

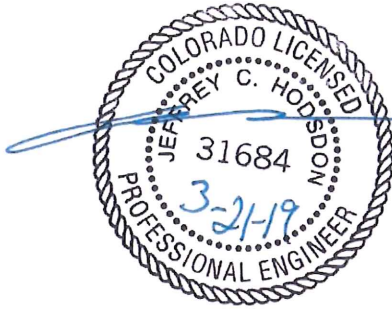


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Bent Grass Meadows Drive & Meridian Road  
 Bent Grass East Commercial  
 Transportation Memorandum  
 (LSC #184910)  
 March 21, 2019

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.



**Engineering Review**  
 01/16/2020 10:45:20 AM  
 dsdrice  
 JeffRice@elpasoco.com  
 (719) 520-7877  
 EPC Planning & Community  
 Development Department

Developer's Statement

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

*Bent Grass Metro District*

*Randle W. Case II, President*

4/2/19  
 Date



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March 21, 2019

Bent Grass Metro District  
c/o Randy Case II  
102 East Pikes Peak Avenue, #200  
Colorado Springs, CO 80903

RE: Bent Grass East Commercial/  
Bent Grass Meadows Drive &  
Meridian Road  
El Paso County, Colorado  
Transportation Memorandum  
LSC #184910

Dear Randy:

LSC Transportation Consultants, Inc. has prepared this traffic impact study for the Bent Grass East Commercial development and the intersection of Bent Grass Meadows Drive & Meridian Road. The Bent Grass East Commercial site is located west of Meridian Road and south of Bent Grass Meadows Drive in El Paso County, Colorado. The study area is shown in Figure 1. 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

This study addresses the short-term impacts of this development prior to further residential development (beyond Filing 1) or roadway infrastructure to the west.

## 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 total traffic volumes on the study area roadway network.
- The projected levels of service at the intersections of Meridian Road/Bent Grass Meadows Drive and Meridian Park Drive/Bent Grass Meadows Drive at the site access point to Bent Grass Meadows Drive.
- A traffic signal warrant analysis of the intersection of Meridian Road/Bent Grass Meadows Drive.
- A vehicle queueing analysis at the key study area intersections
- Recommendations for all necessary short-term intersection improvements and phasing of these improvements including the potential closure of the existing 7-Eleven access to Bent Grass Meadows.

## LAND USE

Figure 2 shows the existing and future land uses served by the section of Bent Grass Meadows Drive in the area just west of Meridian Road. 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. There is an existing mobile home with accompanying sheds and utility garages just north the Bent Grass Residential Filing 1. There are also two vacant parcels just northwest of the intersection of Meridian/Bent Grass Meadows with a total area of 7.94 acres. Although there are no known plans to develop these parcels at this time, previous studies have assumed they would be developed with a mix of retail and office uses. This study addresses the short-term scenario including only the current Bent Grass residential Filing 1 and prior to the Bent Grass Meadows Drive extension/connection to the west and south from Filing 1.

The Bent Grass East Commercial development has been divided into nine traffic analysis zones. The location of each zone is shown in Figure 2. The existing and future land uses assumed for each zone are shown in Table 1.

The Bent Grass East Commercial development is partially developed with a gas station with convenience store, a veterinary clinic, and a dental clinic. Plans have been approved to expand the veterinary clinic from 4,171 square feet to 8,342 and to provide additional parking for the dental clinic.

There is currently one vacant lot east of Meridian Park Drive, Lot 1A Bent Grass East Commercial Filing 2A, and one vacant lot west of Meridian Park Drive, Tract BB Bent Grass East Commercial Filing 2B. The south half of Tract BB is planned to be subdivided into four lots. Figure 3 shows the site plan for this area. Access for these lots is planned to Meridian Park Drive aligning with the

south 7-Eleven access point and to Bent Grass Meadows Drive about 530 feet west of Meridian Park Drive.

## EXISTING ROADWAY AND TRAFFIC CONDITIONS

### Area Roadways

The roadways in the study area are identified below, followed by a brief description. 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. Ultimately, 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. The Bent Grass Meadows Drive/Meridian Road intersection is planned to be signalized in the future once warrants for signalization are satisfied.

### Existing Traffic Conditions

Figure 4 shows the existing morning and afternoon peak-hour traffic volumes at the intersections of Meridian Road/Bent Grass Meadows Drive and Meridian Park Drive/Bent Grass Meadows Drive and the existing 7-Eleven access between these two intersections. The traffic volumes are from traffic counts conducted in the fall of 2018. 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.

<b>Table 2</b>			
<b>Intersection Levels of Service Delay Ranges</b>			
Level of Service	Signalized Intersections		Unsignalized Intersections
	Average Control Delay (seconds per vehicle)	V/C <sup>(1)</sup>	Average Control Delay (seconds per vehicle) <sup>(2)</sup>
A	10.0 sec or less	less than 0.60	10.0 sec or less
B	10.1-20.0 sec	0.60-0.69	10.1-15.0 sec
C	20.1-35.0 sec	0.70-0.79	15.1-25.0 sec
D	35.1-55.0 sec	0.80-0.89	25.1-35.0 sec
E	55.1-80.0 sec	0.90-0.99	35.1-50.0 sec
F	80.1 sec or more	1.00 and greater	50.1 sec or more

(1) Source: *Transportation Research Circular 212*  
 (2) If V/C ratio is greater than 1.0 the level of service is LOS F regardless of the projected average control delay per vehicle.

The intersections of Meridian Road/Bent Grass Meadows Drive and Meridian Park Drive/Bent Grass Meadows Drive and the existing 7-Eleven access between these two intersections were analyzed to determine the existing levels of service based on the unsignalized method of analysis procedures found in the *Highway Capacity Manual, 6<sup>th</sup> Edition* by the Transportation Research Board. Figure 4 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 Meridian Park/Bent Grass Meadows Drive and the 7-Eleven access to Bent Grass Meadows Drive are currently operating at LOS A during the peak hour as stop-sign-controlled intersections.

**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 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**

Figure 5 shows the projected 2020 background traffic volumes. Background traffic includes existing traffic volumes plus the traffic expected to be generated by nearby existing and approved developments including the approved expansion of the veterinary clinic located on Lot 3B of Filing No. 2B but assumes zero traffic generated by any other additional development within Bent Grass

East Commercial. The 2020 background traffic volumes assume closure of the existing 7-Eleven access to Bent Grass Meadows Drive. The 2020 background scenario also assumes Bent Grass Meadows Drive has not been extended west and no development has occurred on the parcels north of Bent Grass Meadows Drive. Through traffic on Meridian Road was assumed to grow based on two percent growth per year.

## TRIP GENERATION

Estimates of the vehicle-trips generated by the development of the currently vacant parcels within Bent Grass East Commercial have been made using the nationally published trip generation rates found in *Trip Generation, 10th Edition* by the Institute of Transportation Engineers (ITE). Table 1 shows the land use assumed for each vacant parcel within Bent Grass East Commercial. There are currently no plans for the portion of Tract BB just south of Bent Grass Meadows Drive and for Filing 2A Lot 1A. It was assumed that these areas would be developed with similar uses and densities proposed for Tracts A and D. Table 1 also shows a trip generation estimate for the approved expansion of the veterinary clinic located on Lot 3B or Filing 2B.

The total number of vehicle-trips generated has been reduced to take into account the “pass-by” phenomena. A pass-by trip is made by a motorist who would already be on the adjacent roadways regardless of the proposed development, but who stops in at the site while passing by. The motorist would then continue on his or her way to a final destination in the original direction. The pass-by percentages shown on Table 1 are from the *Trip Generation Handbook - An ITE Proposed Recommended Practice, 3rd Edition, 2017* by ITE.

Development of the currently vacant parcels within Bent Grass East Commercial (not including the approved expansion of the veterinary clinic) can be expected to generate an additional 4,595 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 212 additional vehicles would enter, and 126 additional 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 228 additional vehicles would enter, and 233 additional vehicles would exit the site.

## TRIP DISTRIBUTION AND ASSIGNMENT

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 primary 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. [existing distribution?](#)

The pass-by trips from Meridian Road were assigned based, in large part, on the magnitude and direction of the existing traffic volumes.

When the distribution percentages (from Figure 6) were applied to the trip generation estimates (from Table 1), the site-generated traffic volumes on the area roadways were determined. Figure 7 shows the additional site-generated traffic volumes projected due to development of the currently vacant parcels within the Bent Grass East Commercial development. The site-generated volumes do not include traffic projected to be generated by the approved expansion of the veterinary clinic located on Lot 3B of Filing No. 2B. Traffic volumes projected to be generated by the expansion were included in the 2020 background traffic volumes shown in Figure 5.

## **2020 TOTAL TRAFFIC**

Figure 8 shows the projected short-term total traffic volumes at the site access point and key adjacent intersections. The short-term total traffic volumes are the sum of the 2020 background traffic volumes from Figure 5 plus the additional site-generated traffic volumes from Figure 7.

## **PROJECTED LEVELS OF SERVICE**

The intersections of Meridian Road/Bent Grass Meadows Drive and the proposed west site access point 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. The 7-Eleven access to Bent Grass Meadows Drive was assumed to be closed. The intersection of Meridian/Bent Grass Meadows was assumed to be signalized in the short-term figure and was analyzed using Synchro. Figure 8 and Table 3 show the level of service analysis results. Table 3 also includes the corresponding vehicular delay values for comparison. The level of service technical 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. If signalized all movements are projected to operate at LOS D or better during the peak hours based on the projected 2020 total traffic volumes, which assume full buildout of the Bent Grass East Commercial development.

All movements at the intersection of Meridian Park/Bent Grass Meadows Drive and the proposed site access to Bent Grass Meadows Drive are projected to operate at LOS C or better as stop-sign-controlled intersections based on the projected 2020 total traffic volumes, which assume full buildout of the Bent Grass East Commercial development.

## **TRAFFIC SIGNAL WARRANT ANALYSIS**

### **Vehicular Volume Traffic Signal Warrants**

The combination of major street approach volumes (includes the sum of northbound and southbound approach volumes) and minor street volumes (eastbound and westbound approaches analyzed separately) at the subject intersection were analyzed to determine if the combination currently exceeds or would exceed the threshold criteria for Eight-Hour and/or



Four-Hour Vehicular Volume Traffic Signal Warrants in the *2009 Manual on Uniform Traffic Control Devices* (MUTCD). Table 4 show the warrant evaluation. Table 43 shows existing condition and the projected traffic condition following buildout of the Bent Grass East Commercial development.

Based on the analysis shown in Table 4, four of the eight hours analyzed currently meet the thresholds for an Eight Hour Vehicular Volume Warrant. With the addition of traffic projected to be generated by the approved expansion of the veterinary clinic located on Lot 3B of Filing No. 2B seven of the eight hours analyzed are projected to meet the threshold. With the addition of traffic projected to be generated by development of the currently proposed land uses (TAZs 5, 6, and 7) all eight hours analyzed are projected to meet the thresholds.

Two of the eight hours analyzed currently meet the thresholds for a Four-Hour Vehicular Volume Warrant. A Four-Hour Vehicular Volume Warrant is projected to be met with the addition of traffic projected to be generated by the approved expansion of the veterinary clinic located on Lot 3B of Filing No. 2B.

#### **Warrant 7 Analysis (Crash Experience)**

The following is from the MUTCD:

*Support:*

*01 The Crash Experience signal warrant conditions are intended for application where the severity and frequency of crashes are the principal reasons to consider installing a traffic control signal.*

*Standard:*

*02 The need for a traffic control signal shall be considered if an engineering study finds that all of the following criteria are met:*

*A. Adequate trial of alternatives with satisfactory observance and enforcement has failed to reduce the crash frequency; and*

*B. Five or more reported crashes, of types susceptible to correction by a traffic control signal, have occurred within a 12-month period, each crash involving personal injury or property damage apparently exceeding the applicable requirements for a reportable crash; and*

*C. For each of any 8 hours of an average day, the vehicles per hour (vph) given in both of the 80 percent columns of Condition A in Table 4C-1 (see Section 4C.02), or the vph in both of the 80 percent columns of Condition B in Table 4C-1 exists on the major-street and the higher-volume minor-street approach, respectively, to the intersection, or the volume of pedestrian traffic is not less than 80 percent of the requirements specified in the Pedestrian Volume warrant. These major-street and minor-street volumes shall be for the same 8 hours. On the minor street, the higher volume shall not be required to be on the same approach during each of the 8 hours.*

The Colorado State Patrol provided LSC with crash data for the intersection of Bent Grass Meadows Drive and Meridian Road from 2015 through November 2018. From December 2017 to November 2018 there were ten reported crashes at this intersection. Eight of the crashes involved an eastbound left-turning vehicle and a southbound through vehicle. The remaining two crashes involved a northbound left-turning vehicle and a southbound through vehicle. In one of these crashes an eastbound left-turning vehicle waiting in the Meridian Road median blocked the line of sight for the northbound left-turning vehicle. All ten of these crashes would be considered susceptible to correction by a traffic control signal. A copy of these data are attached for reference.

Based on analysis of the available data, item B above has been satisfied as five or more crashes susceptible to correction by a traffic control signal were reported in a twelve-month period. Item C is also currently satisfied. Item A would likely need to be discussed with El Paso County. This is the final remaining item before the warrant is satisfied.

### **ALTERNATIVE INTERSECTION TRAFFIC CONTROL**

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.

#### **Modern Roundabout Intersection**

A modern roundabout intersection at Bent Grass Meadows Blvd./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 a four-leg conventional intersections.
- A roundabout may be more aesthetically appealing than a traditional signal-controlled intersection and 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 short-term level of service for northbound through movement is projected to be worse than with the roundabout.
- 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.

Figure 8 shows the level of service results for a signalized and unsignalized channelized T intersection traffic control.

### 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 southbound traffic requires a more complex movement than with a signal. However, most motorists entering the intersection from the east 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 Boulevard, a taper, and a northbound left-turn lane approaching Woodmen Hills Drive. 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 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.

## VEHICLE QUEUING ANALYSIS

### For Predicting Closure of 7-Eleven Access

A queuing analysis was performed using Synchro/SimTraffic for Bent Grass Meadows Drive between Meridian Road and Meridian Park Drive to determine when the existing 7-Eleven access

located between these two intersections would need to be closed. The 2020 background morning and afternoon peak-hour traffic volumes were entered into the Synchro model. The intersection of Bent Grass Meadows/Meridian was modeled as a signal-controlled intersection. The simulation was run five times. Additional traffic was added until the eastbound left-turn queue approaching Meridian Road was projected to overflow the existing turn lane, the westbound left-turn lane approaching the 7-Eleven access was projected to overflow the existing turn lane and/or the eastbound right-turn queue approaching Meridian Road blocked the 7-Eleven access. The queuing reports are attached.

When 113 entering and 63 exiting vehicles (representing approximately 50 percent development of the currently vacant parcels within Bent Grass East Commercial) were added to the projected 2020 background traffic volumes shown in Figure 5, the westbound left-turn queue approaching the 7-Eleven access is projected to exceed the existing turn lane length. The eastbound right-turn queue approaching Meridian Road is also projected to extend to the 7-Eleven access.

### **Buildout Condition (No 7-Eleven Access)**

A queuing analysis was performed using Synchro/SimTraffic for Bent Grass Meadows Drive between Meridian Road and the proposed west site access. The 2020 total morning and afternoon peak-hour traffic volumes were entered into the Synchro model. The simulation was run five times. The queuing reports are attached.

Based on the projected 2020 total traffic volumes the projected maximum eastbound left-turn queue on Bent Grass Meadows Drive approaching Meridian Road is 184 feet. The maximum westbound left-turn queue approaching Meridian Park Drive is 77 feet. These queues could be accommodated if Bent Grass Meadows Drive were restriped with side-by-side left-turn lanes as shown in Figure 9.

The projected maximum northbound left-turn queue on Meridian Road approaching Bent Grass Meadows Drive is 165 feet. The existing northbound left-turn lane at this intersection is about 700 feet long.

## **CONCLUSIONS AND RECOMMENDATIONS**

### **Trip Generation**

- Development of the currently vacant parcels within Bent Grass East Commercial can be expected to generate an additional 4,595 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 212 additional vehicles would enter, and 126 additional 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 228 additional vehicles would enter, and 233 additional vehicles would exit the site.



### 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 2020 total traffic volumes, which assume full buildout of the Bent Grass East Commercial development.
- All movements at the intersection of Meridian Park/Bent Grass Meadows Drive and the proposed site access to Bent Grass Meadows Drive are projected to operate at LOS C or better as stop-sign-controlled intersections based on the projected 2020 total traffic volumes, which assume full buildout of the Bent Grass East Commercial development.

### Traffic Signal Warrant Analysis

- As discussed in the Traffic Signal Warrant Analysis section above, a Four-Hour Vehicular Volume Traffic Signal Warrant is projected to be met with the addition of traffic projected to be generated by the approved expansion of the veterinary clinic located on Lot 3B of Filing No. 2B. Seven of the eight hours analyzed are projected to meet the threshold and seven of the eight hours analyzed are projected to meet the criteria for an Eight-Hour Vehicular Volume Traffic Signal Warrant. All eight hours analyzed are projected to meet the thresholds with the addition of traffic projected to be generated by the currently proposed land uses.
- **Crash Experience Warrant:** As discussed in the Traffic Signal Warrant Analysis section above, in order for a Crash Experience Warrant to be considered, three criteria need to be met. The existing number of reported crashes in the last twelve months and the vehicular volumes at the intersection of Bent Grass Meadows/Meridian meet criteria B and C. Criteria A states, "Adequate trial of alternatives with satisfactory observance and enforcement has failed to reduce the crash frequency." Item A would likely need to be discussed with El Paso County. This is the final remaining item before the warrant is satisfied.

### Alternative Intersection Traffic Control

- Please refer to the report section above for discussion and details. Although the analysis indicates lower intersection delay and fewer stops for northbound through traffic with the signalized channelized T intersection, the conventional signalized intersection is likely a more viable solution given the added cost of a channelized T intersection and the identified need for a future eastbound dual left turn lane at this intersection.

### Roadway Improvements

- Table 5 identifies the future roadway improvements that will be needed in the vicinity of the site. Figure 10 shows the location of each improvement. Table 5 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 2020 total traffic volumes, which assume buildout of the Bent Grass East Commercial Development.
- There is currently a southbound right-turn deceleration lane on Meridian Road approaching Bent Grass Meadows Drive.
- There is currently a westbound left-turn lane on Bent Grass Meadows Drive approaching the proposed full-movement site access.

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

Sincerely,

LSC TRANSPORTATION CONSULTANTS, INC.

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

JCH:KDF/bjwb

Enclosures: Tables 1, 3, 4, and 5  
Figures 1-10  
Crash Reports  
Traffic Count Report  
Level of Service Reports  
Queuing Reports

where?

What is length? Is it adequate for a signalized intersection?

Vet expansion?

**Table 1  
Trip Generation Estimate  
Bent Grass**

Zone	Lot	Area (acres)	Floor Area Ratio	Land Use Code	Land Use Description	Trip Generation Units		Trip Generation Rates <sup>(1)</sup>					Total Future Trips Generated					Pass-By Trips <sup>(2)</sup>	New External Future Trips Generated Average Weekday Traffic	
						Existing	Future	Average Weekday Traffic	Morning Peak Hour In	Afternoon Peak Hour Out	Afternoon Peak Hour In	Morning Peak Hour Out	Average Weekday Traffic	Morning Peak Hour In	Afternoon Peak Hour Out	Afternoon Peak Hour In	Morning Peak Hour Out			
<b>Existing/Approved Land Uses</b>																				
1	Bent Grass East Commercial Fil. No. 1 Lot 1	1.05	0.07	---	7-Eleven	3.01 KSF <sup>(3)</sup>	0 KSF	---	---	---	---	---	---	---	---	---	---	---	---	---
2	Bent Grass East Commercial Fil. No. 2 Tract A	1.5	---	---	Drainage	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3	Bent Grass East Commercial Fil. No. 2A Lot 2A	0.70	0.12	720	Medical-Dental Office Building	3.516 KSF	0 KSF	---	---	---	---	---	---	---	---	---	---	---	---	---
4	Bent Grass East Commercial Fil No. 2B Lot 3B	0.99	0.19	640	Animal Hospital/Veterinary Clinic	4.171 KSF	4.171 KSF	21.50	2.53	1.24	1.57	2.35	90	11	5	7	10	0%	90	
<b>Currently Proposed Land Uses</b>																				
5	Bent Grass East Commercial Fil No. 2B Tract BB - A	0.91	0.12	932	High-Turnover Sit-Down Restaurant	4.8 KSF	4.8 KSF	112.18	5.47	4.47	6.06	3.71	538	26	21	29	18	43%	307	
6	Bent Grass East Commercial Fil No. 2B Tract BB - B	0.49	0.22	770	Business Park	4.8 KSF	4.8 KSF	76.88	1.29	0.23	0.48	1.36	369	6	1	2	7	0%	369	
	Bent Grass East Commercial Fil No. 2B Tract BB - C	0.49	0.28	770	Business Park	6.0 KSF	6.0 KSF	76.88	1.29	0.23	0.48	1.36	461	8	1	3	8	0%	461	
7	Bent Grass East Commercial Fil No. 2B Tract BB - D	0.68	0.20	820	Shopping Center	6.0 KSF	6.0 KSF	92.52	3.93	2.41	3.70	4.01	555	24	14	22	24	34%	366	
<b>Assumed Future Land Uses</b>																				
8	Bent Grass East Commercial Fil No. 2B Tract BB (remaining)	2.48	0.24	930 820	Fast Casual Restaurant Shopping Center	5 KSF 21 KSF	5 KSF 21 KSF	315.17 92.52	1.39 3.93	0.68 2.41	7.77 3.70	6.36 4.01	1,576 1,936	7 82	3 50	39 77	32 84	43% 34%	898 1,278	
9	Bent Grass East Commercial Fil. No. 2A Lot 1A	1.46	0.24	820	Shopping Center	0 KSF	15 KSF <sup>(3)</sup>	92.52	3.93	2.41	3.70	4.01	1,388	59	36	56	60	34%	916	
													<b>5,435</b>	<b>153</b>	<b>90</b>	<b>172</b>	<b>173</b>		<b>3,679</b>	

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, 3rd Edition, 2017" by ITE  
(3) KSF = thousand square feet  
Source: LSC Transportation Consultants, Inc.

Provide all calculations and add Bent Grass Residential Filing 2. Separate table into existing, background, platted, and future if desired.



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

**2020 Total Traffic**

**AM Peak**

Scenario		Eastbound		Northbound		Southbound		Overall
		Left	Right	Left	Through	Through	Right	
Stop-Sign Control With Channelized "T" Configuration	Delay	384.0	67.5	41.4	Free	Free	Free	---
	LOS	F	F	E				
Modern Roundabout	Delay	18.5	33.1	6.1	6.7	17	25.3	17.9
	LOS	C	D	A	A	C	D	C
Conventional Signal Control	Delay	40.7	13.6	25.5	4.2	22.6	2.1	16.9
	LOS	D	B	C	A	C	A	B
Conventional Signal Control With Free Eastbound Right	Delay	41.1	0.2	26.1	4.1	22.2	2.1	15.8
	LOS	D	A	C	A	C	A	B
Signal Control With Channelized "T" Configuration	Delay	40.7	13.6	25.5	Free	22.6	2.1	16.0
	LOS	D	B	C		C	A	B

**PM Peak**

Scenario		Eastbound		Northbound		Southbound		Overall
		Left	Right	Left	Through	Through	Right	
Stop-Sign Control With Channelized "T" Configuration	Delay	46.1	16.0	14.1	Free	Free	Free	---
	LOS	E	C	B				
Modern Roundabout	Delay	9.1	9.7	11.6	14.2	7.4	8.3	10.7
	LOS	A	A	B	B	A	A	B
Conventional Signal Control	Delay	44.9	10.6	10.5	7.8	11.1	2.0	11.4
	LOS	D	B	B	A	B	A	B
Conventional Signal Control With Free Eastbound Right	Delay	44.9	0.2	10.5	7.8	11.1	2.0	10.5
	LOS	D	A	B	A	B	A	B
Signal Control With Channelized "T" Configuration	Delay	44.9	10.6	10.5	Free	11.1	2.0	8.0
	LOS	D	A	B		B	A	A

Source: LSC Transportation Consultants, Inc.

**Table 4**  
**Bent Grass East Commercial**  
**Traffic Signal Warrant Analysis of Meridian Road/Bent Grass Meadows Drive**

Hour	Traffic Volumes										Warrant 1, Eight Hour Vehicular Volume Evaluation <sup>(5)</sup>								Warrant 2, Four Hour Vehicular Volume Evaluation <sup>(4)</sup>			Warrant 7, Crash Experience										
	Approved Uses					Currently Proposed Uses					Warrant Thresholds				Warrant Threshold Met?				Warrant Threshold Met?			Warrant Volume Thresholds				Warrant Threshold Met?						
	Existing <sup>(1)</sup>		TAZ 4	Existing + Approved		TAZ 5	TAZ 6	TAZ 7	Existing + Approved + Proposed		Condition A (70%)		Condition B (70%)		Existing		Existing + Approved		Existing + Approved + Proposed		Warrant Threshold Minimum	Warrant Threshold Met?		Condition A (56%)		Condition B (56%)		Existing				
	Major <sup>(2)</sup>	Minor <sup>(3)</sup>	EB LT	Major <sup>(2)</sup>	Minor <sup>(3)</sup>	EB LT	EB LT	EB LT	Major <sup>(2)</sup>	Minor <sup>(3)</sup>	Major	Minor	Major	Minor	A	B	A	B	A	B	Minimum	Existing	Existing + Approved	Existing + Approved + Proposed	Major	Minor	Major	Minor	A	B		
6:30 AM	2160	46	1	2160	47	5	1	3	2160	56	420	105	630	53	No	No	No	No	No	Yes	60	No	No	No	336	84	504	42	No	Yes		
7:30 AM	2023	77	2	2023	79	8	1	6	2023	94	420	105	630	53	No	Yes	No	Yes	No	Yes	60	Yes	Yes	Yes	336	84	504	42	No	Yes		
11:30 AM	1357	52	8	1357	60	9	5	10	1357	84	420	105	630	53	No	No	No	Yes	No	Yes	60	No	Yes	Yes	336	84	504	42	No	Yes		
12:30 PM	1398	54	3	1398	57	16	2	12	1398	87	420	105	630	53	No	Yes	No	Yes	No	Yes	60	No	No	Yes	336	84	504	42	No	Yes		
2:00 PM	1610	47	6	1610	53	7	2	9	1610	71	420	105	630	53	No	No	No	Yes	No	Yes	60	No	No	Yes	336	84	504	42	No	Yes		
3:00 PM	2218	63	8	2218	71	5	2	9	2218	87	420	105	630	53	No	Yes	No	Yes	No	Yes	60	Yes	Yes	Yes	336	84	504	42	No	Yes		
4:15 PM	2306	58	6	2306	64	6	7	11	2306	88	420	105	630	53	No	Yes	No	Yes	No	Yes	60	No	Yes	Yes	336	84	504	42	No	Yes		
5:15 PM	2310	51	5	2310	56	10	7	13	2310	86	420	105	630	53	No	No	No	Yes	No	Yes	60	No	No	Yes	336	84	504	42	No	Yes		
															0	4	0	7	0	8				2	4	7					0	8
															No	No	No	No	No	Yes				No	Yes	Yes					No	Yes

Notes:  
(1) Based on counts by LSC in February 2016.  
(2) Meridian Road northbound and southbound left-turn, through, and right-turn volumes.  
(3) Bent Grass Meadows Drive left-turn volume only.  
(4) Thresholds are based on 2 or more lanes on major approach and 1 lane on minor approach with the 70% factor used as the major street speed exceeds 40 mph.

**Table 5**

**Short-Term Improvements at Meridian/Bent Grass Meadows Drive**

**Bent Grass East Commercial Update**

Add items from Figure 10.

	Improvement <sup>(1)</sup>	Description	Trigger	Timing
A	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 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.
B	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 <b>[or "to the extent that"]</b> 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.
C	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.
D	Close 7-Eleven Access	Remove the existing curb cut.	When the eastbound right-turn queue approaching Meridian Road blocks the access <b>and/or</b> 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.
E	Restripe westbound left-turn lane approaching Meridian Park	Stripe as shown in Figure 9.	With C	

**Notes:**

(1) See Figure 10 for the location of each recommended improvement.

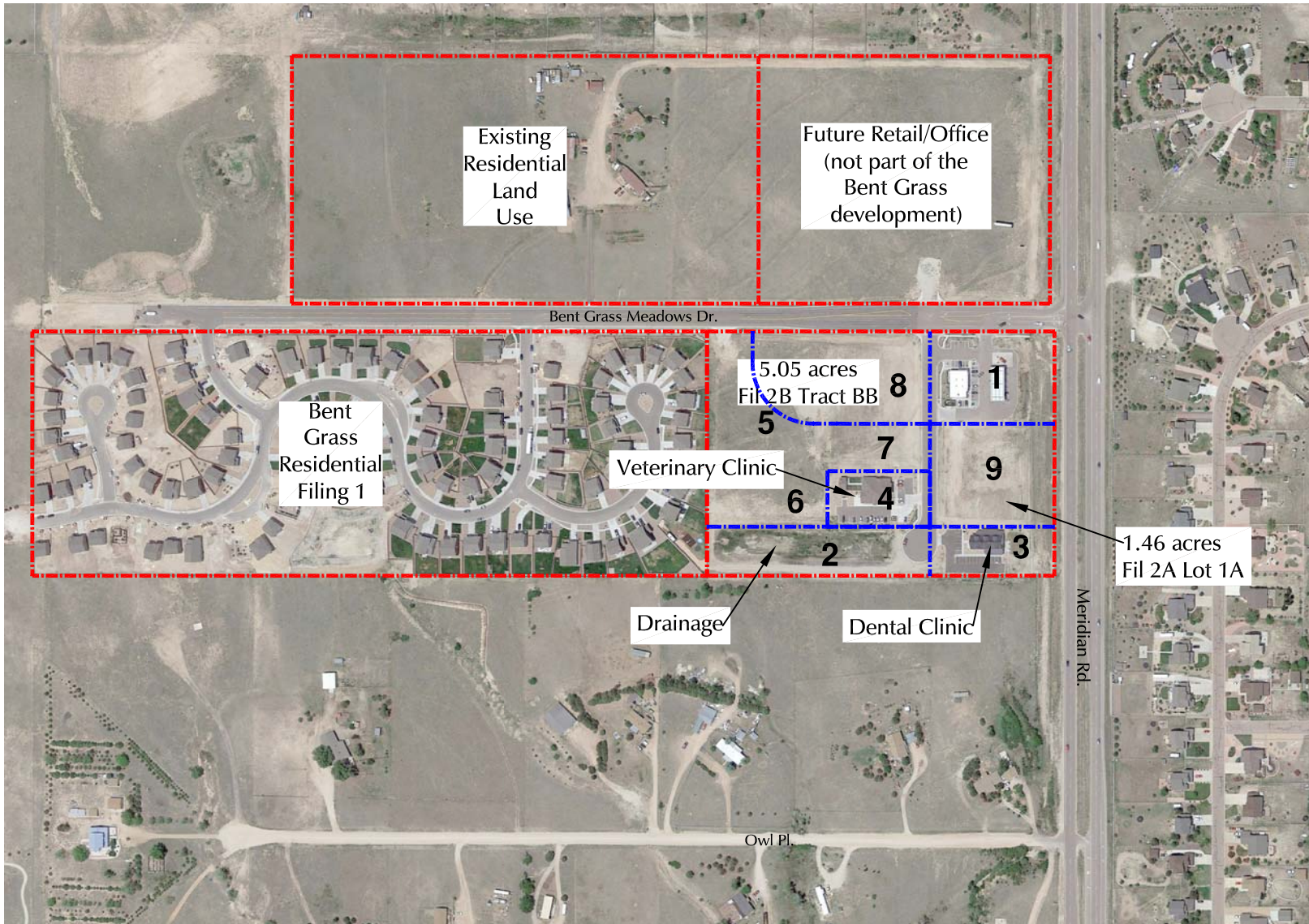
Source: LSC Transportation Consultants, Inc.



Approximate Scale  
Scale: 1" = 1,000'

Figure 1  
**Vicinity  
Map**

Bent Grass (LSC #184910)



LEGEND:  
**XX** = TAZ Number

Figure 2  
**Land Use**

Bent Grass (LSC #184910)



Approximate Scale  
Scale: NTS

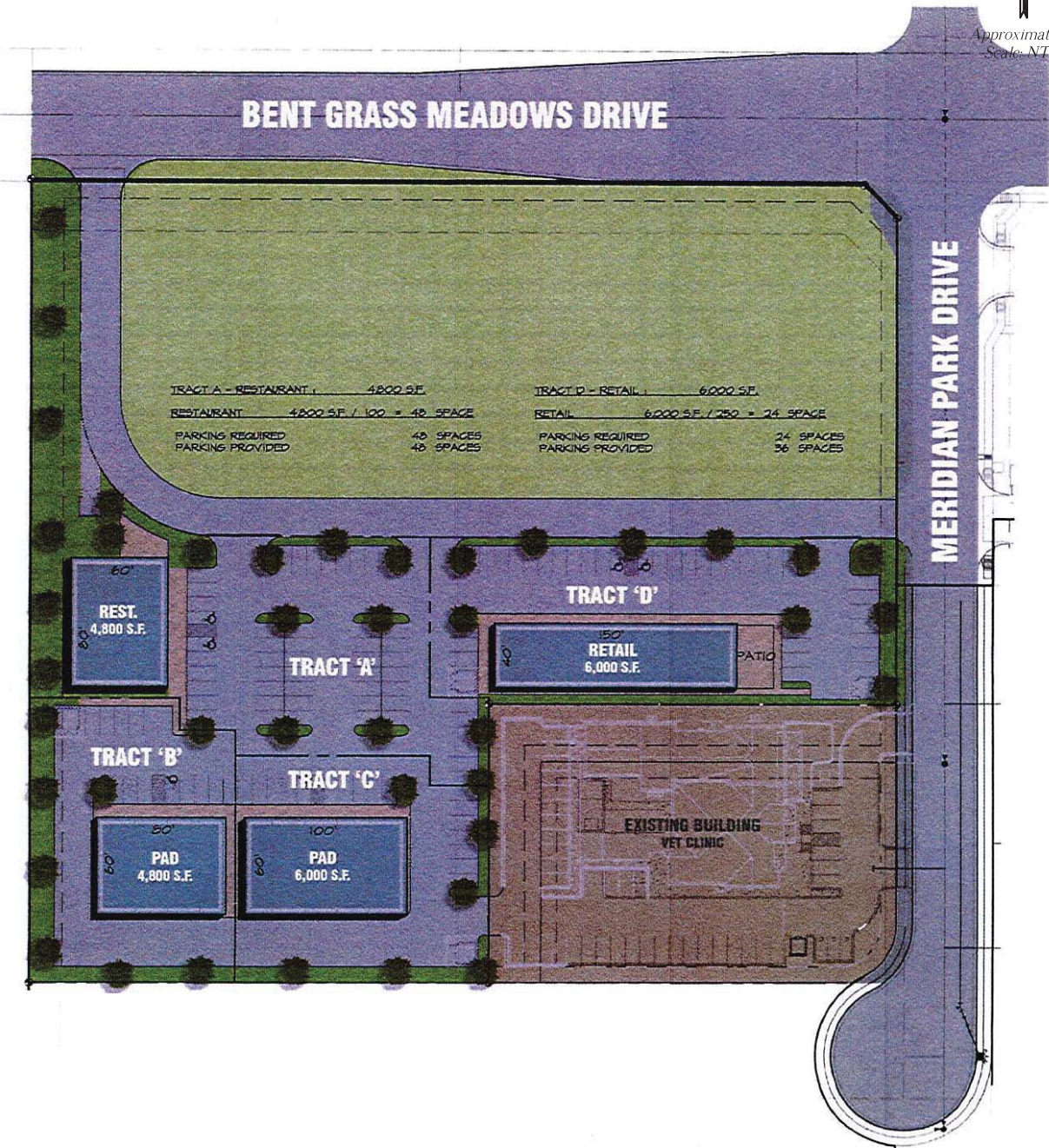
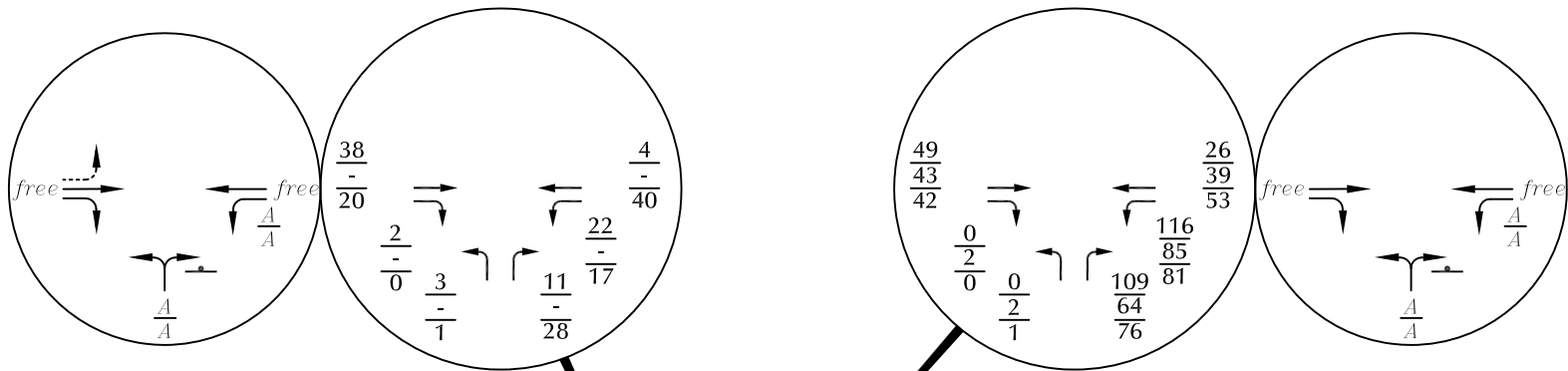


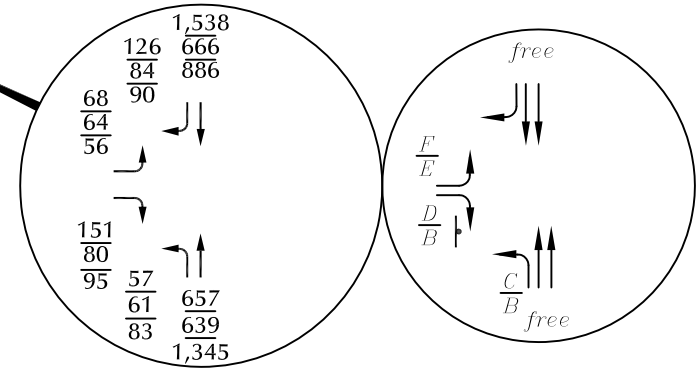
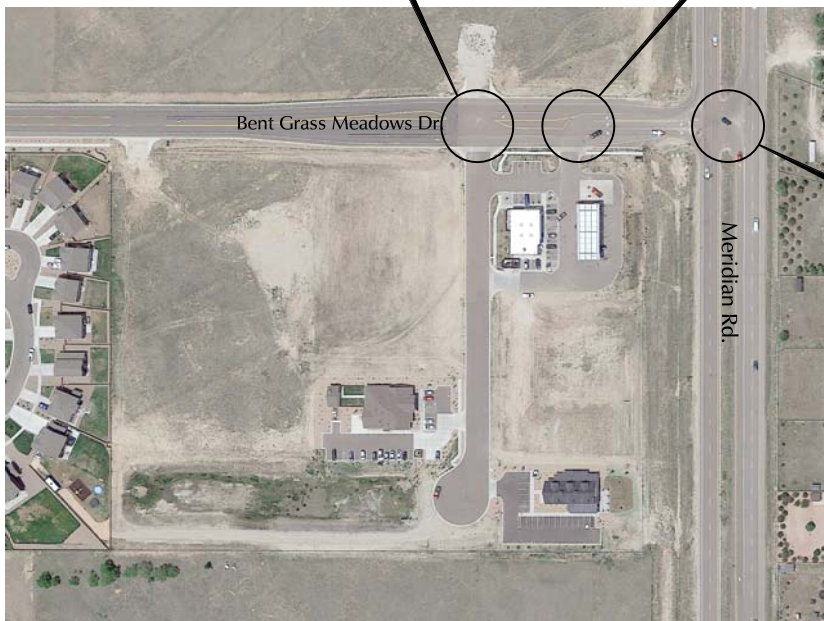
Figure 3  
**Site Plan**

Bent Grass (LSC #184910)





Approximate Scale  
Scale: 1" = 200'



LEGEND:

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

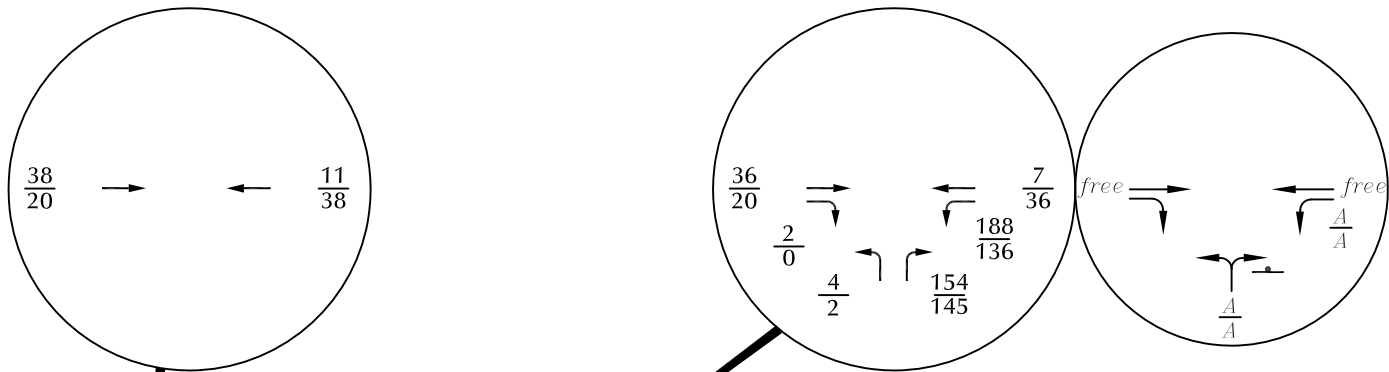
Based on counts by LSC Sept and Oct 2018

Figure 4

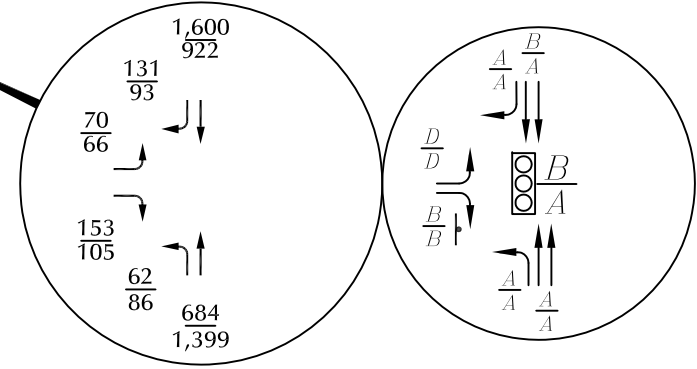
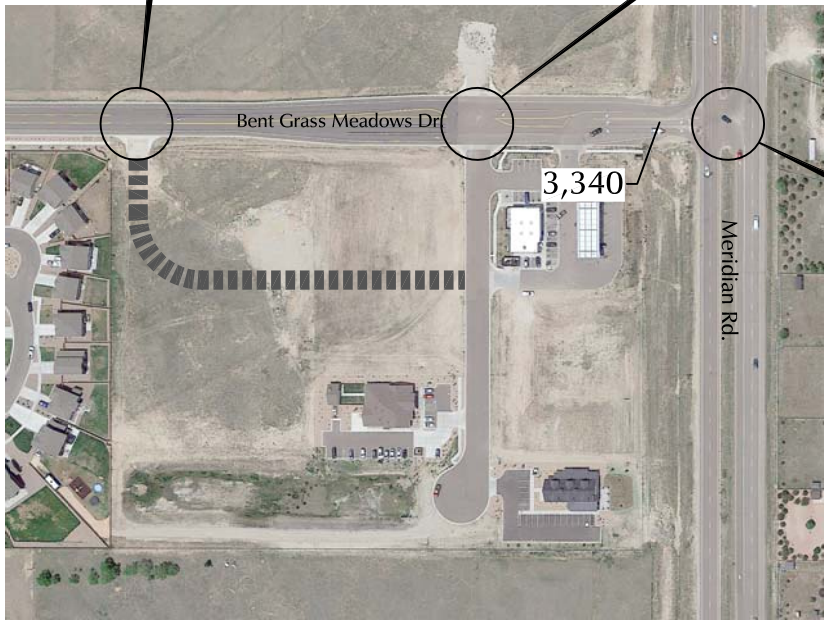
# Existing Traffic, Lane Geometry, Traffic Control and Level of Service

Bent Grass (LSC #184910)





Approximate Scale  
Scale: 1" = 200'



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)

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

$\frac{B}{B}$  = 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)

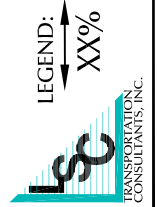


Figure 5  
Year 2020 Background Traffic, Lane Geometry, Traffic Control and Level of Service  
Bent Grass (LSC #184910)





Approximate Scale  
Scale: 1" = 200'

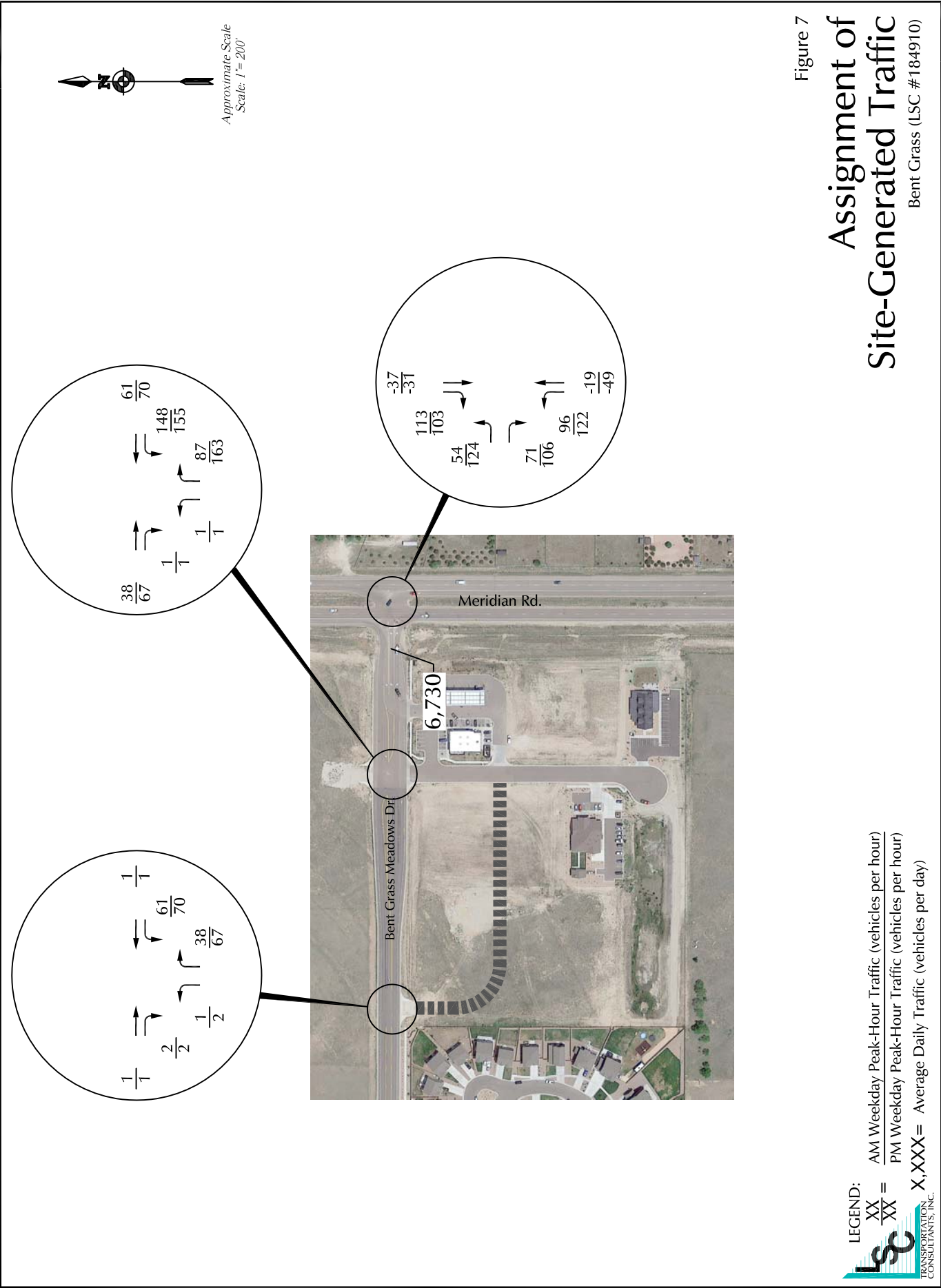


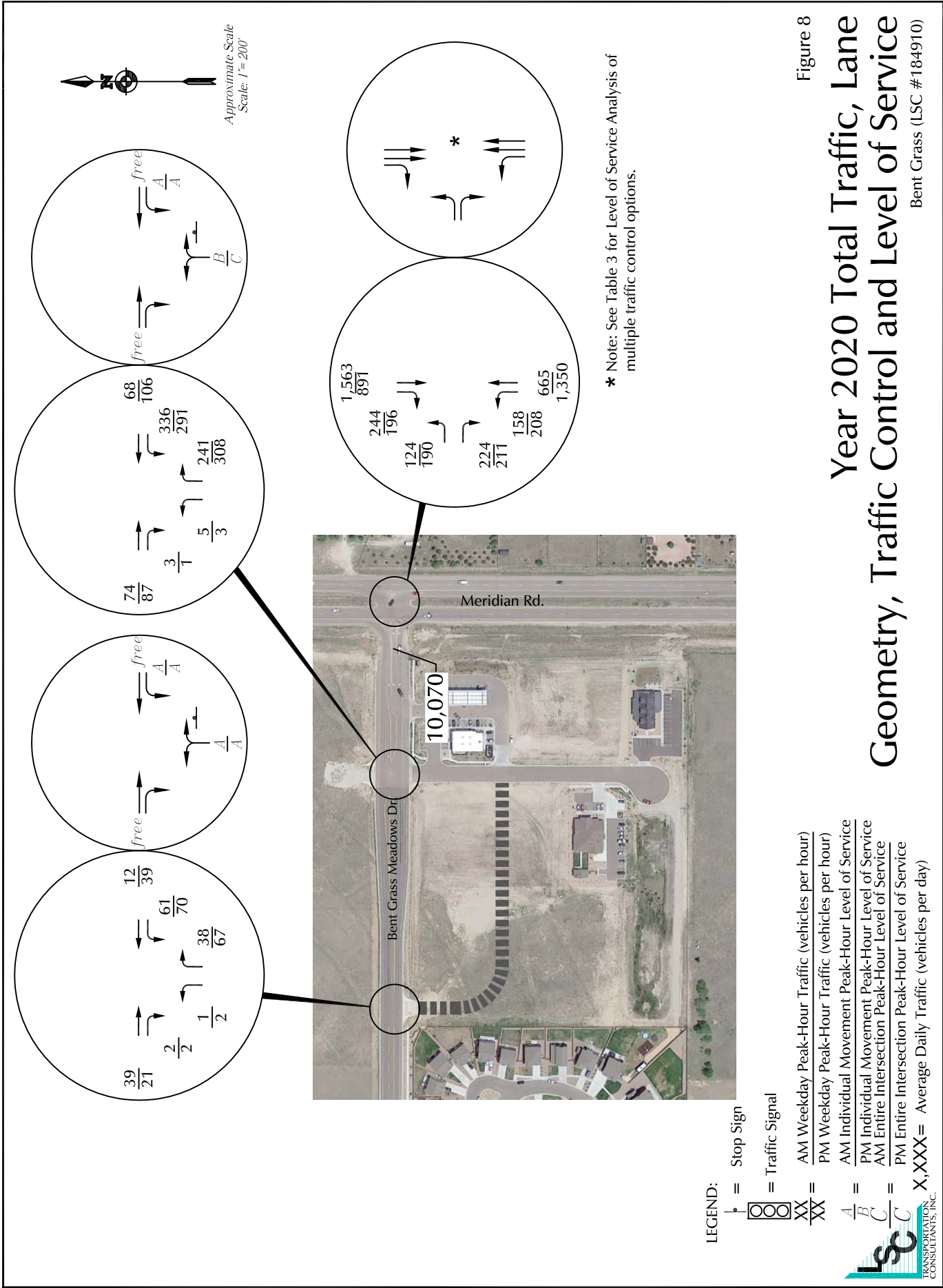
LEGEND:  
XX% = Percent Directional Distribution

Figure 6

# Directional Distribution of Site-Generated Traffic

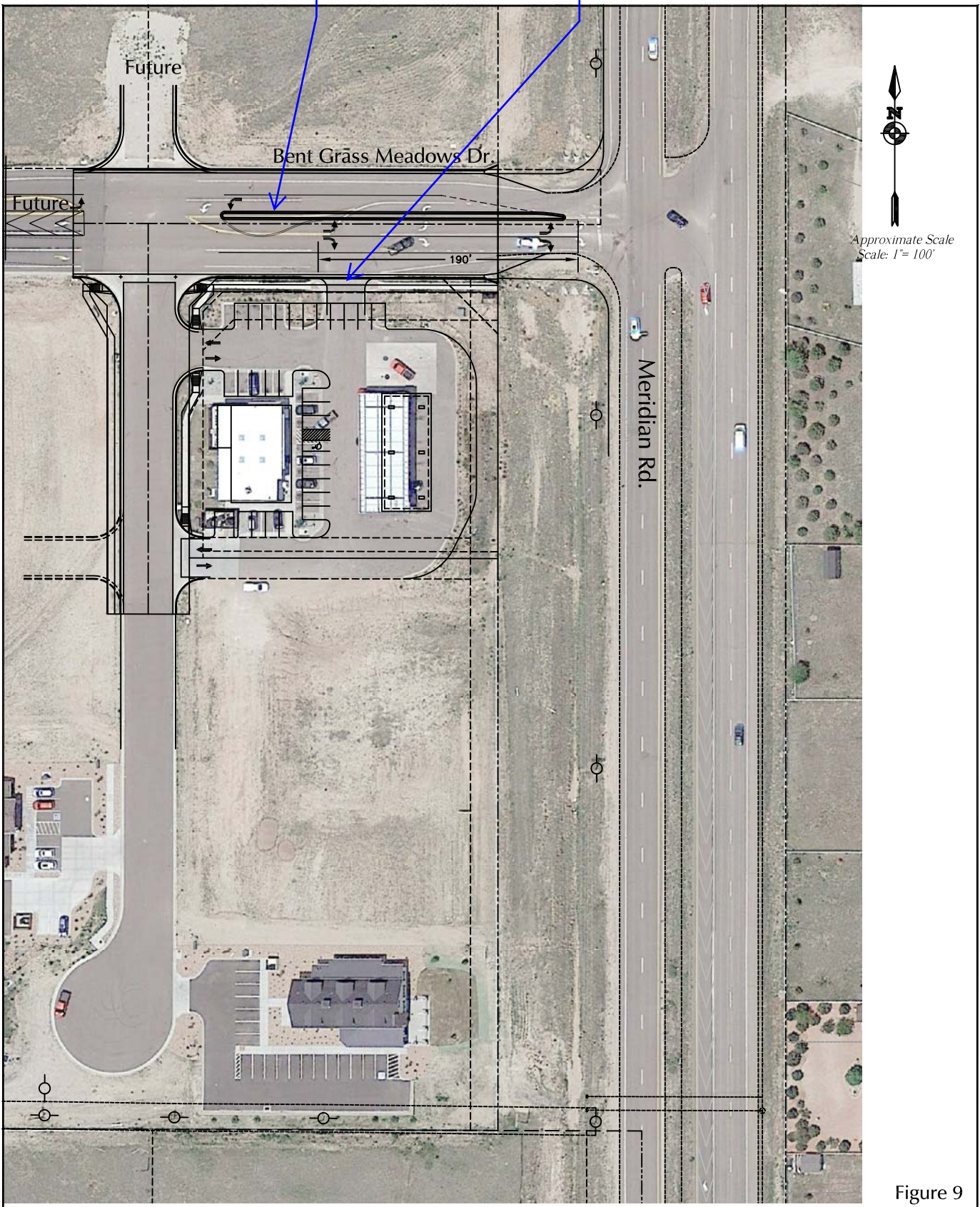
Bent Grass (LSC #184910)





label median

label closure



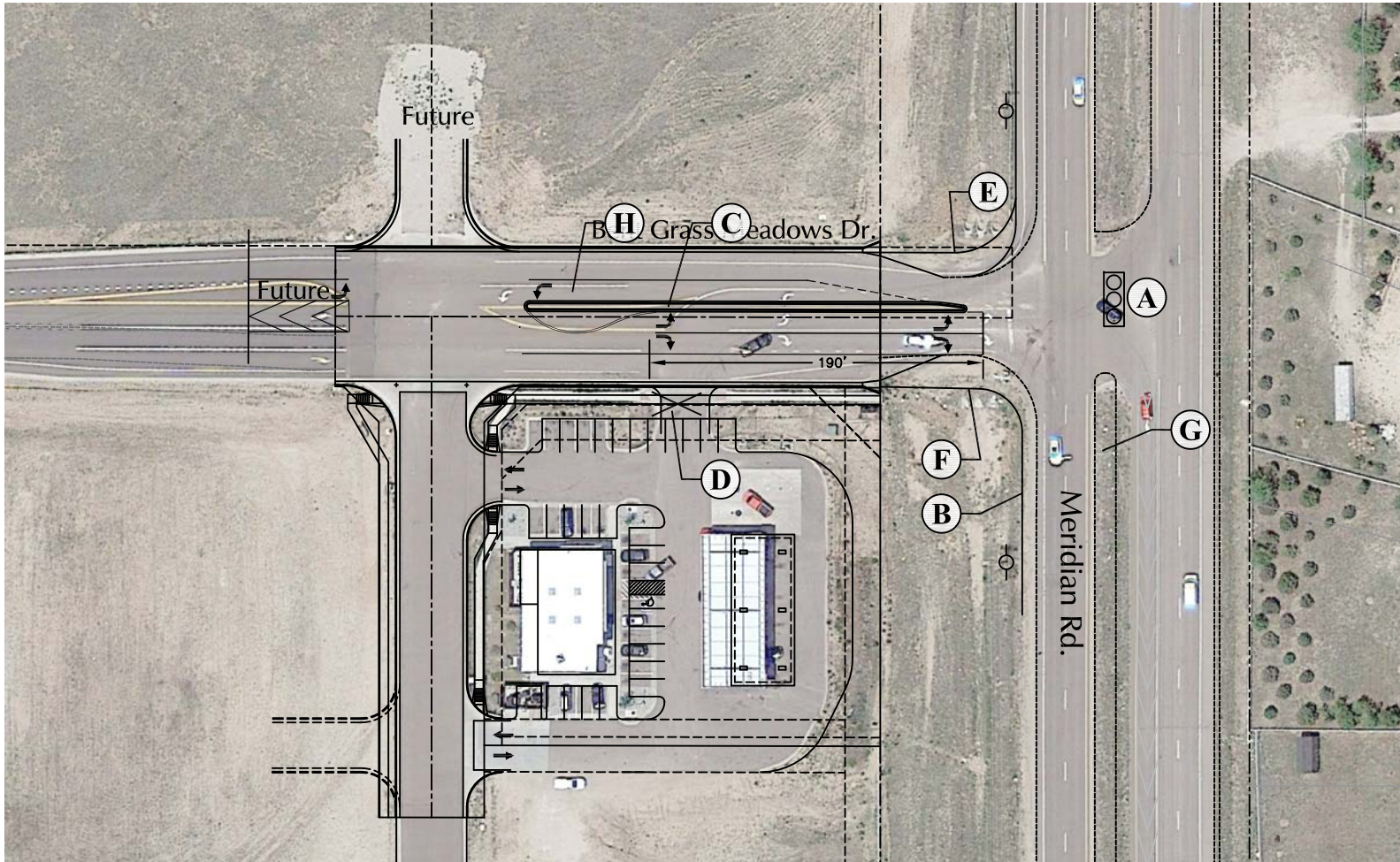
Approximate Scale  
Scale: 1"= 100'

Figure 9

# Recommended Short-Term Lane Geometry

Bent Grass East Commercial Update (LSC #184910)






  
 Approximate Scale  
 Scale: 1" = 100'

Figure 10

# Future Roadway Improvements

Bent Grass East Commercial Update (LSC #184910)

Add items to Table 5 to match improvements.

AccidentDate	Year	Month	DayOfWec	AccidentTime	NumberInjured	TotalVehicles	ReferencePointName	ReferencePointAtName	Accident_Narrative_Printable
11/6/2018 0:00	2018	11	Tuesday	3:58:00 PM	3	2	MERIDIAN ROAD	BENT GRASS MEADOWS DR	Vehicle 1 was eastbound on Bent Grass Meadows Dr making a left turn onto northbound Meridian Rd. Vehicle 2 was southbound on Meridian Rd at Bent Grass Meadows Dr in the left lane. Vehicle 1 proceeded from a stop sign and pulled into vehicle 2's path. Vehicle 2 collided its front with the side of vehicle 1. Vehicle 1 began to rotate counter clockwise and came to a rest facing west in the center of the intersection. Vehicle 2 also began to rotate counter clockwise and came to a rest facing east blocking the left lane of southbound Meridian Rd.
11/4/2018 0:00	2018	11	Sunday	1:19:00 PM	0	2	MERIDIAN ROAD	BENT GRASS MEADOWS DR	Vehicle #1 was eastbound Bent Grass Meadow Dr attempting to turn north onto Meridian Rd. Vehicle #2 was southbound on Meridian Rd in the #1 lane approaching Bent Grass Meadow Dr. Vehicle #1 pulled out in front of vehicle #2. Vehicle #2's front struck the left front/side of vehicle #1. Vehicle #2 rotated counter clockwise and its right side struck the left side of vehicle #1. Vehicle #1 and #2 both came to a stop facing southeast.
10/9/2018 0:00	2018	10	Tuesday	6:33:00 PM	0	2	MERIDIAN ROAD	BENT GRASS MEADOWS DR	Vehicle #1 was northbound on Meridian Road attempting to turn left onto Bent Grass Meadows. Vehicle #2 was southbound on Meridian Road. There was a vehicle in the center median of Meridian Road from eastbound Bent Grass Meadows waiting to turn onto northbound Meridian Road. The view (from driver #1) of southbound traffic on Meridian Road was obstructed by that vehicle. The front of vehicle #2 collided with the right front side of vehicle #1 approximately 15' north of the south road edge of Bent Grass Meadows and 13' east of the west road edge of Meridian Road. Vehicle #1 rotated counterclockwise 1/4 times and continued southbound for approximately 97' before coming to final rest on all four wheels facing south. Vehicle #2 rotated clockwise 180 degrees coming to final rest on all four wheels facing north. Vehicles were moved prior to investigation.
10/2/2018 0:00	2018	10	Tuesday	9:11:00 PM	0	2	MERIDIAN ROAD	BENT GRASS MEADOWS DR	Vehicle 1 was turning from eastbound Bent Grass Meadows to northbound Meridian Road. Vehicle 2 was traveling south on Meridian Road in the left lane. Vehicle 1 stopped at the stop sign then proceeded into the intersection when it was not clear. Vehicle 2 collided with vehicle 1. Both vehicles were driven to an adjacent parking lot.
9/8/2018 0:00	2018	9	Saturday	10:03:00 AM	3	2	MERIDIAN ROAD	BENT GRASS MEADOWS DR	Vehicle #1 was stopped on Bent Grass Meadows Drive eastbound at Meridian Road. Vehicle #2 was traveling southbound on Meridian Road in the right lane approaching Bent Grass Meadows Drive. Vehicle #1 entered the intersection and its front struck Vehicle #2's right rear. Vehicle #2 rotated 1/4 turn clockwise traveling 65.2 feet and began to roll. Vehicle #2 traveled 56.7 feet while rolling 1/2 time, coming to final rest on its top facing west against a telephone pole. Vehicle #1 moved off the road from final rest.
7/6/2018 0:00	2018	7	Friday	12:24:00 PM	0	2	MERIDIAN ROAD	BENT GRASS MEADOWS DR	Vehicle #1 was stopped at the stop sign on eastbound Bentgrass Meadows, waiting to turn left onto Meridian Rd. Vehicle #2 was southbound on Meridian Rd in the right lane. Vehicle #1 started forward from the stop sign and collided its front with the passenger side of vehicle #2. This collision forced vehicle #2 to rotate clockwise, where it traveled through the left lane of southbound Meridian Rd and into the center median. Vehicle #2 came to rest in the median facing west. Vehicle #1 was moved prior to investigation.
6/5/2018 0:00	2018	6	Tuesday	6:01:00 PM	0	3	MERIDIAN ROAD	BENT GRASS MEADOWS DR	Vehicle #1 was northbound on Meridian Road attempting to turn left onto Bent Grass Meadows. Vehicle #2 was southbound on Meridian Road. Vehicle #3 was eastbound on Bent Grass Meadows stopped at the stop sign. The front of vehicle #2 collided with the right side of Vehicle #1. The front of vehicle #1 then collided with the front of vehicle #3. Vehicles were moved prior to investigation.
2/13/2018 0:00	2018	2	Tuesday	3:14:00 PM	0	2	MERIDIAN ROAD	BENT GRASS MEADOWS DR	Vehicle #1 was proceeding eastbound from a stop sign at Bent Grass Meadows Drive to turn left onto Meridian Road northbound. Vehicle #2 was traveling southbound on Meridian Road in the #1 lane. Vehicle #1 collided with the front right of Vehicle #2 with its front left. After impact, Vehicle #2 came to rest south of the intersection on the left side of the roadway partially blocking the #1 lane. Vehicle #1 rotated 1/2 half turn clockwise and came to rest partially blocking the right turn lane from Meridian Road southbound onto Bent Grass Meadows Drive facing northwest.
1/8/2018 0:00	2018	1	Monday	5:47:00 PM	0	2	MERIDIAN ROAD	BENT GRASS MEADOWS DR	Vehicle 1 was stopped on Bent Grass Meadows facing east at the intersection of Meridian Road. Vehicle 2 was traveling south on Meridian Road in the left lane. Vehicle 1 failed to yield the right of way and entered the intersection. Vehicle 2 could not stop and collided with the driver's side of vehicle 1. Both vehicles came to rest in the median on their wheels facing east.
12/22/2017 0:00	2017	12	Friday	11:00:00 AM	0	2	MERIDIAN ROAD	BENT GRASS MEADOWS DR	Vehicle #1 was stopped on Bent Grass Meadows waiting to make a left turn onto Meridian Rd. Vehicle #2 was in the right through lane southbound on Meridian Rd approaching Bent Grass Meadows (at this intersection Meridian Rd does not have a stop sign only Bent Grass Meadows). Vehicle #1 failed to yield to Vehicle #2 and started into the intersection. Vehicle #1 collided it's front with the right side of Vehicle #2. Vehicle #2 rotated clockwise and came to rest on the shoulder facing north. Vehicle #1 was driven to rest.

# LSC Transportation Consultants, Inc.

545 E Pikes Peak Ave, Suite 210

Colorado Springs, CO 80905

719-633-2868

File Name : Meridian Park Rd - Bent Grass Meadows AM

Site Code : 00184910

Start Date : 10/30/2018

Page No : 1

### Groups Printed- Bank 1

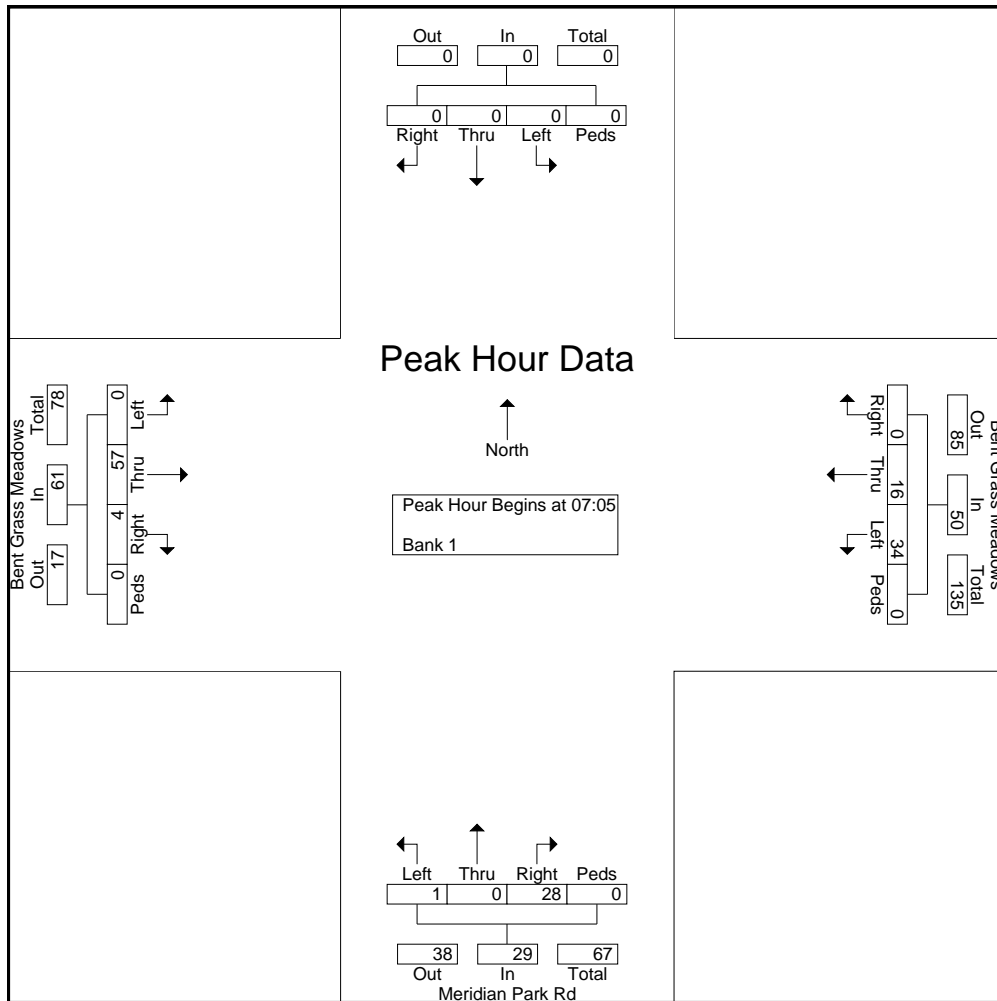
Start Time	Southbound				Bent Grass Meadows Westbound				Meridian Park Rd Northbound				Bent Grass Meadows Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
06:30	0	0	0	0	0	0	0	0	0	0	1	0	0	5	0	0	6
06:35	0	0	0	0	1	0	0	0	0	0	0	0	0	4	0	0	5
06:40	0	0	0	0	1	0	0	0	0	0	2	0	0	0	0	0	3
06:45	0	0	0	0	1	0	0	0	0	0	1	0	0	3	0	0	5
06:50	0	0	0	0	2	1	0	0	0	0	0	0	0	4	1	0	8
06:55	0	0	0	0	3	1	0	0	0	0	2	0	0	2	0	0	8
<b>Total</b>	0	0	0	0	8	2	0	0	0	0	6	0	0	18	1	0	35
07:00	0	0	0	0	2	0	0	0	0	0	4	0	0	6	0	0	12
07:05	0	0	0	0	3	1	0	0	1	0	0	0	0	5	1	0	11
07:10	0	0	0	0	1	0	0	0	0	0	2	0	0	4	1	0	8
07:15	0	0	0	0	2	0	0	0	0	0	5	0	0	3	0	0	10
07:20	0	0	0	0	1	1	0	0	0	0	4	0	0	3	1	0	10
07:25	0	0	0	0	2	2	0	0	0	0	2	0	0	3	0	0	9
07:30	0	0	0	0	3	1	0	0	0	0	0	0	0	6	1	0	11
07:35	0	0	0	0	6	1	0	0	0	0	3	0	0	3	0	0	13
07:40	0	0	0	0	1	4	0	0	0	0	2	0	0	7	0	0	14
07:45	0	0	0	0	4	1	0	0	0	0	4	0	0	8	0	0	17
07:50	0	0	0	0	3	0	0	0	0	0	2	0	0	6	0	0	11
07:55	0	0	0	0	3	4	0	0	0	0	1	0	0	3	0	0	11
<b>Total</b>	0	0	0	0	31	15	0	0	1	0	29	0	0	57	4	0	137
08:00	0	0	0	0	5	1	0	0	0	0	3	0	0	6	0	0	15
08:05	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	0	6
08:10	0	0	0	0	2	0	0	0	0	0	4	0	0	2	0	0	8
08:15	0	0	0	0	1	0	0	0	0	0	3	0	0	0	0	0	4
08:20	0	0	0	0	2	1	0	0	0	0	8	0	0	3	0	0	14
08:25	0	0	0	0	1	1	0	0	0	0	5	0	0	0	0	0	7
<b>Grand Total</b>	0	0	0	0	50	20	0	0	1	0	61	0	0	89	5	0	226
Apprch %	0	0	0	0	71.4	28.6	0	0	1.6	0	98.4	0	0	94.7	5.3	0	
<b>Total %</b>	0	0	0	0	22.1	8.8	0	0	0.4	0	27	0	0	39.4	2.2	0	

# LSC Transportation Consultants, Inc.

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

File Name : Meridian Park Rd - Bent Grass Meadows AM  
 Site Code : 00184910  
 Start Date : 10/30/2018  
 Page No : 2

Start Time	Southbound					Bent Grass Meadows Westbound					Meridian Park Rd Northbound					Bent Grass Meadows Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 06:30 to 08:25 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:05																					
07:05	0	0	0	0	0	3	1	0	0	4	1	0	0	0	1	0	5	1	0	6	11
07:10	0	0	0	0	0	1	0	0	0	1	0	0	2	0	2	0	4	1	0	5	8
07:15	0	0	0	0	0	2	0	0	0	2	0	0	5	0	5	0	3	0	0	3	10
07:20	0	0	0	0	0	1	1	0	0	2	0	0	4	0	4	0	3	1	0	4	10
07:25	0	0	0	0	0	2	2	0	0	4	0	0	2	0	2	0	3	0	0	3	9
07:30	0	0	0	0	0	3	1	0	0	4	0	0	0	0	0	0	6	1	0	7	11
07:35	0	0	0	0	0	6	1	0	0	7	0	0	3	0	3	0	3	0	0	3	13
07:40	0	0	0	0	0	1	4	0	0	5	0	0	2	0	2	0	7	0	0	7	14
07:45	0	0	0	0	0	4	1	0	0	5	0	0	4	0	4	0	8	0	0	8	17
07:50	0	0	0	0	0	3	0	0	0	3	0	0	2	0	2	0	6	0	0	6	11
07:55	0	0	0	0	0	3	4	0	0	7	0	0	1	0	1	0	3	0	0	3	11
08:00	0	0	0	0	0	5	1	0	0	6	0	0	3	0	3	0	6	0	0	6	15
Total Volume	0	0	0	0	0	34	16	0	0	50	1	0	28	0	29	0	57	4	0	61	140
% App. Total	0	0	0	0	0	.68	.32	0	0		.02	.00	.56	0		0	.934	.066	0		
PHF	.000	.000	.000	.000	.000	.472	.333	.000	.000	.595	.083	.000	.467	.000	.483	.000	.594	.333	.000	.635	.686





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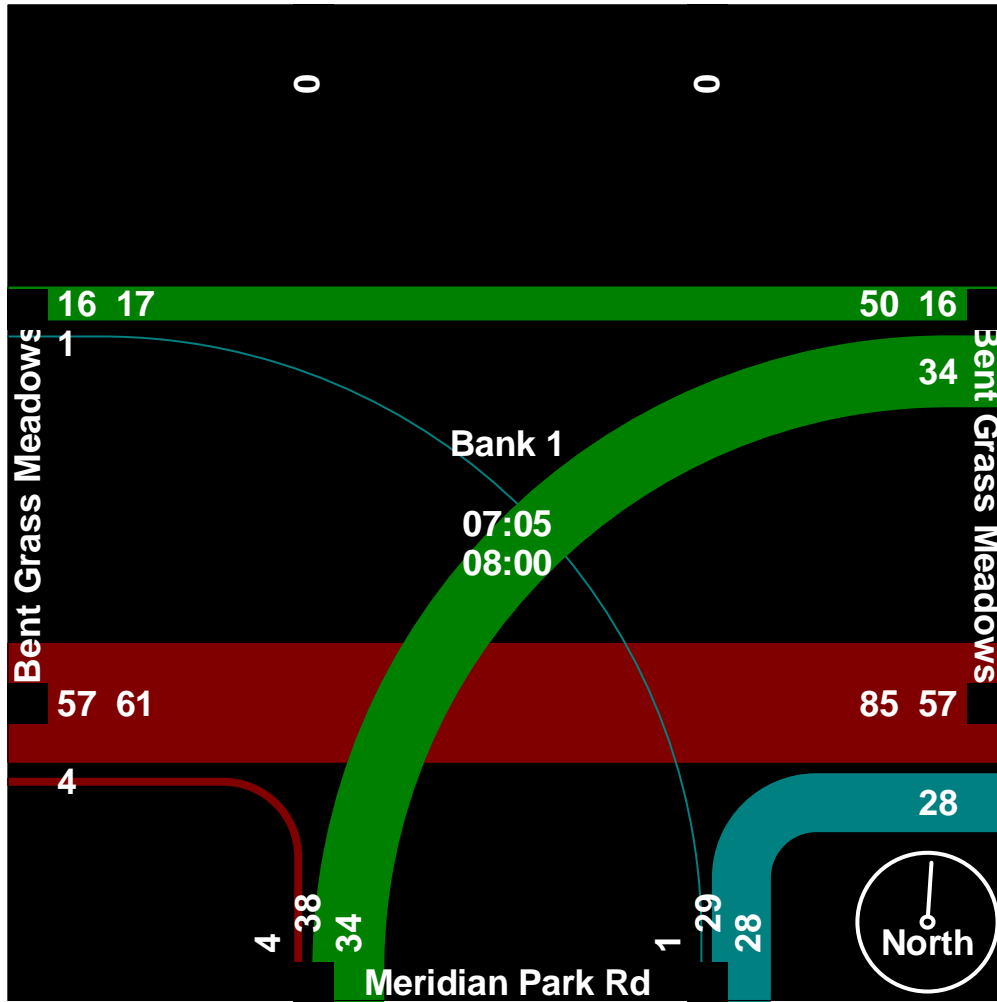
719-633-2868

File Name : Meridian Park Rd - Bent Grass Meadows AM

Site Code : 00184910

Start Date : 10/30/2018

Page No : 3



# LSC Transportation Consultants, Inc.

545 E Pikes Peak Ave, Suite 210

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719-633-2868

File Name : Meridian Park Rd - Bent Grass Meadows Mid

Site Code : 00184910

Start Date : 10/30/2018

Page No : 1

## Groups Printed- Bank 1

Start Time	Southbound				Bent Grass Meadows Westbound				Meridian Park Rd Northbound				Bent Grass Meadows Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
11:30	0	0	0	0	5	8	0	0	0	0	8	0	0	4	1	0	26
11:45	0	0	0	0	7	3	0	0	1	0	9	0	0	7	0	0	27
Total	0	0	0	0	12	11	0	0	1	0	17	0	0	11	1	0	53
12:00	0	0	0	0	1	7	0	0	0	0	3	0	0	7	0	0	18
12:15	0	0	0	0	2	4	0	0	0	0	4	0	0	1	1	0	12
12:30	0	0	0	0	9	7	0	0	1	0	3	0	0	6	0	0	26
12:45	0	0	0	0	8	3	0	0	0	0	10	0	0	3	0	0	24
Total	0	0	0	0	20	21	0	0	1	0	20	0	0	17	1	0	80
Grand Total	0	0	0	0	32	32	0	0	2	0	37	0	0	28	2	0	133
Apprch %	0	0	0	0	50	50	0	0	5.1	0	94.9	0	0	93.3	6.7	0	
Total %	0	0	0	0	24.1	24.1	0	0	1.5	0	27.8	0	0	21.1	1.5	0	

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719-633-2868

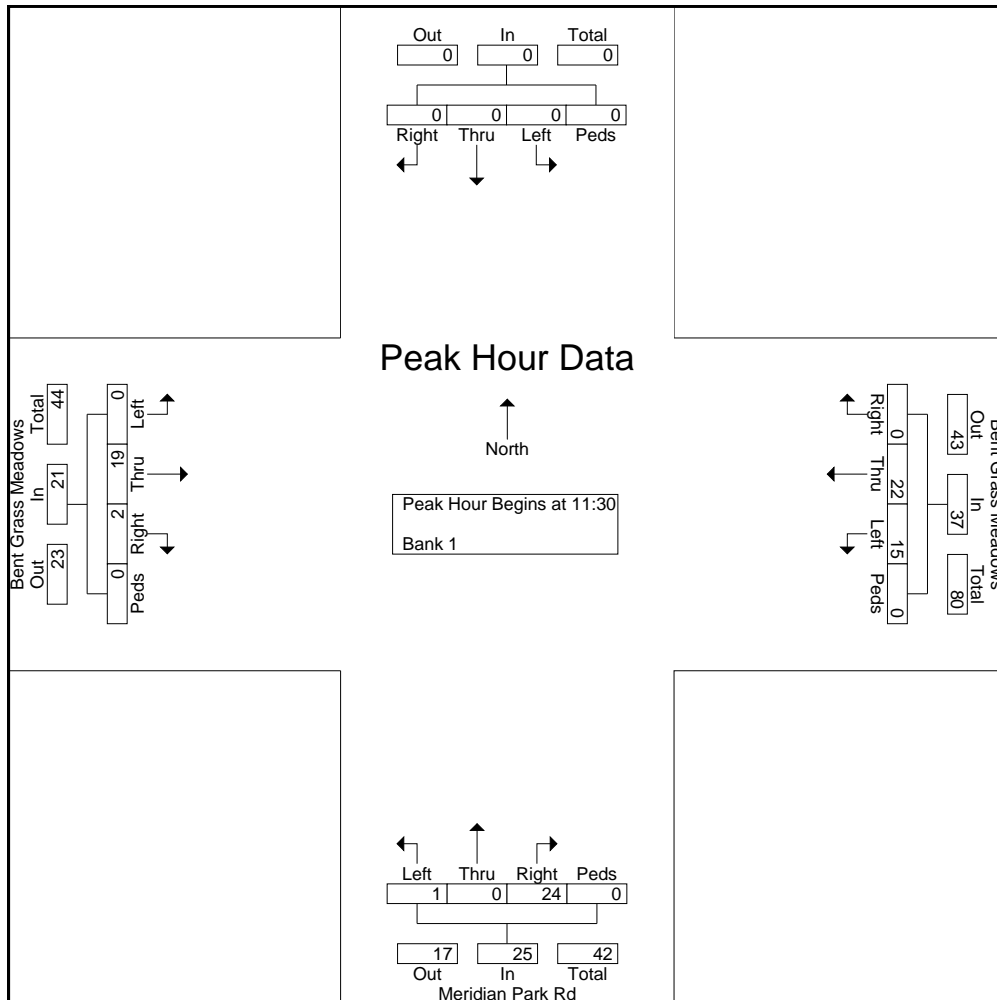
File Name : Meridian Park Rd - Bent Grass Meadows Mid

Site Code : 00184910

Start Date : 10/30/2018

Page No : 2

Start Time	Southbound					Bent Grass Meadows Westbound					Meridian Park Rd Northbound					Bent Grass Meadows Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 11:30 to 12:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:30																					
11:30	0	0	0	0	0	5	8	0	0	13	0	0	8	0	8	0	4	1	0	5	26
11:45	0	0	0	0	0	7	3	0	0	10	1	0	9	0	10	0	7	0	0	7	27
12:00	0	0	0	0	0	1	7	0	0	8	0	0	3	0	3	0	7	0	0	7	18
12:15	0	0	0	0	0	2	4	0	0	6	0	0	4	0	4	0	1	1	0	2	12
Total Volume	0	0	0	0	0	15	22	0	0	37	1	0	24	0	25	0	19	2	0	21	83
% App. Total	0	0	0	0	0	40.5	59.5	0	0		4	0	96	0		0	90.5	9.5	0		
PHF	.000	.000	.000	.000	.000	.536	.688	.000	.000	.712	.250	.000	.667	.000	.625	.000	.679	.500	.000	.750	.769



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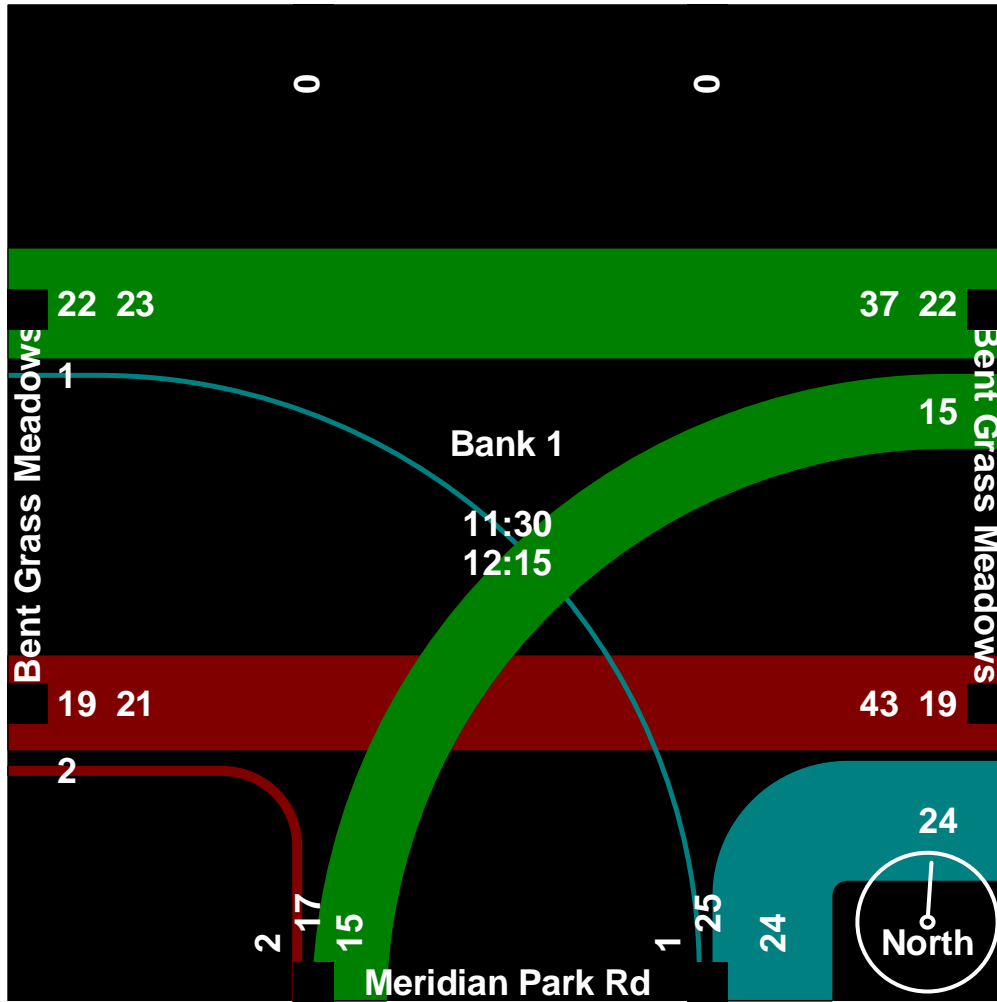
719-633-2868

File Name : Meridian Park Rd - Bent Grass Meadows Mid

Site Code : 00184910

Start Date : 10/30/2018

Page No : 3



# LSC Transportation Consultants, Inc.

545 E Pikes Peak Ave, Suite 210

Colorado Springs, CO 80905

719-633-2868

File Name : Meridian Park Rd - Bent Grass Meadows PM

Site Code : 00184910

Start Date : 10/29/2018

Page No : 1

## Groups Printed- Bank 1

Start Time	Southbound				Bent Grass Meadows Westbound				Meridian Park Rd Northbound				Bent Grass Meadow Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
16:00	0	0	0	0	2	9	0	0	0	0	12	0	0	4	0	0	27
16:15	0	0	0	0	5	13	0	0	1	0	10	0	0	6	0	0	35
16:30	0	0	0	0	8	7	0	0	0	0	7	0	0	3	0	0	25
16:45	0	0	0	0	7	12	0	0	0	0	4	0	0	3	0	0	26
Total	0	0	0	0	22	41	0	0	1	0	33	0	0	16	0	0	113
17:00	0	0	0	0	2	14	0	0	1	0	8	0	0	5	1	0	31
17:15	0	0	0	0	3	6	0	0	0	0	15	0	0	8	0	0	32
17:30	0	0	0	0	4	11	0	0	0	0	5	0	0	3	1	0	24
17:45	0	0	0	0	3	9	0	0	0	0	2	0	0	6	0	0	20
Total	0	0	0	0	12	40	0	0	1	0	30	0	0	22	2	0	107
Grand Total	0	0	0	0	34	81	0	0	2	0	63	0	0	38	2	0	220
Apprch %	0	0	0	0	29.6	70.4	0	0	3.1	0	96.9	0	0	95	5	0	
Total %	0	0	0	0	15.5	36.8	0	0	0.9	0	28.6	0	0	17.3	0.9	0	

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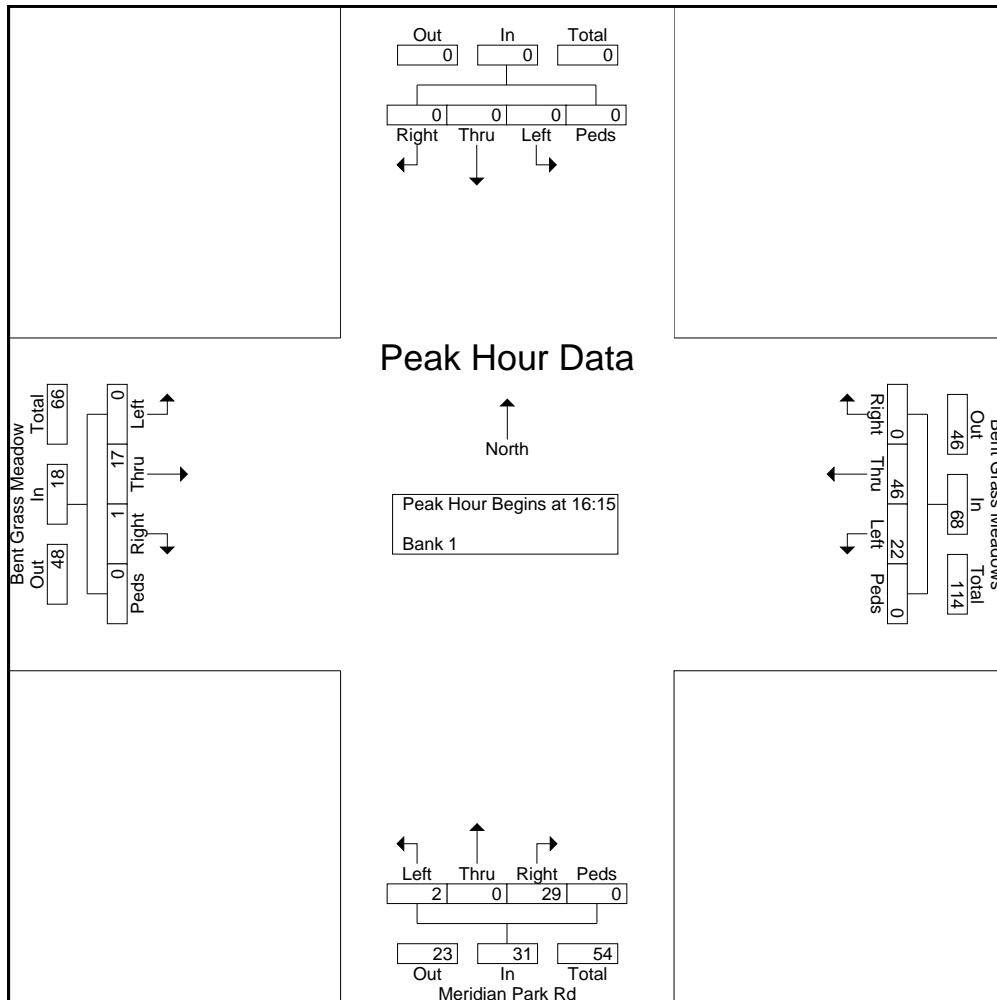
File Name : Meridian Park Rd - Bent Grass Meadows PM

Site Code : 00184910

Start Date : 10/29/2018

Page No : 2

Start Time	Southbound					Bent Grass Meadows Westbound					Meridian Park Rd Northbound					Bent Grass Meadow Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:15																					
16:15	0	0	0	0	0	5	13	0	0	18	1	0	10	0	11	0	6	0	0	6	35
16:30	0	0	0	0	0	8	7	0	0	15	0	0	7	0	7	0	3	0	0	3	25
16:45	0	0	0	0	0	7	12	0	0	19	0	0	4	0	4	0	3	0	0	3	26
17:00	0	0	0	0	0	2	14	0	0	16	1	0	8	0	9	0	5	1	0	6	31
Total Volume	0	0	0	0	0	22	46	0	0	68	2	0	29	0	31	0	17	1	0	18	117
% App. Total	0	0	0	0	0	32.4	67.6	0	0		6.5	0	93.5	0		0	94.4	5.6	0		
PHF	.000	.000	.000	.000	.000	.688	.821	.000	.000	.895	.500	.000	.725	.000	.705	.000	.708	.250	.000	.750	.836



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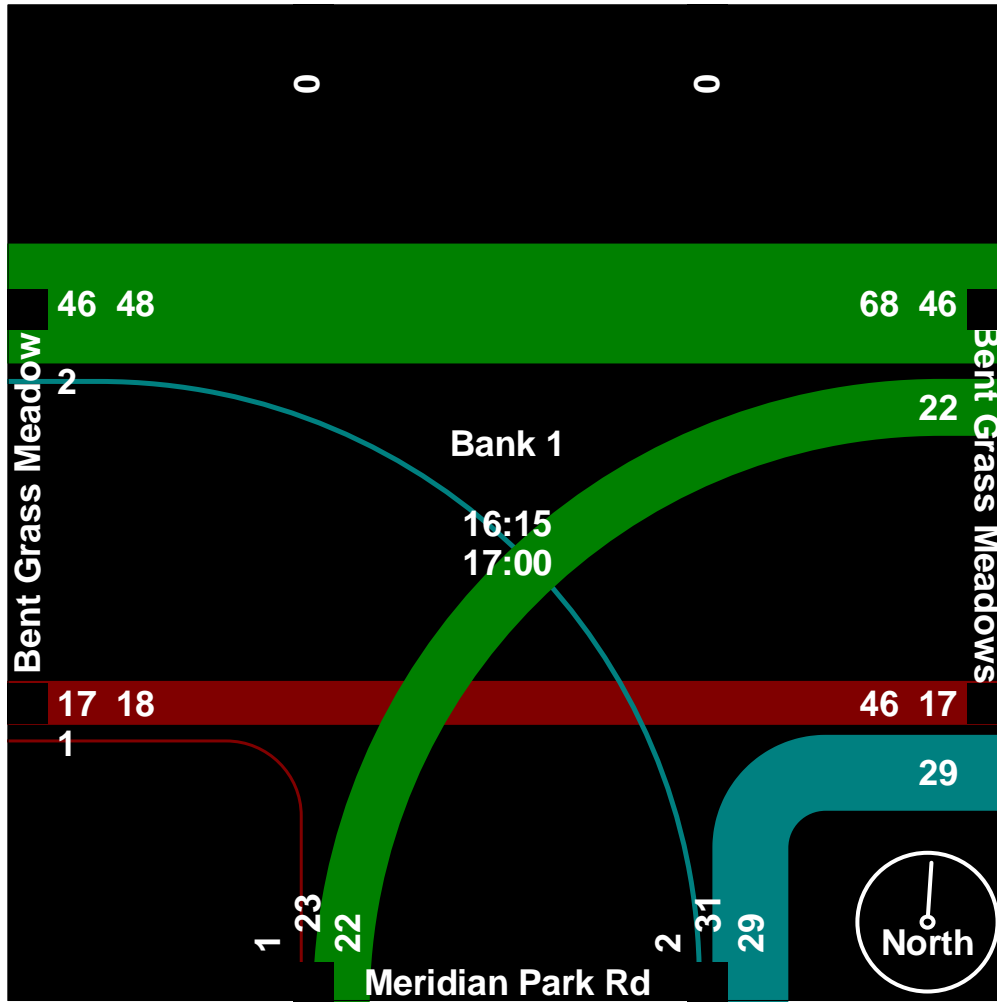
719-633-2868

File Name : Meridian Park Rd - Bent Grass Meadows PM

Site Code : 00184910

Start Date : 10/29/2018

Page No : 3



# LSC Transportation Consultants, Inc.

545 E Pikes Peak Ave, Suite 210

Colorado Springs, CO 80905

719-633-2868

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

Start Time	Meridian Rd Southbound				Westbound				Meridian Rd Northbound				Bent Grass Meadows Dr Eastbound				Int. Total
	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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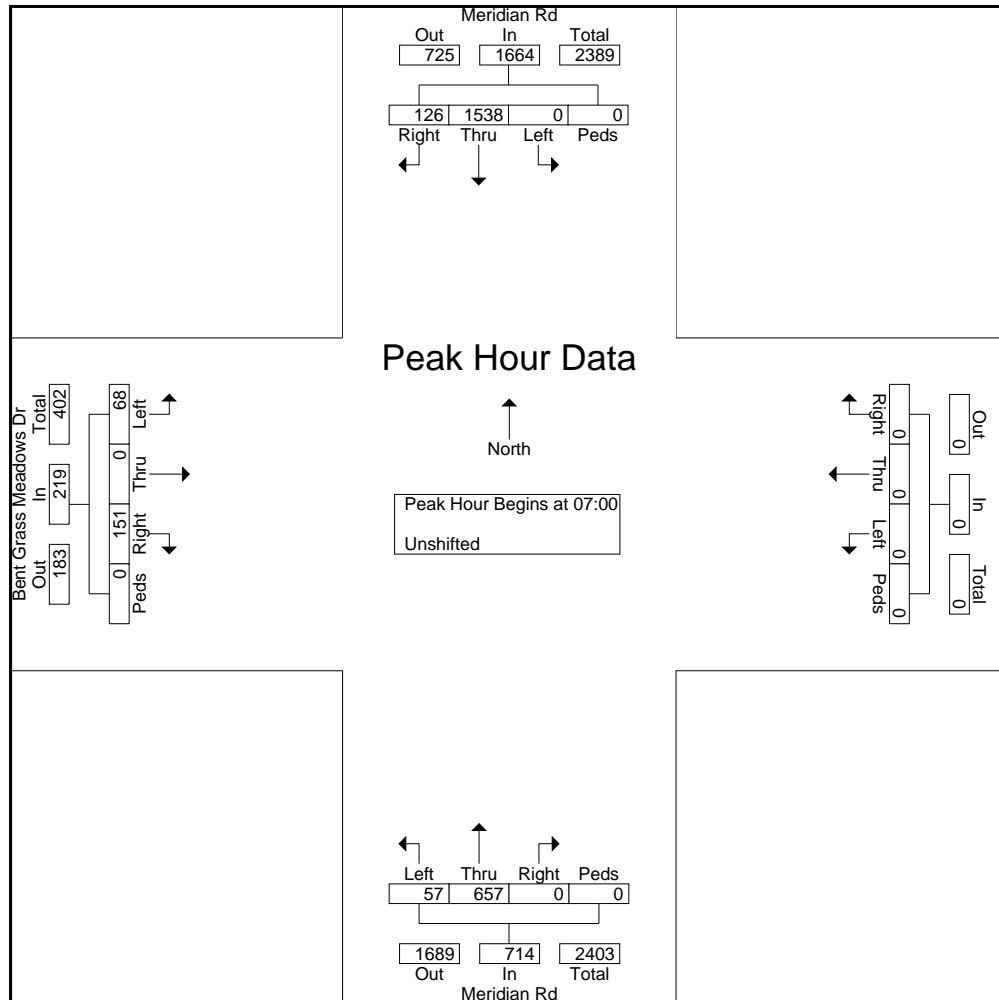
File Name : Meridian Rd - Bent Grass Meadows Dr AM 9-18

Site Code : 154561

Start Date : 9/12/2018

Page No : 2

Start Time	Meridian Rd Southbound					Westbound					Meridian Rd Northbound					Bent Grass Meadows Dr Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. 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	<b>443</b>	29	0	<b>472</b>	0	0	0	0	0	13	<b>195</b>	0	0	<b>208</b>	16	0	41	0	57	<b>737</b>
07:30	0	372	33	0	405	0	0	0	0	0	<b>19</b>	179	0	0	198	17	0	30	0	47	650
07:45	0	297	<b>40</b>	0	337	0	0	0	0	0	16	162	0	0	178	<b>22</b>	0	<b>43</b>	0	<b>65</b>	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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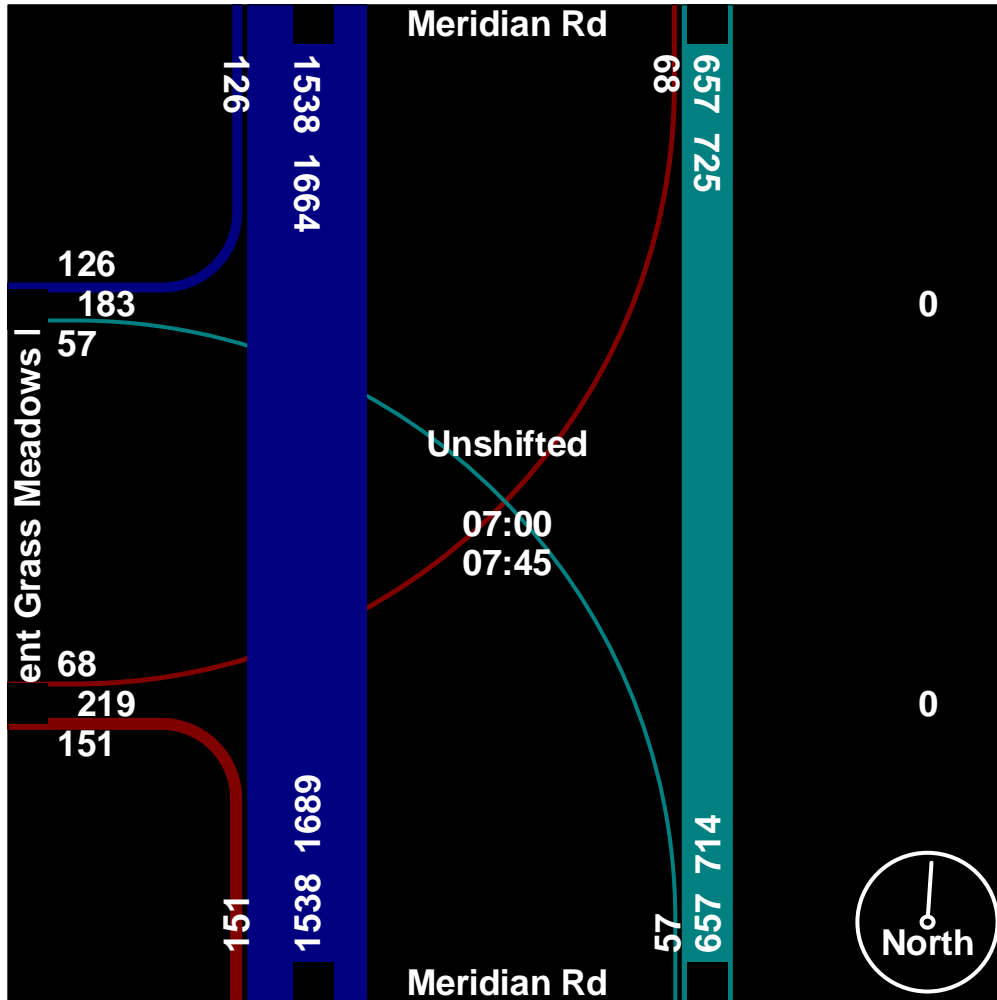
719-633-2868

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

Site Code : 154561

Start Date : 9/12/2018

Page No : 3



# LSC Transportation Consultants, Inc.

545 E Pikes Peak Ave, Suite 210

Colorado Springs, CO 80905

719-633-2868

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

Site Code : 154561

Start Date : 9/11/2018

Page No : 1

### Groups Printed- Unshifted

Start Time	Meridian Rd Southbound				Westbound				Meridian Rd Northbound				Bent Grass Meadows Dr Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
11:30	0	135	22	0	0	0	0	0	8	158	0	0	7	0	20	0	350
11:45	0	129	11	0	0	0	0	0	5	163	0	1	9	0	21	0	339
Total	0	264	33	0	0	0	0	0	13	321	0	1	16	0	41	0	689
12:00	0	170	27	0	0	0	0	0	16	135	0	0	16	0	20	0	384
12:15	0	170	17	0	0	0	0	0	18	173	0	0	20	0	22	0	420
12:30	0	155	23	0	0	0	0	0	13	164	0	0	15	0	25	0	395
12:45	0	171	17	0	0	0	0	0	14	167	0	0	13	0	13	0	395
Total	0	666	84	0	0	0	0	0	61	639	0	0	64	0	80	0	1594
13:00	0	117	16	0	0	0	0	0	16	160	0	2	14	0	12	0	337
13:15	0	158	15	0	0	0	0	0	16	176	0	0	12	0	21	0	398
Grand Total	0	1205	148	0	0	0	0	0	106	1296	0	3	106	0	154	0	3018
Apprch %	0	89.1	10.9	0	0	0	0	0	7.5	92.2	0	0.2	40.8	0	59.2	0	
Total %	0	39.9	4.9	0	0	0	0	0	3.5	42.9	0	0.1	3.5	0	5.1	0	

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719-633-2868

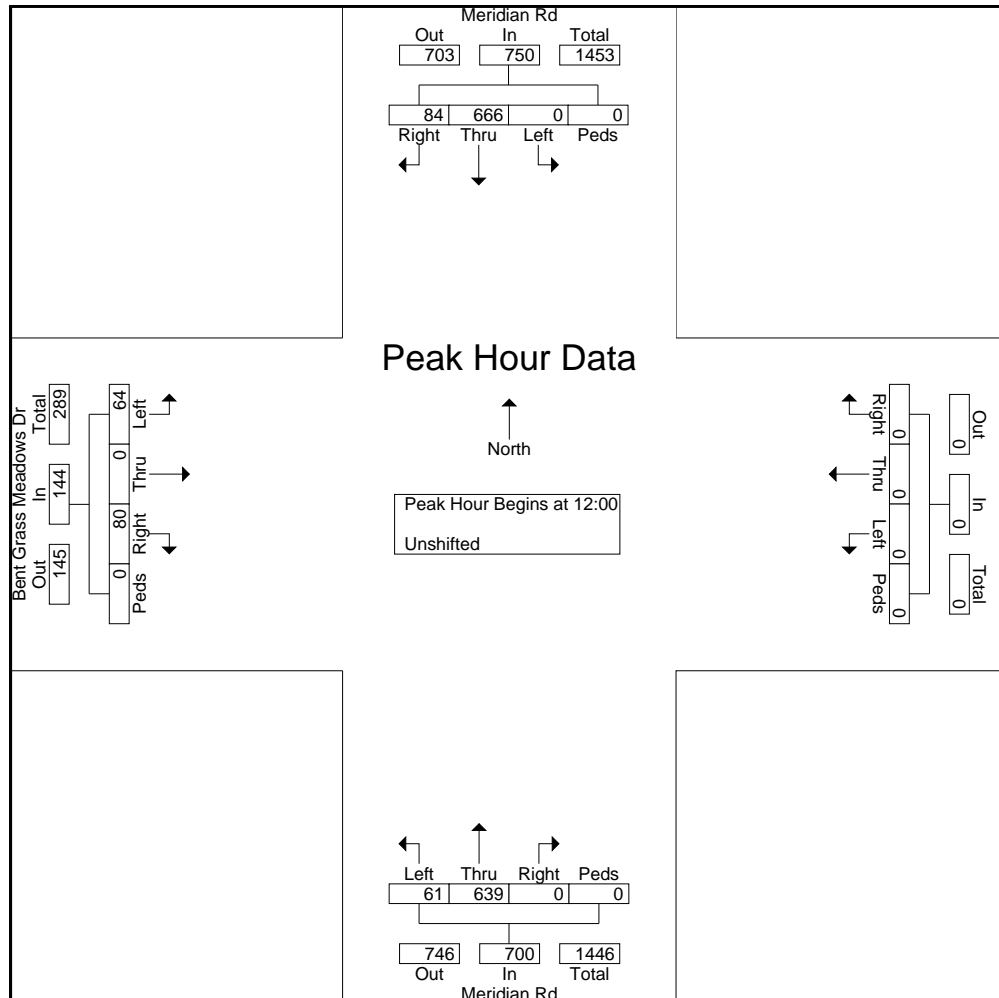
File Name : Meridian Rd - Bent Grass Meadows Noon 9-18

Site Code : 154561

Start Date : 9/11/2018

Page No : 2

Start Time	Meridian Rd Southbound					Westbound					Meridian Rd Northbound					Bent Grass Meadows Dr Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 11:30 to 13:15 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00																					
12:00	0	170	27	0	197	0	0	0	0	0	16	135	0	0	151	16	0	20	0	36	384
12:15	0	170	17	0	187	0	0	0	0	0	18	173	0	0	191	20	0	22	0	42	420
12:30	0	155	23	0	178	0	0	0	0	0	13	164	0	0	177	15	0	25	0	40	395
12:45	0	171	17	0	188	0	0	0	0	0	14	167	0	0	181	13	0	13	0	26	395
Total Volume	0	666	84	0	750	0	0	0	0	0	61	639	0	0	700	64	0	80	0	144	1594
% App. Total	0	88.8	11.2	0		0	0	0	0		8.7	91.3	0	0		44.4	0	55.6	0		
PHF	.000	.974	.778	.000	.952	.000	.000	.000	.000	.000	.847	.923	.000	.000	.916	.800	.000	.800	.000	.857	.949



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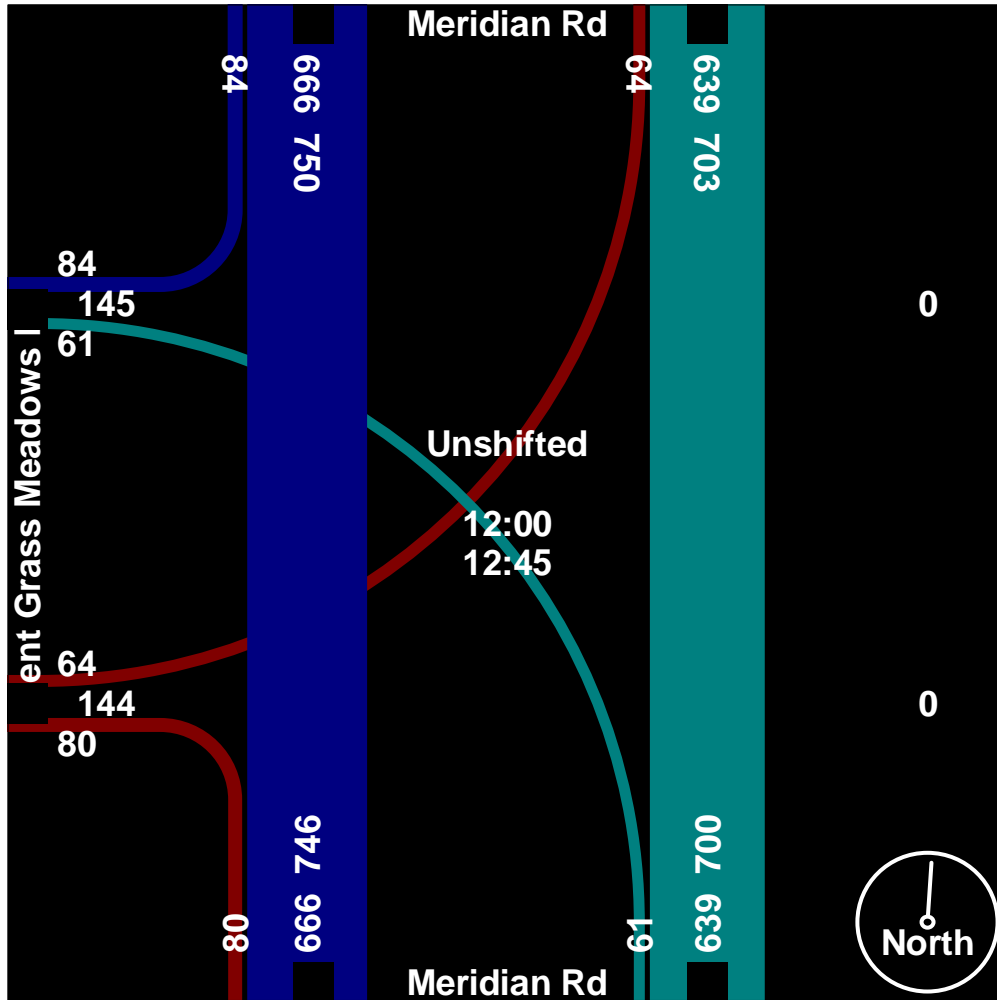
719-633-2868

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

Site Code : 154561

Start Date : 9/11/2018

Page No : 3



# LSC Transportation Consultants, Inc.

545 E Pikes Peak Ave, Suite 210

Colorado Springs, CO 80905

719-633-2868

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

Site Code : 00000000

Start Date : 9/11/2018

Page No : 1

### Groups Printed- Unshifted

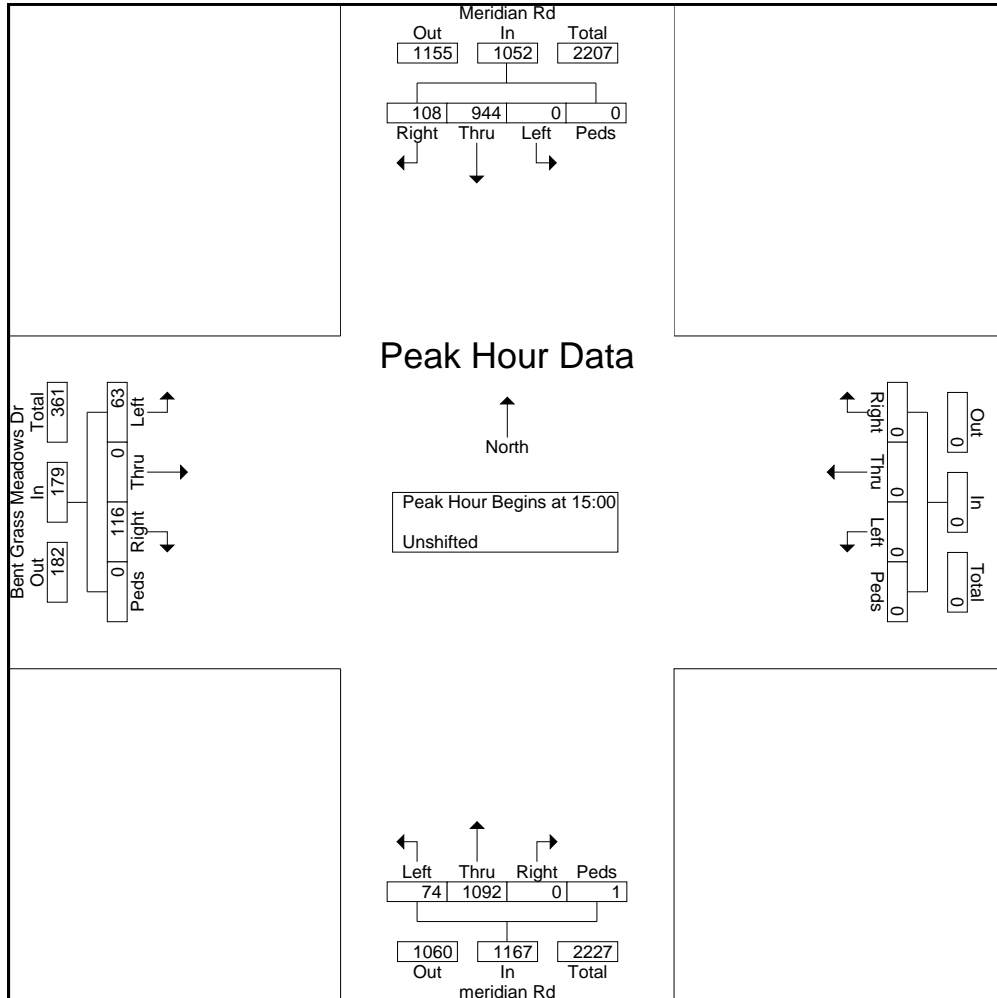
Start Time	Meridian Rd Southbound				Westbound				meridian Rd Northbound				Bent Grass Meadows Dr Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
14:00	0	150	16	0	0	0	0	0	6	178	0	0	6	0	10	0	366
14:15	0	160	15	0	0	0	0	0	9	204	0	1	11	0	17	0	417
14:30	0	159	16	0	0	0	0	0	19	197	0	0	11	0	17	0	419
14:45	0	195	26	0	0	0	0	0	17	243	0	0	19	0	38	0	538
Total	0	664	73	0	0	0	0	0	51	822	0	1	47	0	82	0	1740
15:00	0	247	21	0	0	0	0	0	17	222	0	0	16	0	22	0	545
15:15	0	241	30	0	0	0	0	0	18	278	0	1	23	0	36	0	627
15:30	0	206	26	0	0	0	0	0	10	252	0	0	10	0	25	0	529
15:45	0	250	31	0	0	0	0	0	29	340	0	0	14	0	33	0	697
Total	0	944	108	0	0	0	0	0	74	1092	0	1	63	0	116	0	2398
Grand Total	0	1608	181	0	0	0	0	0	125	1914	0	2	110	0	198	0	4138
Apprch %	0	89.9	10.1	0	0	0	0	0	6.1	93.8	0	0.1	35.7	0	64.3	0	
Total %	0	38.9	4.4	0	0	0	0	0	3	46.3	0	0	2.7	0	4.8	0	

# LSC Transportation Consultants, Inc.

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

File Name : Meridian Rd - Bent Grass Meadows Mid 9-18  
 Site Code : 00000000  
 Start Date : 9/11/2018  
 Page No : 2

Start Time	Meridian Rd Southbound					Westbound					Meridian Rd Northbound					Bent Grass Meadows Dr Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 14:00 to 15:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 15:00																					
15:00	0	247	21	0	268	0	0	0	0	0	17	222	0	0	239	16	0	22	0	38	545
15:15	0	241	30	0	271	0	0	0	0	0	18	278	0	1	297	23	0	36	0	59	627
15:30	0	206	26	0	232	0	0	0	0	0	10	252	0	0	262	10	0	25	0	35	529
15:45	0	250	31	0	281	0	0	0	0	0	29	340	0	0	369	14	0	33	0	47	697
Total Volume	0	944	108	0	1052	0	0	0	0	0	74	1092	0	1	1167	63	0	116	0	179	2398
% App. Total	0	89.7	10.3	0		0	0	0	0		6.3	93.6	0	0.1		35.2	0	64.8	0		
PHF	.000	.944	.871	.000	.936	.000	.000	.000	.000	.000	.638	.803	.000	.250	.791	.685	.000	.806	.000	.758	.860



# LSC Transportation Consultants, Inc.

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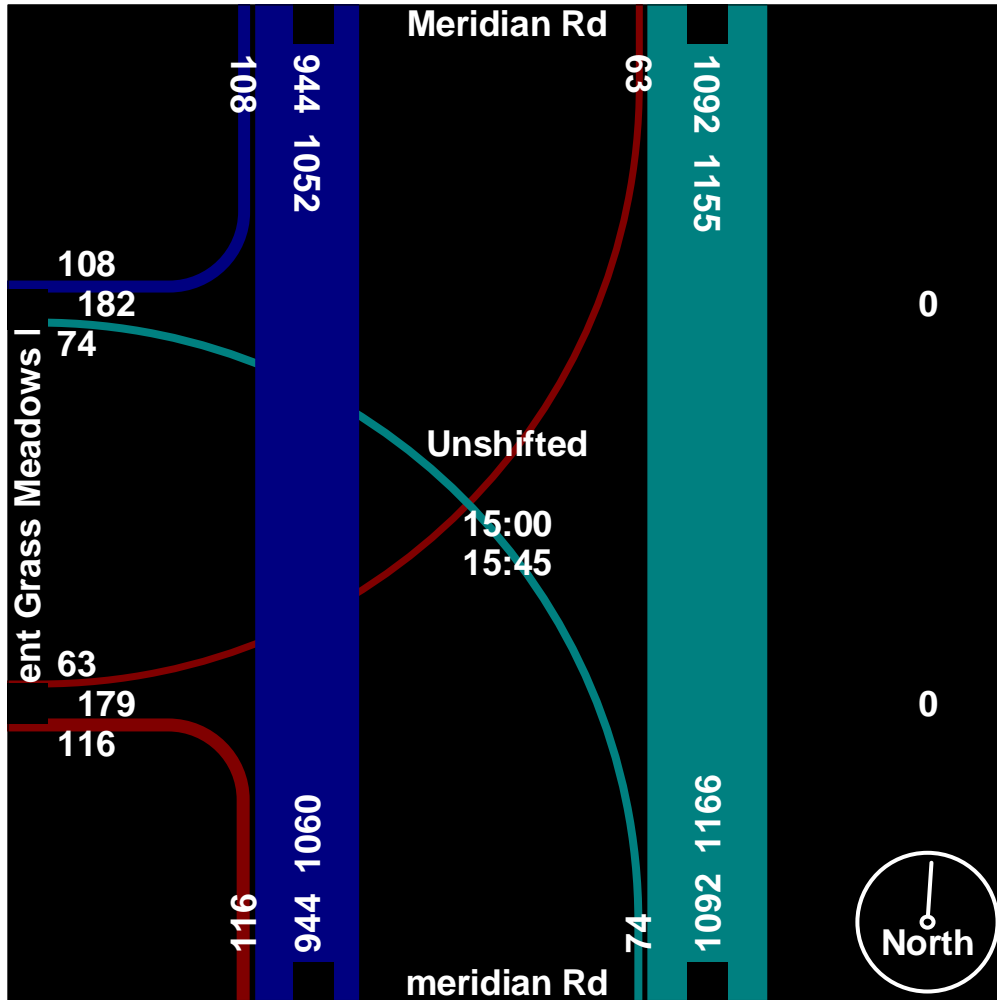
719-633-2868

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

Site Code : 00000000

Start Date : 9/11/2018

Page No : 3





# LSC Transportation Consultants, Inc.

545 E Pikes Peak Ave, Suite 210

Colorado Springs, CO 80905

719-633-2868

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

Site Code : 154561

Start Date : 9/12/2018

Page No : 1

## Groups Printed- Unshifted

Start Time	Meridian Rd Southbound				Westbound				Meridian Rd Northbound				Bent Grass Meadows Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
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	

# LSC Transportation Consultants, Inc.

545 E Pikes Peak Ave, Suite 210

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719-633-2868

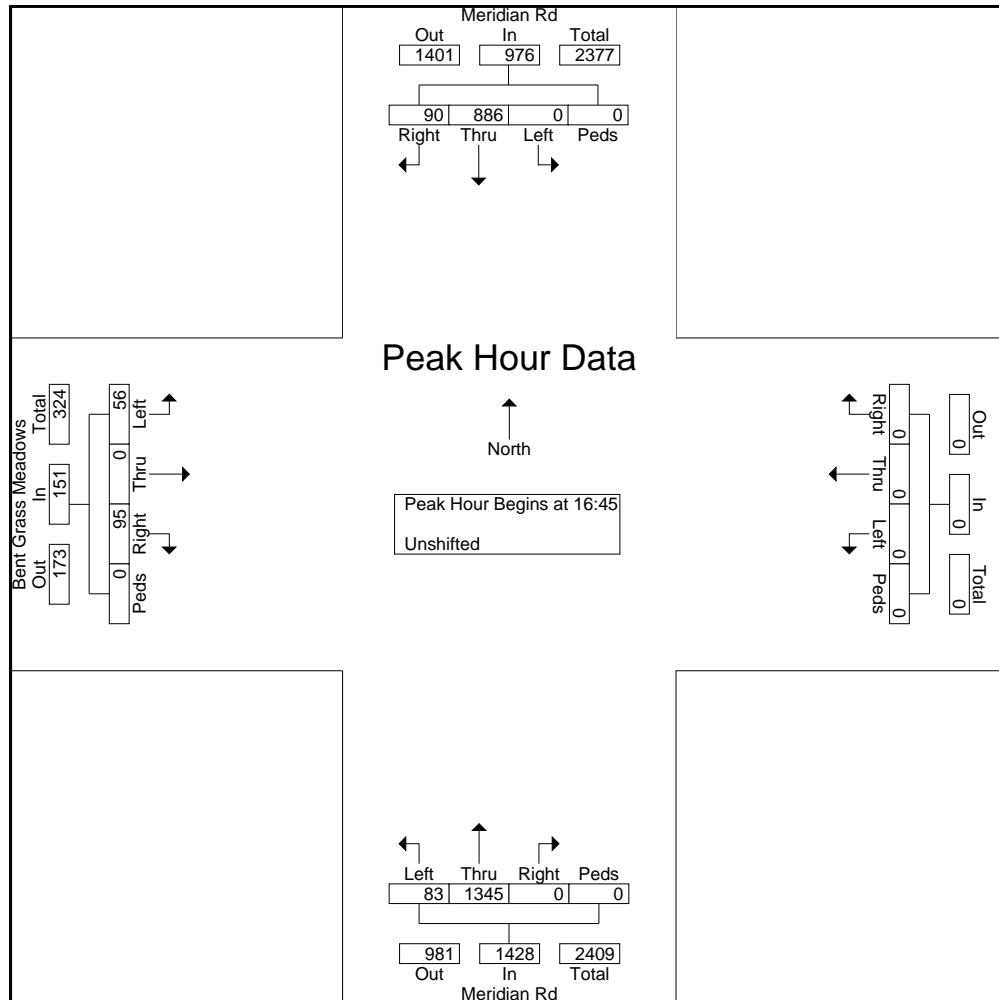
File Name : Meridian Rd - Bent Grass Meadows PM 9-18

Site Code : 154561

Start Date : 9/12/2018

Page No : 2

Start Time	Meridian Rd Southbound					Westbound					Meridian Rd Northbound					Bent Grass Meadows Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. 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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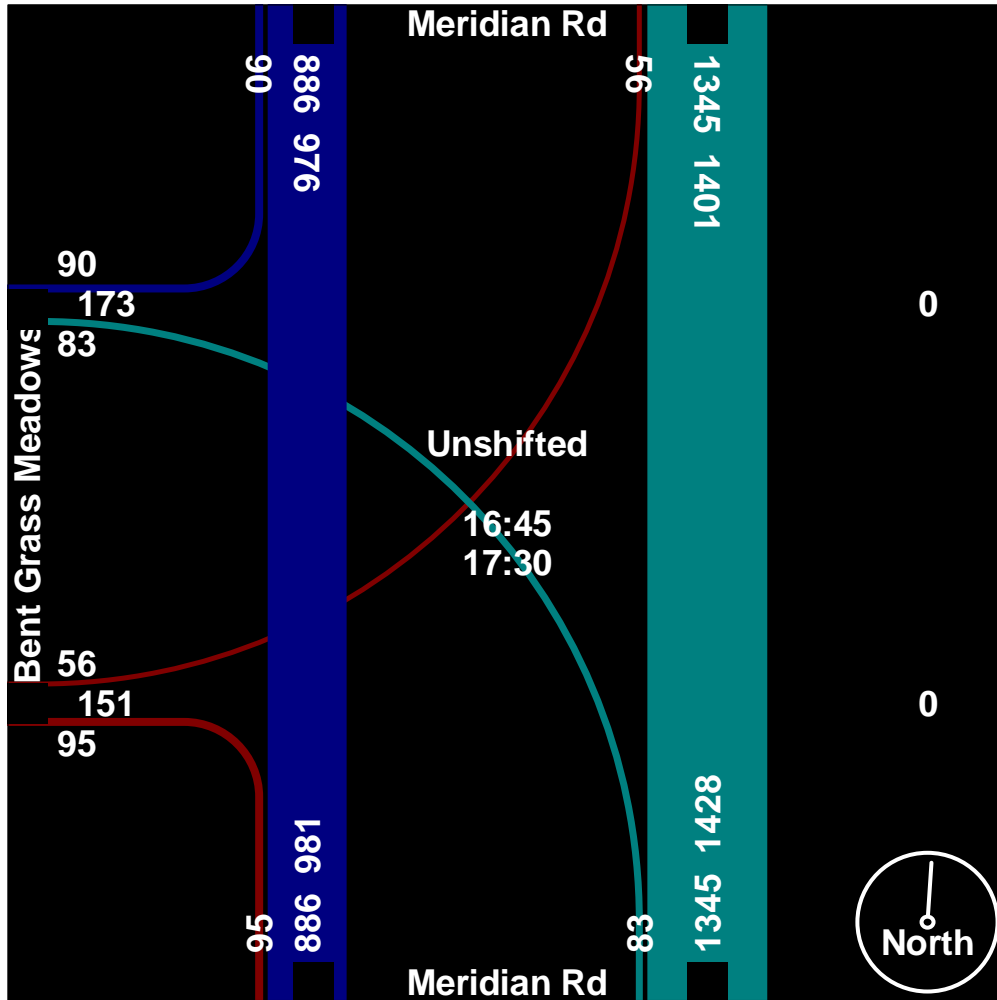
719-633-2868

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

Site Code : 154561

Start Date : 9/12/2018

Page No : 3



# LSC Transportation Consultants, Inc.

545 E Pikes Peak Ave, Suite 210

Colorado Springs, CO 80905

719-633-2868

File Name : Bent Grass Meadows - 7-11 North Access AM

Site Code : 00184910

Start Date : 10/30/2018

Page No : 1

### Groups Printed- Unshifted

Start Time	Southbound				Bent Grass Meadows Westbound				7-11 North Access Northbound				Bent Grass Meadows Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
06:30	0	0	0	0	7	0	0	0	0	0	10	0	0	5	1	0	23
06:35	0	0	0	0	11	1	0	0	0	0	6	0	0	4	0	0	22
06:40	0	0	0	0	14	1	0	0	0	0	14	0	0	2	0	0	31
06:45	0	0	0	0	4	1	0	0	0	0	8	0	0	4	0	0	17
06:50	0	0	0	0	12	2	0	0	0	0	6	0	0	4	0	0	24
06:55	0	0	0	0	12	4	0	0	0	0	11	0	0	4	0	0	31
<b>Total</b>	0	0	0	0	60	9	0	0	0	0	55	0	0	23	1	0	148
07:00	0	0	0	0	11	2	0	0	0	0	8	0	0	10	0	0	31
07:05	0	0	0	0	17	4	0	0	0	0	11	0	0	5	0	0	37
07:10	0	0	0	0	17	1	0	0	0	0	11	0	0	4	0	0	33
07:15	0	0	0	0	4	2	0	0	0	0	14	0	0	8	1	0	29
07:20	0	0	0	0	15	2	0	0	0	0	9	0	0	7	0	0	33
07:25	0	0	0	0	10	4	0	0	0	0	9	0	0	5	0	0	28
07:30	0	0	0	0	10	4	0	0	0	0	9	0	0	4	2	0	29
07:35	0	0	0	0	9	7	0	0	0	0	9	0	0	6	0	0	31
07:40	0	0	0	0	11	5	0	0	0	0	8	0	0	9	0	0	33
07:45	0	0	0	0	14	5	0	0	0	0	7	0	0	12	0	0	38
07:50	0	0	0	0	13	3	0	0	0	0	15	0	0	8	0	0	39
07:55	0	0	0	0	5	7	0	0	0	0	11	0	0	4	0	0	27
<b>Total</b>	0	0	0	0	136	46	0	0	0	0	121	0	0	82	3	0	388
08:00	0	0	0	0	11	6	0	0	0	0	8	0	0	10	0	0	35
08:05	0	0	0	0	6	0	0	0	0	0	7	0	0	6	0	0	19
08:10	0	0	0	0	20	2	0	0	0	0	11	0	0	6	0	0	39
08:15	0	0	0	0	8	1	0	0	0	0	11	0	0	2	0	0	22
08:20	0	0	0	0	11	3	0	0	0	0	9	0	0	11	0	0	34
08:25	0	0	0	0	12	2	0	0	0	0	6	0	0	6	0	0	26
<b>Grand Total</b>	0	0	0	0	264	69	0	0	0	0	228	0	0	146	4	0	711
Apprch %	0	0	0	0	79.3	20.7	0	0	0	0	100	0	0	97.3	2.7	0	
<b>Total %</b>	0	0	0	0	37.1	9.7	0	0	0	0	32.1	0	0	20.5	0.6	0	

# LSC Transportation Consultants, Inc.

545 E Pikes Peak Ave, Suite 210

Colorado Springs, CO 80905

719-633-2868

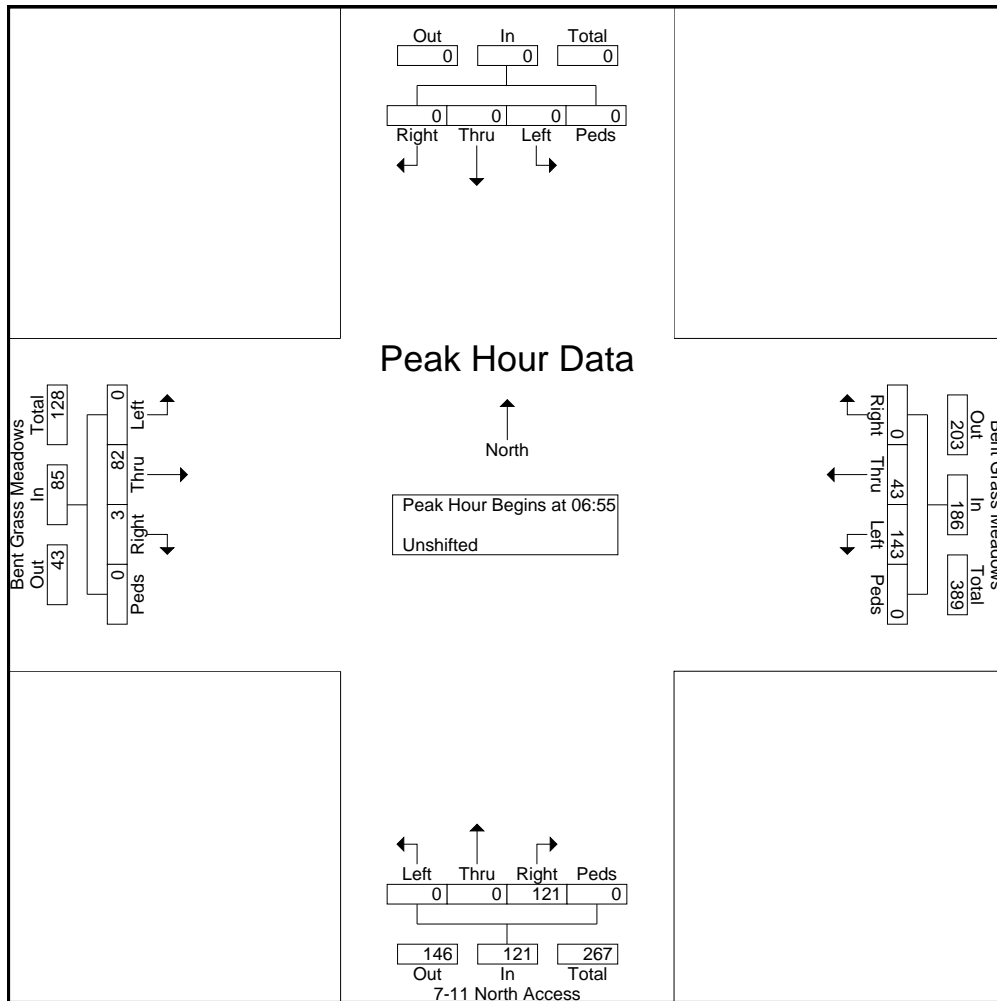
File Name : Bent Grass Meadows - 7-11 North Access AM

Site Code : 00184910

Start Date : 10/30/2018

Page No : 2

Start Time	Southbound					Bent Grass Meadows Westbound					7-11 North Access Northbound					Bent Grass Meadows Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 06:30 to 08:25 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 06:55																					
06:55	0	0	0	0	0	12	4	0	0	16	0	0	11	0	11	0	4	0	0	4	31
07:00	0	0	0	0	0	11	2	0	0	13	0	0	8	0	8	0	10	0	0	10	31
07:05	0	0	0	0	0	17	4	0	0	21	0	0	11	0	11	0	5	0	0	5	37
07:10	0	0	0	0	0	17	1	0	0	18	0	0	11	0	11	0	4	0	0	4	33
07:15	0	0	0	0	0	4	2	0	0	6	0	0	14	0	14	0	8	1	0	9	29
07:20	0	0	0	0	0	15	2	0	0	17	0	0	9	0	9	0	7	0	0	7	33
07:25	0	0	0	0	0	10	4	0	0	14	0	0	9	0	9	0	5	0	0	5	28
07:30	0	0	0	0	0	10	4	0	0	14	0	0	9	0	9	0	4	2	0	6	29
07:35	0	0	0	0	0	9	7	0	0	16	0	0	9	0	9	0	6	0	0	6	31
07:40	0	0	0	0	0	11	5	0	0	16	0	0	8	0	8	0	9	0	0	9	33
07:45	0	0	0	0	0	14	5	0	0	19	0	0	7	0	7	0	12	0	0	12	38
07:50	0	0	0	0	0	13	3	0	0	16	0	0	15	0	15	0	8	0	0	8	39
Total Volume	0	0	0	0	0	143	43	0	0	186	0	0	121	0	121	0	82	3	0	85	392
% App. Total	0	0	0	0	0	76.9	23.1	0	0		0	0	100	0		0	96.5	3.5	0		
PHF	.000	.000	.000	.000	.000	.701	.512	.000	.000	.738	.000	.000	.672	.000	.672	.000	.569	.125	.000	.590	.838



# LSC Transportation Consultants, Inc.

545 E Pikes Peak Ave, Suite 210

Colorado Springs, CO 80905

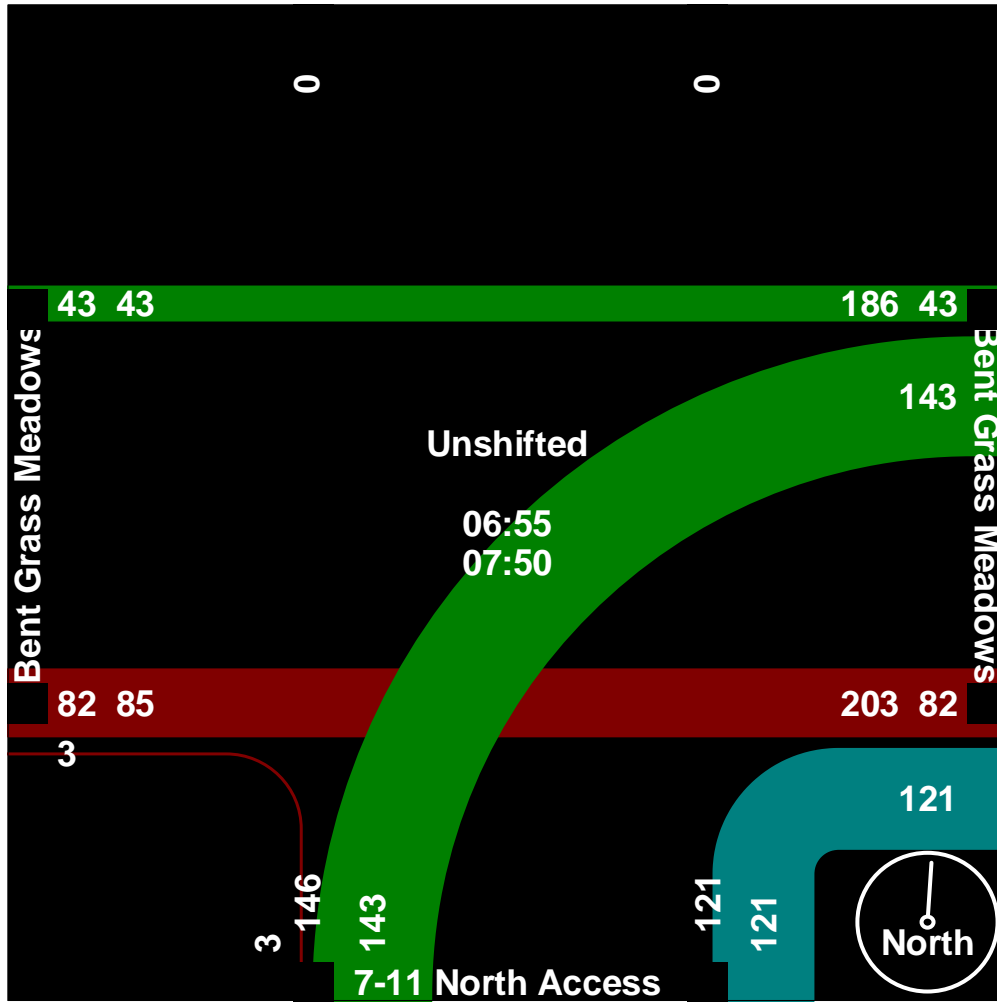
719-633-2868

File Name : Bent Grass Meadows - 7-11 North Access AM

Site Code : 00184910

Start Date : 10/30/2018

Page No : 3



# LSC Transportation Consultants, Inc.

545 E Pikes Peak Ave, Suite 210

Colorado Springs, CO 80905

719-633-2868

File Name : Bent Grass Meadows - 7-11 North Access Mid 11-18

Site Code : 00184910

Start Date : 11/7/2018

Page No : 1

### Groups Printed- Bank 1

Start Time	Southbound				Bent Grass Meadows Westbound				7-11 North Access Northbound				Bent Grass Meadows Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
08:30	0	0	0	0	24	12	0	0	0	0	26	0	0	17	3	0	82
08:45	0	0	0	0	14	7	0	0	0	0	18	0	0	9	0	0	48
Total	0	0	0	0	38	19	0	0	0	0	44	0	0	26	3	0	130
09:00	0	0	0	0	20	4	0	0	0	0	13	0	0	9	1	0	47
09:15	0	0	0	0	17	6	0	0	0	0	15	0	0	13	0	0	51
09:30	0	0	0	0	21	7	0	0	0	0	22	0	0	9	0	0	59
09:45	0	0	0	0	11	8	0	0	0	0	13	0	0	11	0	0	43
Total	0	0	0	0	69	25	0	0	0	0	63	0	0	42	1	0	200
10:00	0	0	0	0	27	3	0	0	0	0	18	0	0	6	0	0	54
10:15	0	0	0	0	14	9	0	0	0	0	18	0	0	10	0	0	51
10:30	0	0	0	0	23	10	0	0	0	0	16	0	0	11	2	0	62
10:45	0	0	0	0	29	13	0	0	0	0	26	0	0	10	1	0	79
Total	0	0	0	0	93	35	0	0	0	0	78	0	0	37	3	0	246
Grand Total	0	0	0	0	200	79	0	0	0	0	185	0	0	105	7	0	576
Apprch %	0	0	0	0	71.7	28.3	0	0	0	0	100	0	0	93.8	6.2	0	
Total %	0	0	0	0	34.7	13.7	0	0	0	0	32.1	0	0	18.2	1.2	0	

# LSC Transportation Consultants, Inc.

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

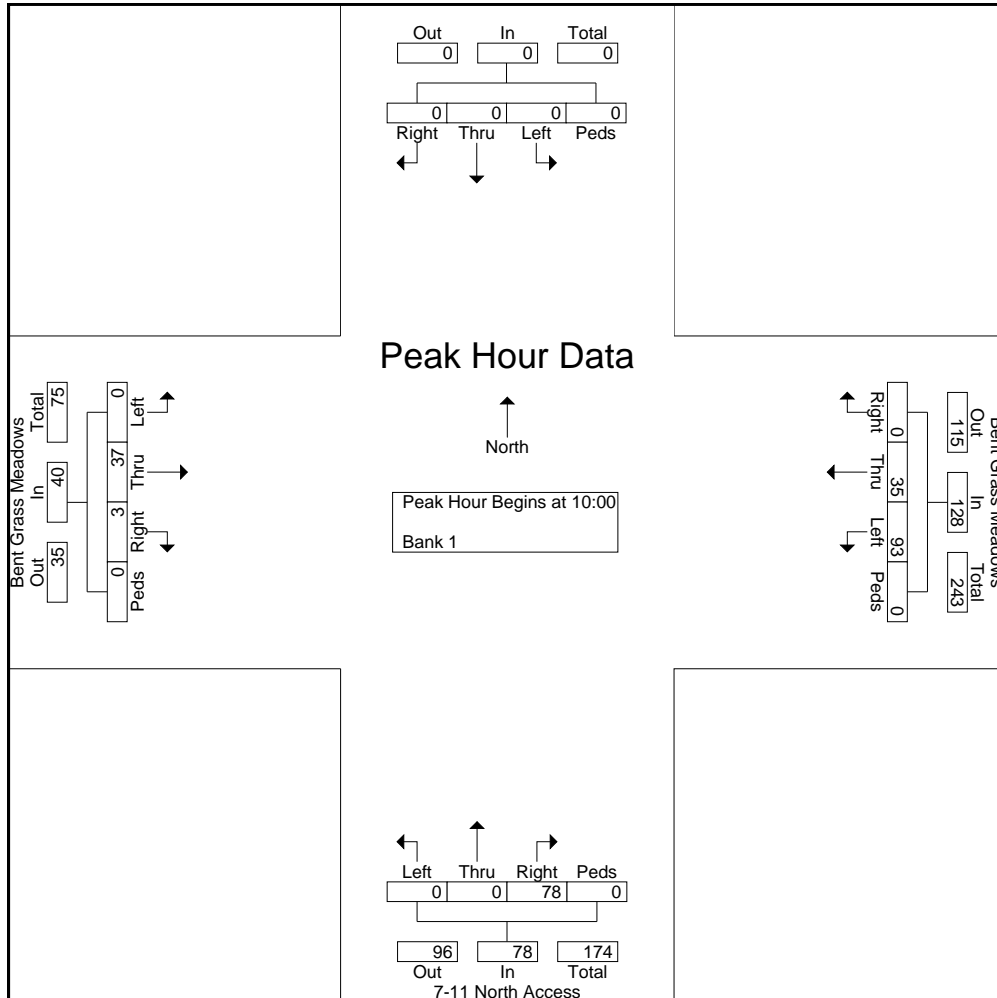
File Name : Bent Grass Meadows - 7-11 North Access Mid 11-18

Site Code : 00184910

Start Date : 11/7/2018

Page No : 2

Start Time	Southbound					Bent Grass Meadows Westbound					7-11 North Access Northbound					Bent Grass Meadows Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 08:30 to 10:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 10:00																					
10:00	0	0	0	0	0	27	3	0	0	30	0	0	18	0	18	0	6	0	0	6	54
10:15	0	0	0	0	0	14	9	0	0	23	0	0	18	0	18	0	10	0	0	10	51
10:30	0	0	0	0	0	23	10	0	0	33	0	0	16	0	16	0	11	2	0	13	62
10:45	0	0	0	0	0	<b>29</b>	<b>13</b>	0	0	<b>42</b>	0	0	<b>26</b>	0	<b>26</b>	0	10	1	0	11	<b>79</b>
Total Volume	0	0	0	0	0	93	35	0	0	128	0	0	78	0	78	0	37	3	0	40	246
% App. Total	0	0	0	0	0	72.7	27.3	0	0	.762	0	0	100	0	.750	0	92.5	7.5	0	.769	.778
PHF	.000	.000	.000	.000	.000	.802	.673	.000	.000	.762	.000	.000	.750	.000	.750	.000	.841	.375	.000	.769	.778





**LSC Transportation Consultants, Inc.**

545 E Pikes Peak Ave, Suite 210

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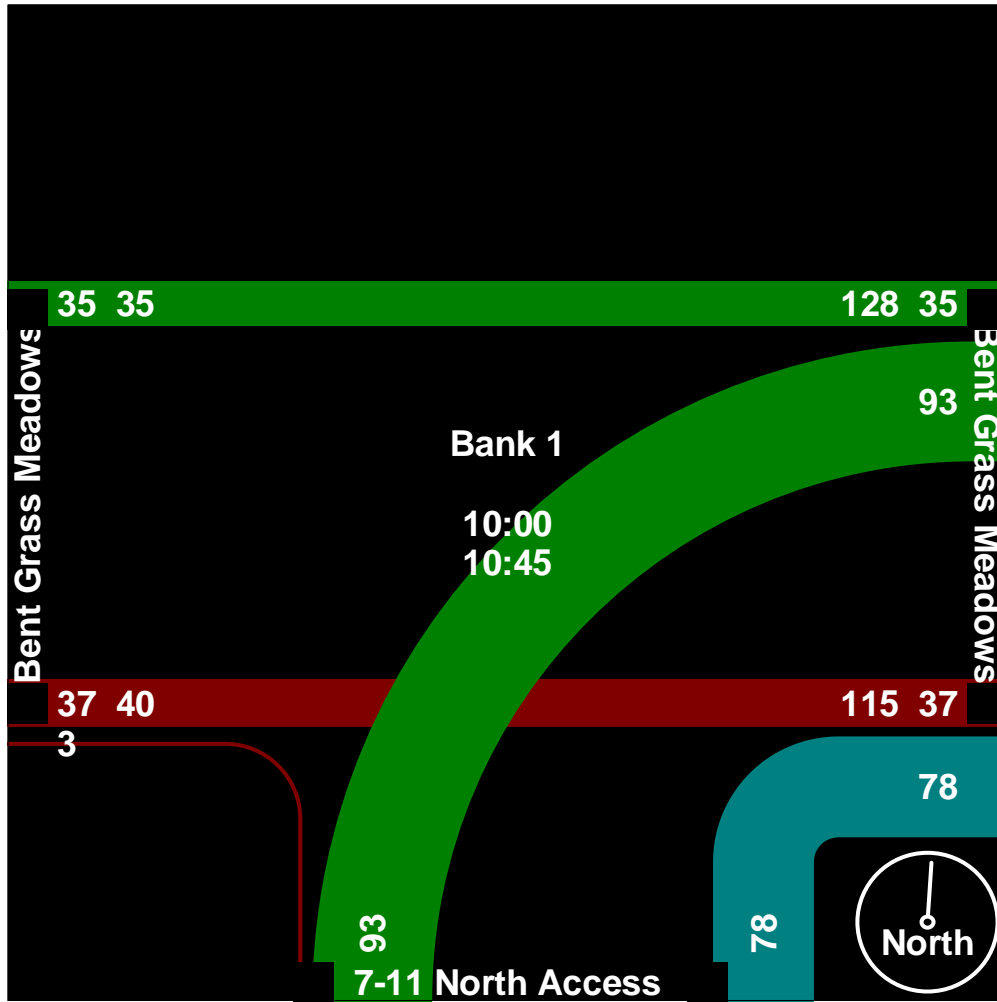
719-633-2868

File Name : Bent Grass Meadows - 7-11 North Access Mid 11-18

Site Code : 00184910

Start Date : 11/7/2018

Page No : 3



# LSC Transportation Consultants, Inc.

545 E Pikes Peak Ave, Suite 210

Colorado Springs, CO 80905

719-633-2868

File Name : Bent Grass Meadows - 7-11 North Access Mid

Site Code : 00184910

Start Date : 10/30/2018

Page No : 1

## Groups Printed- Unshifted

Start Time	Southbound				Bent Grass Meadows Westbound				7-11 North Access Northbound				Bent Grass Meadows Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
11:30	0	0	0	0	28	12	0	0	1	0	19	0	0	12	0	0	72
11:45	0	0	0	0	23	10	0	0	0	0	21	0	0	14	2	0	70
Total	0	0	0	0	51	22	0	0	1	0	40	0	0	26	2	0	142
12:00	0	0	0	0	31	8	0	0	0	0	29	0	0	11	0	0	79
12:15	0	0	0	0	22	6	0	0	0	0	22	0	0	5	0	0	55
12:30	0	0	0	0	26	16	0	0	0	0	27	0	0	9	0	0	78
12:45	0	0	0	0	25	11	0	0	0	0	22	0	0	13	0	0	71
Total	0	0	0	0	104	41	0	0	0	0	100	0	0	38	0	0	283
Grand Total	0	0	0	0	155	63	0	0	1	0	140	0	0	64	2	0	425
Apprch %	0	0	0	0	71.1	28.9	0	0	0.7	0	99.3	0	0	97	3	0	
Total %	0	0	0	0	36.5	14.8	0	0	0.2	0	32.9	0	0	15.1	0.5	0	

# LSC Transportation Consultants, Inc.

545 E Pikes Peak Ave, Suite 210

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719-633-2868

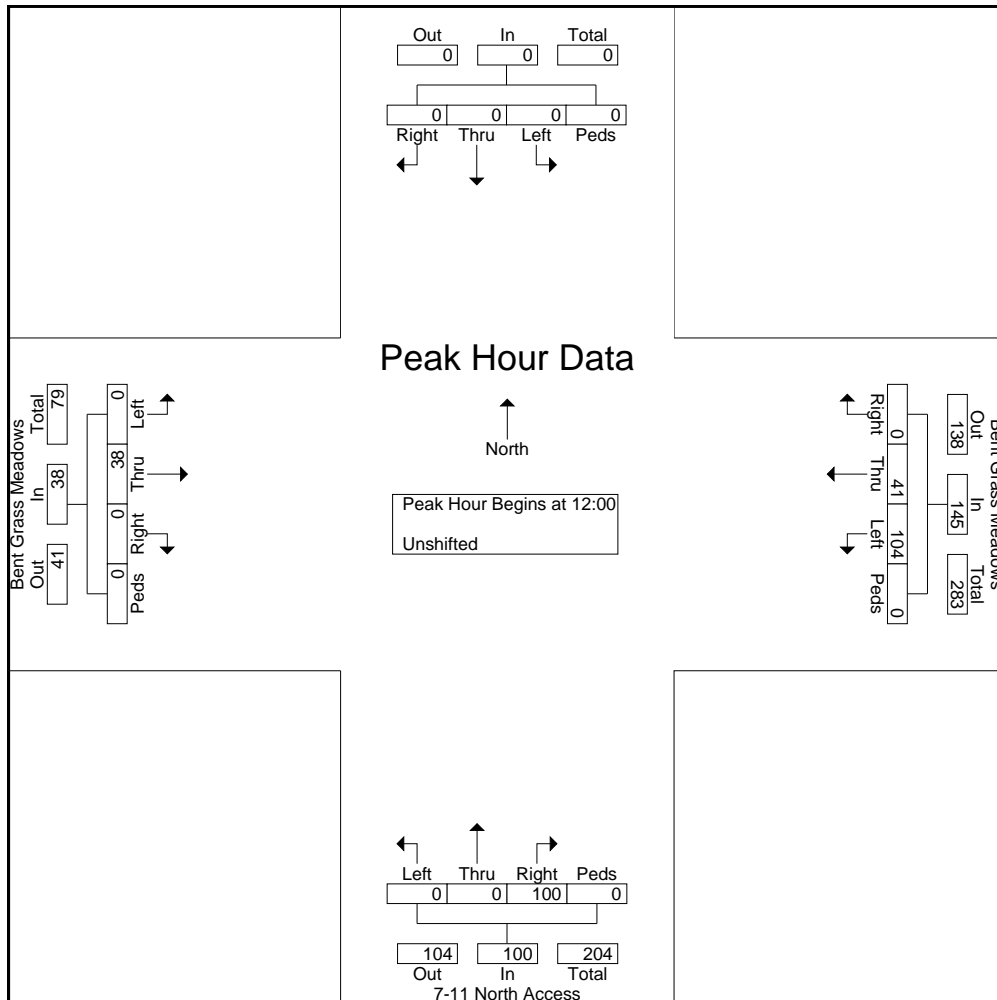
File Name : Bent Grass Meadows - 7-11 North Access Mid

Site Code : 00184910

Start Date : 10/30/2018

Page No : 2

Start Time	Southbound					Bent Grass Meadows Westbound					7-11 North Access Northbound					Bent Grass Meadows Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 11:30 to 12:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00																					
12:00	0	0	0	0	0	31	8	0	0	39	0	0	29	0	29	0	11	0	0	11	79
12:15	0	0	0	0	0	22	6	0	0	28	0	0	22	0	22	0	5	0	0	5	55
12:30	0	0	0	0	0	26	16	0	0	42	0	0	27	0	27	0	9	0	0	9	78
12:45	0	0	0	0	0	25	11	0	0	36	0	0	22	0	22	0	13	0	0	13	71
Total Volume	0	0	0	0	0	104	41	0	0	145	0	0	100	0	100	0	38	0	0	38	283
% App. Total	0	0	0	0	0	71.7	28.3	0	0		0	0	100	0		0	100	0	0		
PHF	.000	.000	.000	.000	.000	.839	.641	.000	.000	.863	.000	.000	.862	.000	.862	.000	.731	.000	.000	.731	.896



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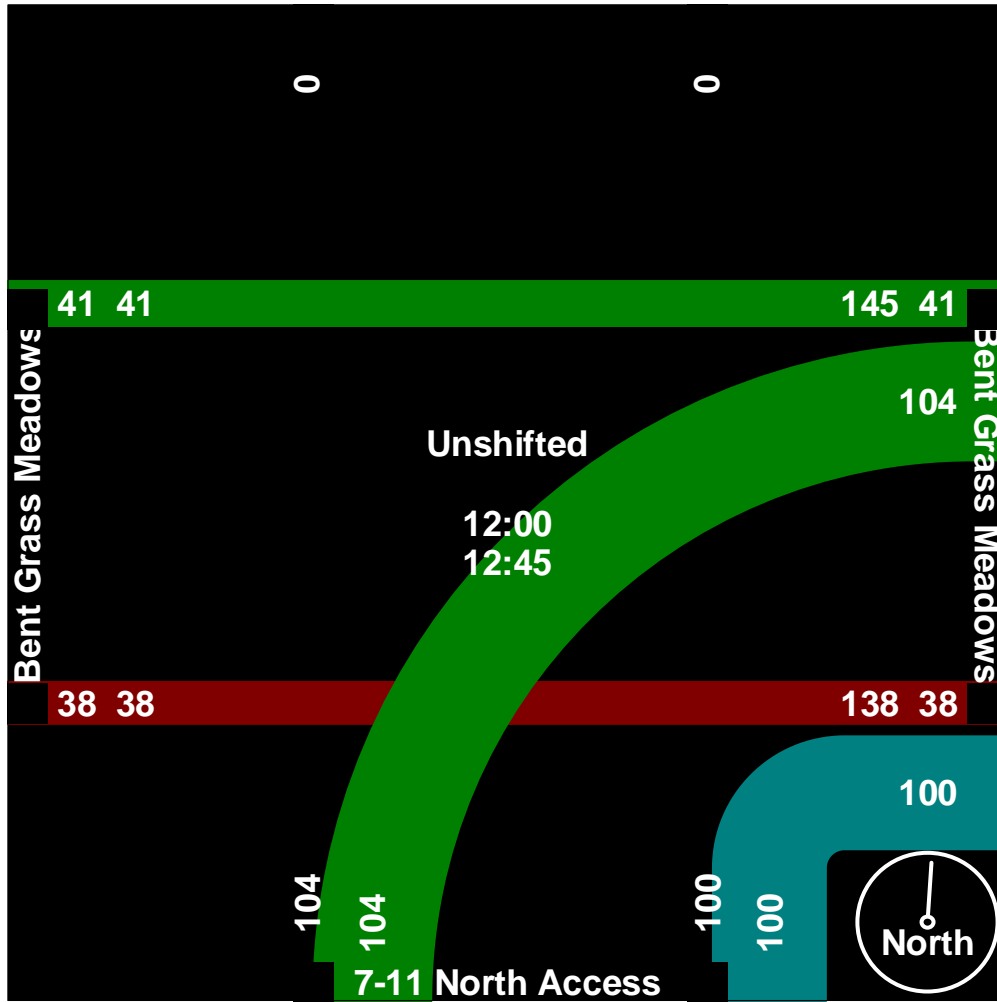
719-633-2868

File Name : Bent Grass Meadows - 7-11 North Access Mid

Site Code : 00184910

Start Date : 10/30/2018

Page No : 3



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719-633-2868

File Name : Bent Grass Meadows - 7-11 North Access PM

Site Code : 00184910

Start Date : 10/29/2018

Page No : 1

### Groups Printed- Unshifted

Start Time	Southbound				Bent Grass Meadows Westbound				7-11 North Access Northbound				Bent Grass Meadow Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
16:00	0	0	0	0	23	11	0	0	0	0	29	0	0	16	0	0	79
16:15	0	0	0	0	30	17	0	0	1	0	17	0	0	16	0	0	81
16:30	0	0	0	0	35	15	0	0	1	0	26	0	0	10	0	0	87
16:45	0	0	0	0	19	19	0	0	0	0	27	0	0	7	0	0	72
Total	0	0	0	0	107	62	0	0	2	0	99	0	0	49	0	0	319
17:00	0	0	0	0	26	16	0	0	0	0	26	0	0	12	1	0	81
17:15	0	0	0	0	29	9	0	0	0	0	22	0	0	23	0	0	83
17:30	0	0	0	0	14	15	0	0	0	0	18	0	0	7	0	0	54
17:45	0	0	0	0	24	12	0	0	0	0	23	0	0	6	2	0	67
Total	0	0	0	0	93	52	0	0	0	0	89	0	0	48	3	0	285
Grand Total	0	0	0	0	200	114	0	0	2	0	188	0	0	97	3	0	604
Apprch %	0	0	0	0	63.7	36.3	0	0	1.1	0	98.9	0	0	97	3	0	
Total %	0	0	0	0	33.1	18.9	0	0	0.3	0	31.1	0	0	16.1	0.5	0	

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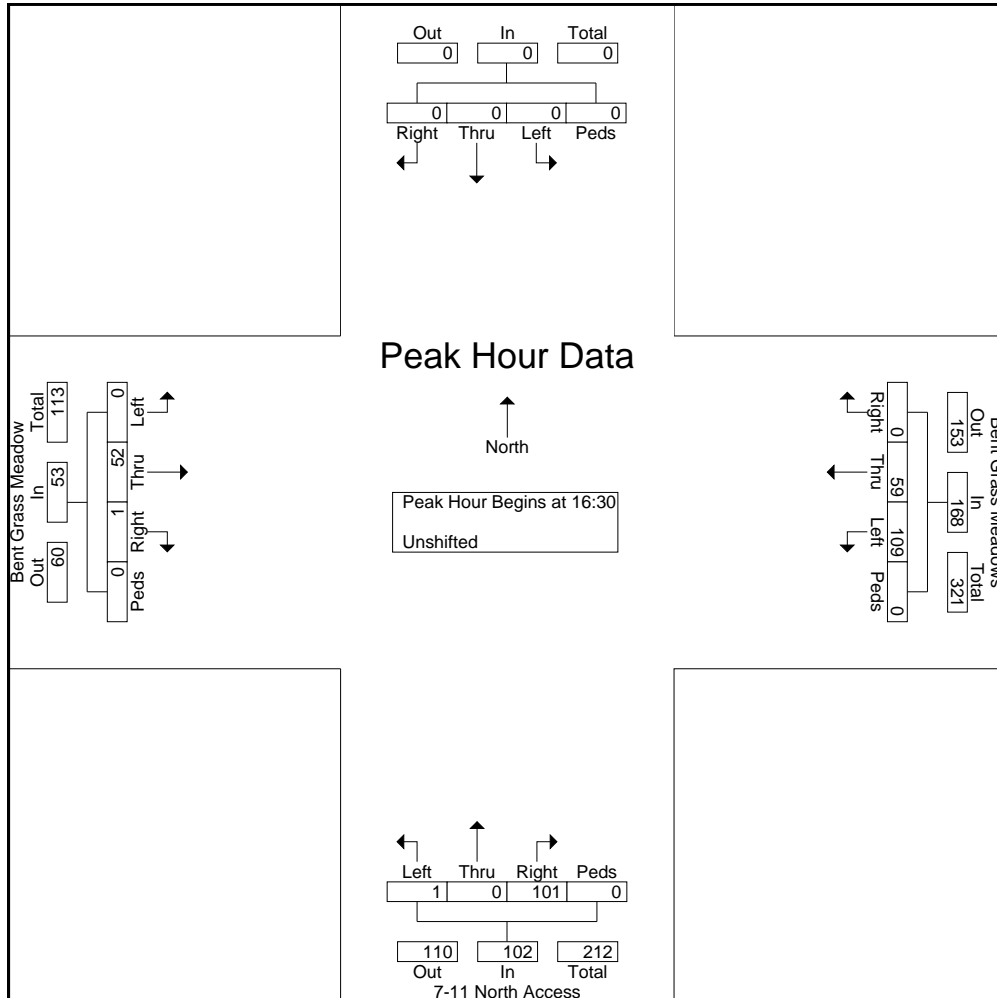
File Name : Bent Grass Meadows - 7-11 North Access PM

Site Code : 00184910

Start Date : 10/29/2018

Page No : 2

Start Time	Southbound					Bent Grass Meadows Westbound					7-11 North Access Northbound					Bent Grass Meadow Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:30																					
16:30	0	0	0	0	0	35	15	0	0	50	1	0	26	0	27	0	10	0	0	10	87
16:45	0	0	0	0	0	19	19	0	0	38	0	0	27	0	27	0	7	0	0	7	72
17:00	0	0	0	0	0	26	16	0	0	42	0	0	26	0	26	0	12	1	0	13	81
17:15	0	0	0	0	0	29	9	0	0	38	0	0	22	0	22	0	23	0	0	23	83
Total Volume	0	0	0	0	0	109	59	0	0	168	1	0	101	0	102	0	52	1	0	53	323
% App. Total	0	0	0	0	0	64.9	35.1	0	0		1	0	99	0		0	98.1	1.9	0		
PHF	.000	.000	.000	.000	.000	.779	.776	.000	.000	.840	.250	.000	.935	.000	.944	.000	.565	.250	.000	.576	.928



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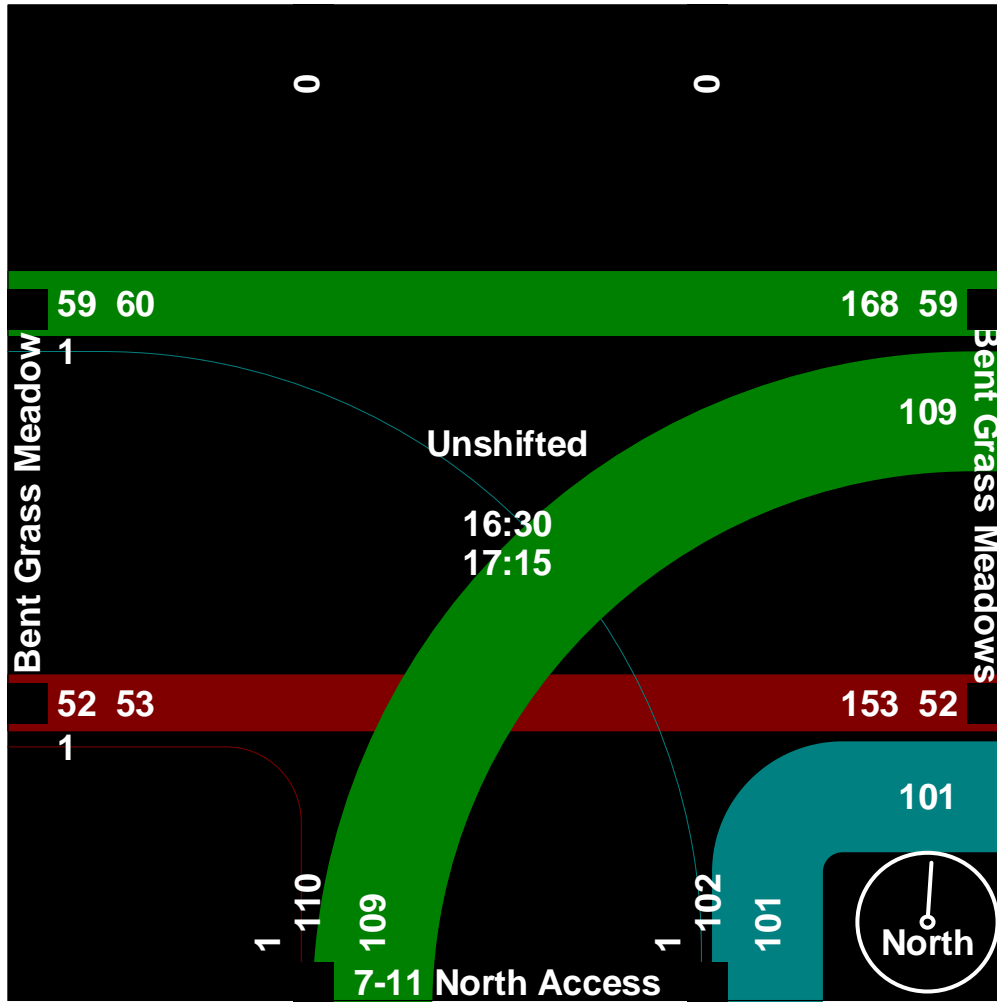
719-633-2868

File Name : Bent Grass Meadows - 7-11 North Access PM

Site Code : 00184910

Start Date : 10/29/2018

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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



Intersection						
Int Delay, s/veh	5.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	
Traffic Vol, veh/h	82	3	143	43	0	121
Future Vol, veh/h	82	3	143	43	0	121
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	60	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	73	73	91	91	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	112	4	157	47	0	121

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	116	0	473
Stage 1	-	-	-	-	112
Stage 2	-	-	-	-	361
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	-	-	1473	-	550
Stage 1	-	-	-	-	913
Stage 2	-	-	-	-	705
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1473	-	491
Mov Cap-2 Maneuver	-	-	-	-	491
Stage 1	-	-	-	-	815
Stage 2	-	-	-	-	705

Approach	EB	WB	NB
HCM Control Delay, s	0	5.9	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	941	-	-	1473	-
HCM Lane V/C Ratio	0.129	-	-	0.107	-
HCM Control Delay (s)	9.4	-	-	7.7	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.4	-	-	0.4	-

**Intersection**

Int Delay, s/veh 3.2

**Movement** EBT EBR WBL WBT NBL NBR

Lane Configurations	↑	↗	↘	↑	↘	
Traffic Vol, veh/h	57	4	34	16	1	28
Future Vol, veh/h	57	4	34	16	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	85	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	73	73	91	91	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	78	5	37	18	1	28

**Major/Minor** Major1 Major2 Minor1

Conflicting Flow All	0	0	83	0	170	78
Stage 1	-	-	-	-	78	-
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	-	-	1514	-	820	983
Stage 1	-	-	-	-	945	-
Stage 2	-	-	-	-	932	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1514	-	800	983
Mov Cap-2 Maneuver	-	-	-	-	800	-
Stage 1	-	-	-	-	922	-
Stage 2	-	-	-	-	932	-

**Approach** EB WB NB

HCM Control Delay, s 0 5.1 8.8  
 HCM LOS A

**Minor Lane/Major Mvmt** NBLn1 EBT EBR WBL WBT

Capacity (veh/h)	975	-	-	1514	-
HCM Lane V/C Ratio	0.03	-	-	0.025	-
HCM Control Delay (s)	8.8	-	-	7.4	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

**Intersection**

Int Delay, s/veh	1.9					
<b>Movement</b>	<b>EBL</b>	<b>EBR</b>	<b>NBL</b>	<b>NBT</b>	<b>SBT</b>	<b>SBR</b>
Lane Configurations	↙	↗	↙	↑↑	↑↑	↗
Traffic Vol, veh/h	64	80	61	639	666	84
Future Vol, veh/h	64	80	61	639	666	84
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	92	92	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	74	93	66	695	666	84

<b>Major/Minor</b>	<b>Minor2</b>	<b>Major1</b>		<b>Major2</b>	
Conflicting Flow All	1146	333	750	0	0
Stage 1	666	-	-	-	-
Stage 2	480	-	-	-	-
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	193	663	855	-	-
Stage 1	472	-	-	-	-
Stage 2	588	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	178	663	855	-	-
Mov Cap-2 Maneuver	297	-	-	-	-
Stage 1	436	-	-	-	-
Stage 2	588	-	-	-	-

<b>Approach</b>	<b>EB</b>	<b>NB</b>	<b>SB</b>
HCM Control Delay, s	15.7	0.8	0
HCM LOS	C		

<b>Minor Lane/Major Mvmt</b>	<b>NBL</b>	<b>NBT</b>	<b>EBLn1</b>	<b>EBLn2</b>	<b>SBT</b>	<b>SBR</b>
Capacity (veh/h)	855	-	297	663	-	-
HCM Lane V/C Ratio	0.078	-	0.251	0.14	-	-
HCM Control Delay (s)	9.6	-	21.1	11.3	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0.3	-	1	0.5	-	-

**Intersection**

Int Delay, s/veh 6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↘	
Traffic Vol, veh/h	38	0	104	41	0	100
Future Vol, veh/h	38	0	104	41	0	100
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	60	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	93	93	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	44	0	112	44	0	116

**Major/Minor**

	Major1	Major2	Minor1		
Conflicting Flow All	0	0	44	0	312
Stage 1	-	-	-	-	44
Stage 2	-	-	-	-	268
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	-	-	1564	-	681
Stage 1	-	-	-	-	978
Stage 2	-	-	-	-	777
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1564	-	632
Mov Cap-2 Maneuver	-	-	-	-	632
Stage 1	-	-	-	-	908
Stage 2	-	-	-	-	777

**Approach**

	EB	WB	NB
HCM Control Delay, s	0	5.4	9
HCM LOS			A

**Minor Lane/Major Mvmt**

	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1026	-	-	1564	-
HCM Lane V/C Ratio	0.113	-	-	0.072	-
HCM Control Delay (s)	9	-	-	7.5	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.4	-	-	0.2	-

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

Existing Traffic  
 Noon Hour

Intersection						
Int Delay, s/veh	3.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	
Traffic Vol, veh/h	17	1	20	21	1	20
Future Vol, veh/h	17	1	20	21	1	20
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	85	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	64	64	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	23	1	31	33	1	20

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	24	0	118 23
Stage 1	-	-	-	-	23 -
Stage 2	-	-	-	-	95 -
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	-	-	1591	-	878 1054
Stage 1	-	-	-	-	1000 -
Stage 2	-	-	-	-	929 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1591	-	861 1054
Mov Cap-2 Maneuver	-	-	-	-	861 -
Stage 1	-	-	-	-	981 -
Stage 2	-	-	-	-	929 -

Approach	EB	WB	NB
HCM Control Delay, s	0	3.6	8.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1043	-	-	1591	-
HCM Lane V/C Ratio	0.02	-	-	0.02	-
HCM Control Delay (s)	8.5	-	-	7.3	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

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	-	-

**Intersection**

Int Delay, s/veh 5.4

**Movement** EBT EBR WBL WBT NBL NBR

Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Vol, veh/h	52	1	109	59	1	101
Future Vol, veh/h	52	1	109	59	1	101
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	60	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	84	84	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	52	1	130	70	1	107

**Major/Minor** Major1 Major2 Minor1

Conflicting Flow All	0	0	53	0	382	52
Stage 1	-	-	-	-	52	-
Stage 2	-	-	-	-	330	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1553	-	620	1016
Stage 1	-	-	-	-	970	-
Stage 2	-	-	-	-	728	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1553	-	568	1016
Mov Cap-2 Maneuver	-	-	-	-	568	-
Stage 1	-	-	-	-	889	-
Stage 2	-	-	-	-	728	-

**Approach** EB WB NB

HCM Control Delay, s	0	4.9	9
HCM LOS			A

**Minor Lane/Major Mvmt** NBLn1 EBT EBR WBL WBT

Capacity (veh/h)	1008	-	-	1553	-
HCM Lane V/C Ratio	0.108	-	-	0.084	-
HCM Control Delay (s)	9	-	-	7.5	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.4	-	-	0.3	-

**Intersection**

Int Delay, s/veh 4.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↘	↙
Traffic Vol, veh/h	19	1	20	39	1	34
Future Vol, veh/h	19	1	20	39	1	34
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	85	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	63	63	100	100	58	58
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	2	20	39	2	59

**Major/Minor**

	Major1	Major2	Minor1		
Conflicting Flow All	0	0	32	0	109
Stage 1	-	-	-	-	30
Stage 2	-	-	-	-	79
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	-	-	1580	-	888
Stage 1	-	-	-	-	993
Stage 2	-	-	-	-	944
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1580	-	876
Mov Cap-2 Maneuver	-	-	-	-	876
Stage 1	-	-	-	-	980
Stage 2	-	-	-	-	944

**Approach**

	EB	WB	NB
HCM Control Delay, s	0	2.5	8.7
HCM LOS			A

**Minor Lane/Major Mvmt**

	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1038	-	-	1580	-
HCM Lane V/C Ratio	0.058	-	-	0.013	-
HCM Control Delay (s)	8.7	-	-	7.3	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-



Timings  
1: Meridian Rd & Bent Grass Meadows Dr

2020 Background Traffic  
AM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖	↗	↖	↑↑	↑↑	↗
Traffic Volume (vph)	70	153	62	684	1600	131
Future Volume (vph)	70	153	62	684	1600	131
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)	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 Effct Green (s)	8.7	8.7	62.9	62.9	53.4	53.4
Actuated g/C Ratio	0.11	0.11	0.77	0.77	0.65	0.65
v/c Ratio	0.39	0.51	0.32	0.29	0.78	0.14
Control Delay	38.6	12.0	7.9	3.3	14.9	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.6	12.0	7.9	3.3	14.9	1.7
LOS	D	B	A	A	B	A
Approach Delay	20.4			3.7	13.9	
Approach LOS	C			A	B	

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 81.6  
 Natural Cycle: 80  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.78  
 Intersection Signal Delay: 11.5  
 Intersection Capacity Utilization 64.0%  
 Analysis Period (min) 15  
 Intersection LOS: B  
 ICU Level of Service C

Splits and Phases: 1: Meridian Rd & Bent Grass Meadows Dr



Intersection						
Int Delay, s/veh	6.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	
Traffic Vol, veh/h	54	7	188	16	1	154
Future Vol, veh/h	54	7	188	16	1	154
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	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	73	73	91	91	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	74	10	207	18	1	154

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	84	0	506 74
Stage 1	-	-	-	-	74 -
Stage 2	-	-	-	-	432 -
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	-	-	1513	-	526 988
Stage 1	-	-	-	-	949 -
Stage 2	-	-	-	-	655 -
Platoon blocked, %	-	-	-	-	
Mov Cap-1 Maneuver	-	-	1513	-	454 988
Mov Cap-2 Maneuver	-	-	-	-	454 -
Stage 1	-	-	-	-	819 -
Stage 2	-	-	-	-	655 -

Approach	EB	WB	NB
HCM Control Delay, s	0	7.1	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	981	-	-	1513	-
HCM Lane V/C Ratio	0.158	-	-	0.137	-
HCM Control Delay (s)	9.4	-	-	7.8	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.6	-	-	0.5	-

Timings  
1: Meridian Rd & Bent Grass Meadows Dr

2020 Background Traffic  
PM Peak Hour

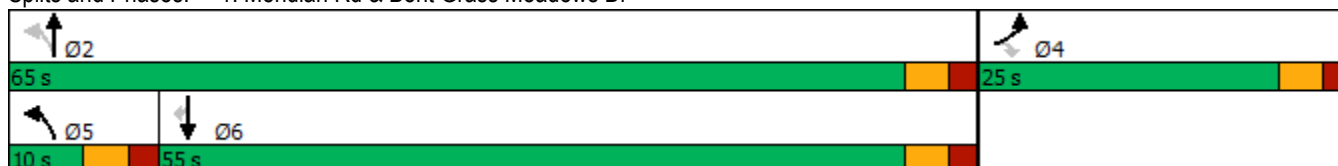


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	66	105	86	1399	922	93
Future Volume (vph)	66	105	86	1399	922	93
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	10.0	23.0	23.0	23.0
Total Split (s)	25.0	25.0	10.0	65.0	55.0	55.0
Total Split (%)	27.8%	27.8%	11.1%	72.2%	61.1%	61.1%
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)	8.9	8.9	62.9	62.9	54.7	54.7
Actuated g/C Ratio	0.11	0.11	0.77	0.77	0.67	0.67
v/c Ratio	0.40	0.44	0.20	0.54	0.39	0.09
Control Delay	38.8	11.7	3.8	4.9	7.4	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.8	11.7	3.8	4.9	7.4	1.7
LOS	D	B	A	A	A	A
Approach Delay	22.2			4.8	6.9	
Approach LOS	C			A	A	

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 81.8  
 Natural Cycle: 60  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.54  
 Intersection Signal Delay: 6.8  
 Intersection Capacity Utilization 51.2%  
 Analysis Period (min) 15  
 Intersection LOS: A  
 ICU Level of Service A

Splits and Phases: 1: Meridian Rd & Bent Grass Meadows Dr



Intersection						
Int Delay, s/veh	7.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	
Traffic Vol, veh/h	19	1	136	38	2	145
Future Vol, veh/h	19	1	136	38	2	145
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	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	63	63	100	100	58	58
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	2	136	38	3	250

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	32	0	340 30
Stage 1	-	-	-	-	30 -
Stage 2	-	-	-	-	310 -
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	-	-	1580	-	656 1044
Stage 1	-	-	-	-	993 -
Stage 2	-	-	-	-	744 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1580	-	600 1044
Mov Cap-2 Maneuver	-	-	-	-	600 -
Stage 1	-	-	-	-	908 -
Stage 2	-	-	-	-	744 -

Approach	EB	WB	NB
HCM Control Delay, s	0	5.9	9.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1034	-	-	1580	-
HCM Lane V/C Ratio	0.245	-	-	0.086	-
HCM Control Delay (s)	9.6	-	-	7.5	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	1	-	-	0.3	-

Timings  
1: Meridian Rd & Bent Grass Meadows Dr

2020 Total Traffic  
AM Peak Hour

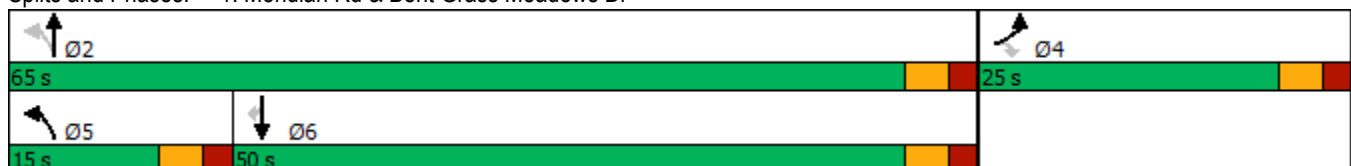


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	124	224	158	665	1563	244
Future Volume (vph)	124	224	158	665	1563	244
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	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 Effct Green (s)	11.2	11.2	60.1	60.1	46.5	46.5
Actuated g/C Ratio	0.14	0.14	0.74	0.74	0.57	0.57
v/c Ratio	0.53	0.59	0.66	0.30	0.88	0.27
Control Delay	40.7	13.6	25.5	4.2	22.6	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.7	13.6	25.5	4.2	22.6	2.1
LOS	D	B	C	A	C	A
Approach Delay	23.3			8.3	19.8	
Approach LOS	C			A	B	

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 81.3  
 Natural Cycle: 90  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.88  
 Intersection Signal Delay: 16.9  
 Intersection LOS: B  
 Intersection Capacity Utilization 71.3%  
 ICU Level of Service C  
 Analysis Period (min) 15

Splits and Phases: 1: Meridian Rd & Bent Grass Meadows Dr



Intersection						
Int Delay, s/veh	6.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↘	↙
Traffic Vol, veh/h	92	8	336	77	2	241
Future Vol, veh/h	92	8	336	77	2	241
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	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	73	73	91	91	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	126	11	369	85	2	241

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	137	0	949
Stage 1	-	-	-	-	126
Stage 2	-	-	-	-	823
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	-	-	1447	-	289
Stage 1	-	-	-	-	900
Stage 2	-	-	-	-	431
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1447	-	215
Mov Cap-2 Maneuver	-	-	-	-	215
Stage 1	-	-	-	-	671
Stage 2	-	-	-	-	431

Approach	EB	WB	NB
HCM Control Delay, s	0	6.8	10.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	900	-	-	1447	-
HCM Lane V/C Ratio	0.27	-	-	0.255	-
HCM Control Delay (s)	10.5	-	-	8.3	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	1.1	-	-	1	-



Intersection						
Int Delay, s/veh	4.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	62	2	61	18	1	38
Future Vol, veh/h	62	2	61	18	1	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	73	92	92	91	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	85	2	66	20	1	41

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	87	0	238 86
Stage 1	-	-	-	-	86 -
Stage 2	-	-	-	-	152 -
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	-	-	1509	-	750 973
Stage 1	-	-	-	-	937 -
Stage 2	-	-	-	-	876 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1509	-	717 973
Mov Cap-2 Maneuver	-	-	-	-	711 -
Stage 1	-	-	-	-	896 -
Stage 2	-	-	-	-	876 -

Approach	EB	WB	NB
HCM Control Delay, s	0	5.8	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	964	-	-	1509	-
HCM Lane V/C Ratio	0.044	-	-	0.044	-
HCM Control Delay (s)	8.9	-	-	7.5	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Timings  
1: Meridian Rd & Bent Grass Meadows Dr

2020 Total Traffic  
PM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖	↗	↖	↑↑	↑↑	↗
Traffic Volume (vph)	190	211	208	1350	891	196
Future Volume (vph)	190	211	208	1350	891	196
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)	23.0	23.0	10.0	23.0	23.0	23.0
Total Split (s)	25.0	25.0	10.0	65.0	55.0	55.0
Total Split (%)	27.8%	27.8%	11.1%	72.2%	61.1%	61.1%
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)	15.4	15.4	60.1	60.1	50.1	50.1
Actuated g/C Ratio	0.18	0.18	0.70	0.70	0.59	0.59
v/c Ratio	0.70	0.53	0.54	0.57	0.43	0.19
Control Delay	44.9	10.6	10.5	7.8	11.1	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.9	10.6	10.5	7.8	11.1	2.0
LOS	D	B	B	A	B	A
Approach Delay	26.9			8.2	9.4	
Approach LOS	C			A	A	

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 85.5  
 Natural Cycle: 60  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.70  
 Intersection Signal Delay: 11.4  
 Intersection Capacity Utilization 59.2%  
 Analysis Period (min) 15  
 Intersection LOS: B  
 ICU Level of Service B

Splits and Phases: 1: Meridian Rd & Bent Grass Meadows Dr





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

2020 Total Traffic  
 PM Peak Hour

**Intersection**

Int Delay, s/veh 9.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↘	
Traffic Vol, veh/h	86	2	291	108	3	308
Future Vol, veh/h	86	2	291	108	3	308
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	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	63	63	100	100	58	58
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	137	3	291	108	5	531

**Major/Minor**

	Major1	Major2	Minor1		
Conflicting Flow All	0	0	140	0	827
Stage 1	-	-	-	-	137
Stage 2	-	-	-	-	690
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	-	-	1443	-	341
Stage 1	-	-	-	-	890
Stage 2	-	-	-	-	498
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1443	-	272
Mov Cap-2 Maneuver	-	-	-	-	272
Stage 1	-	-	-	-	710
Stage 2	-	-	-	-	498

**Approach**

	EB	WB	NB
HCM Control Delay, s	0	5.9	15
HCM LOS			C

**Minor Lane/Major Mvmt**

	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	891	-	-	1443	-
HCM Lane V/C Ratio	0.602	-	-	0.202	-
HCM Control Delay (s)	15	-	-	8.1	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	4.1	-	-	0.8	-

HCM 6th TWSC  
4: BGE Commercial West Access & Bent Grass Meadows Dr



2020 Total Traffic  
PM Peak Hour

Intersection						
Int Delay, s/veh	5.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑		↑	↑	↑	↑
Traffic Vol, veh/h	21	2	70	41	2	67
Future Vol, veh/h	21	2	70	41	2	67
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	63	92	92	100	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	33	2	76	41	2	73

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	35	0	227 34
Stage 1	-	-	-	-	34 -
Stage 2	-	-	-	-	193 -
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	-	-	1576	-	761 1039
Stage 1	-	-	-	-	988 -
Stage 2	-	-	-	-	840 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1576	-	724 1039
Mov Cap-2 Maneuver	-	-	-	-	692 -
Stage 1	-	-	-	-	941 -
Stage 2	-	-	-	-	840 -

Approach	EB	WB	NB
HCM Control Delay, s	0	4.8	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1024	-	-	1576	-
HCM Lane V/C Ratio	0.073	-	-	0.048	-
HCM Control Delay (s)	8.8	-	-	7.4	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.2	-

Intersection						
Intersection Delay, s/veh	17.9					
Intersection LOS	C					
Approach	EB		NB		SB	
Entry Lanes	2		2		2	
Conflicting Circle Lanes	2		2		2	
Adj Approach Flow, veh/h	362		957		2053	
Demand Flow Rate, veh/h	370		976		2095	
Vehicles Circulating, veh/h	1812		132		188	
Vehicles Exiting, veh/h	471		2050		920	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	27.9		6.4		21.4	
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	0.357	0.643	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	132	238	459	517	985	1110
Cap Entry Lane, veh/h	352	352	1299	1299	1244	1244
Entry HV Adj Factor	0.977	0.979	0.979	0.981	0.980	0.980
Flow Entry, veh/h	129	233	450	507	965	1088
Cap Entry, veh/h	344	344	1273	1274	1219	1220
V/C Ratio	0.375	0.677	0.353	0.398	0.792	0.892
Control Delay, s/veh	18.5	33.1	6.1	6.7	17.0	25.3
LOS	C	D	A	A	C	D
95th %tile Queue, veh	2	5	2	2	9	14

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	466		1623		1087	
Demand Flow Rate, veh/h	475		1655		1109	
Vehicles Circulating, veh/h	909		225		221	
Vehicles Exiting, veh/h	421		1159		1659	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	9.4		13.0		7.9	
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	0.474	0.526	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	225	250	778	877	521	588
Cap Entry Lane, veh/h	710	710	1209	1209	1213	1213
Entry HV Adj Factor	0.982	0.980	0.980	0.981	0.981	0.980
Flow Entry, veh/h	221	245	763	860	511	576
Cap Entry, veh/h	697	696	1185	1186	1189	1188
V/C Ratio	0.317	0.352	0.644	0.726	0.430	0.485
Control Delay, s/veh	9.1	9.7	11.6	14.2	7.4	8.3
LOS	A	A	B	B	A	A
95th %tile Queue, veh	1	2	5	7	2	3

Timings

2020 Total Traffic (With Free EB RT to SB Accel Lane)

1: Meridian Rd & Bent Grass Meadows Dr

AM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖	↗	↖	↑↑	↑↑	↗
Traffic Volume (vph)	124	224	158	665	1563	244
Future Volume (vph)	124	224	158	665	1563	244
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)	23.0		10.0	23.0	23.0	23.0
Total Split (s)	25.0		15.0	65.0	50.0	50.0
Total Split (%)	27.8%		16.7%	72.2%	55.6%	55.6%
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)	11.2	82.5	61.3	61.3	47.6	47.6
Actuated g/C Ratio	0.14	1.00	0.74	0.74	0.58	0.58
v/c Ratio	0.54	0.15	0.67	0.29	0.87	0.27
Control Delay	41.1	0.2	26.1	4.1	22.2	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.1	0.2	26.1	4.1	22.2	2.1
LOS	D	A	C	A	C	A
Approach Delay	14.8			8.4	19.5	
Approach LOS	B			A	B	

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 82.5  
 Natural Cycle: 90  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.87  
 Intersection Signal Delay: 15.8  
 Intersection LOS: B  
 Intersection Capacity Utilization 71.3%  
 ICU Level of Service C  
 Analysis Period (min) 15

Splits and Phases: 1: Meridian Rd & Bent Grass Meadows Dr



Timings

2020 Total Traffic (With Free EB RT to SB Accel Lane)

1: Meridian Rd & Bent Grass Meadows Dr

PM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖	↗	↖	↑↑	↑↑	↗
Traffic Volume (vph)	190	211	208	1350	891	196
Future Volume (vph)	190	211	208	1350	891	196
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)	23.0		10.0	23.0	23.0	23.0
Total Split (s)	25.0		10.0	65.0	55.0	55.0
Total Split (%)	27.8%		11.1%	72.2%	61.1%	61.1%
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)	15.4	85.5	60.1	60.1	50.1	50.1
Actuated g/C Ratio	0.18	1.00	0.70	0.70	0.59	0.59
v/c Ratio	0.70	0.15	0.54	0.57	0.43	0.19
Control Delay	44.9	0.2	10.5	7.8	11.1	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.9	0.2	10.5	7.8	11.1	2.0
LOS	D	A	B	A	B	A
Approach Delay	21.4			8.2	9.4	
Approach LOS	C			A	A	

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 85.5  
 Natural Cycle: 60  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.70  
 Intersection Signal Delay: 10.5  
 Intersection LOS: B  
 Intersection Capacity Utilization 59.2%  
 ICU Level of Service B  
 Analysis Period (min) 15

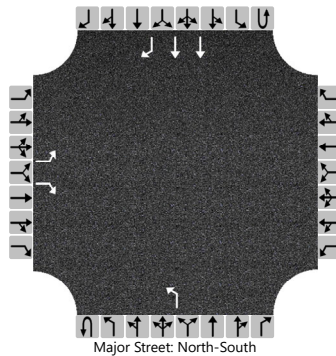
Splits and Phases: 1: Meridian Rd & Bent Grass Meadows Dr



# HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	KDF			Intersection	Meridian/Bent Grass Mead		
Agency/Co.	LSC			Jurisdiction	El Paso County, CO		
Date Performed	1/21/2019			East/West Street	Bent Grass Meadows Dr		
Analysis Year	2020			North/South Street	Meridian Rd		
Time Analyzed	AM Peak Hour			Peak Hour Factor	0.88		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	Bent Grass East Comm						

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	1	0	0	0	0	2	1
Configuration		L		R						L					T	R
Volume (veh/h)		124		224					0	158					1563	244
Percent Heavy Vehicles (%)		2		2					2	2						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized	No												No			
Median Type   Storage	Left + Thru								1							

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.5		6.9									4.1				
Critical Headway (sec)		6.84		6.94									4.14				
Base Follow-Up Headway (sec)		3.5		3.3									2.2				
Follow-Up Headway (sec)		3.52		3.32									2.22				

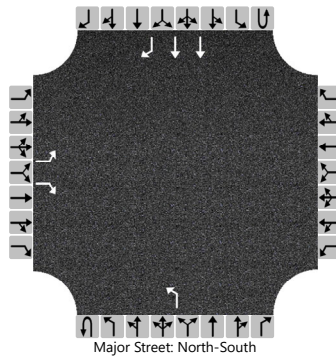
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		141		255									180				
Capacity, c (veh/h)		90		287									270				
v/c Ratio		1.57		0.89									0.67				
95% Queue Length, Q <sub>95</sub> (veh)		11.1		8.0									4.3				
Control Delay (s/veh)		384.0		67.5									41.4				
Level of Service (LOS)		F		F									E				
Approach Delay (s/veh)	180.3								41.4								
Approach LOS	F																

# HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	KDF			Intersection	Meridian/Bent Grass Mead		
Agency/Co.	LSC			Jurisdiction	El Paso County, CO		
Date Performed	1/21/2019			East/West Street	Bent Grass Meadows Dr		
Analysis Year	2020			North/South Street	Meridian Rd		
Time Analyzed	PM Peak Hour			Peak Hour Factor	0.96		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	Bent Grass East Comm						

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound					
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R		
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6		
Number of Lanes		1	0	1		0	0	0	0	1	0	0	0	0	2	1		
Configuration		L		R						L					T	R		
Volume (veh/h)		190		211					0	208					891	196		
Percent Heavy Vehicles (%)		2		2					2	2								
Proportion Time Blocked																		
Percent Grade (%)		0																
Right Turn Channelized		No												No				
Median Type   Storage		Left + Thru									1							

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.5		6.9						4.1						
Critical Headway (sec)		6.84		6.94						4.14						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		198		220						217							
Capacity, c (veh/h)		274		545						613							
v/c Ratio		0.72		0.40						0.35							
95% Queue Length, Q <sub>95</sub> (veh)		5.1		1.9						1.6							
Control Delay (s/veh)		46.1		16.0						14.1							
Level of Service (LOS)		E		C						B							
Approach Delay (s/veh)		30.3								14.1							
Approach LOS		D															



Timings

2020 Total Traffic (With Signalized Channelized T)

1: Meridian Rd & Bent Grass Meadows Dr

AM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø2
Lane Configurations	↖	↗	↖	↑↑	↑↑	↗	
Traffic Volume (vph)	124	224	158	665	1563	244	
Future Volume (vph)	124	224	158	665	1563	244	
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 Effct Green (s)	11.2	11.2	60.1	81.3	46.5	46.5	
Actuated g/C Ratio	0.14	0.14	0.74	1.00	0.57	0.57	
v/c Ratio	0.53	0.59	0.66	0.22	0.88	0.27	
Control Delay	40.7	13.6	25.5	0.1	22.6	2.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	40.7	13.6	25.5	0.1	22.6	2.1	
LOS	D	B	C	A	C	A	
Approach Delay	23.3			5.0	19.8		
Approach LOS	C			A	B		

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 81.3  
 Natural Cycle: 90  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.88  
 Intersection Signal Delay: 16.0  
 Intersection LOS: B  
 Intersection Capacity Utilization 71.3%  
 ICU Level of Service C  
 Analysis Period (min) 15  
 ! Phase conflict between lane groups.

Splits and Phases: 1: Meridian Rd & Bent Grass Meadows Dr



Timings

2020 Total Traffic (With Signalized Channelized T)

1: Meridian Rd & Bent Grass Meadows Dr

PM Peak Hour

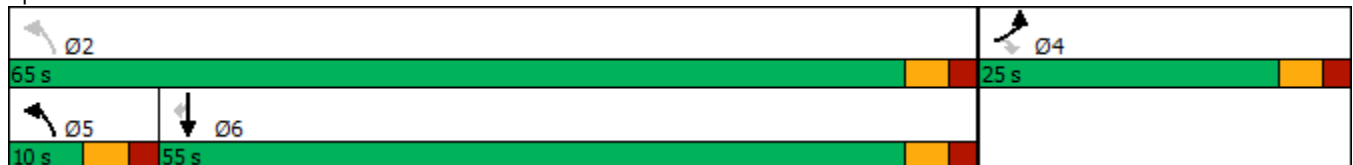


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø2
Lane Configurations							
Traffic Volume (vph)	190	211	208	1350	891	196	
Future Volume (vph)	190	211	208	1350	891	196	
Turn Type	Prot	Perm	custom	NA	NA	Perm	
Protected Phases	4!		5	Free!	6		2
Permitted Phases		4	2			6	
Detector Phase	4	4	5		6	6	
Switch Phase							
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	10.0		55.0	55.0	65.0
Total Split (%)	27.8%	27.8%	11.1%		61.1%	61.1%	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)	15.4	15.4	60.1	85.5	50.1	50.1	
Actuated g/C Ratio	0.18	0.18	0.70	1.00	0.59	0.59	
v/c Ratio	0.70	0.53	0.54	0.40	0.43	0.19	
Control Delay	44.9	10.6	10.5	0.3	11.1	2.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	44.9	10.6	10.5	0.3	11.1	2.0	
LOS	D	B	B	A	B	A	
Approach Delay	26.9			1.7	9.4		
Approach LOS	C			A	A		

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 85.5  
 Natural Cycle: 60  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.70  
 Intersection Signal Delay: 8.0  
 Intersection Capacity Utilization 59.2%  
 Analysis Period (min) 15  
 Intersection LOS: A  
 ICU Level of Service B  
 ! Phase conflict between lane groups.

Splits and Phases: 1: Meridian Rd & Bent Grass Meadows Dr



## Queuing and Blocking Report

### Intersection: 1: 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)	124	145	117	114	90	390	371	194
Average Queue (ft)	59	74	60	48	30	188	152	38
95th Queue (ft)	109	130	105	98	72	338	304	110
Link Distance (ft)	144	144		1270	1270	1112	1112	
Upstream Blk Time (%)	0	0						
Queuing Penalty (veh)	0	1						
Storage Bay Dist (ft)			700					330
Storage Blk Time (%)							0	0
Queuing Penalty (veh)							1	0

### Intersection: 2: 7-Eleven Access & Bent Grass Meadows Dr

Movement	EB	WB	NB
Directions Served	T	L	LR
Maximum Queue (ft)	30	62	87
Average Queue (ft)	2	16	40
95th Queue (ft)	13	48	68
Link Distance (ft)	91		109
Upstream Blk Time (%)			0
Queuing Penalty (veh)			0
Storage Bay Dist (ft)		60	
Storage Blk Time (%)		0	
Queuing Penalty (veh)		0	

### Intersection: 3: Meridian Park Dr & Bent Grass Meadows Dr

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	48	51
Average Queue (ft)	12	30
95th Queue (ft)	40	50
Link Distance (ft)		515
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	85	
Storage Blk Time (%)		
Queuing Penalty (veh)		

## Zone Summary

Zone wide Queuing Penalty: 2

## Queuing and Blocking Report

### Intersection: 1: 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)	139	104	125	146	139	192	154	72
Average Queue (ft)	61	44	56	65	52	99	59	27
95th Queue (ft)	114	82	107	122	108	169	126	59
Link Distance (ft)	144	144		1270	1270	1112	1112	
Upstream Blk Time (%)	0							
Queuing Penalty (veh)	0							
Storage Bay Dist (ft)			700					330
Storage Blk Time (%)								
Queuing Penalty (veh)								

### Intersection: 2: 7-Eleven Access & Bent Grass Meadows Dr

Movement	EB	WB	NB
Directions Served	T	L	LR
Maximum Queue (ft)	39	46	70
Average Queue (ft)	3	14	37
95th Queue (ft)	22	42	62
Link Distance (ft)	91		109
Upstream Blk Time (%)	0		0
Queuing Penalty (veh)	0		0
Storage Bay Dist (ft)		60	
Storage Blk Time (%)		0	
Queuing Penalty (veh)		0	

### Intersection: 3: Meridian Park Dr & Bent Grass Meadows Dr

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	43	72
Average Queue (ft)	7	38
95th Queue (ft)	30	58
Link Distance (ft)		515
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	85	
Storage Blk Time (%)		
Queuing Penalty (veh)		

## Zone Summary

Zone wide Queuing Penalty: 1

## Queuing and Blocking Report

### Intersection: 1: 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)	137	176	144	126	97	509	494	352
Average Queue (ft)	60	84	77	51	33	232	194	60
95th Queue (ft)	113	151	130	102	77	426	395	191
Link Distance (ft)	291	291		1273	1273	1101	1101	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			700					330
Storage Blk Time (%)							2	0
Queuing Penalty (veh)							7	0

### Intersection: 3: Meridian Park Dr & Bent Grass Meadows Dr

Movement	EB	WB	NB
Directions Served	R	L	LR
Maximum Queue (ft)	9	77	104
Average Queue (ft)	0	28	52
95th Queue (ft)	5	64	83
Link Distance (ft)		291	515
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	155		
Storage Blk Time (%)			
Queuing Penalty (veh)			

### Intersection: 4: BGE Commercial West Access & Bent Grass Meadows Dr

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	30	52
Average Queue (ft)	3	23
95th Queue (ft)	18	48
Link Distance (ft)		290
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

### Zone Summary

Zone wide Queuing Penalty: 7

## Queuing and Blocking Report

### Intersection: 1: 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)	184	125	165	153	151	208	161	74
Average Queue (ft)	101	54	79	81	74	114	69	29
95th Queue (ft)	168	100	138	135	136	183	134	60
Link Distance (ft)	291	291		1273	1273	1101	1101	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			700					330
Storage Blk Time (%)								
Queuing Penalty (veh)								

### Intersection: 3: Meridian Park Dr & Bent Grass Meadows Dr

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	75	131
Average Queue (ft)	21	55
95th Queue (ft)	60	98
Link Distance (ft)	291	515
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

### Intersection: 4: BGE Commercial West Access & Bent Grass Meadows Dr

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	12	58
Average Queue (ft)	2	30
95th Queue (ft)	13	49
Link Distance (ft)		290
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

### Zone Summary

Zone wide Queuing Penalty: 0