						0	0	
Storage Bay Dist (ft)			700					330
Storage Blk Time (%)							8	0
Queuing Penalty (veh)							23	1

Queuing and Blocking Report

Intersection: 3: Meridian Rd & Bent Grass Meadows Dr

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	L	T	T	T	T	R
Maximum Queue (ft)	264	281	59	496	315	233	450	407	181
Average Queue (ft)	160	173	2	262	138	129	298	250	60
95th Queue (ft)	235	255	43	467	244	208	424	377	123
Link Distance (ft)	277	277	277		1660	1660	712	712	
Upstream Blk Time (%)	0	1	0						
Queuing Penalty (veh)	1	2	0						
Storage Bay Dist (ft)				700					330
Storage Blk Time (%)								1	0
Queuing Penalty (veh)								1	0