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July 2, 2025

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RE: Meridian Road and Flower Road Intersection - Operations Alternatives Analysis
El Paso County, Colorado

Dear Mr. Barnhart:

Matrix Design Group, Inc. (Matrix) appreciates this opportunity to review the existing conditions at the intersection of Meridian Road and Flower Road. We understand the existing intersection of Meridian Road and Flower Road is approximately 1,220 linear feet south of Woodmen Road and 920 feet north of Rolling Thunder Way. This intersection is one of three partial-movement intersections that serve the Walmart Supercenter and associated stores on the west side of Meridian Road. In addition to these three partial-movement intersections, there is a fourth access to the Walmart site, which is a full-movement and connects to Foxtail Meadow Lane. Further, we understand the following two issues are of most concern:

- Limited Left-Turn Capacity – Because there is only one full-movement intersection serving this shopping center (at Foxtail) and Foxtail Meadow Lane does not have a full-movement intersection at Woodmen Road; it can be difficult for patrons to exit the site and proceed to the north or west. Often the result can be the use of U-Turns at other intersections along Meridian Road.
- Delay and Crash Concerns along Meridian Road – Due to the behavior of some frustrated drivers, the higher number of U-Turns and other geometric concerns along Meridan Road (Larger Median and sight lines) the County is concerned that this area may be experiencing higher delays and crashes.

This letter is organized as follows:

- **Executive Summary** – From the six alternatives studied, matrix can recommend two alternatives for further consideration.
- **Understanding** – The study examines safety and traffic flow concerns at the Flower Road and Meridian Road intersection, focusing on limited left-turn access, U-turn use, and visibility issues.
- **Approach** - Matrix reviewed existing conditions, considered future site changes, and evaluated five intersection alternatives based on updated traffic patterns and data from recent studies.
- **Study Area** – A brief overview of the location of the studied intersection.
- **Existing Conditions** – Analysis was conducted using the methodologies outlined in the *Highway Capacity Manual*, 7th Edition using PTV Vistro.

- **Alternative Analysis** – The turning volumes, LOS, delay, and queue length summary are provided for each alternative. Moreover, the signal warrant analysis is performed for alternatives with stop-controlled control type and the results are summarized.
- **Future Conditions Analysis** – Evaluates the recommended alternatives based on a projected 10-year growth. A summary of LOS, delays and queue lengths is provided for preferred alternatives.
- **Safety Assessment** – A review of crash data in the recent years at this intersection is provided in this section. A CMF is provided for the preferred alternatives.
- **Evaluation Matrix** – A comparison of alternatives to the existing conditions.
- **Conclusions and Recommendations** – From the six alternatives studied, matrix can recommend two alternatives for further consideration.
- ***Appendices*** – Includes intersection operations summary for the existing conditions as well as for each alternative. Excerpts of the previous studies are also included in the appendices.

Executive Summary

In this study, Matrix studied different intersection configurations and control types for the intersection of Meridian Road and Flower Road. The purpose of this analysis was to identify the preferred alternative to enhance safety and improve overall intersection efficiency, while providing traffic circulation on the adjacent roadways. Considering all the key parameters outlined in this letter, Matrix recommends constructing a roundabout at this intersection to enhance safety and traffic operations. A roundabout will facilitate left-turn movements from the development to both Meridian Road and Woodmen Road, while also serving as a traffic calming measure to reduce speeding and mitigate the risk of severe angle crashes. The Roundabout is the Preferred Alternative. However, it should be noted that while the roundabout alternative performs better than the signalized option, including constructability and cost considerations, the signalized alternatives are also feasible. **Table 1** lists the recommended alternatives.

Table 1. Recommended Alternatives

Alternative	Description	Notes
A	**Traffic Signal**	**Recommended**
E	**Roundabout**	**Recommeded** *(Preferred Alternative)*

Understanding (Basis of Study)

The existing intersection of Flowers and Meridian Road is approximately 1,220 linear feet south of Woodmen Road and 920 feet north of Rolling Thunder Way. This intersection is one of three partial-movement intersections that serve the Walmart Supercenter and associated stores on the west side of Meridian Road. In addition to these three partial-movement intersections, there is a fourth access to the Walmart site, which is full-movement and connects to Foxtail Meadow Lane.

Limited Left-Turn Capacity – Because there is only one full-movement intersection serving this shopping center (at Foxtail) and Foxtail Meadow Lane does not have a full-movement intersection at Woodmen Road; it can be difficult for patrons to exit the site and proceed to the north or west. Often the result can be the use of U-Turns at other intersections along Meridian Road.

Delay and Crash Concerns along Meridian Road – Due to the behavior of some frustrated drivers, the higher number of U-Turns and other geometric concerns along Meridan Road (Larger Median and sight lines) the County is concerned that this area may be experiencing higher delays and crashes.

This intersection experienced one fatal crash in the past year. Moreover, since the left-turn egress from the development at the southwest corner of Meridan Road/Woodmen Road to Meridian Road was not anticipated during the construction of the project, many motorists use the Right-In-Right-Out (RIRO) access to the north of this intersection to eventually make a U-turn at this intersection. It was also determined during the site visit that the large median can potentially create a sight distance issue for motorists making a northbound left turn or southbound left turn.

Approach to Exploring Alternatives

Based on this understanding, Matrix has reviewed the existing site conditions and recent studies for the area (provided by the County). For the purposes of this analysis Matrix used assumptions for trip generation, distribution and assignment from the *Flower Road and Meridian Road Closure Traffic Analysis Report* prepared by Bohannan & Huston (January 2025).

Reassignment of Traffic

In review of alternative intersection configurations, site generated traffic will choose different paths out of the shopping center. Traffic counts and re-assigned the turning volumes based on each alternative's configurations.

New Fueling Station

The Walmart Supercenter has recently proposed a new fueling station which will be located on the north side of the development. This new traffic was included in our analysis.

Alternatives Development

The following list of 5 alternatives have been evaluated for the intersection of Flower Road and Meridian Road:

- **A.** Install a new traffic signal and convert the intersection to a full-movement configuration
- **B.** Rebuild Intersection in a High-T Configuration (northbound left-turn in and eastbound left-turn out)
- **B1.** Rebuild Intersection with a Signalized High-T Configuration
- **C.** Rebuild Intersection with a Northbound Left-In and Right-In Right Out (RIRO) Driveway
- **D.** Rebuild Intersection with a Northbound Left-In and Eastbound Left-Out (LILO)
- **E.** Rebuild Intersection with a Roundabout

Study Area

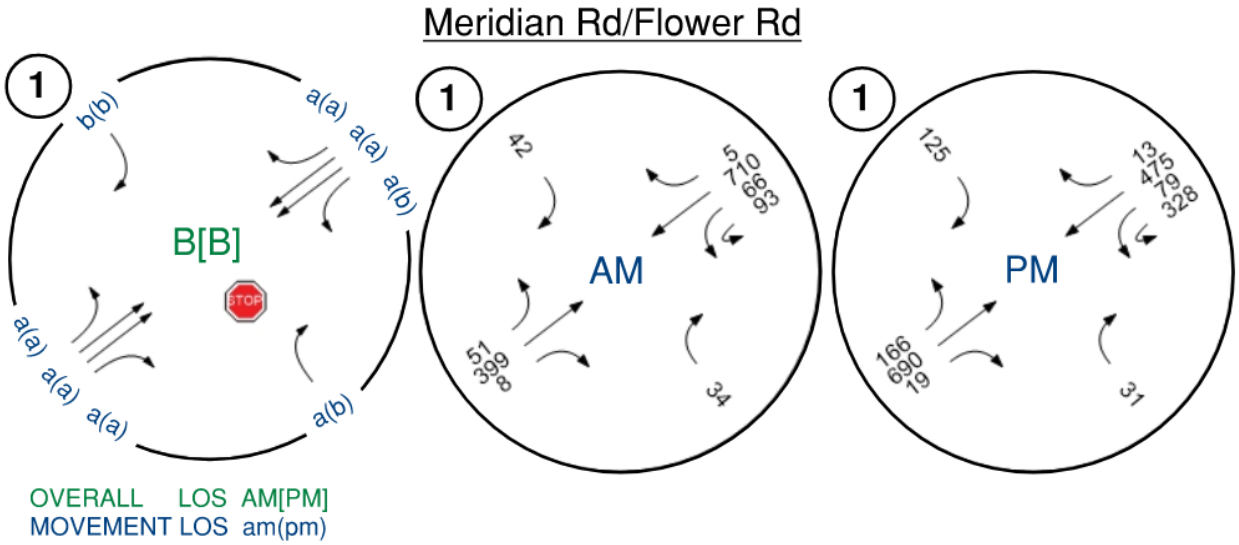
Meridian Road/Flower Road is located between Woodmen Road and Rolling Thunder Way, in the City of Falcon. The location of the intersection is shown in **Figure 1**.

Figure 1. Vicinity Map

Existing Conditions

The intersection of Meridian Road and Flower Road is currently unsignalized, with stop-controlled implemented on the westbound approach and a free right-turn movement on the eastbound approach. The *Flower Road and Meridian Road Closure Traffic Analysis Report* (January 2025), and the Walmart Store #4335 Fuel Station (March 2023), which is a proposed development that will be located at the northeast corner of the current Walmart parking lot, were used to study the existing conditions at this intersection. **Figure 2** shows the existing conditions traffic operations.

Figure 2. Existing Intersection Configurations with Movements' LOS and AM/ PM volumes



As shown in **Figure 2**, this intersection operates at LOS B during both the AM and PM peak hours. All turning movements also operate at acceptable levels of service. During the site visit, a near-angle crash was observed at this intersection. Also, it was observed that many motorists use the RIRO intersection north of the subject intersection to make a southbound U-turn at Meridian Road/Flower Road, as no left-out movement is anticipated for this development. With only approximately 115 feet of available lane length for the eastbound right-turn movement at the RIRO access to the north of Meridan Road/Flower Road, vehicle weavings create a potentially hazardous condition on this segment. Furthermore, the large median at the intersection restricts sight distance, posing an additional safety concern. **Table 2** shows the 95th-percentile queue length and vehicle delay for the existing conditions.

Table 2. Existing Condition 95th-Percentile Queue length and Vehicle Delay

Movement	AM Peak Hour		PM Peak Hour	
	Queue (ft)	Delay (sec/veh)	Queue (ft)	Delay (sec/veh)
NBL	5	10	15	9
SBL	14	9	69	13
EBR	6	11	15	11
WBR	4	10	4	11

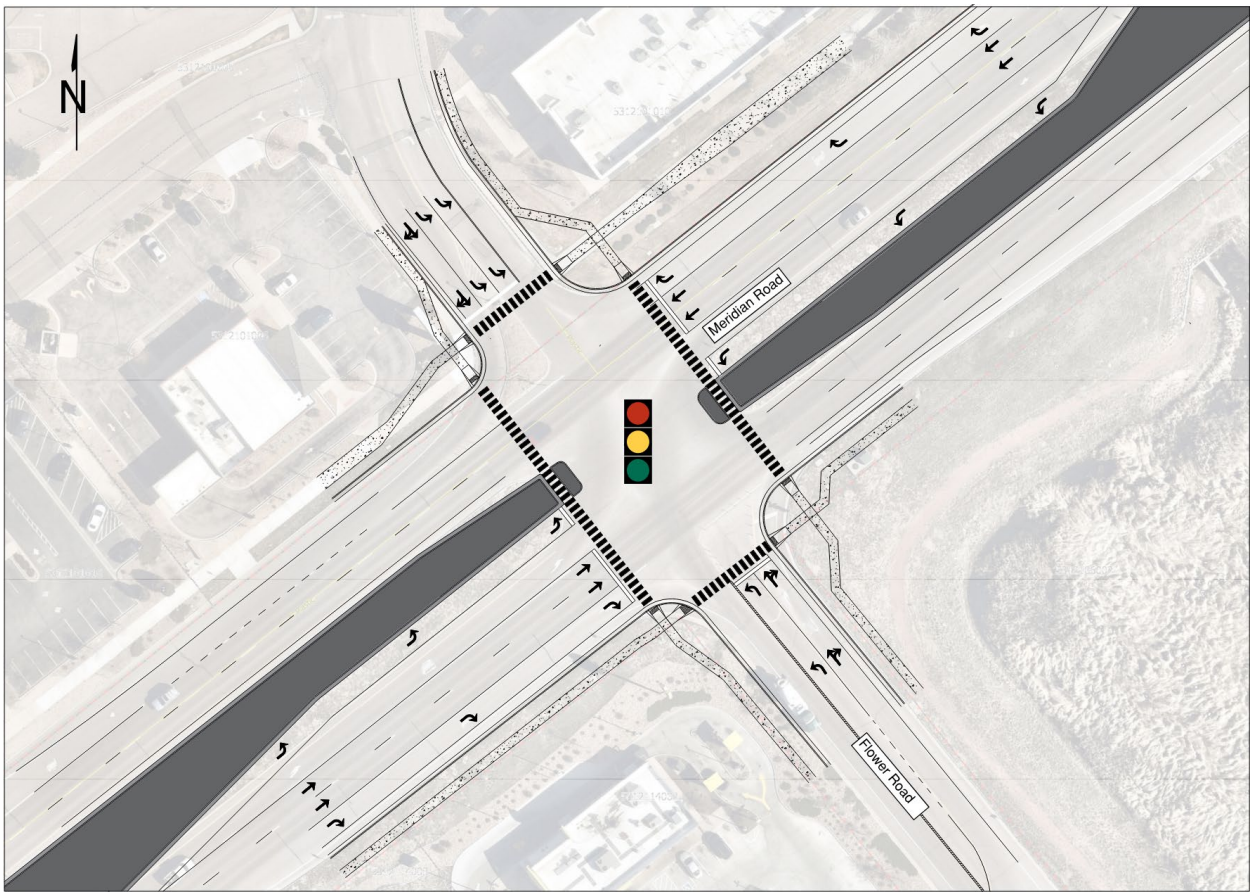
Signal Warrant Analysis

PTV Vistro software was used to evaluate Signal Warrants 1 through 3 at this intersection. The software applies methodology from NCHRP Report 716 to estimate 24-hour volumes based on peak hour volumes. Using the PM peak data to estimate the 24-hour volumes, the analysis showed that traffic signal is projected to be met at this intersection. The signal warrant analysis summary is included in Appendix B – Existing Conditions Analysis.

Alternative Analysis

This section presents summary analysis of 5 different alternative layouts for the Meridian Road and Flower Road intersection. These alternatives were evaluated based on their ability to address identified safety concerns while maintaining acceptable traffic operations.

Alternative A: Signalized Intersection



The first alternative is to convert this intersection to a full-movement signalized intersection with a double eastbound left-turn lane. This alternative would shift the following traffic to the proposed eastbound left-turn movement:

- All southbound U-turns at the Meridian Road/Flower Road intersection.
- A portion of the eastbound right-turn traffic at Meridian Road/Flower Road that currently uses Meridian Road/Rolling Thunder Way to make a southbound U-turn.
- Future traffic associated with the Walmart fueling station, which was originally expected to use the upstream RIRO access to eventually make a southbound U-turn at this intersection.

Moreover, the northbound and southbound left-turn lanes were shifted further into the median to improve sight distances. This adjustment will provide motorists with safer turning conditions. Additionally, this alternative includes pedestrian safety improvements by introducing marked crosswalks on all approaches of the intersection. A pedestrian refuge island will be added to the northbound and southbound approaches, allowing pedestrians to cross in two stages and wait safely in the median. These enhancements will improve pedestrian visibility, reduce crossing distances, and contribute to overall intersection safety.

Matrix assumed that all the U-turn volumes at Meridian Road/Flower Road will be re-routed to the eastbound left-turn movement. Also, as shown in the *Walmart Fuel station TIS*, all the new site's eastbound right-turn traffic at the Market View driveway is anticipated to later make a southbound U-turn at the studied intersection. Therefore, the future fuel station traffic also re-routed to the eastbound left-turn.

Figure 3 shows the intersection configuration with movements LOS and AM and PM peak hour volumes for Alternative A. **Table 3** shows the 95th-percentile queue length and vehicle delay for Alternative A.

Figure 3. Alternative A Traffic Operations Summary

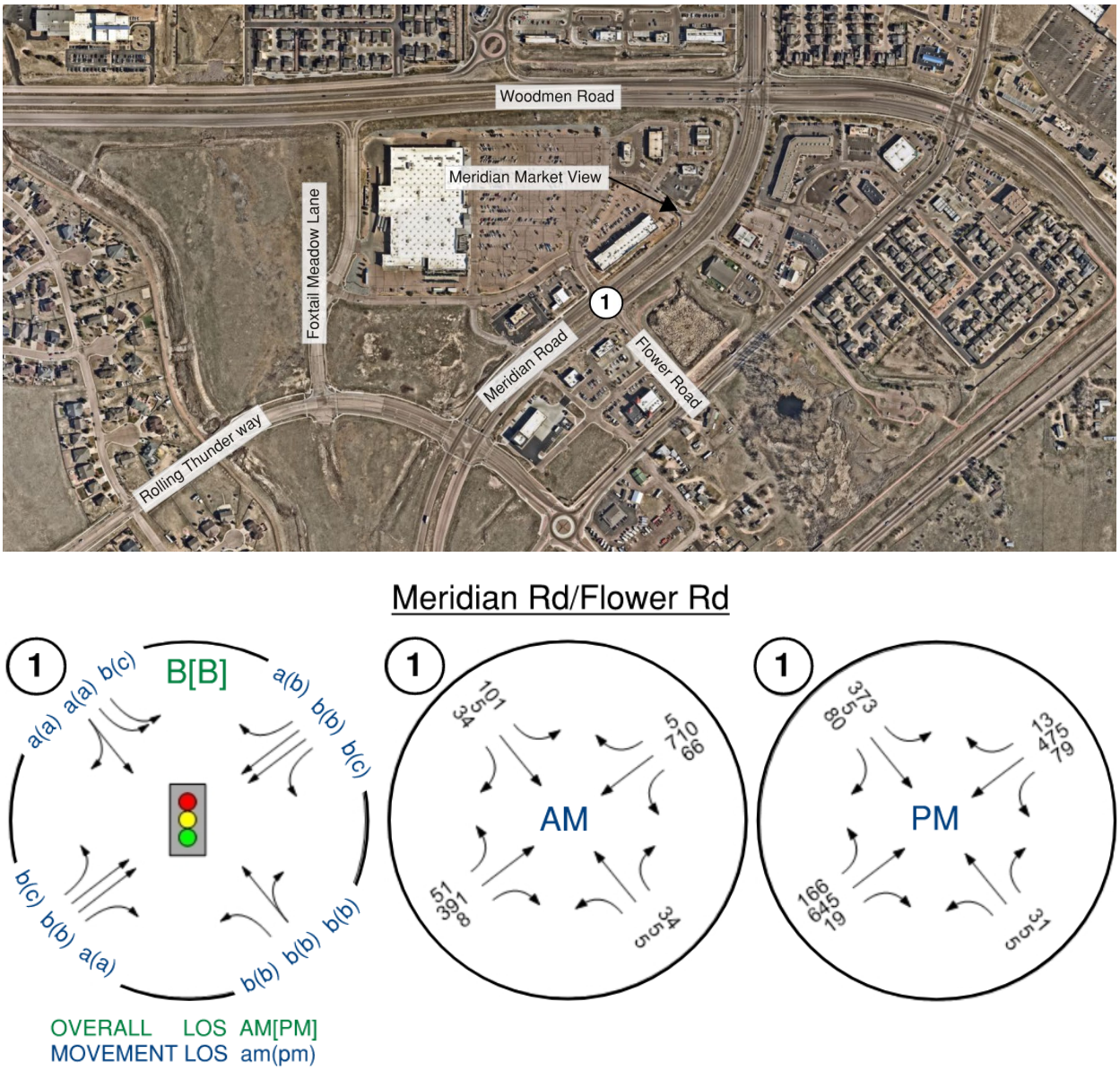
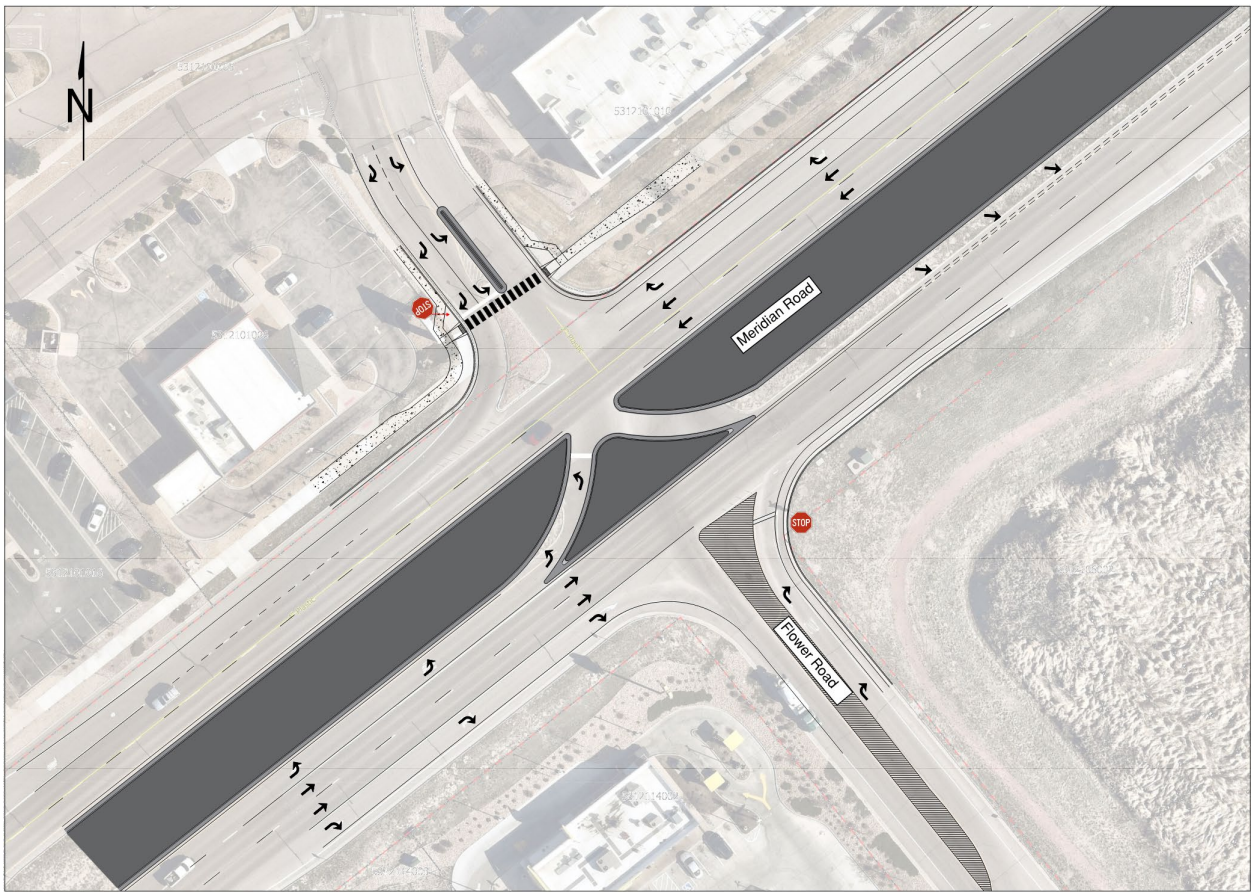


Table 3. Alternative A - 95th-Percentile Queue length and Vehicle Delay

Movement	AM Peak Hour		PM Peak Hour	
	Queue (ft)	Delay (sec/veh)	Queue (ft)	Delay (sec/veh)
NBL	20	19	76	24
NBT	38	10	83	12
NBR	1	9	2	9
SBL	24	19	34	21
SBT	78	12	65	13
SBR	1	8	2	11
EBL	16	15	87	23
EBT/EBR	5	9	11	10
WBL	2	17	2	19
WBT/WBR	7	15	8	18

As shown in **Figure 3** and **Table 3**, the intersection operates at LOS B during the AM and PM peak hour. The overall delay for this intersection is 12 seconds per vehicle and 16 seconds per vehicle during the AM and PM peak, respectively.

Alternative B: High-T Intersection (Unsignalized)



This alternative will include an eastbound left-turn to northbound through lane via an acceleration lane at the studied intersection. The southbound left-turn will be removed at this intersection. This configuration minimizes conflict points, leading to fewer opportunities for crashes. In order to reassign the traffic, in addition to the assumptions outlined in Alternative A, all southbound left-turn traffic into the development to the east was removed and rerouted. This traffic was redirected to continue southbound on Meridian Road, make a U-turn at the Meridian Road/Rolling Thunder Way intersection, and then make a northbound right-turn onto Flower Road. Although this alternative provides a left-turn egress from the development, the eastbound left-turn movement is experiencing a high delay (501 seconds per vehicle) during the PM peak hour with the LOS F as vehicles cannot find an acceptable gap due to high southbound through volumes. A signal warrant analysis was conducted for this intersection, and the results indicate that a traffic signal is projected to be warranted using this alternative's configurations. The intersection operations summary is provided in Appendix C – *Alternative Analysis*. **Figure 4** shows the intersection configuration with movements' LOS and AM and PM peak hour volumes. **Table 4** shows the vehicle delay and 95th queue length for Alternative B.

Figure 4. Alternative B – Traffic Operations Summary

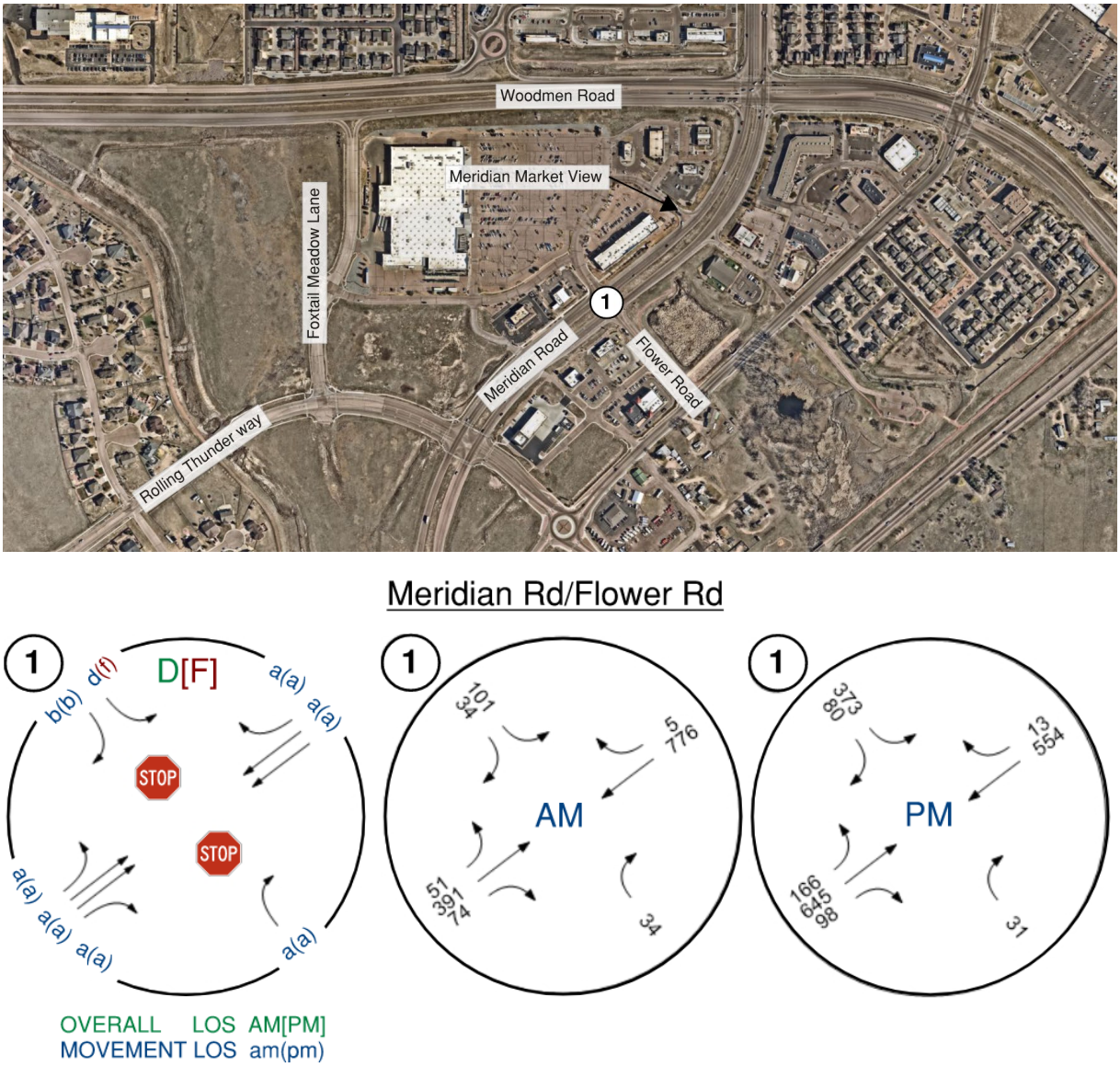
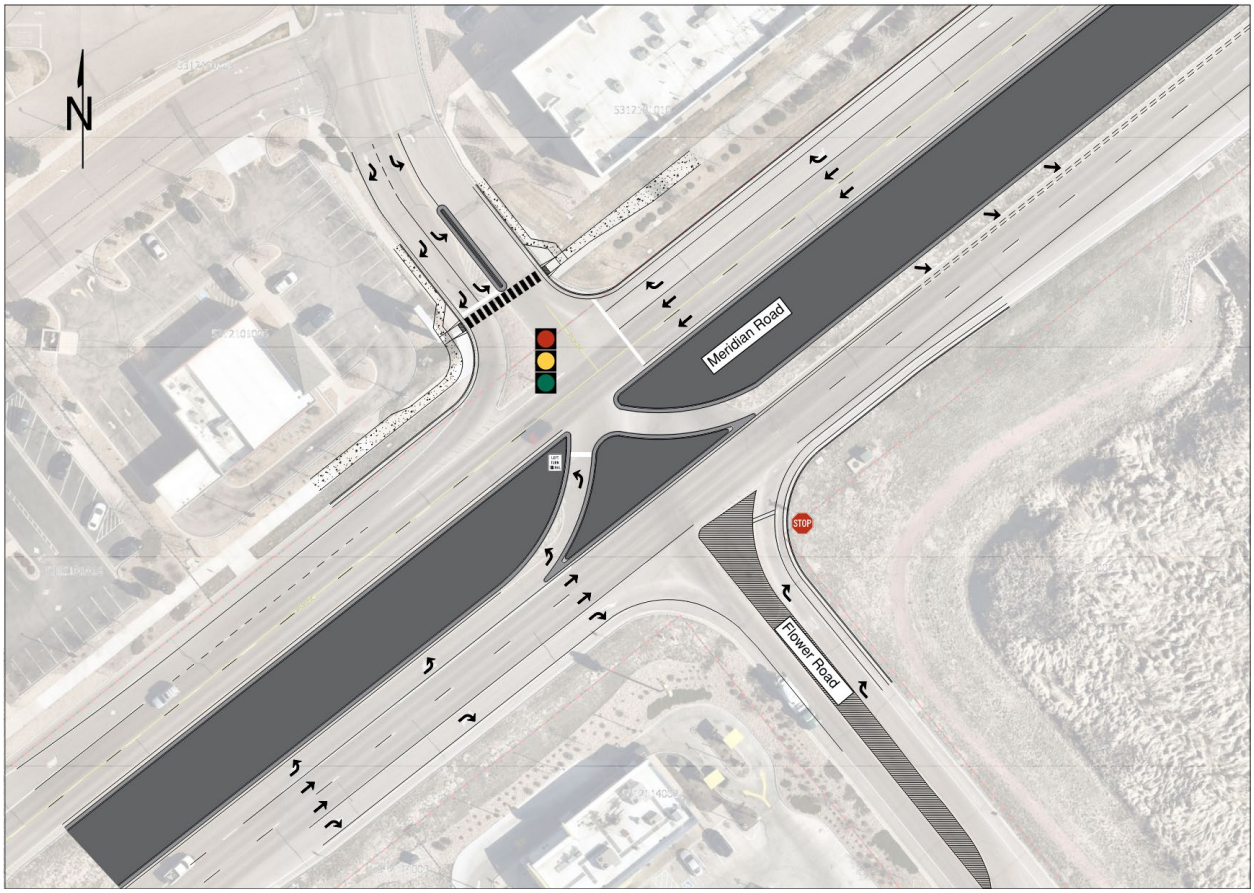


Table 4. Alternative B 95th-Percentile Queue length and Vehicle Delay

Movement	AM Peak Hour		PM Peak Hour	
	Queue (ft)	Delay (sec/veh)	Queue (ft)	Delay (sec/veh)
NBL	6	10	17	10
EBL	46	27	533	229
EBR	5	12	10	11
WBL	4	10	4	11

As shown in **Figure 4** and **Table 4**, this intersection will operate at LOS F with a high delay during the PM peak hour. Moreover, according to Table 2-27. Design Criteria for Acceleration lanes, from the El Paso County Engineering Criteria Manual, the eastbound left-turn to northbound through acceleration lane requires 380-feet of acceleration length and a 144-ft taper for a total of 525-ft. This total length would overlap with the existing double left-turn lanes at Meridian Road and Woodmen Road. As a result, Matrix does not recommend this alternative.

Alternative B1: High-T Intersection (Signalized)



This alternative will follow the same configuration and logic presented in alternative B. The key difference is that this is a signalized Continuous Green-T (CGT) intersection. The northbound through on Meridian Rd will pass through the intersection without stopping at the traffic signal. The southbound and eastbound approach as well as the northbound left-turn movement are controlled by a signal. Moreover, the southbound left-turn access for patrons of the development to the east who currently use the southbound left-turn will be prohibited under this configuration. A pedestrian crosswalk is provided on the west leg of the intersection. **Figure 5** shows the intersection configuration with movements' LOS and AM and PM peak hour volumes. **Table 5** shows the vehicle delay and 95th queue length for Alternative B1.

Figure 5. Alternative B1 – Traffic Operations Summary

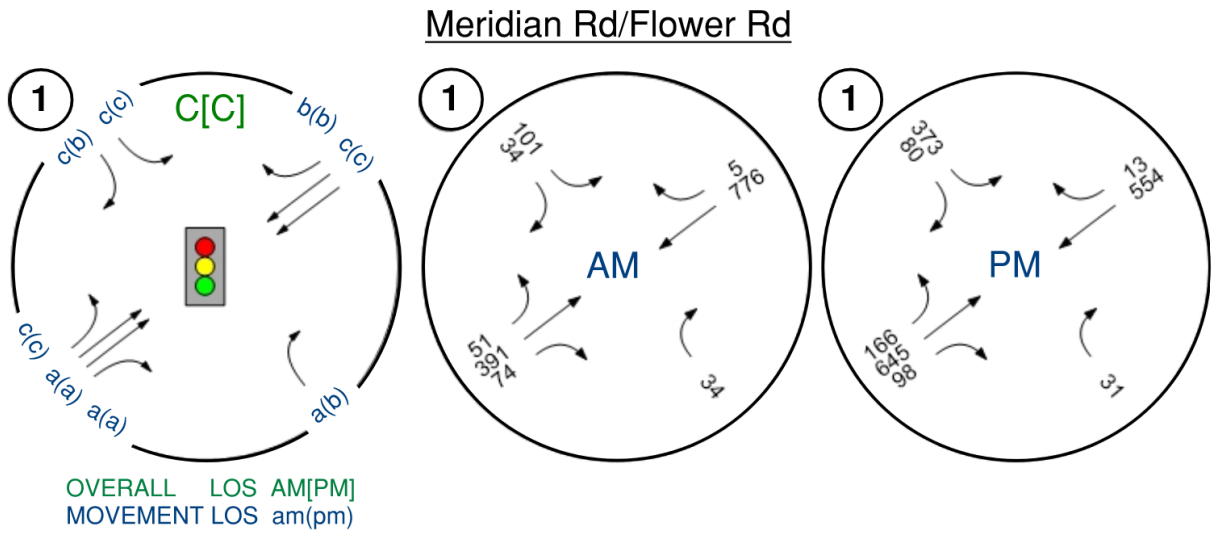
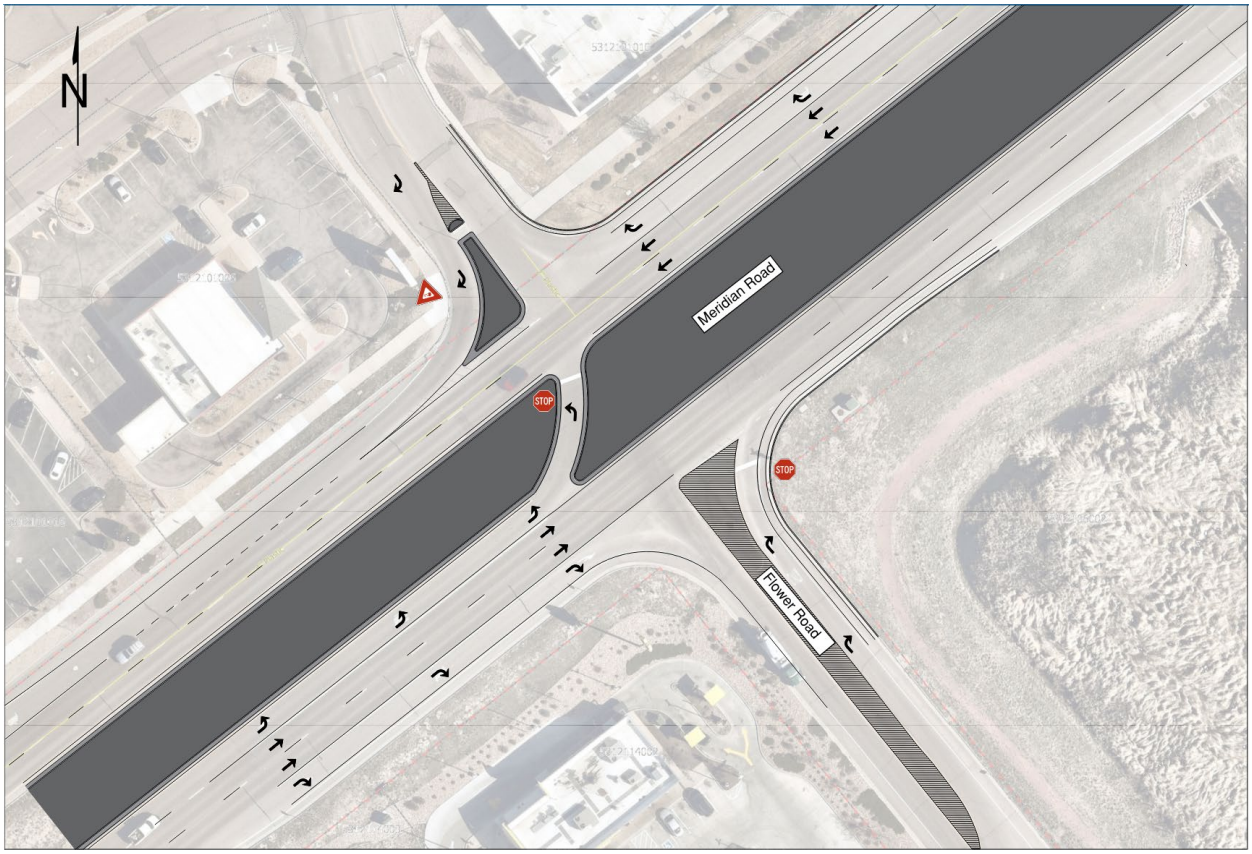


Table 5. Alternative B1 - 95th-Percentile Queue length and Vehicle Delay

Movement	AM Peak Hour		PM Peak Hour	
	Queue (ft)	Delay (sec/veh)	Queue (ft)	Delay (sec/veh)
NBL	38	33	116	30
SBT	215	21	168	24
SBR	1	15	3	19
EBL	65	24	237	25
EBR	10	22	19	17
WBR	3	10	4	11

As shown in **Figure 5** and Table 5 above, this intersection will operate at an acceptable LOS for both AM and PM peak hour. This alternative would resolve the lack of an eastbound left-turn egress at the intersection. This configuration will also reduce the risk of angle crashes at this intersection. However, similar to Alternative B, the eastbound left-turn to northbound through acceleration lane requires an acceleration lane length of 525-ft. This lane would overlap with the existing double left-turn lanes at Meridian Road and Woodmen Road. Additionally, the queue length for the eastbound left is 237-ft which will block the internal driveway along Meridian Market View. As a result, Matrix does not recommend this alternative.

Alternative C: Northbound Left-In with Right-In/Right-Out Driveway



Under this alternative, the southbound left-turn lane would be removed, while the current RIRO and northbound left-turn would remain in place. It is anticipated that by prohibiting the southbound left-turn at Meridian Road/Flower Road intersection, vehicles will be rerouted to the adjacent signalized intersection of Meridian Road/Rolling Thunder View to make the U-turn and later to make a northbound right-turn into the adjacent development. Also, Matrix assumed 75 percent of the vehicles making the southbound U-turn at Meridian Road/Flower Road, including the site generated trips from the future Walmart fuel station, will make an eastbound right turn at Meridian Road/Flower Road as the opportunity for making a southbound U-turn will not be available anymore. The remaining 25 percent, which originate from Meridian Road/Market View will use the southbound through movement at the studied intersection to reroute back to northbound through. **Figure 6** shows the intersection configuration with movements' LOS and AM and PM peak hour volumes. **Table 6** shows the 95th-percentile queue length and vehicle delay for Alternative C.

Figure 6. Alternative C – Traffic Operations Summary

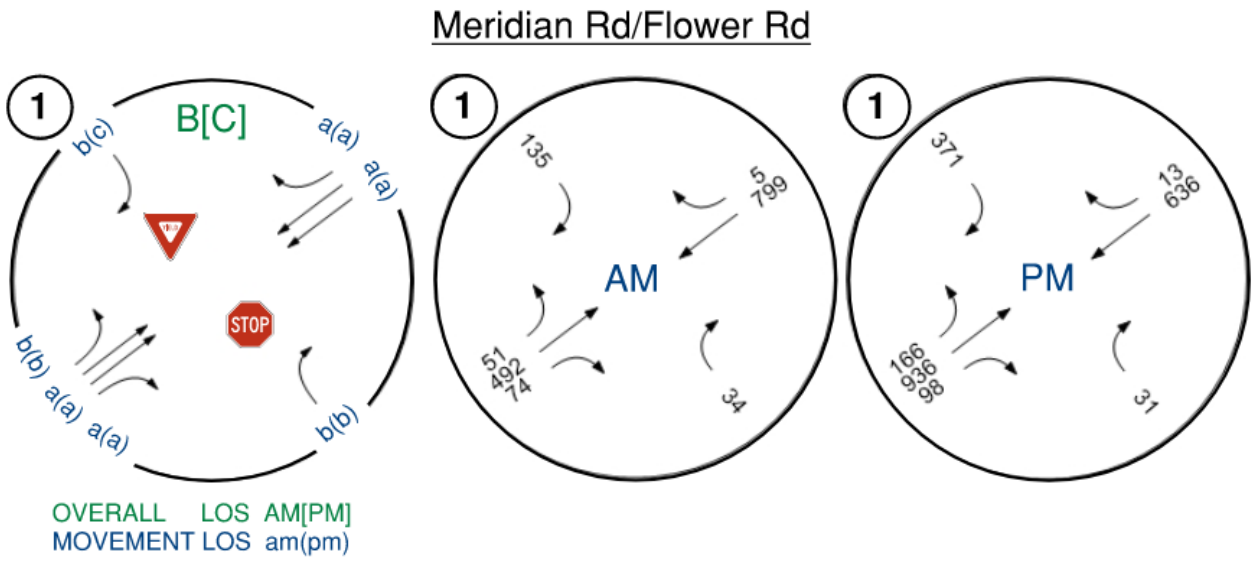
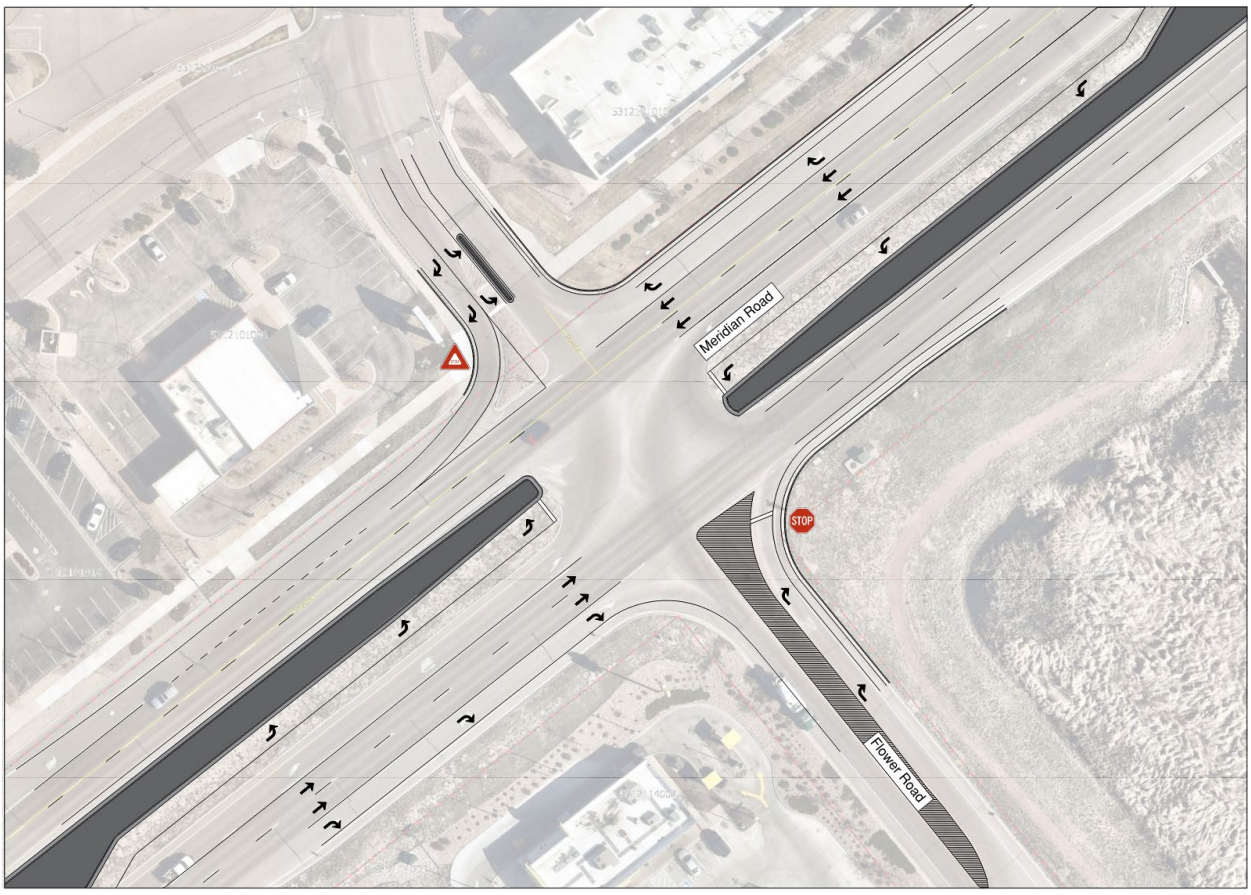


Table 6. Alternative C 95th-Percentile Queue length and Vehicle Delay

Movement	AM Peak Hour		PM Peak Hour	
	Queue (ft)	Delay (sec/veh)	Queue (ft)	Delay (sec/veh)
NBL	6	10	19	10
EBR	25	13	107	19
WBR	4	10	5	13

This intersection operates at an acceptable LOS with a LOS B during the AM peak hour and LOS C during the PM peak hour. A signal warrant analysis was conducted, and the results indicate that a traffic signal is warranted at this intersection. The signal warrant summary is included in Appendix C – *Alternative Analysis*. Although this is a partial improvement particularly in terms of safety and traffic operations, a traffic signal is warranted and the lack of left-turn egress from the development remains unaddressed. As a result, Matrix Does not recommend this alternative.

Alternative D: Northbound Left-In and Eastbound Left-Out (Stop-Controlled)



This alternative will include an exclusive eastbound left-turn lane at the development's driveway. The eastbound left-turn volumes were determined similar to the signalized intersection alternative (Alternative A). The northbound and southbound left-turn lanes were shifted further into the median to improve sight distances. This adjustment will provide motorists with safer turning conditions and help reduce crashes at the intersection. **Figure 7** shows the intersection configuration with movement LOS and peak hours volumes. **Table 7** shows the 95th-percentile queue length and vehicle delay for Alternative D.

Figure 7. Alternative D – Traffic Operations Summary

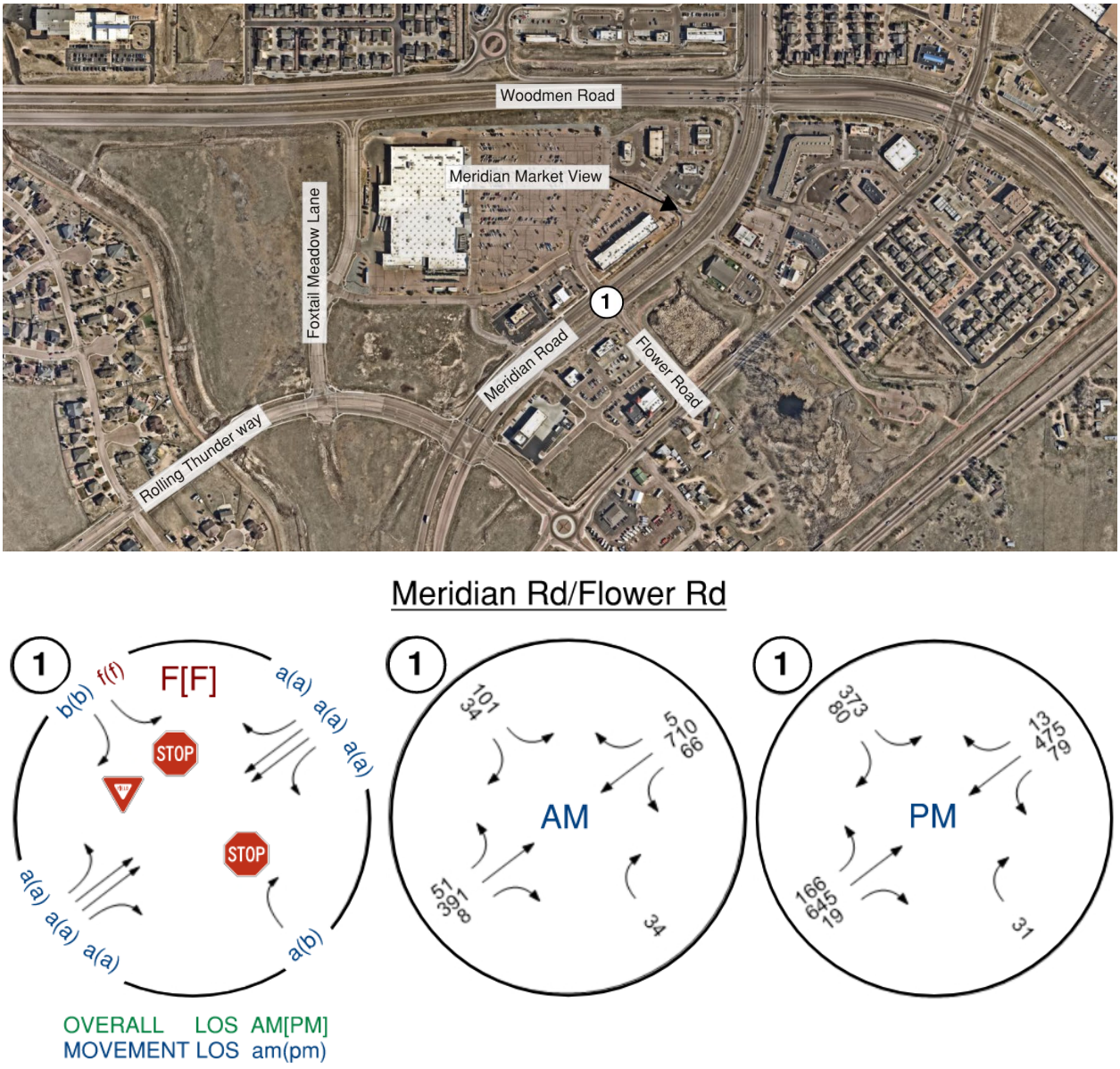
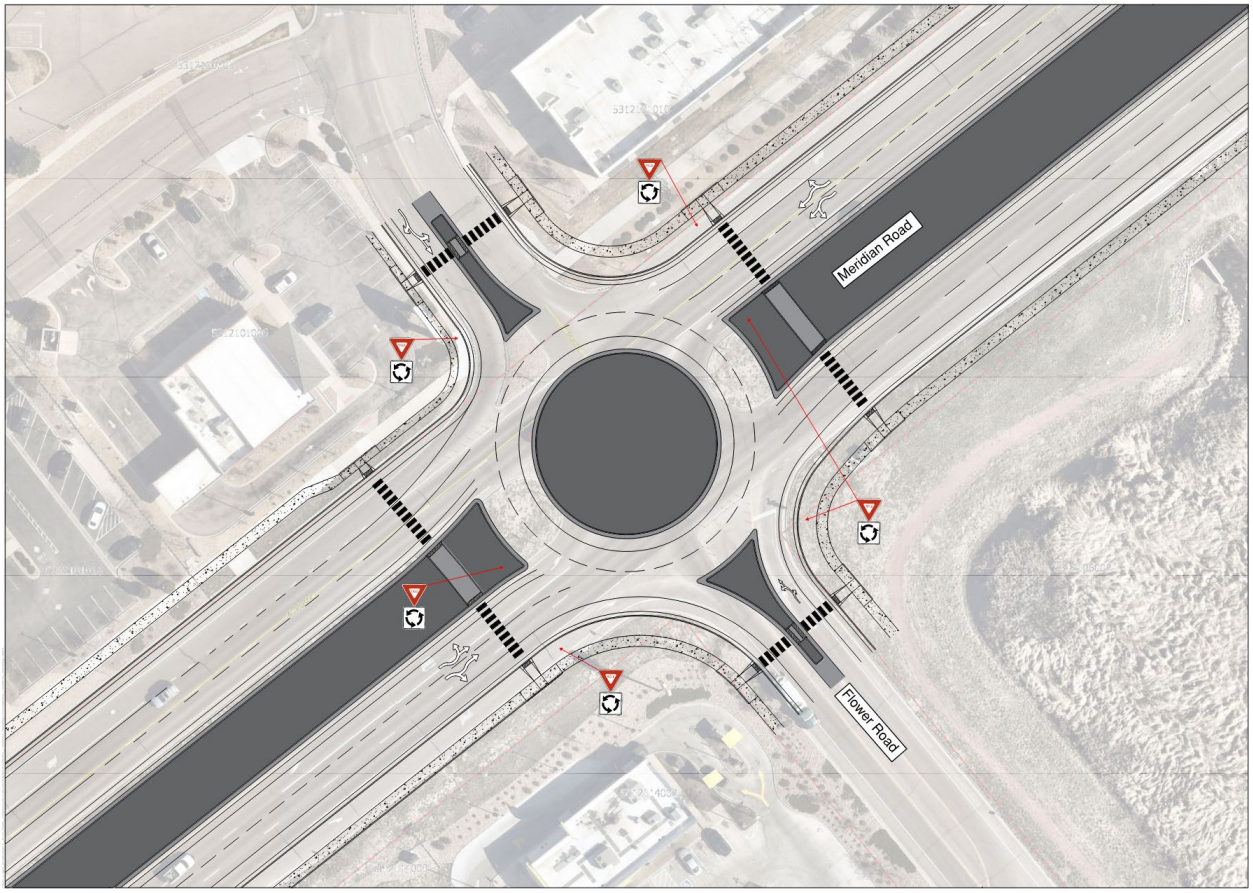


Table 7. Alterative D - 95th-Percentile Queue length and Vehicle Delay

Movement	AM Peak Hour		PM Peak Hour	
	Queue (ft)	Delay (sec/veh)	Queue (ft)	Delay (sec/veh)
NBL	5	10	16	9
SBL	5	8	8	9
EBL	161	160	1129	2241
EBR	5	11	9	11
WBR	4	10	4	11

As shown in **Table 7**, the eastbound left-turn lane experiences delays of 2,241 seconds per vehicle during the PM peak hour which means the motorists will never find an acceptable gap to make a left-turn. The intersection operates at LOS F during both the AM and PM peak periods. A signal warrant analysis was conducted, and the results indicate that a traffic signal is projected to be warranted at this intersection. The signal warrant summary is included in Appendix C – *Alternative Analysis*. Since a traffic signal is warranted, the eastbound left-turn movement experiences excessive delay, and the intersection operates at an unacceptable LOS, Matrix does not recommend this alternative.

Alternative E: Roundabout



In this alternative, a roundabout would replace the current configuration at this intersection. Northbound and southbound approaches each will have two lanes while the eastbound and westbound approach will have one lane in each direction. The traffic assignment for this alternative is identical to Alternative A – Signalized Intersection. **Figure 8** shows the intersection configuration with movements' LOS and AM and PM peak hour volumes. **Table 8** shows the 95th-percentile queue length and vehicle delay for Alternative E.

Figure 8. Alternative E – Traffic Operations Summary

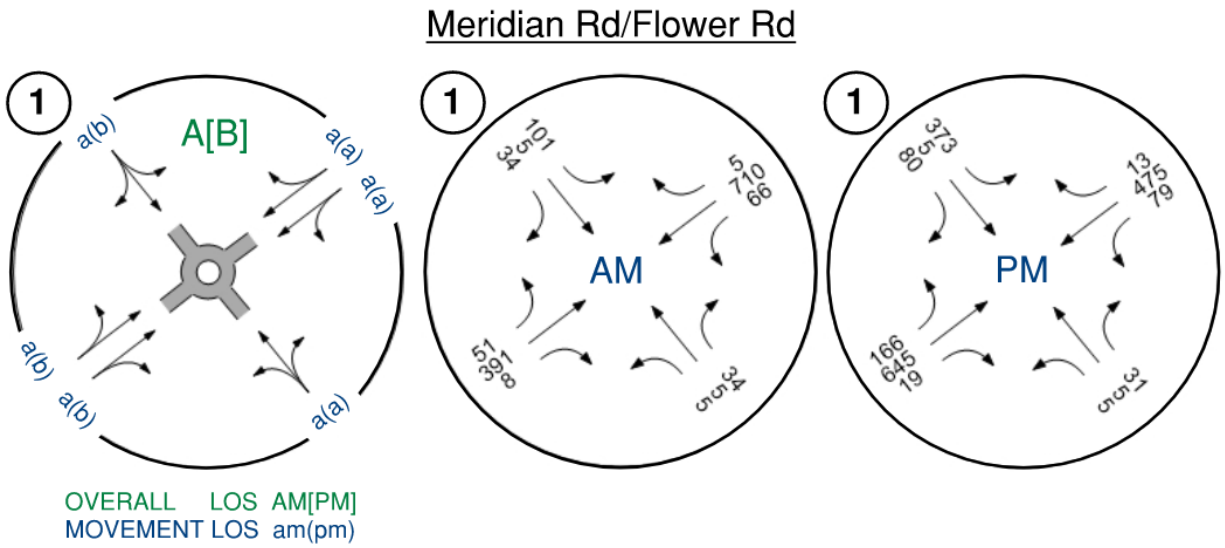


Table 8. Alternative E - 95th-Percentile Queue length and Vehicle Delay

Movement	AM Peak Hour		PM Peak Hour	
	Queue (ft)	Delay (sec/veh)	Queue (ft)	Delay (sec/veh)
NBL/NBT	20	5	74	11
NBT/NBR	21	5	79	11
SBL/SBT	35	6	26	6
SBT/SBR	38	6	28	6
EBL/EBT/EBR	22	8	104	14
WBL/WBT/WBR	4	5	8	9

This intersection during the AM peak hour and PM peak hour operates at LOS A and LOS B with an intersection delay of 6 seconds per vehicle and 10 seconds per vehicle, respectively. This alternative will eliminate the lack of outbound left-turn deficiency from the development while providing safety benefits to motorists by improving the intersection sight distance and reducing the speed at the intersection.

Future Conditions Analysis

This section evaluates future traffic conditions based on a 10-year growth projection. Traffic counts were obtained from the CDOT Traffic Count Database System (TCDS) for Meridian Road north of Woodmen Road with earliest counts from 2006 and latest counts from 2023. A growth rate of 3.2%, which equates to a growth factor of 1.409 was applied to the existing conditions for Alternative A – Traffic Signal, Alternative B1- High-T (Signalized) and Alternative E - Roundabout. **Table 9** summarizes the resulting movement LOS, delays and queue lengths for the three alternatives aforementioned above.

Table 9. Future Conditions LOS, 95th-Percentile Queue length and Vehicle Delay

Movement	AM Peak Hour			PM Peak Hour		
	LOS	Queue (ft)	Delay (sec/veh)	LOS	Queue (ft)	Delay (sec/veh)
Alternative A – Traffic Signal						
Overall Intersection	**B**	**–**	**18**	**C**	**–**	**33**
NBL	B	20	20	D	120	33
NBT	B	59	11	F	334	51
NBR	A	1	9	B	3	12
SBL	B	24	19	C	40	24
SBT	C	192	23	C	144	20
SBR	A	1	8	B	2	13
EBL	B	16	15	B	72	15
EBT/EBR	A	5	9	B	15	14
WBL	B	2	17	B	2	19
WBT/WBR	B	7	16	C	9	20
Alternative B1 – High-T (Signalized)						
Overall Intersection	**B**	**–**	**20**	**C**	**–**	**24**
NBL	C	38	33	C	116	30
SBT	B	260	19	C	212	22
SBR	B	1	11	B	3	16
EBL	C	65	24	C	237	25
EBR	C	10	22	B	19	17
WBR	B	4	10	B	4	12
Alternative E – Roundabout						
Overall Intersection	**A**	**–**	**7**	**B**	**–**	**14**
NBL/NBT	A	29	6	C	139	16
NBT/NBR	A	31	6	C	153	16
SBL/SBT	A	57	7	A	40	7
SBT/SBR	A	64	7	A	43	7
EBL/EBT/EBR	B	31	12	C	156	21
WBL/WBT/WBR	A	5	6	B	11	12

As shown in **Table 9**, all three alternatives will provide an acceptable LOS during the AM and PM peak hours for the 10-year horizon year. Alternative A and Alternative B1 operate at LOS B during the AM peak and LOS C during the PM peak. In comparison, Alternative E operates at LOS A during the AM peak and LOS B during the PM peak.

Safety Assessment

Crash data from the *Flower Road and Meridian Road Alternative Analysis* (October 2024) was reviewed for this alternative analysis. According to the obtained data from the Pikes Peak Area Council of Governments (PPACG, January 2018 – December 2022) and the 2023 Colorado Department of Transportation (CDOT), a total of 17 property-damage-only crashes, 5 injury-related crashes, and 1 fatal crash were recorded at this intersection. The fatal crash was classified as an approach turn crash and occurred in 2023 which is the latest available data.

The Crash Modification Clearing House was used to assess the safety benefits of preferred alternatives in reducing the crash type and severity observed at this intersection. The CMF ID: 320 shows a 67% reduction in angle crashes by installing a traffic signal at similar intersections. Also, the CMF ID 4872 shows a 44 percent reduction in serious, minor, and possible injury crash severities by converting a stopped controlled intersection to a roundabout. Note that while a traffic signal will significantly improve safety for left-turn movements, it may increase the risk of rear-end collisions.

Evaluation Matrix

Table 10 provides an evaluation table to qualitatively compare the different alternatives which were studied in this traffic letter. Considering all of the parameters, Matrix would recommend Alternative E – Roundabout due to its overall benefit.

Table 10. Alternatives Analysis

Alternative	Description	Reduce Delay	Pedestrian Accessibility	Operations & Safety	Notes
Existing Conditions		–	✕✕	✕✕	
A	Traffic Signal	★★	★★★	★★	Recommended
B	High-T (Unsignalized)	✕✕	✕✕	✕✕	Not Recommended
B1	High-T (Signalized)	★★	✕✕	★	Acceptable
C	NB Left-in w/ RIRO	★	✕✕	✕✕	Not Recommended
D	NB Left-in & EB Left-out	✕✕	✕✕	✕✕	Not Recommended
E	Roundabout	★★★	★★★	★★★	**Recommended (Preferred Alternative)**

Legend:
★★★ *Very Good* *Good* ★ *Fair* – *Neutral* ✕ *Poor* ✕✕ *Very Poor*

Conclusion and Recommendations

Due to safety concerns and incomplete traffic circulation at the intersection of Meridian Road and Flower Road, Matrix evaluated the existing conditions as well as six design alternatives. The analysis used traffic volume data from the *Flower Road and Meridian Road Closure Traffic Analysis Report* (January 2025) and the *Walmart Store #4335 Fuel Station Traffic Study* (March 2023). Each alternative was reviewed in coordination with El Paso County staff. A summary of the alternatives and their performance is provided below:

Alternative E – Roundabout
This alternative proposes replacing the existing intersection configuration with a roundabout. The northbound and southbound approaches would each have two lanes, while the eastbound and westbound approaches would consist of a single lane in each direction. The roundabout would allow full circulation of traffic and serve as a traffic-calming measure. Our analysis shows that this configuration would result in the lowest overall delay compared to all other alternatives. A integrated pedestrian sidewalk would also be provided. This alternative is projected to operate at an acceptable level of service (LOS) under the 10-year horizon analysis and achieves the highest safety score.

Alternative B – Signalized Intersection
This alternative would convert the intersection to a full-movement signalized configuration, including a dual eastbound left-turn lane. It addresses the left-turn egress deficiency and significantly reduces the risk of angle crashes by relocating the northbound and southbound left-turn lanes and providing protected left-turn signal phasing. A pedestrian sidewalk would also be included. This alternative is projected to operate at an acceptable LOS under the 10-year horizon.

Alternative B1 – High T (Signalized CGT)
This configuration introduces a signalized Continuous Green-T (CGT) intersection. Northbound through traffic on Meridian Road would not stop at the signal, while the southbound and eastbound approaches, along with the northbound left-turn movement, would be signal-controlled. This reduces the risk of angle crashes; however, the eastbound left-turn queue is expected to block the internal driveway along Meridian Market View. Additionally, southbound left-turn access for patrons entering the development to the east would be prohibited under this scenario. This alternative operates at an acceptable LOS for the 10-year horizon but represents only a partial improvement.

Alternative C – Northbound Left-In and Eastbound Right-In/Right-Out
This alternative removes the southbound left-turn lane while maintaining the existing right-in/right-out and northbound left-turn movements. Vehicles currently making the southbound left turn would instead use the signalized intersection at Meridian Road and Rolling Thunder View to execute a U-turn, followed by a northbound right turn into the adjacent development. While this configuration improves safety and traffic operations, it does not provide left-turn egress from the development. Moreover a traffic signal is projected to be warranted under this alternative.

Alternative B – High T (Unsignalized)
This option introduces an eastbound left-turn merging into the northbound through lane via an acceleration lane. Moreover, the southbound left-turn movement would be removed under this design. This alternative reduces conflict points and lowers the risk of collisions, however, signal

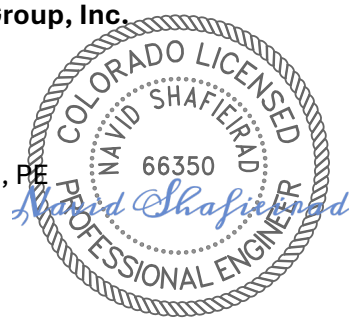
warrant analysis indicates that the criteria for signalization would project to be met under this configuration. The intersection operates at an unacceptable LOS under this alternative.

Alternative D – Northbound Left-In and Eastbound Left-Out
This alternative removes the southbound left-turn lane while preserving the existing right-in/right-out and northbound left-turn movements. It provides left-out access from the development; however, southbound left-turn movement into the development to the east would be restricted. Traffic signal warrants are projected to be met under this alternative and this intersection will operate at an unacceptable LOS.

After evaluating all the key parameters discussed in this letter, Matrix recommends constructing a roundabout at the Meridian Road and Flower Road intersection. The roundabout will improve safety and operational efficiency, accommodate all turning movements, and provide traffic calming to reduce speeding and the risk of severe angle crashes.

Please feel free to contact me at (719) 575-0100 or at navid.shafieirad@matrixdesigngroup.com if you have any questions.

Sincerely,
Matrix Design Group, Inc.



Navid Shafieirad, PE
Project Manager

Attached: Appendix A - Traffic Counts
Appendix B - Existing Conditions Analysis
Appendix C - Alternative Analyses
Appendix D - Future Conditions Analyses
Appendix E – Supporting Documents

Appendix A – Traffic Counts

FLOWER ROAD & MERIDIAN ROAD CLOSURE

TRAFFIC ANALYSIS REPORT

JANUARY 6, 2025

Prepared For:

EL PASO COUNTY

3275 AKERS DRIVE

COLORADO SPRINGS, COLORADO 80922

Bohannan Huston

Engineering

Spatial Data

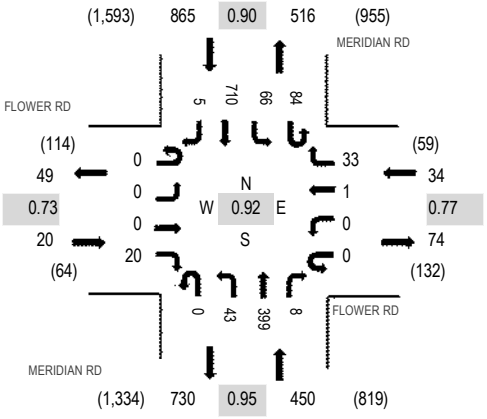
Advanced Technologies

(303) 216-2439
www.alltrafficdata.net

Location: 1 MERIDIAN RD & FLOWER RD AM
Date: Tuesday, June 18, 2024
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour

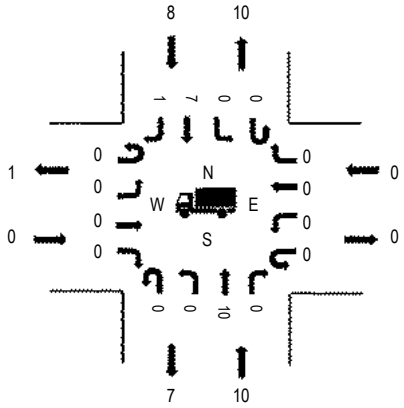
Motorized Vehicles



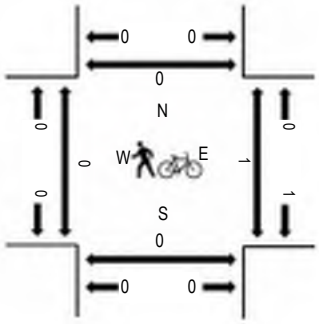
Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.73
WB	0.0%	0.77
NB	2.2%	0.95
SB	0.9%	0.90
All	1.3%	0.92

Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	FLOWER RD Eastbound				FLOWER RD Westbound				MERIDIAN RD Northbound				MERIDIAN RD Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
7:00 AM	0	0	0	8	0	0	0	3	0	7	82	0	14	10	191	3	318	1,366
7:15 AM	0	0	0	1	0	0	0	5	0	5	109	1	15	14	204	0	354	1,369
7:30 AM	0	0	0	4	0	0	0	5	0	11	101	1	22	14	212	3	373	1,294
7:45 AM	0	0	0	7	0	0	1	11	0	12	89	2	22	23	154	0	321	1,188
8:00 AM	0	0	0	8	0	0	0	12	0	15	100	4	25	15	140	2	321	1,169
8:15 AM	0	2	0	10	0	0	0	8	0	12	80	1	28	11	127	0	279	
8:30 AM	0	0	0	9	0	0	0	4	0	11	76	2	25	11	125	4	267	
8:45 AM	0	0	0	15	0	0	0	10	0	21	75	2	32	21	119	7	302	
Count Total	0	2	0	62	0	0	1	58	0	94	712	13	183	119	1,272	19	2,535	
Peak Hour	0	0	0	20	0	0	1	33	0	43	399	8	84	66	710	5	1,369	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles in Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	0	1	0	0	1	7:00 AM	0	0	0	0	0	7:00 AM	0	0	0	0	0
7:15 AM	0	7	0	1	8	7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	0	0
7:30 AM	0	1	0	4	5	7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0
8:00 AM	0	2	0	3	5	8:00 AM	0	0	0	0	0	8:00 AM	0	0	1	0	1
8:15 AM	1	1	0	2	4	8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0
8:30 AM	0	3	0	0	3	8:30 AM	0	0	0	0	0	8:30 AM	0	0	0	0	0
8:45 AM	0	1	0	0	1	8:45 AM	0	0	0	0	0	8:45 AM	0	0	0	0	0
Count Total	1	16	0	10	27	Count Total	0	0	0	0	0	Count Total	0	0	1	0	1
Peak Hour	0	10	0	8	18	Peak Hour	0	0	0	0	0	Peak Hour	0	0	1	0	1

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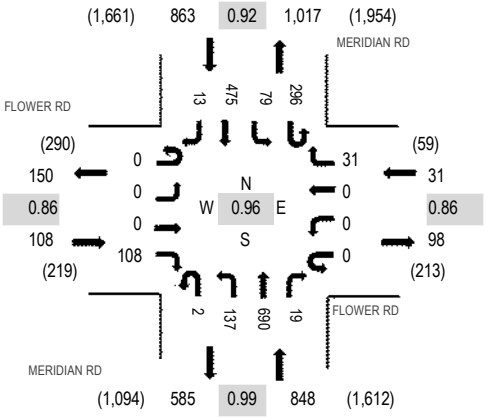
Location: 1 MERIDIAN RD & FLOWER RD PM
Date: Tuesday, June 18, 2024
Peak Hour: 04:15 PM - 05:15 PM
Peak 15-Minutes: 05:00 PM - 05:15 PM

Peak Hour

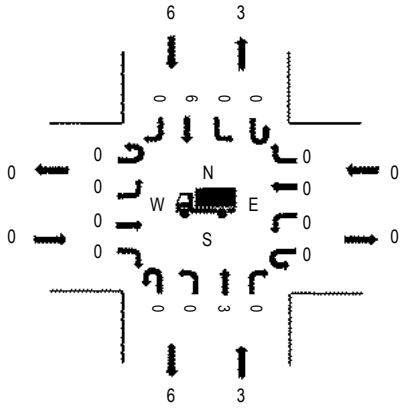
Motorized Vehicles



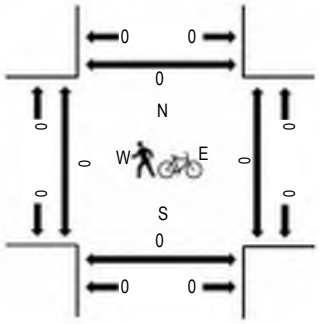
Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.86
WB	0.0%	0.86
NB	0.4%	0.99
SB	0.7%	0.92
All	0.5%	0.96

Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	FLOWER RD Eastbound				FLOWER RD Westbound				MERIDIAN RD Northbound				MERIDIAN RD Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	0	0	30	0	0	1	7	0	27	156	5	68	26	119	4	443	1,810
4:15 PM	0	0	0	25	0	0	0	8	0	36	173	6	72	14	103	2	439	1,850
4:30 PM	0	0	0	26	0	0	0	8	0	37	162	5	77	22	130	5	472	1,834
4:45 PM	0	0	0	24	0	0	0	6	0	35	174	6	71	20	115	5	456	1,811
5:00 PM	0	0	0	33	0	0	0	9	2	29	181	2	76	23	127	1	483	1,741
5:15 PM	0	0	0	25	0	0	0	6	0	34	172	5	61	25	90	5	423	
5:30 PM	0	0	0	29	0	0	0	9	0	35	155	4	78	21	112	6	449	
5:45 PM	0	0	0	27	0	0	0	5	0	21	145	5	75	24	77	7	386	
Count Total	0	0	0	219	0	0	1	58	2	254	1,318	38	578	175	873	35	3,551	
Peak Hour	0	0	0	108	0	0	0	31	2	137	690	19	296	79	475	13	1,850	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles in Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	2	0	3	5	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:15 PM	0	1	0	0	1	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:30 PM	0	2	0	1	3	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	5	5	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:15 PM	0	1	0	0	1	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
Count Total	0	6	0	9	15	Count Total	0	0	0	0	0	Count Total	0	0	0	0	0
Peak Hour	0	3	0	6	9	Peak Hour	0	0	0	0	0	Peak Hour	0	0	0	0	0

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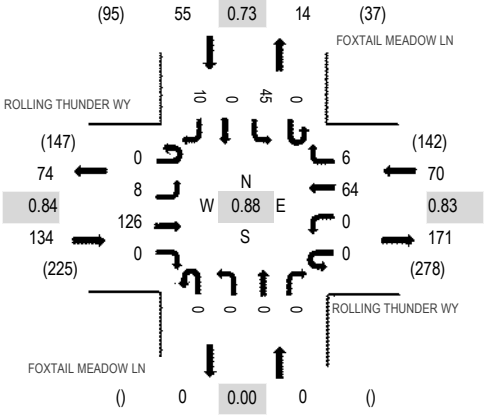
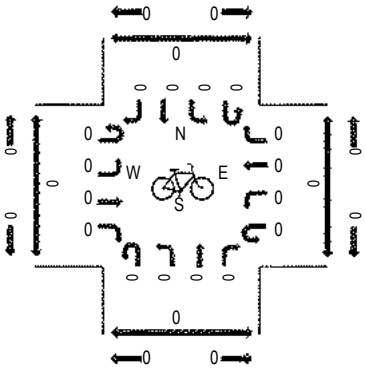
Location: 1 FOXTAIL MEADOW LN & ROLLING THUNDER WY AM
Date: Thursday, October 3, 2024
Peak Hour: 07:00 AM - 08:00 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

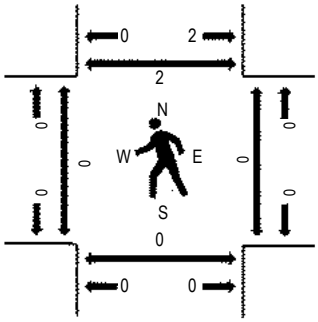
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	ROLLING THUNDER WY Eastbound				ROLLING THUNDER WY Westbound				FOXTAIL MEADOW LN Northbound				FOXTAIL MEADOW LN Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	1	36	0	0	0	15	0	0	0	0	0	0	4	0	1	57	259	0	0	0	0
7:15 AM	0	3	37	0	0	0	18	1	0	0	0	0	0	7	0	3	69	250	0	0	0	0
7:30 AM	0	2	34	0	0	0	18	1	0	0	0	0	0	14	0	5	74	236	0	0	0	1
7:45 AM	0	2	19	0	0	0	13	4	0	0	0	0	0	20	0	1	59	212	0	0	0	1
8:00 AM	0	2	14	0	0	0	19	2	0	0	0	0	0	7	0	4	48	203	0	0	0	1
8:15 AM	0	1	29	0	0	0	11	4	0	0	0	0	0	7	0	3	55		0	0	0	0
8:30 AM	0	3	12	0	0	0	20	3	0	0	0	0	0	9	0	3	50		0	0	0	0
8:45 AM	0	7	23	0	0	0	12	1	0	0	0	0	0	6	0	1	50		0	0	0	0
Count Total	0	21	204	0	0	0	126	16	0	0	0	0	0	74	0	21	462		0	0	0	3
Peak Hour	0	8	126	0	0	0	64	6	0	0	0	0	0	45	0	10	259		0	0	0	2

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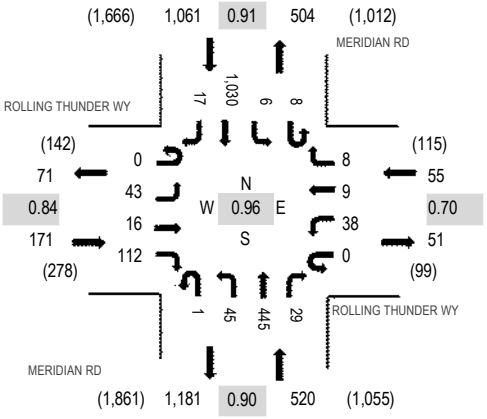
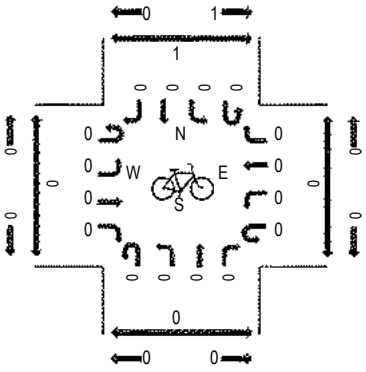
Location: 2 MERIDIAN RD & ROLLING THUNDER WY AM
Date: Thursday, October 3, 2024
Peak Hour: 07:00 AM - 08:00 AM
Peak 15-Minutes: 07:15 AM - 07:30 AM

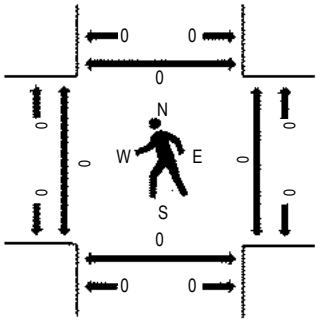
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	ROLLING THUNDER WY Eastbound				ROLLING THUNDER WY Westbound				MERIDIAN RD Northbound				MERIDIAN RD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	9	4	24	0	2	2	1	0	11	100	10	2	1	286	2	454	1,807	0	0	0	0
7:15 AM	0	16	2	25	0	10	2	3	1	12	136	4	0	0	255	5	471	1,712	0	0	0	0
7:30 AM	0	11	4	36	0	19	4	0	0	11	101	4	1	2	236	4	433	1,559	0	0	0	0
7:45 AM	0	7	6	27	0	7	1	4	0	11	108	11	5	3	253	6	449	1,470	0	0	0	0
8:00 AM	0	0	1	19	0	7	2	5	0	13	131	6	1	3	166	5	359	1,307	0	0	0	0
8:15 AM	0	7	2	28	0	7	2	6	0	12	108	3	2	4	136	1	318		0	0	0	0
8:30 AM	0	1	2	17	0	6	3	4	1	17	116	5	0	6	162	4	344		0	0	0	0
8:45 AM	0	10	4	16	0	6	3	9	0	7	105	11	3	1	109	2	286		0	0	0	0
Count Total	0	61	25	192	0	64	19	32	2	94	905	54	14	20	1,603	29	3,114		0	0	0	0
Peak Hour	0	43	16	112	0	38	9	8	1	45	445	29	8	6	1,030	17	1,807		0	0	0	0

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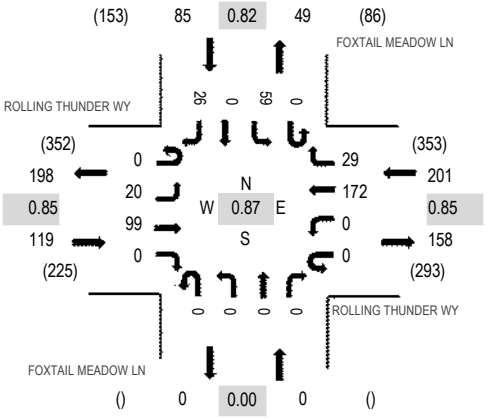
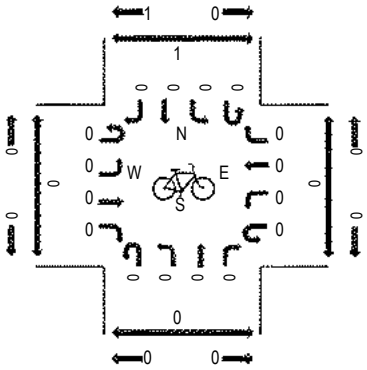
Location: 1 FOXTAIL MEADOW LN & ROLLING THUNDER WY PM
Date: Thursday, October 3, 2024
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:00 PM - 04:15 PM

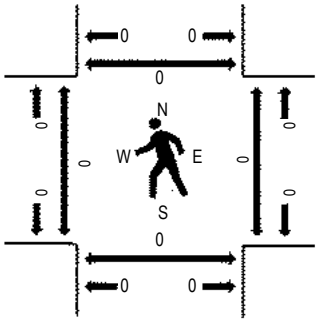
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

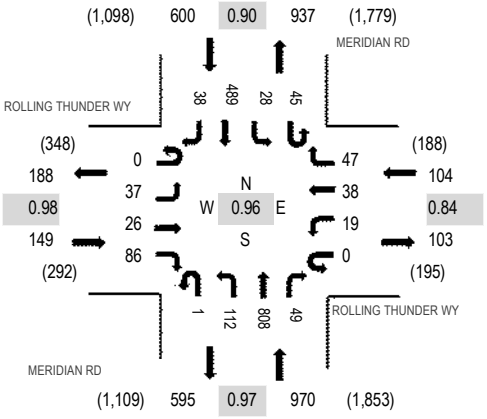
Traffic Counts - Motorized Vehicles

Interval Start Time	ROLLING THUNDER WY Eastbound				ROLLING THUNDER WY Westbound				FOXTAIL MEADOW LN Northbound				FOXTAIL MEADOW LN Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	5	29	0	0	0	52	7	0	0	0	0	0	15	0	9	117	405	0	0	0	0
4:15 PM	0	6	29	0	0	0	34	8	0	0	0	0	0	10	0	5	92	364	0	0	0	0
4:30 PM	0	4	24	0	0	0	39	7	0	0	0	0	0	13	0	7	94	358	0	0	0	0
4:45 PM	0	5	17	0	0	0	47	7	0	0	0	0	0	21	0	5	102	353	0	0	0	0
5:00 PM	0	5	19	0	0	0	35	2	0	0	0	0	0	11	0	4	76	326	0	0	0	0
5:15 PM	1	9	19	0	0	0	37	3	0	0	0	0	0	13	0	4	86		0	0	0	0
5:30 PM	0	2	26	0	0	0	32	8	0	0	0	0	0	15	0	6	89		0	0	0	1
5:45 PM	0	3	22	0	0	0	30	5	0	0	0	0	0	10	0	5	75		0	0	0	0
Count Total	1	39	185	0	0	0	306	47	0	0	0	0	0	108	0	45	731		0	0	0	1
Peak Hour	0	20	99	0	0	0	172	29	0	0	0	0	0	59	0	26	405		0	0	0	0

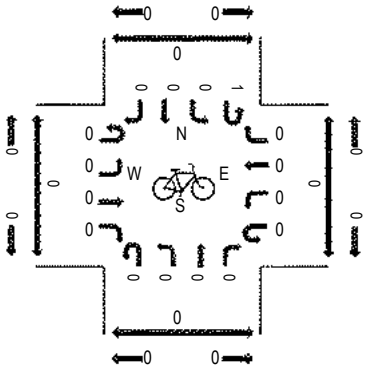
(303) 216-2439
www.alltrafficdata.net

Location: 2 MERIDIAN RD & ROLLING THUNDER WY PM
Date: Thursday, October 3, 2024
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:00 PM - 04:15 PM

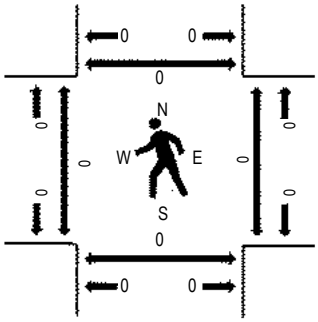
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



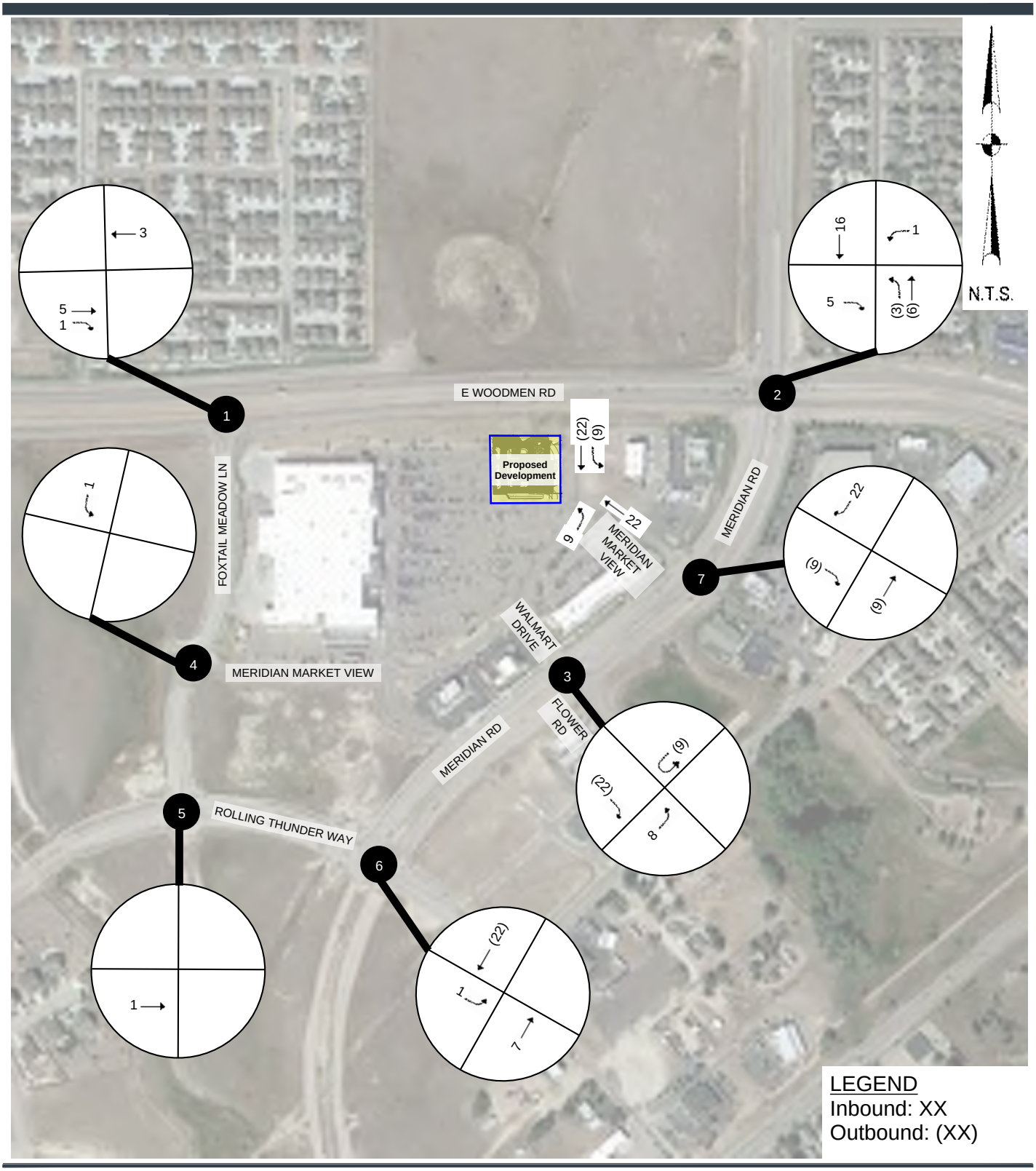
Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	ROLLING THUNDER WY Eastbound				ROLLING THUNDER WY Westbound				MERIDIAN RD Northbound				MERIDIAN RD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	6	6	26	0	7	13	10	0	37	193	9	11	8	131	16	473	1,823	0	0	0	0
4:15 PM	0	8	9	20	0	5	11	15	0	19	208	15	7	7	123	9	456	1,783	0	0	0	0
4:30 PM	0	12	7	19	0	3	8	16	1	24	203	12	10	9	112	7	443	1,759	0	0	0	0
4:45 PM	0	11	4	21	0	4	6	6	0	32	204	13	17	4	123	6	451	1,713	0	0	0	0
5:00 PM	0	5	1	30	0	2	8	9	0	22	220	13	5	6	99	13	433	1,608	0	0	0	2
5:15 PM	0	10	5	19	0	7	8	12	1	23	184	9	11	8	119	16	432		0	0	0	0
5:30 PM	0	9	7	26	0	5	5	6	0	17	200	9	3	6	101	3	397		0	0	0	0
5:45 PM	0	6	6	19	0	2	12	8	0	23	147	15	7	7	84	10	346		0	0	0	0
Count Total	0	67	45	180	0	35	71	82	2	197	1,559	95	71	55	892	80	3,431		0	0	0	2
Peak Hour	0	37	26	86	0	19	38	47	1	112	808	49	45	28	489	38	1,823		0	0	0	0



Project Name:

WALMART STORE #4335-543 FUEL STATION TIA

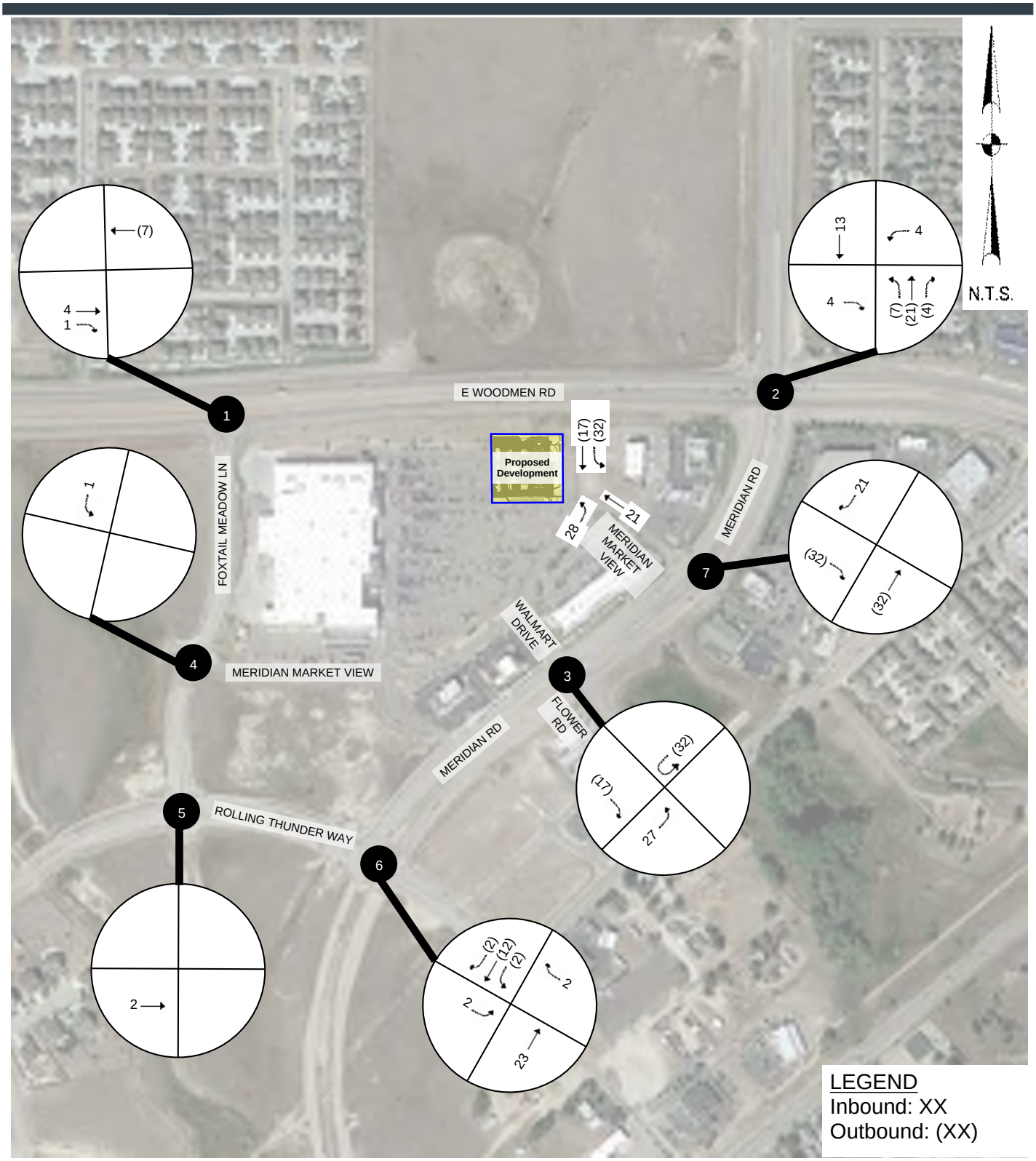
Sheet Title:

SITE GENERATED TRIPS AM PEAK HOUR

Walter P Moore and Associates, Inc.
1301 McKinney, Suite 1100
Houston, Texas 77010

713.630.7300

WPMA P.N.:	Designed by:	Figure No.
T04-22006-05	TD	9
Date: March 2023	Drawn by: JB	



Walter P Moore and Associates, Inc.
1301 McKinney, Suite 1100
Houston, Texas 77010

713.630.7300

Project Name:

WALMART STORE #4335-543 FUEL STATION TIA

Sheet Title:

SITE GENERATED TRIPS PM PEAK HOUR

WPMA P.N.:	Designed by:	Figure No.
T04-22006-05	TD	10
Date:	Drawn by:	
March 2023	JB	

Appendix B – Existing Condition Analyses

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Intersection Level Of Service Report
Intersection 4: Meridian Rd/Flower Rd

Control Type:	Two-way stop	Delay (sec / veh):	11.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.075

Intersection Setup

Name	Meridian Rd			Meridian Rd			Meridian Market View			Flower Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	460.00	100.00	360.00	400.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			25.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

Volumes

Name	Meridian Rd			Meridian Rd			Meridian Market View			Flower Rd		
Base Volume Input [veh/h]	43	399	8	150	710	5	0	0	20	0	0	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	8	0	0	9	0	0	0	0	22	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	51	399	8	159	710	5	0	0	42	0	0	34
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	1.0000	1.0000	0.9200	1.0000	1.0000	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	108	2	43	193	1	0	0	11	0	0	9
Total Analysis Volume [veh/h]	55	434	9	173	772	5	0	0	46	0	0	37
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.00	0.00	0.16	0.01	0.00	0.00	0.00	0.08	0.00	0.00	0.05
d_M, Delay for Movement [s/veh]	9.61	0.00	0.00	8.83	0.00	0.00	0.00	0.00	11.36	0.00	0.00	9.80
Movement LOS	A	A	A	A	A	A			B			A
95th-Percentile Queue Length [veh/ln]	0.21	0.00	0.00	0.55	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.15
95th-Percentile Queue Length [ft/ln]	5.28	0.00	0.00	13.73	0.00	0.00	0.00	0.00	6.07	0.00	0.00	3.69
d_A, Approach Delay [s/veh]	1.06			1.61			11.36			9.80		
Approach LOS	A			A			B			A		
d_I, Intersection Delay [s/veh]	1.92											
Intersection LOS	B											

Signal Warrants Report For Intersection 4: Meridian Rd/Flower Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	N	S	E	W
1	874	458	34	42
2	848	444	33	41
3	830	435	32	40
4	778	408	30	37
5	690	362	27	33
6	682	357	27	33
7	673	353	26	32
8	612	321	24	29
9	603	316	23	29
10	594	311	23	29
11	516	270	20	25
12	481	252	19	23
13	472	247	18	23
14	350	183	14	17
15	350	183	14	17
16	245	128	10	12
17	140	73	5	7
18	140	73	5	7
19	79	41	3	4
20	44	23	2	2
21	26	14	1	1
22	9	5	0	0
23	9	5	0	0
24	9	5	0	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	4	1332	1	42	No	No	No	No	No	No	No	Yes	No	No
2	4	1292	1	41	No	No	No	No	No	No	No	No	No	No
3	4	1265	1	40	No	No	No	No	No	No	No	No	No	No
4	4	1186	1	37	No	No	No	No	No	No	No	No	No	No
5	4	1052	1	33	No	No	No	No	No	No	No	No	No	No
6	4	1039	1	33	No	No	No	No	No	No	No	No	No	No
7	4	1026	1	32	No	No	No	No	No	No	No	No	No	No
8	4	933	1	29	No	No	No	No	No	No	No	No	No	No
9	4	919	1	29	No	No	No	No	No	No	No	No	No	No
10	4	905	1	29	No	No	No	No	No	No	No	No	No	No
11	4	786	1	25	No	No	No	No	No	No	No	No	No	No
12	4	733	1	23	No	No	No	No	No	No	No	No	No	No
13	4	719	1	23	No	No	No	No	No	No	No	No	No	No
14	4	533	1	17	No	No	No	No	No	No	No	No	No	No
15	4	533	1	17	No	No	No	No	No	No	No	No	No	No
16	4	373	1	12	No	No	No	No	No	No	No	No	No	No
17	4	213	1	7	No	No	No	No	No	No	No	No	No	No
18	4	213	1	7	No	No	No	No	No	No	No	No	No	No
19	4	120	1	4	No	No	No	No	No	No	No	No	No	No
20	4	67	1	2	No	No	No	No	No	No	No	No	No	No
21	4	40	1	1	No	No	No	No	No	No	No	No	No	No
22	4	14	1	0	No	No	No	No	No	No	No	No	No	No
23	4	14	1	0	No	No	No	No	No	No	No	No	No	No
24	4	14	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	1	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	9.8	11.4
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:05	0:07
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	34	42
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	1408	1408
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

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Intersection Level Of Service Report
Intersection 4: Meridian Rd/Flower Rd

Control Type:	Two-way stop	Delay (sec / veh):	13.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.491

Intersection Setup

Name	Meridian Rd			Meridian Rd			Meridian Market View			Flower Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	460.00	100.00	360.00	400.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			25.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

Volumes

Name	Meridian Rd			Meridian Rd			Meridian Market View			Flower Rd		
Base Volume Input [veh/h]	139	690	19	375	475	13	0	0	108	0	0	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	27	0	0	32	0	0	0	0	17	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	166	690	19	407	475	13	0	0	125	0	0	31
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	1.0000	0.9600	1.0000	1.0000	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	43	180	5	106	124	3	0	0	33	0	0	8
Total Analysis Volume [veh/h]	173	719	20	424	495	14	0	0	130	0	0	32
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.16	0.01	0.00	0.49	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.05
d_M, Delay for Movement [s/veh]	9.09	0.00	0.00	13.13	0.00	0.00	0.00	0.00	10.78	0.00	0.00	10.95
Movement LOS	A	A	A	B	A	A			B			B
95th-Percentile Queue Length [veh/ln]	0.59	0.00	0.00	2.76	0.00	0.00	0.00	0.00	0.62	0.00	0.00	0.16
95th-Percentile Queue Length [ft/ln]	14.68	0.00	0.00	68.95	0.00	0.00	0.00	0.00	15.54	0.00	0.00	3.96
d_A, Approach Delay [s/veh]	1.72			5.97			10.78			10.95		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	4.43											
Intersection LOS	B											

Signal Warrants Report For Intersection 4: Meridian Rd/Flower Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	N	S	E	W
1	895	875	31	125
2	868	849	30	121
3	850	831	29	119
4	797	779	28	111
5	707	691	24	99
6	698	683	24	98
7	689	674	24	96
8	627	613	22	88
9	618	604	21	86
10	609	595	21	85
11	528	516	18	74
12	492	481	17	69
13	483	473	17	68
14	358	350	12	50
15	358	350	12	50
16	251	245	9	35
17	143	140	5	20
18	143	140	5	20
19	81	79	3	11
20	45	44	2	6
21	27	26	1	4
22	9	9	0	1
23	9	9	0	1
24	9	9	0	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	4	1770	1	125	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	4	1717	1	121	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	4	1681	1	119	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	4	1576	1	111	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
5	4	1398	1	99	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No
6	4	1381	1	98	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No
7	4	1363	1	96	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No
8	4	1240	1	88	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
9	4	1222	1	86	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
10	4	1204	1	85	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
11	4	1044	1	74	No	No	No	No	No	Yes	Yes	Yes	No	No
12	4	973	1	69	No	No	No	No	No	Yes	Yes	Yes	No	No
13	4	956	1	68	No	No	No	No	No	Yes	Yes	Yes	No	No
14	4	708	1	50	No	No	No	No	No	No	No	Yes	No	No
15	4	708	1	50	No	No	No	No	No	No	No	Yes	No	No
16	4	496	1	35	No	No	No	No	No	No	No	No	No	No
17	4	283	1	20	No	No	No	No	No	No	No	No	No	No
18	4	283	1	20	No	No	No	No	No	No	No	No	No	No
19	4	160	1	11	No	No	No	No	No	No	No	No	No	No
20	4	89	1	6	No	No	No	No	No	No	No	No	No	No
21	4	53	1	4	No	No	No	No	No	No	No	No	No	No
22	4	18	1	1	No	No	No	No	No	No	No	No	No	No
23	4	18	1	1	No	No	No	No	No	No	No	No	No	No
24	4	18	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	2	4	10	10	13	13	15	7	3

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.9	10.8
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:05	0:22
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	31	125
High Minor Volume Condition Met	No	Yes
Total Entering Volume on All Approaches During Same Hour	1926	1926
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Appendix C – Alternative Conditions Analyses

Alternative A – Traffic Signal

Alternative B – High-T Intersection (Unsignalized)

Alternative B1 – High-T Intersection (Signalized)

Alternative C – Northbound Left-In with RIRO Driveway

Alternative D – Northbound Left-In and Eastbound Left-Out (Stop-Controlled)

Alternative E – Roundabout

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Intersection Level Of Service Report
Intersection 4: Meridian Rd/Flower Rd

Control Type:	Signalized	Delay (sec / veh):	12.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.294

Intersection Setup

Name	Meridian Rd			Meridian Rd			Meridian Market View			Flower Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	460.00	100.00	360.00	400.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			25.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Meridian Rd			Meridian Rd			Meridian Market View			Flower Rd		
Base Volume Input [veh/h]	43	399	8	150	710	5	0	5	20	5	5	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	-8	0	-84	0	0	101	0	-8	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	8	0	0	0	0	0	0	0	22	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	4	0	0	3	0	0	17	0	0	17
Total Hourly Volume [veh/h]	51	391	4	66	710	2	101	5	17	5	5	17
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	106	1	18	193	1	27	1	5	1	1	5
Total Analysis Volume [veh/h]	55	425	4	72	772	2	110	5	18	5	5	18
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	7	4	0	0	8	0
Auxiliary Signal Groups												
Maximum Green [s]	3	10	0	5	10	0	4	10	0	0	10	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	10	23	0	12	25	0	9	25	0	0	16	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	0	10	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No	No		No	No		No	No			No	
Maximum Recall	No	No		No	No		No	No			No	
Pedestrian Recall	No	No		No	No		No	No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C
C, Calculated Cycle Length [s]	34	34	34	34	34	34	34	34	34	34
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	10	10	3	10	10	3	10	2	2
g / C, Green / Cycle	0.06	0.29	0.29	0.07	0.30	0.30	0.10	0.28	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.03	0.12	0.00	0.04	0.22	0.00	0.03	0.01	0.00	0.01
s, saturation flow rate [veh/h]	1781	3560	1589	1781	3560	1589	3459	1643	1388	1643
c, Capacity [veh/h]	109	1027	459	132	1075	480	333	469	226	118
d1, Uniform Delay [s]	15.52	9.81	8.66	15.23	10.61	8.32	14.39	8.84	16.74	14.91
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.62	0.27	0.01	3.44	0.91	0.00	0.57	0.04	0.04	0.80
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.51	0.41	0.01	0.54	0.72	0.00	0.33	0.05	0.02	0.20
d, Delay for Lane Group [s/veh]	19.14	10.07	8.66	18.67	11.53	8.33	14.96	8.88	16.78	15.71
Lane Group LOS	B	B	A	B	B	A	B	A	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.42	0.85	0.01	0.53	1.74	0.01	0.36	0.10	0.03	0.16
50th-Percentile Queue Length [ft/ln]	10.58	21.30	0.36	13.31	43.43	0.17	9.01	2.53	0.84	3.96
95th-Percentile Queue Length [veh/ln]	0.76	1.53	0.03	0.96	3.13	0.01	0.65	0.18	0.06	0.29
95th-Percentile Queue Length [ft/ln]	19.04	38.34	0.65	23.95	78.18	0.31	16.22	4.56	1.52	7.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	19.14	10.07	8.66	18.67	11.53	8.33	14.96	8.88	8.88	16.78	15.71	15.71
Movement LOS	B	B	A	B	B	A	B	A	A	B	B	B
d_A, Approach Delay [s/veh]	11.09			12.13			13.91			15.90		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	12.02											
Intersection LOS	B											
Intersection V/C	0.294											

Emissions

Vehicle Miles Traveled [mph]	9.49	73.36	0.69	7.21	77.27	0.20	4.93	1.03	0.40	1.85
Stops [stops/h]	44.81	180.44	1.53	56.37	367.95	0.74	76.35	10.73	3.58	16.77
Fuel consumption [US gal/h]	0.99	5.27	0.05	1.09	8.19	0.02	0.85	0.13	0.06	0.27
CO [g/h]	69.52	368.49	3.27	75.88	572.75	1.24	59.40	9.03	4.14	18.88
NOx [g/h]	13.53	71.70	0.64	14.76	111.44	0.24	11.56	1.76	0.81	3.67
VOC [g/h]	16.11	85.40	0.76	17.59	132.74	0.29	13.77	2.09	0.96	4.37

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	9.19	9.19	9.19	9.19
l_p,int, Pedestrian LOS Score for Intersectio	2.794	2.711	2.145	1.960
Crosswalk LOS	C	B	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1118	1236	1236	706
d_b, Bicycle Delay [s]	3.31	2.48	2.48	7.12
l_b,int, Bicycle LOS Score for Intersection	1.962	2.260	1.807	1.634
Bicycle LOS	A	B	A	A

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Intersection Level Of Service Report
Intersection 4: Meridian Rd/Flower Rd

Control Type:	Signalized	Delay (sec / veh):	16.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.376

Intersection Setup

Name	Meridian Rd			Meridian Rd			Meridian Market View			Flower Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	460.00	100.00	360.00	400.00	100.00	100.00	120.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			25.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Meridian Rd			Meridian Rd			Meridian Market View			Flower Rd		
Base Volume Input [veh/h]	139	690	19	375	475	13	0	5	108	5	5	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	-45	0	-296	0	0	341	0	-45	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	27	0	0	0	0	0	32	0	17	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	10	0	0	7	0	0	40	0	0	16
Total Hourly Volume [veh/h]	166	645	9	79	475	6	373	5	40	5	5	15
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	175	2	21	129	2	101	1	11	1	1	4
Total Analysis Volume [veh/h]	180	701	10	86	516	7	405	5	43	5	5	16
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	7	4	0	0	8	0
Auxiliary Signal Groups												
Maximum Green [s]	5	10	0	5	10	0	5	10	0	0	10	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	28	50	0	13	35	0	27	47	0	0	20	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	0	10	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No	No		No	No		No	No			No	
Maximum Recall	No	No		No	No		No	No			No	
Pedestrian Recall	No	No		No	No		No	No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C
C, Calculated Cycle Length [s]	38	38	38	38	38	38	38	38	38	38
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	12	12	3	10	10	5	11	2	2
g / C, Green / Cycle	0.13	0.31	0.31	0.08	0.26	0.26	0.13	0.30	0.06	0.06
(v / s)_i Volume / Saturation Flow Rate	0.10	0.20	0.01	0.05	0.14	0.00	0.12	0.03	0.00	0.01
s, saturation flow rate [veh/h]	1781	3560	1589	1781	3560	1589	3459	1615	1357	1648
c, Capacity [veh/h]	230	1099	490	142	923	412	450	484	195	109
d1, Uniform Delay [s]	16.23	11.45	9.25	17.12	12.35	10.60	16.49	9.71	19.09	17.00
k, delay calibration	0.15	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.94	0.62	0.02	4.14	0.53	0.02	6.81	0.09	0.05	0.86
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.64	0.02	0.61	0.56	0.02	0.90	0.10	0.03	0.19
d, Delay for Lane Group [s/veh]	24.17	12.07	9.27	21.27	12.88	10.62	23.30	9.80	19.14	17.85
Lane Group LOS	C	B	A	C	B	B	C	A	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.70	1.85	0.04	0.75	1.44	0.03	1.94	0.25	0.04	0.17
50th-Percentile Queue Length [ft/ln]	42.47	46.31	1.07	18.72	36.09	0.85	48.57	6.25	1.01	4.30
95th-Percentile Queue Length [veh/ln]	3.06	3.33	0.08	1.35	2.60	0.06	3.50	0.45	0.07	0.31
95th-Percentile Queue Length [ft/ln]	76.44	83.35	1.92	33.70	64.96	1.53	87.43	11.26	1.82	7.73

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	24.17	12.07	9.27	21.27	12.88	10.62	23.30	9.80	9.80	19.14	17.85	17.85
Movement LOS	C	B	A	C	B	B	C	A	A	B	B	B
d_A, Approach Delay [s/veh]	14.48			14.04			21.87			18.10		
Approach LOS	B			B			C			B		
d_I, Intersection Delay [s/veh]	16.08											
Intersection LOS	B											
Intersection V/C	0.376											

Emissions

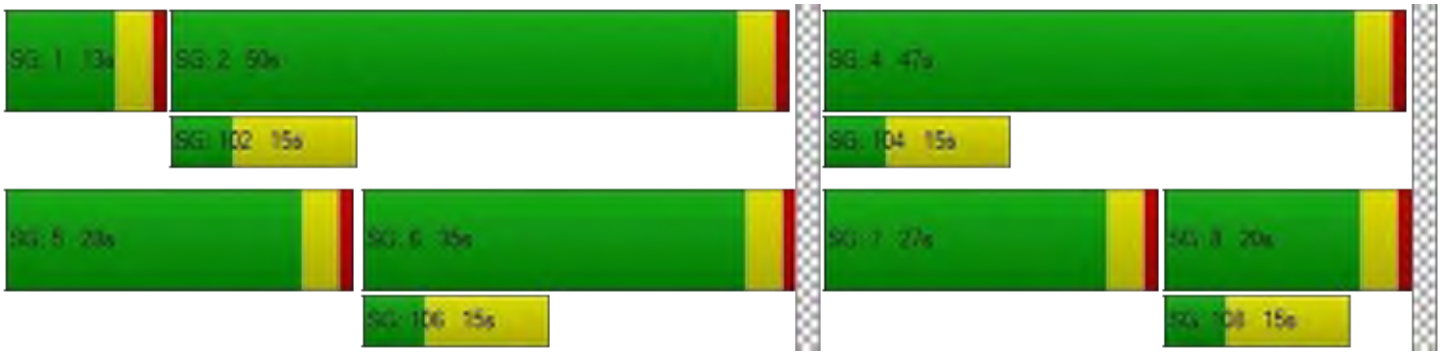
Vehicle Miles Traveled [mph]	31.07	121.01	1.73	8.61	51.65	0.70	23.58	2.79	0.40	1.69
Stops [stops/h]	159.30	347.43	4.01	70.24	270.75	3.18	364.42	23.46	3.80	16.11
Fuel consumption [US gal/h]	3.56	9.47	0.12	1.37	5.86	0.07	4.38	0.31	0.06	0.26
CO [g/h]	249.08	661.93	8.40	95.80	409.79	5.00	306.08	21.77	4.43	18.30
NOx [g/h]	48.46	128.79	1.63	18.64	79.73	0.97	59.55	4.24	0.86	3.56
VOC [g/h]	57.73	153.41	1.95	22.20	94.97	1.16	70.94	5.04	1.03	4.24

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	11.25	11.25	11.25	11.25
l_p,int, Pedestrian LOS Score for Intersectio	2.849	2.797	2.283	1.975
Crosswalk LOS	C	C	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	2397	1615	2240	834
d_b, Bicycle Delay [s]	0.75	0.71	0.28	6.53
l_b,int, Bicycle LOS Score for Intersection	2.303	2.068	2.373	1.629
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 4: Meridian Rd/Flower Rd

Control Type:	Two-way stop	Delay (sec / veh):	26.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.401

Intersection Setup

Name	Meridian Rd			Meridian Rd			Meridian Market View			Flower Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	360.00	400.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	1	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	250.00	380.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			25.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

Volumes

Name	Meridian Rd			Meridian Rd			Meridian Market View			Flower Rd		
Base Volume Input [veh/h]	43	399	8	150	710	5	0	0	20	0	0	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	-8	66	-84	66	0	101	0	-8	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	8	0	0	0	0	0	0	0	22	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	51	391	74	66	776	5	101	0	34	0	0	34
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	106	20	18	211	1	27	0	9	0	0	9
Total Analysis Volume [veh/h]	55	425	80	72	843	5	110	0	37	0	0	37
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			Yes	Yes
Number of Storage Spaces in Median	0	0	1	1

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.00	0.00	0.00	0.01	0.00	0.40	0.00	0.06	0.00	0.00	0.03
d_M, Delay for Movement [s/veh]	9.93	0.00	0.00	0.00	0.00	0.00	26.63	0.00	11.62	0.00	0.00	8.44
Movement LOS	A		A		A	A	D		B			A
95th-Percentile Queue Length [veh/ln]	0.23	0.00	0.00	0.00	0.00	0.00	1.84	0.00	0.20	0.00	0.00	0.11
95th-Percentile Queue Length [ft/ln]	5.63	0.00	0.00	0.00	0.00	0.00	46.05	0.00	5.09	0.00	0.00	2.65
d_A, Approach Delay [s/veh]	4.05			0.00			22.85			8.44		
Approach LOS	A			A			C			A		
d_I, Intersection Delay [s/veh]	3.61											
Intersection LOS	D											

Signal Warrants Report For Intersection 4: Meridian Rd/Flower Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	N	S	E	W
1	781	125	34	135
2	758	121	33	131
3	742	119	32	128
4	695	111	30	120
5	617	99	27	107
6	609	98	27	105
7	601	96	26	104
8	547	88	24	95
9	539	86	23	93
10	531	85	23	92
11	461	74	20	80
12	430	69	19	74
13	422	68	18	73
14	312	50	14	54
15	312	50	14	54
16	219	35	10	38
17	125	20	5	22
18	125	20	5	22
19	70	11	3	12
20	39	6	2	7
21	23	4	1	4
22	8	1	0	1
23	8	1	0	1
24	8	1	0	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	3	906	2	135	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
2	3	879	2	131	No	No	No	Yes	No	Yes	Yes	Yes	No	No
3	3	861	2	128	No	No	No	Yes	No	Yes	Yes	Yes	No	No
4	3	806	2	120	No	No	No	Yes	No	Yes	Yes	Yes	No	No
5	3	716	2	107	No	No	No	No	No	No	Yes	Yes	No	No
6	3	707	2	105	No	No	No	No	No	No	Yes	Yes	No	No
7	3	697	2	104	No	No	No	No	No	No	Yes	Yes	No	No
8	3	635	2	95	No	No	No	No	No	No	Yes	Yes	No	No
9	3	625	2	93	No	No	No	No	No	No	No	Yes	No	No
10	3	616	2	92	No	No	No	No	No	No	No	Yes	No	No
11	3	535	2	80	No	No	No	No	No	No	No	Yes	No	No
12	3	499	2	74	No	No	No	No	No	No	No	No	No	No
13	3	490	2	73	No	No	No	No	No	No	No	No	No	No
14	3	362	2	54	No	No	No	No	No	No	No	No	No	No
15	3	362	2	54	No	No	No	No	No	No	No	No	No	No
16	3	254	2	38	No	No	No	No	No	No	No	No	No	No
17	3	145	2	22	No	No	No	No	No	No	No	No	No	No
18	3	145	2	22	No	No	No	No	No	No	No	No	No	No
19	3	81	2	12	No	No	No	No	No	No	No	No	No	No
20	3	45	2	7	No	No	No	No	No	No	No	No	No	No
21	3	27	2	4	No	No	No	No	No	No	No	No	No	No
22	3	9	2	1	No	No	No	No	No	No	No	No	No	No
23	3	9	2	1	No	No	No	No	No	No	No	No	No	No
24	3	9	2	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	4	1	4	8	11	0	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	8.4	22.8
Number of Lanes on Minor Street Approach	1	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:04	0:51
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	34	135
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	1075	1075
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

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Intersection Level Of Service Report
Intersection 4: Meridian Rd/Flower Rd

Control Type:	Two-way stop	Delay (sec / veh):	228.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.389

Intersection Setup

Name	Meridian Rd			Meridian Rd			Meridian Market View			Flower Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	360.00	400.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	1	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	250.00	380.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			25.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

Volumes

Name	Meridian Rd			Meridian Rd			Meridian Market View			Flower Rd		
Base Volume Input [veh/h]	139	690	19	375	475	13	0	0	108	0	0	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	-45	79	-296	79	0	341	0	-45	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	27	0	0	0	0	0	32	0	17	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	166	645	98	79	554	13	373	0	80	0	0	31
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9600	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	175	27	21	151	4	101	0	21	0	0	8
Total Analysis Volume [veh/h]	180	701	107	86	602	14	405	0	83	0	0	34
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			Yes	Yes
Number of Storage Spaces in Median	0	0	1	1

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.19	0.00	0.00	0.00	0.01	0.00	1.39	0.00	0.12	0.00	0.00	0.03
d_M, Delay for Movement [s/veh]	9.61	0.00	0.00	0.00	0.00	0.00	228.79	0.00	10.88	0.00	0.00	8.43
Movement LOS	A		A		A	A	F		B			A
95th-Percentile Queue Length [veh/ln]	0.69	0.00	0.00	0.00	0.00	0.00	21.30	0.00	0.40	0.00	0.00	0.10
95th-Percentile Queue Length [ft/ln]	17.19	0.00	0.00	0.00	0.00	0.00	532.56	0.00	10.12	0.00	0.00	2.43
d_A, Approach Delay [s/veh]	6.03			0.00			191.73			8.43		
Approach LOS	A			A			F			A		
d_I, Intersection Delay [s/veh]	67.07											
Intersection LOS	F											

Signal Warrants Report For Intersection 4: Meridian Rd/Flower Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	N	S	E	W
1	567	264	31	453
2	550	256	30	439
3	539	251	29	430
4	505	235	28	403
5	448	209	24	358
6	442	206	24	353
7	437	203	24	349
8	397	185	22	317
9	391	182	21	313
10	386	180	21	308
11	335	156	18	267
12	312	145	17	249
13	306	143	17	245
14	227	106	12	181
15	227	106	12	181
16	159	74	9	127
17	91	42	5	72
18	91	42	5	72
19	51	24	3	41
20	28	13	2	23
21	17	8	1	14
22	6	3	0	5
23	6	3	0	5
24	6	3	0	5

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	3	831	2	453	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
2	3	806	2	439	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
3	3	790	2	430	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
4	3	740	2	403	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
5	3	657	2	358	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
6	3	648	2	353	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
7	3	640	2	349	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
8	3	582	2	317	No	Yes	Yes	Yes	No	No	No	Yes	No	No
9	3	573	2	313	No	Yes	Yes	Yes	No	No	No	Yes	No	No
10	3	566	2	308	No	Yes	Yes	Yes	No	No	No	Yes	No	No
11	3	491	2	267	No	Yes	Yes	Yes	No	No	No	No	No	No
12	3	457	2	249	No	No	Yes	Yes	No	No	No	No	No	No
13	3	449	2	245	No	No	Yes	Yes	No	No	No	No	No	No
14	3	333	2	181	No	No	No	No	No	No	No	No	No	No
15	3	333	2	181	No	No	No	No	No	No	No	No	No	No
16	3	233	2	127	No	No	No	No	No	No	No	No	No	No
17	3	133	2	72	No	No	No	No	No	No	No	No	No	No
18	3	133	2	72	No	No	No	No	No	No	No	No	No	No
19	3	75	2	41	No	No	No	No	No	No	No	No	No	No
20	3	41	2	23	No	No	No	No	No	No	No	No	No	No
21	3	25	2	14	No	No	No	No	No	No	No	No	No	No
22	3	9	2	5	No	No	No	No	No	No	No	No	No	No
23	3	9	2	5	No	No	No	No	No	No	No	No	No	No
24	3	9	2	5	No	No	No	No	No	No	No	No	No	No
Hours Met					7	11	13	13	0	4	7	10	4	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	8.4	191.7
Number of Lanes on Minor Street Approach	1	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:04	24:07
Delay Condition Met	No	Yes
Volume on Minor Street Approach During Same Hour	31	453
High Minor Volume Condition Met	No	Yes
Total Entering Volume on All Approaches During Same Hour	1315	1315
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	Yes
Warrant Met for Intersection	**Yes**	

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Intersection Level Of Service Report
Intersection 4: Meridian Rd/Flower Rd

Control Type:	Signalized	Delay (sec / veh):	22.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.329

Intersection Setup

Name	Meridian Rd			Meridian Rd			Meridian Market View			Flower Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	400.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	380.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name	Meridian Rd			Meridian Rd			Meridian Market View			Flower Rd		
Base Volume Input [veh/h]	43	399	74	0	710	5	0	0	20	0	0	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	-8	0	0	66	0	101	0	-8	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	8	0	0	0	0	0	0	0	22	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	3	0	0	17	0	0	0
Total Hourly Volume [veh/h]	51	391	74	0	776	2	101	0	17	0	0	34
Peak Hour Factor	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200	0.9200	1.0000	0.9200	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	106	19	0	211	1	27	0	5	0	0	9
Total Analysis Volume [veh/h]	55	425	74	0	843	2	110	0	18	0	0	34
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	0	0	0	6	0	4	0	0	0	0	0
Auxiliary Signal Groups												
Maximum Green [s]	5	0	0	0	10	0	10	0	0	0	0	0
Amber [s]	4.5	0.0	0.0	0.0	4.5	0.0	3.0	0.0	0.0	0.0	0.0	0.0
All red [s]	2.0	0.0	0.0	0.0	2.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	5	0	5	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	10	0	10	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No				No		No					
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	4.5	0.0	0.0	0.0	4.5	0.0	2.0	0.0	0.0	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	22	0	0	0	24	0	14	0	0	0	0	0
Lead / Lag	Lead	-	-	-	-	-	Lag	-	-	-	-	-
Minimum Green [s]	5	0	0	0	10	0	10	0	0	0	0	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No				No		No					
Maximum Recall	No				No		No					
Pedestrian Recall	No				No		No					

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	R	
C, Calculated Cycle Length [s]	60	60	60	60	60	
L, Total Lost Time per Cycle [s]	6.50	6.50	6.50	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	4.50	4.50	4.50	2.00	2.00	
g_i, Effective Green Time [s]	3	17	17	9	9	
g / C, Green / Cycle	0.05	0.29	0.29	0.15	0.15	
(v / s)_i Volume / Saturation Flow Rate	0.03	0.24	0.00	0.06	0.01	
s, saturation flow rate [veh/h]	1781	3560	1589	1781	1589	
c, Capacity [veh/h]	95	1026	458	262	234	
d1, Uniform Delay [s]	27.75	19.91	15.22	23.25	22.07	
k, delay calibration	0.11	0.11	0.11	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	5.50	1.71	0.00	1.07	0.14	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.58	0.82	0.00	0.42	0.08	
d, Delay for Lane Group [s/veh]	33.24	21.62	15.22	24.32	22.20	
Lane Group LOS	C	C	B	C	C	
Critical Lane Group	Yes	Yes	No	Yes	No	
50th-Percentile Queue Length [veh/ln]	0.85	4.95	0.02	1.43	0.22	
50th-Percentile Queue Length [ft/ln]	21.31	123.72	0.44	35.82	5.49	
95th-Percentile Queue Length [veh/ln]	1.53	8.60	0.03	2.58	0.39	
95th-Percentile Queue Length [ft/ln]	38.36	214.92	0.79	64.47	9.87	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	33.24	0.00	0.00	0.00	21.62	15.22	24.32	0.00	22.20	0.00	0.00	0.00
Movement LOS	C				C	B	C		C			
d_A, Approach Delay [s/veh]	33.24			21.60			24.02			0.00		
Approach LOS	C			C			C			A		
d_I, Intersection Delay [s/veh]	22.53											
Intersection LOS	C											
Intersection V/C	0.329											

Emissions

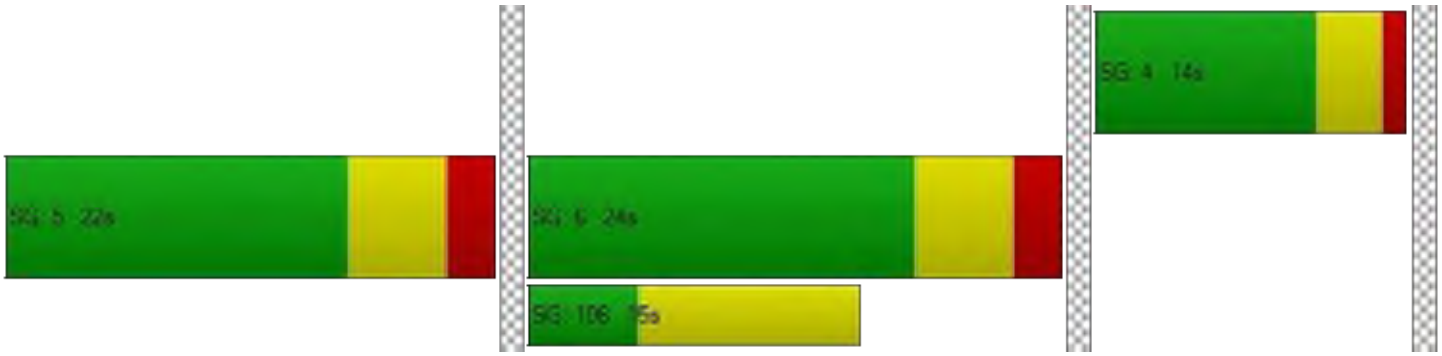
Vehicle Miles Traveled [mph]	9.49	84.38	0.20	4.93	0.81	
Stops [stops/h]	51.15	593.84	1.05	85.96	13.16	
Fuel consumption [US gal/h]	1.21	12.56	0.02	1.10	0.17	
CO [g/h]	84.90	878.27	1.66	76.62	11.75	
NOx [g/h]	16.52	170.88	0.32	14.91	2.29	
VOC [g/h]	19.68	203.55	0.38	17.76	2.72	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	21.68	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	2.001	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	517	583	333	0
d_b, Bicycle Delay [s]	16.50	15.05	20.83	30.00
l_b,int, Bicycle LOS Score for Intersection	1.560	2.259	1.560	4.132
Bicycle LOS	A	B	A	D

Sequence

Ring 1	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 4: Meridian Rd/Flower Rd

Control Type:	Signalized	Delay (sec / veh):	25.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.498

Intersection Setup

Name	Meridian Rd			Meridian Rd			Meridian Market View			Flower Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	400.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	380.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			25.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name	Meridian Rd			Meridian Rd			Meridian Market View			Flower Rd		
Base Volume Input [veh/h]	139	690	19	375	475	13	0	0	108	0	0	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	-45	79	-296	79	0	341	0	-45	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	27	0	0	0	0	0	32	0	17	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	98	0	0	7	0	0	40	0	0	16
Total Hourly Volume [veh/h]	166	645	0	79	554	6	373	0	40	0	0	31
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9600	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	175	0	21	151	2	101	0	10	0	0	8
Total Analysis Volume [veh/h]	180	701	0	86	602	7	405	0	42	0	0	34
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	0	0	0	6	0	4	4	0	0	8	0
Auxiliary Signal Groups												
Maximum Green [s]	5	0	0	0	10	0	10	10	0	0	10	0
Amber [s]	4.5	0.0	0.0	0.0	4.5	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	2.0	0.0	0.0	0.0	2.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	0	0	5	0	5	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	0	10	0	10	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No				No		No					
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	4.5	0.0	0.0	0.0	4.5	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	23	0	0	0	22	0	15	15	0	0	64	0
Lead / Lag	Lead	-	-	-	-	-	Lag	-	-	-	-	-
Minimum Green [s]	5	0	0	0	10	0	10	10	0	0	10	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No				No		No					
Maximum Recall	No				No		No					
Pedestrian Recall	No				No		No					

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	R	
C, Calculated Cycle Length [s]	60	60	60	60	60	
L, Total Lost Time per Cycle [s]	6.50	6.50	6.50	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	4.50	4.50	4.50	2.00	2.00	
g_i, Effective Green Time [s]	8	13	13	16	16	
g / C, Green / Cycle	0.13	0.21	0.21	0.27	0.27	
(v / s)_i Volume / Saturation Flow Rate	0.10	0.17	0.00	0.23	0.03	
s, saturation flow rate [veh/h]	1781	3560	1589	1781	1589	
c, Capacity [veh/h]	234	762	340	474	423	
d1, Uniform Delay [s]	25.19	22.31	18.62	20.90	16.58	
k, delay calibration	0.11	0.11	0.11	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	5.32	1.89	0.02	4.48	0.10	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.77	0.79	0.02	0.85	0.10	
d, Delay for Lane Group [s/veh]	30.51	24.20	18.64	25.38	16.68	
Lane Group LOS	C	C	B	C	B	
Critical Lane Group	Yes	Yes	No	Yes	No	
50th-Percentile Queue Length [veh/ln]	2.58	3.74	0.07	5.60	0.42	
50th-Percentile Queue Length [ft/ln]	64.53	93.43	1.77	139.95	10.60	
95th-Percentile Queue Length [veh/ln]	4.65	6.73	0.13	9.48	0.76	
95th-Percentile Queue Length [ft/ln]	116.15	168.17	3.19	236.96	19.08	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	30.51	0.00	0.00	0.00	24.20	18.64	25.38	0.00	16.68	0.00	0.00	0.00
Movement LOS	C				C	B	C		B			
d_A, Approach Delay [s/veh]	30.51			24.14			24.56			0.00		
Approach LOS	C			C			C			A		
d_I, Intersection Delay [s/veh]	25.22											
Intersection LOS	C											
Intersection V/C	0.498											

Emissions

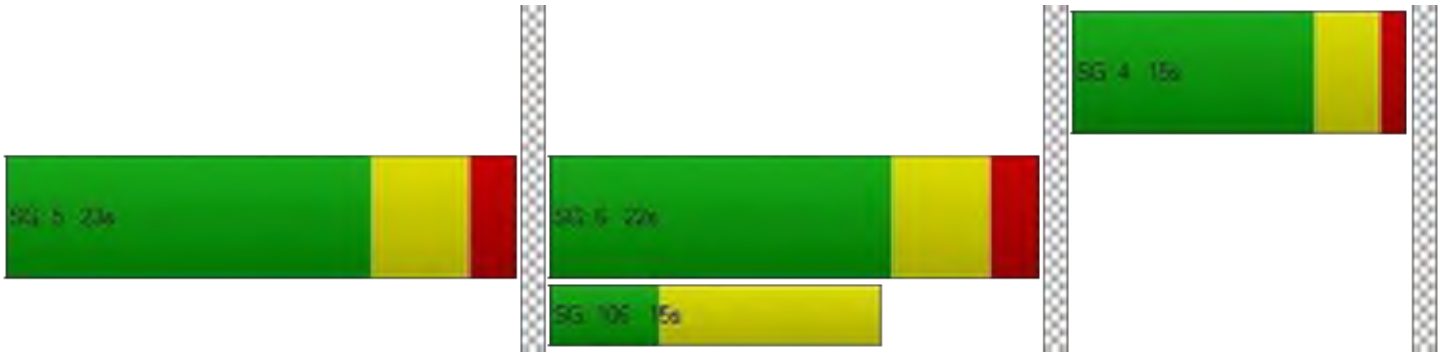
Vehicle Miles Traveled [mph]	31.07	60.26	0.70	18.17	1.88	
Stops [stops/h]	154.87	448.44	4.26	335.88	25.44	
Fuel consumption [US gal/h]	3.75	9.53	0.09	4.20	0.32	
CO [g/h]	262.27	666.04	6.53	293.36	22.71	
NOx [g/h]	51.03	129.59	1.27	57.08	4.42	
VOC [g/h]	60.78	154.36	1.51	67.99	5.26	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	21.68	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	2.162	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	550	517	367	0
d_b, Bicycle Delay [s]	15.77	16.50	20.01	30.00
l_b,int, Bicycle LOS Score for Intersection	1.560	2.068	1.560	4.132
Bicycle LOS	A	B	A	D

Sequence

Ring 1	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 4: Meridian Rd/Flower Rd

Control Type:	Two-way stop	Delay (sec / veh):	13.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.258

Intersection Setup

Name	Meridian Rd			Meridian Rd			Meridian Market View			Flower Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	460.00	100.00	360.00	400.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			25.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

Volumes

Name	Meridian Rd			Meridian Rd			Meridian Market View			Flower Rd		
Base Volume Input [veh/h]	43	399	8	150	710	5	0	0	20	0	0	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	93	66	-159	89	0	0	0	93	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	8	0	0	9	0	0	0	0	22	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	51	492	74	0	799	5	0	0	135	0	0	34
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	1.0000	1.0000	0.9200	1.0000	1.0000	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	134	20	0	217	1	0	0	37	0	0	9
Total Analysis Volume [veh/h]	55	535	80	0	868	5	0	0	147	0	0	37
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.26	0.00	0.00	0.05
d_M, Delay for Movement [s/veh]	10.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.50	0.00	0.00	10.19
Movement LOS	B	A	A		A	A			B			B
95th-Percentile Queue Length [veh/ln]	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.02	0.00	0.00	0.16
95th-Percentile Queue Length [ft/ln]	5.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.57	0.00	0.00	3.99
d_A, Approach Delay [s/veh]	0.82			0.00			13.50			10.19		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	1.69											
Intersection LOS	B											

Signal Warrants Report For Intersection 4: Meridian Rd/Flower Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	N	S	E	W
1	804	617	34	135
2	780	598	33	131
3	764	586	32	128
4	716	549	30	120
5	635	487	27	107
6	627	481	27	105
7	619	475	26	104
8	563	432	24	95
9	555	426	23	93
10	547	420	23	92
11	474	364	20	80
12	442	339	19	74
13	434	333	18	73
14	322	247	14	54
15	322	247	14	54
16	225	173	10	38
17	129	99	5	22
18	129	99	5	22
19	72	56	3	12
20	40	31	2	7
21	24	19	1	4
22	8	6	0	1
23	8	6	0	1
24	8	6	0	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	4	1421	1	135	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
2	4	1378	1	131	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
3	4	1350	1	128	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
4	4	1265	1	120	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
5	4	1122	1	107	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
6	4	1108	1	105	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
7	4	1094	1	104	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
8	4	995	1	95	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
9	4	981	1	93	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
10	4	967	1	92	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
11	4	838	1	80	No	No	No	No	No	Yes	Yes	Yes	No	No
12	4	781	1	74	No	No	No	No	No	Yes	Yes	Yes	No	No
13	4	767	1	73	No	No	No	No	No	Yes	Yes	Yes	No	No
14	4	569	1	54	No	No	No	No	No	No	No	Yes	No	No
15	4	569	1	54	No	No	No	No	No	No	No	Yes	No	No
16	4	398	1	38	No	No	No	No	No	No	No	No	No	No
17	4	228	1	22	No	No	No	No	No	No	No	No	No	No
18	4	228	1	22	No	No	No	No	No	No	No	No	No	No
19	4	128	1	12	No	No	No	No	No	No	No	No	No	No
20	4	71	1	7	No	No	No	No	No	No	No	No	No	No
21	4	43	1	4	No	No	No	No	No	No	No	No	No	No
22	4	14	1	1	No	No	No	No	No	No	No	No	No	No
23	4	14	1	1	No	No	No	No	No	No	No	No	No	No
24	4	14	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	4	6	10	10	13	13	15	4	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.2	13.5
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:05	0:30
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	34	135
High Minor Volume Condition Met	No	Yes
Total Entering Volume on All Approaches During Same Hour	1590	1590
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

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Intersection Level Of Service Report
Intersection 4: Meridian Rd/Flower Rd

Control Type:	Two-way stop	Delay (sec / veh):	19.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.620

Intersection Setup

Name	Meridian Rd			Meridian Rd			Meridian Market View			Flower Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	460.00	100.00	360.00	400.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			25.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

Volumes

Name	Meridian Rd			Meridian Rd			Meridian Market View			Flower Rd		
Base Volume Input [veh/h]	139	690	19	375	475	13	0	0	108	0	0	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	246	79	-407	161	0	0	0	246	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	27	0	0	32	0	0	0	0	17	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	166	936	98	0	636	13	0	0	371	0	0	31
Peak Hour Factor	0.9200	0.9200	0.9200	0.9600	0.9200	0.9200	1.0000	1.0000	0.9200	1.0000	1.0000	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	254	27	0	173	4	0	0	101	0	0	8
Total Analysis Volume [veh/h]	180	1017	107	0	691	14	0	0	403	0	0	34
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.20	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.62	0.00	0.00	0.07
d_M, Delay for Movement [s/veh]	10.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.11	0.00	0.00	12.57
Movement LOS	B	A	A		A	A			C			B
95th-Percentile Queue Length [veh/ln]	0.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.29	0.00	0.00	0.21
95th-Percentile Queue Length [ft/ln]	18.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	107.24	0.00	0.00	5.34
d_A, Approach Delay [s/veh]	1.39			0.00			19.11			12.57		
Approach LOS	A			A			C			B		
d_I, Intersection Delay [s/veh]	4.07											
Intersection LOS	C											

Signal Warrants Report For Intersection 4: Meridian Rd/Flower Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	N	S	E	W
1	649	1200	31	371
2	630	1164	30	360
3	617	1140	29	352
4	578	1068	28	330
5	513	948	24	293
6	506	936	24	289
7	500	924	24	286
8	454	840	22	260
9	448	828	21	256
10	441	816	21	252
11	383	708	18	219
12	357	660	17	204
13	350	648	17	200
14	260	480	12	148
15	260	480	12	148
16	182	336	9	104
17	104	192	5	59
18	104	192	5	59
19	58	108	3	33
20	32	60	2	19
21	19	36	1	11
22	6	12	0	4
23	6	12	0	4
24	6	12	0	4

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	4	1849	1	371	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	4	1794	1	360	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	4	1757	1	352	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	4	1646	1	330	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	4	1461	1	293	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	4	1442	1	289	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	4	1424	1	286	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	4	1294	1	260	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	4	1276	1	256	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	4	1257	1	252	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11	4	1091	1	219	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
12	4	1017	1	204	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
13	4	998	1	200	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
14	4	740	1	148	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
15	4	740	1	148	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
16	4	518	1	104	No	No	No	Yes	No	No	No	Yes	No	No
17	4	296	1	59	No	No	No	No	No	No	No	No	No	No
18	4	296	1	59	No	No	No	No	No	No	No	No	No	No
19	4	166	1	33	No	No	No	No	No	No	No	No	No	No
20	4	92	1	19	No	No	No	No	No	No	No	No	No	No
21	4	55	1	11	No	No	No	No	No	No	No	No	No	No
22	4	18	1	4	No	No	No	No	No	No	No	No	No	No
23	4	18	1	4	No	No	No	No	No	No	No	No	No	No
24	4	18	1	4	No	No	No	No	No	No	No	No	No	No
Hours Met					13	15	15	16	13	15	15	16	13	10

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	12.6	19.1
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:06	1:58
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	31	371
High Minor Volume Condition Met	No	Yes
Total Entering Volume on All Approaches During Same Hour	2251	2251
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

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Intersection Level Of Service Report
Intersection 4: Meridian Rd/Flower Rd

Control Type:	Two-way stop	Delay (sec / veh):	159.6
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.001

Intersection Setup

Name	Meridian Rd			Meridian Rd			Meridian Market View			Flower Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	460.00	100.00	360.00	400.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			25.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

Volumes

Name	Meridian Rd			Meridian Rd			Meridian Market View			Flower Rd		
Base Volume Input [veh/h]	43	399	8	150	710	5	0	0	20	0	0	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	-8	0	-84	0	0	101	0	-8	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	8	0	0	0	0	0	0	0	22	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	51	391	8	66	710	5	101	0	34	0	0	34
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	106	2	18	193	1	27	0	9	0	0	9
Total Analysis Volume [veh/h]	55	425	9	72	772	5	110	0	37	0	0	37
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.00	0.00	0.06	0.01	0.00	1.00	0.00	0.06	0.00	0.00	0.05
d_M, Delay for Movement [s/veh]	9.61	0.00	0.00	8.43	0.00	0.00	159.59	0.00	11.26	0.00	0.00	9.76
Movement LOS	A	A	A	A	A	A	F		B			A
95th-Percentile Queue Length [veh/ln]	0.21	0.00	0.00	0.21	0.00	0.00	6.43	0.00	0.19	0.00	0.00	0.15
95th-Percentile Queue Length [ft/ln]	5.28	0.00	0.00	5.13	0.00	0.00	160.80	0.00	4.81	0.00	0.00	3.67
d_A, Approach Delay [s/veh]	1.08			0.71			122.26			9.76		
Approach LOS	A			A			F			A		
d_I, Intersection Delay [s/veh]	12.79											
Intersection LOS	F											

Signal Warrants Report For Intersection 4: Meridian Rd/Flower Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	N	S	E	W
1	781	450	34	135
2	758	437	33	131
3	742	428	32	128
4	695	401	30	120
5	617	356	27	107
6	609	351	27	105
7	601	347	26	104
8	547	315	24	95
9	539	311	23	93
10	531	306	23	92
11	461	266	20	80
12	430	248	19	74
13	422	243	18	73
14	312	180	14	54
15	312	180	14	54
16	219	126	10	38
17	125	72	5	22
18	125	72	5	22
19	70	41	3	12
20	39	23	2	7
21	23	14	1	4
22	8	5	0	1
23	8	5	0	1
24	8	5	0	1

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	4	1231	2	135	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No
2	4	1195	2	131	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
3	4	1170	2	128	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
4	4	1096	2	120	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
5	4	973	2	107	No	No	No	No	Yes	Yes	Yes	Yes	No	No
6	4	960	2	105	No	No	No	No	Yes	Yes	Yes	Yes	No	No
7	4	948	2	104	No	No	No	No	Yes	Yes	Yes	Yes	No	No
8	4	862	2	95	No	No	No	No	No	Yes	Yes	Yes	No	No
9	4	850	2	93	No	No	No	No	No	Yes	Yes	Yes	No	No
10	4	837	2	92	No	No	No	No	No	Yes	Yes	Yes	No	No
11	4	727	2	80	No	No	No	No	No	Yes	Yes	Yes	No	No
12	4	678	2	74	No	No	No	No	No	No	Yes	Yes	No	No
13	4	665	2	73	No	No	No	No	No	No	Yes	Yes	No	No
14	4	492	2	54	No	No	No	No	No	No	No	No	No	No
15	4	492	2	54	No	No	No	No	No	No	No	No	No	No
16	4	345	2	38	No	No	No	No	No	No	No	No	No	No
17	4	197	2	22	No	No	No	No	No	No	No	No	No	No
18	4	197	2	22	No	No	No	No	No	No	No	No	No	No
19	4	111	2	12	No	No	No	No	No	No	No	No	No	No
20	4	62	2	7	No	No	No	No	No	No	No	No	No	No
21	4	37	2	4	No	No	No	No	No	No	No	No	No	No
22	4	13	2	1	No	No	No	No	No	No	No	No	No	No
23	4	13	2	1	No	No	No	No	No	No	No	No	No	No
24	4	13	2	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	4	7	11	13	13	1	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	9.8	122.3
Number of Lanes on Minor Street Approach	1	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:05	4:35
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	34	135
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	1400	1400
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

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Intersection Level Of Service Report
Intersection 4: Meridian Rd/Flower Rd

Control Type:	Two-way stop	Delay (sec / veh):	2,241.4
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	5.723

Intersection Setup

Name	Meridian Rd			Meridian Rd			Meridian Market View			Flower Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	460.00	100.00	360.00	400.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			25.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

Volumes

Name	Meridian Rd			Meridian Rd			Meridian Market View			Flower Rd		
Base Volume Input [veh/h]	139	690	19	375	475	13	0	0	108	0	0	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	-45	0	-296	0	0	341	0	-45	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	27	0	0	0	0	0	32	0	17	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	166	645	19	79	475	13	373	0	80	0	0	31
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9600	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	175	5	21	129	4	101	0	21	0	0	8
Total Analysis Volume [veh/h]	180	701	21	86	516	14	405	0	83	0	0	34
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.17	0.01	0.00	0.10	0.01	0.00	5.72	0.00	0.11	0.00	0.00	0.05
d_M, Delay for Movement [s/veh]	9.22	0.00	0.00	9.56	0.00	0.00	2241.38	0.00	10.47	0.00	0.00	10.89
Movement LOS	A	A	A	A	A	A	F		B			B
95th-Percentile Queue Length [veh/ln]	0.63	0.00	0.00	0.33	0.00	0.00	45.14	0.00	0.38	0.00	0.00	0.17
95th-Percentile Queue Length [ft/ln]	15.73	0.00	0.00	8.14	0.00	0.00	1128.60	0.00	9.42	0.00	0.00	4.16
d_A, Approach Delay [s/veh]	1.84			1.33			1861.94			10.89		
Approach LOS	A			A			F			B		
d_I, Intersection Delay [s/veh]	446.80											
Intersection LOS	F											

Signal Warrants Report For Intersection 4: Meridian Rd/Flower Rd

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	N	S	E	W
1	567	830	31	453
2	550	805	30	439
3	539	789	29	430
4	505	739	28	403
5	448	656	24	358
6	442	647	24	353
7	437	639	24	349
8	397	581	22	317
9	391	573	21	313
10	386	564	21	308
11	335	490	18	267
12	312	457	17	249
13	306	448	17	245
14	227	332	12	181
15	227	332	12	181
16	159	232	9	127
17	91	133	5	72
18	91	133	5	72
19	51	75	3	41
20	28	42	2	23
21	17	25	1	14
22	6	8	0	5
23	6	8	0	5
24	6	8	0	5

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	4	1397	2	453	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	4	1355	2	439	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	4	1328	2	430	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	4	1244	2	403	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	4	1104	2	358	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	4	1089	2	353	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	4	1076	2	349	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	4	978	2	317	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
9	4	964	2	313	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
10	4	950	2	308	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
11	4	825	2	267	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
12	4	769	2	249	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
13	4	754	2	245	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
14	4	559	2	181	No	Yes	Yes	Yes	No	No	No	Yes	No	No
15	4	559	2	181	No	Yes	Yes	Yes	No	No	No	Yes	No	No
16	4	391	2	127	No	No	No	Yes	No	No	No	No	No	No
17	4	224	2	72	No	No	No	No	No	No	No	No	No	No
18	4	224	2	72	No	No	No	No	No	No	No	No	No	No
19	4	126	2	41	No	No	No	No	No	No	No	No	No	No
20	4	70	2	23	No	No	No	No	No	No	No	No	No	No
21	4	42	2	14	No	No	No	No	No	No	No	No	No	No
22	4	14	2	5	No	No	No	No	No	No	No	No	No	No
23	4	14	2	5	No	No	No	No	No	No	No	No	No	No
24	4	14	2	5	No	No	No	No	No	No	No	No	No	No
Hours Met					13	15	15	16	10	13	13	15	10	7

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.9	1861.9
Number of Lanes on Minor Street Approach	1	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:05	234:17
Delay Condition Met	No	Yes
Volume on Minor Street Approach During Same Hour	31	453
High Minor Volume Condition Met	No	Yes
Total Entering Volume on All Approaches During Same Hour	1881	1881
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	Yes
Warrant Met for Intersection	**Yes**	

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Intersection Level Of Service Report
Intersection 4: Meridian Rd/Flower Rd

Control Type:	Roundabout	Delay (sec / veh):	5.8
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Meridian Rd			Meridian Rd			Meridian Market View			Flower Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

Volumes

Name	Meridian Rd			Meridian Rd			Meridian Market View			Flower Rd		
Base Volume Input [veh/h]	43	399	8	150	710	5	0	5	20	5	5	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	-8	0	-84	0	0	101	0	-8	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	8	0	0	0	0	0	0	0	22	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	51	391	8	66	710	5	101	5	34	5	5	34
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	106	2	18	193	1	27	1	9	1	1	9
Total Analysis Volume [veh/h]	55	425	9	72	772	5	110	5	37	5	5	37
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	2			2			2			2		
Circulating Flow Rate [veh/h]	191			66			866			602		
Exiting Flow Rate [veh/h]	830			583			66			88		
Demand Flow Rate [veh/h]	51	391	8	66	710	5	101	5	34	5	5	34
Adjusted Demand Flow Rate [veh/h]	55	425	9	72	772	5	110	5	37	5	5	37

Lanes

Overwrite Calculated Critical Headway	No	No	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00	3.00	3.00
A (intercept)	1350.00	1420.00	1350.00	1420.00	1420.00	1420.00
B (coefficient)	0.00092	0.00085	0.00092	0.00085	0.00085	0.00085
HV Adjustment Factor	0.98	0.98	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	235	265	408	459	156	48
Capacity of Entry and Bypass Lanes [veh/h]	1133	1208	1271	1343	681	852
Pedestrian Impedance	1.00	1.00	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1111	1184	1246	1316	667	835
X, volume / capacity	0.21	0.22	0.32	0.34	0.23	0.06

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.78	0.83	1.40	1.54	0.87	0.18
95th-Percentile Queue Length [ft]	19.44	20.87	34.91	38.43	21.85	4.47
Approach Delay [s/veh]	5.05		5.86		8.13	4.85
Approach LOS	A		A		A	A
Intersection Delay [s/veh]	5.79					
Intersection LOS	A					

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Intersection Level Of Service Report
Intersection 4: Meridian Rd/Flower Rd

Control Type:	Roundabout	Delay (sec / veh):	10.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	Meridian Rd			Meridian Rd			Meridian Market View			Flower Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

Volumes

Name	Meridian Rd			Meridian Rd			Meridian Market View			Flower Rd		
Base Volume Input [veh/h]	139	690	19	375	475	13	0	5	108	5	5	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	-45	0	-296	0	0	341	0	-45	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	27	0	0	0	0	0	32	0	17	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	166	645	19	79	475	13	373	5	80	5	5	31
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	175	5	21	129	4	101	1	22	1	1	8
Total Analysis Volume [veh/h]	180	701	21	86	516	14	405	5	87	5	5	34
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	2			2			2			2		
Circulating Flow Rate [veh/h]	506			194			619			1312		
Exiting Flow Rate [veh/h]	620			1163			203			114		
Demand Flow Rate [veh/h]	166	645	19	79	475	13	373	5	80	5	5	31
Adjusted Demand Flow Rate [veh/h]	180	701	21	86	516	14	405	5	87	5	5	34

Lanes

Overwrite Calculated Critical Headway	No	No	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00	3.00	3.00
A (intercept)	1350.00	1420.00	1350.00	1420.00	1420.00	1420.00
B (coefficient)	0.00092	0.00085	0.00092	0.00085	0.00085	0.00085
HV Adjustment Factor	0.98	0.98	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	433	488	296	334	507	45
Capacity of Entry and Bypass Lanes [veh/h]	848	924	1130	1205	839	466
Pedestrian Impedance	1.00	1.00	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	831	906	1108	1181	823	457
X, volume / capacity	0.51	0.53	0.26	0.28	0.60	0.10

Movement, Approach, & Intersection Results

Lane LOS	B	B	A	A	B	A
95th-Percentile Queue Length [veh]	2.95	3.17	1.05	1.13	4.16	0.32
95th-Percentile Queue Length [ft]	73.83	79.17	26.28	28.36	103.90	7.95
Approach Delay [s/veh]	11.13		5.65		13.85	9.21
Approach LOS	B		A		B	A
Intersection Delay [s/veh]	10.10					
Intersection LOS	B					

Appendix D - Future Conditions Analyses

Alternative A – Traffic Signal

Alternative B1 – High-T Intersection (Signalized)

Alternative E – Roundabout

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Intersection Level Of Service Report
Intersection 4: Meridian Rd/Flower Rd

Control Type:	Signalized	Delay (sec / veh):	18.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.382

Intersection Setup

Name	Meridian Rd			Meridian Rd			Meridian Market View			Flower Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	460.00	100.00	360.00	400.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			25.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Meridian Rd			Meridian Rd			Meridian Market View			Flower Rd		
Base Volume Input [veh/h]	43	399	8	150	710	5	0	5	20	5	5	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.4090	1.0000	1.0000	1.4090	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	-8	0	-84	0	0	101	0	-8	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	8	0	0	0	0	0	0	0	22	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	4	0	0	3	0	0	17	0	0	17
Total Hourly Volume [veh/h]	51	554	4	66	1000	2	101	5	17	5	5	17
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	151	1	18	272	1	27	1	5	1	1	5
Total Analysis Volume [veh/h]	55	602	4	72	1087	2	110	5	18	5	5	18
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	7	4	0	0	8	0
Auxiliary Signal Groups												
Maximum Green [s]	2	10	0	5	10	0	4	10	0	0	10	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	9	52	0	40	83	0	10	28	0	0	18	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	0	10	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No	No		No	No		No	No			No	
Maximum Recall	No	No		No	No		No	No			No	
Pedestrian Recall	No	No		No	No		No	No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C
C, Calculated Cycle Length [s]	34	34	34	34	34	34	34	34	34	34
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	10	10	3	10	10	3	10	2	2
g / C, Green / Cycle	0.06	0.29	0.29	0.07	0.31	0.31	0.10	0.28	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.03	0.17	0.00	0.04	0.31	0.00	0.03	0.01	0.00	0.01
s, saturation flow rate [veh/h]	1781	3560	1589	1781	3560	1589	3459	1643	1388	1643
c, Capacity [veh/h]	104	1034	462	133	1093	488	333	469	229	119
d1, Uniform Delay [s]	15.71	10.40	8.67	15.32	11.87	8.26	14.48	8.90	16.76	14.98
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.15	0.52	0.01	3.38	11.42	0.00	0.57	0.04	0.04	0.78
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.53	0.58	0.01	0.54	0.99	0.00	0.33	0.05	0.02	0.19
d, Delay for Lane Group [s/veh]	19.86	10.92	8.67	18.69	23.29	8.26	15.05	8.94	16.80	15.76
Lane Group LOS	B	B	A	B	C	A	B	A	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.44	1.30	0.01	0.53	4.27	0.01	0.36	0.10	0.03	0.16
50th-Percentile Queue Length [ft/ln]	10.94	32.58	0.36	13.36	106.81	0.17	9.08	2.56	0.85	3.98
95th-Percentile Queue Length [veh/ln]	0.79	2.35	0.03	0.96	7.66	0.01	0.65	0.18	0.06	0.29
95th-Percentile Queue Length [ft/ln]	19.69	58.64	0.65	24.06	191.55	0.31	16.35	4.60	1.53	7.16

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	19.86	10.92	8.67	18.69	23.29	8.26	15.05	8.94	8.94	16.80	15.76	15.76
Movement LOS	B	B	A	B	C	A	B	A	A	B	B	B
d_A, Approach Delay [s/veh]	11.65			22.98			14.00			15.95		
Approach LOS	B			C			B			B		
d_I, Intersection Delay [s/veh]	18.50											
Intersection LOS	B											
Intersection V/C	0.382											

Emissions

Vehicle Miles Traveled [mph]	9.50	103.99	0.69	7.20	108.67	0.20	4.93	1.03	0.40	1.85
Stops [stops/h]	46.08	274.41	1.53	56.28	899.64	0.73	76.52	10.77	3.57	16.76
Fuel consumption [US gal/h]	1.02	7.76	0.05	1.08	17.88	0.02	0.85	0.13	0.06	0.27
CO [g/h]	70.97	542.36	3.27	75.82	1250.04	1.24	59.59	9.06	4.14	18.89
NOx [g/h]	13.81	105.52	0.64	14.75	243.21	0.24	11.59	1.76	0.81	3.67
VOC [g/h]	16.45	125.70	0.76	17.57	289.71	0.29	13.81	2.10	0.96	4.38

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	9.28	9.28	9.28	9.28
l_p,int, Pedestrian LOS Score for Intersectio	2.886	2.818	2.146	1.960
Crosswalk LOS	C	C	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	2808	4621	1404	819
d_b, Bicycle Delay [s]	2.79	29.36	1.52	5.96
l_b,int, Bicycle LOS Score for Intersection	2.108	2.520	1.807	1.634
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Intersection Level Of Service Report
Intersection 4: Meridian Rd/Flower Rd

Control Type:	Signalized	Delay (sec / veh):	33.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.461

Intersection Setup

Name	Meridian Rd			Meridian Rd			Meridian Market View			Flower Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	460.00	100.00	360.00	400.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			25.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Meridian Rd			Meridian Rd			Meridian Market View			Flower Rd		
Base Volume Input [veh/h]	139	690	19	375	475	13	0	5	108	5	5	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.4090	1.0000	1.0000	1.4090	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	-45	0	-296	0	0	341	0	-45	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	27	0	0	0	0	0	32	0	17	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	10	0	0	7	0	0	40	0	0	16
Total Hourly Volume [veh/h]	166	927	9	79	669	6	373	5	40	5	5	15
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	252	2	21	182	2	101	1	11	1	1	4
Total Analysis Volume [veh/h]	180	1008	10	86	727	7	405	5	43	5	5	16
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Maximum Green [s]	5	10	0	5	10	0	0	10	0	0	10	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	32	64	0	14	46	0	0	28	0	0	14	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	10	0	5	10	0	0	10	0	0	10	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C
C, Calculated Cycle Length [s]	44	44	44	44	44	44	44	44	44	44
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	12	12	3	10	10	10	10	3	3
g / C, Green / Cycle	0.11	0.27	0.27	0.08	0.23	0.23	0.23	0.23	0.06	0.06
(v / s)_i Volume / Saturation Flow Rate	0.10	0.28	0.01	0.05	0.20	0.00	0.12	0.03	0.00	0.01
s, saturation flow rate [veh/h]	1781	3560	1589	1781	3560	1589	3459	1615	1781	1648
c, Capacity [veh/h]	203	947	423	135	811	362	785	367	118	109
d1, Uniform Delay [s]	19.16	16.11	11.90	19.69	16.43	13.14	14.84	13.51	19.18	19.37
k, delay calibration	0.21	0.12	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	20.97	35.34	0.02	4.88	3.82	0.02	0.53	0.16	0.15	0.84
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	1.06	0.02	0.64	0.90	0.02	0.52	0.13	0.04	0.19
d, Delay for Lane Group [s/veh]	40.13	51.44	11.92	24.57	20.25	13.16	15.37	13.67	19.32	20.21
Lane Group LOS	D	F	B	C	C	B	B	B	B	C
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.67	8.24	0.06	0.90	3.19	0.04	1.60	0.35	0.05	0.20
50th-Percentile Queue Length [ft/ln]	66.77	205.99	1.47	22.45	79.78	1.12	40.05	8.74	1.16	5.04
95th-Percentile Queue Length [veh/ln]	4.81	13.38	0.11	1.62	5.74	0.08	2.88	0.63	0.08	0.36
95th-Percentile Queue Length [ft/ln]	120.18	334.59	2.64	40.41	143.61	2.01	72.09	15.73	2.08	9.06

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	40.13	51.44	11.92	24.57	20.25	13.16	15.37	13.67	13.67	19.32	20.21	20.21
Movement LOS	D	F	B	C	C	B	B	B	B	B	C	C
d_A, Approach Delay [s/veh]	49.41			20.64			15.19			20.04		
Approach LOS	D			C			B			C		
d_I, Intersection Delay [s/veh]	33.45											
Intersection LOS	C											
Intersection V/C	0.461											

Emissions

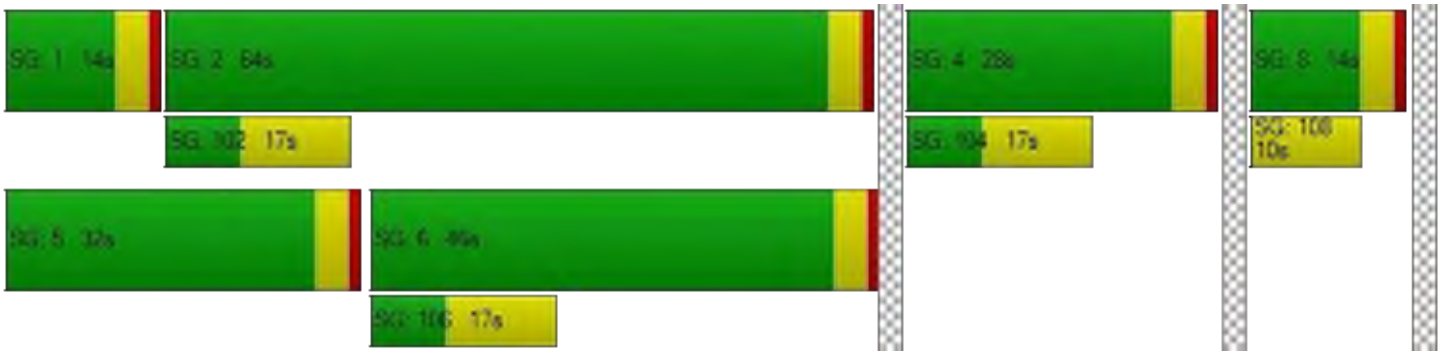
Vehicle Miles Traveled [mph]	31.08	174.04	1.73	8.60	72.74	0.70	23.35	2.77	0.40	1.69
Stops [stops/h]	219.62	1355.11	4.82	73.85	524.86	3.67	263.49	28.74	3.80	16.56
Fuel consumption [US gal/h]	4.74	30.10	0.13	1.46	10.76	0.08	3.33	0.37	0.06	0.28
CO [g/h]	331.38	2103.90	9.33	102.32	751.97	5.58	232.63	25.74	4.44	19.24
NOx [g/h]	64.47	409.34	1.82	19.91	146.31	1.09	45.26	5.01	0.86	3.74
VOC [g/h]	76.80	487.60	2.16	23.71	174.28	1.29	53.91	5.97	1.03	4.46

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	4.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	12.27	18.07	12.27	12.27
l_p,int, Pedestrian LOS Score for Intersectio	2.942	2.928	2.286	1.979
Crosswalk LOS	C	C	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	2741	1919	1096	457
d_b, Bicycle Delay [s]	3.01	0.04	4.47	13.03
l_b,int, Bicycle LOS Score for Intersection	2.556	2.242	2.373	1.629
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	-	4	8	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 4: Meridian Rd/Flower Rd

Control Type:	Signalized	Delay (sec / veh):	19.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.418

Intersection Setup

Name	Meridian Rd			Meridian Rd			Meridian Market View			Flower Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	400.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	380.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name	Meridian Rd			Meridian Rd			Meridian Market View			Flower Rd		
Base Volume Input [veh/h]	43	399	74	0	710	5	0	0	20	0	0	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.4090	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	-8	0	0	66	0	101	0	-8	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	8	0	0	0	0	0	0	0	22	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	3	0	0	17	0	0	0
Total Hourly Volume [veh/h]	51	391	74	0	1066	2	101	0	17	0	0	34
Peak Hour Factor	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200	0.9200	1.0000	0.9200	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	106	19	0	290	1	27	0	5	0	0	9
Total Analysis Volume [veh/h]	55	425	74	0	1159	2	110	0	18	0	0	34
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	0	0	0	6	0	4	0	0	0	0	0
Auxiliary Signal Groups												
Maximum Green [s]	5	0	0	0	10	0	10	0	0	0	0	0
Amber [s]	4.5	0.0	0.0	0.0	4.5	0.0	3.0	0.0	0.0	0.0	0.0	0.0
All red [s]	2.0	0.0	0.0	0.0	2.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	5	0	5	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	10	0	10	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No				No		No					
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	4.5	0.0	0.0	0.0	4.5	0.0	2.0	0.0	0.0	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	22	0	0	0	24	0	14	0	0	0	0	0
Lead / Lag	Lead	-	-	-	-	-	Lag	-	-	-	-	-
Minimum Green [s]	5	0	0	0	10	0	10	0	0	0	0	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No				No		No					
Maximum Recall	No				No		No					
Pedestrian Recall	No				No		No					

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	R	
C, Calculated Cycle Length [s]	60	60	60	60	60	
L, Total Lost Time per Cycle [s]	6.50	6.50	6.50	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	4.50	4.50	4.50	2.00	2.00	
g_i, Effective Green Time [s]	3	23	23	9	9	
g / C, Green / Cycle	0.05	0.38	0.38	0.15	0.15	
(v / s)_i Volume / Saturation Flow Rate	0.03	0.33	0.00	0.06	0.01	
s, saturation flow rate [veh/h]	1781	3560	1589	1781	1589	
c, Capacity [veh/h]	95	1358	606	262	234	
d1, Uniform Delay [s]	27.75	17.01	11.49	23.25	22.07	
k, delay calibration	0.11	0.11	0.11	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	5.50	1.62	0.00	1.07	0.14	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.58	0.85	0.00	0.42	0.08	
d, Delay for Lane Group [s/veh]	33.24	18.64	11.49	24.32	22.20	
Lane Group LOS	C	B	B	C	C	
Critical Lane Group	Yes	Yes	No	Yes	No	
50th-Percentile Queue Length [veh/ln]	0.85	6.28	0.01	1.43	0.22	
50th-Percentile Queue Length [ft/ln]	21.31	157.03	0.36	35.82	5.49	
95th-Percentile Queue Length [veh/ln]	1.53	10.39	0.03	2.58	0.39	
95th-Percentile Queue Length [ft/ln]	38.36	259.78	0.64	64.47	9.87	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	33.24	0.00	0.00	0.00	18.64	11.49	24.32	0.00	22.20	0.00	0.00	0.00
Movement LOS	C				B	B	C		C			
d_A, Approach Delay [s/veh]	33.24			18.62			24.02			0.00		
Approach LOS	C			B			C			A		
d_I, Intersection Delay [s/veh]	19.74											
Intersection LOS	B											
Intersection V/C	0.418											

Emissions

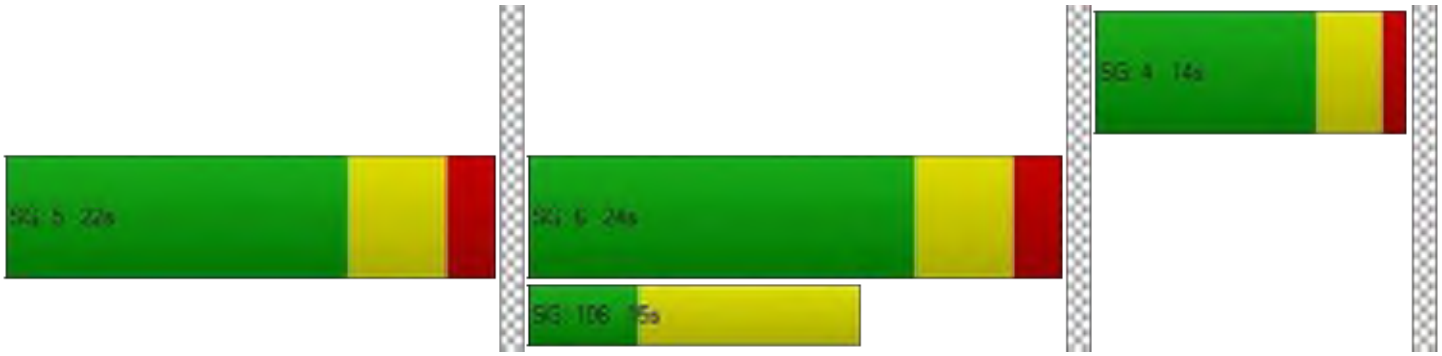
Vehicle Miles Traveled [mph]	9.49	116.01	0.20	4.93	0.81	
Stops [stops/h]	51.15	753.74	0.86	85.96	13.16	
Fuel consumption [US gal/h]	1.21	15.96	0.02	1.10	0.17	
CO [g/h]	84.90	1115.30	1.42	76.62	11.75	
NOx [g/h]	16.52	217.00	0.28	14.91	2.29	
VOC [g/h]	19.68	258.48	0.33	17.76	2.72	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	21.68	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	2.001	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	517	583	333	0
d_b, Bicycle Delay [s]	16.50	15.05	20.83	30.00
l_b,int, Bicycle LOS Score for Intersection	1.560	2.520	1.560	4.132
Bicycle LOS	A	B	A	D

Sequence

Ring 1	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 12: Meridian Rd/ Flower Rd

Control Type:	Two-way stop	Delay (sec / veh):	10.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.047

Intersection Setup

Name	Flower Rd		Meridian Rd			
Approach	Westbound		Northbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Flower Rd		Meridian Rd			
Base Volume Input [veh/h]	0	34	391	74	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.4090	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	34	551	74	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	9	138	19	0	0
Total Analysis Volume [veh/h]	0	34	551	74	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.05	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	10.23	0.00	0.00	0.00	0.00
Movement LOS		B	A	A		
95th-Percentile Queue Length [veh/ln]	0.00	0.15	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	3.70	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	10.23		0.00		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.53					
Intersection LOS	B					

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Intersection Level Of Service Report
Intersection 4: Meridian Rd/Flower Rd

Control Type:	Signalized	Delay (sec / veh):	24.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.557

Intersection Setup

Name	Meridian Rd			Meridian Rd			Meridian Market View			Flower Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	400.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	380.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			25.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			No		

Volumes

Name	Meridian Rd			Meridian Rd			Meridian Market View			Flower Rd		
Base Volume Input [veh/h]	139	690	19	375	475	13	0	0	108	0	0	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.4090	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	-45	79	-296	79	0	341	0	-45	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	27	0	0	0	0	0	32	0	17	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	98	0	0	7	0	0	40	0	0	16
Total Hourly Volume [veh/h]	166	645	0	79	748	6	373	0	40	0	0	31
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9600	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	175	0	21	203	2	101	0	10	0	0	8
Total Analysis Volume [veh/h]	180	701	0	86	813	7	405	0	42	0	0	34
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	0	0	0	6	0	4	4	0	0	8	0
Auxiliary Signal Groups												
Maximum Green [s]	5	0	0	0	10	0	10	10	0	0	10	0
Amber [s]	4.5	0.0	0.0	0.0	4.5	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	2.0	0.0	0.0	0.0	2.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	0	0	0	5	0	5	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	0	10	0	10	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No				No		No					
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	4.5	0.0	0.0	0.0	4.5	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	23	0	0	0	22	0	15	15	0	0	64	0
Lead / Lag	Lead	-	-	-	-	-	Lag	-	-	-	-	-
Minimum Green [s]	5	0	0	0	10	0	10	10	0	0	10	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No				No		No					
Maximum Recall	No				No		No					
Pedestrian Recall	No				No		No					

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	R	
C, Calculated Cycle Length [s]	60	60	60	60	60	
L, Total Lost Time per Cycle [s]	6.50	6.50	6.50	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	4.50	4.50	4.50	2.00	2.00	
g_i, Effective Green Time [s]	8	17	17	16	16	
g / C, Green / Cycle	0.13	0.28	0.28	0.27	0.27	
(v / s)_i Volume / Saturation Flow Rate	0.10	0.23	0.00	0.23	0.03	
s, saturation flow rate [veh/h]	1781	3560	1589	1781	1589	
c, Capacity [veh/h]	234	978	437	474	423	
d1, Uniform Delay [s]	25.19	20.45	15.85	20.90	16.58	
k, delay calibration	0.11	0.11	0.11	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	5.32	1.91	0.01	4.48	0.10	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.77	0.83	0.02	0.85	0.10	
d, Delay for Lane Group [s/veh]	30.51	22.35	15.86	25.38	16.68	
Lane Group LOS	C	C	B	C	B	
Critical Lane Group	Yes	Yes	No	Yes	No	
50th-Percentile Queue Length [veh/ln]	2.58	4.86	0.06	5.60	0.42	
50th-Percentile Queue Length [ft/ln]	64.53	121.56	1.58	139.95	10.60	
95th-Percentile Queue Length [veh/ln]	4.65	8.48	0.11	9.48	0.76	
95th-Percentile Queue Length [ft/ln]	116.15	211.97	2.84	236.96	19.08	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	30.51	0.00	0.00	0.00	22.35	15.86	25.38	0.00	16.68	0.00	0.00	0.00
Movement LOS	C				C	B	C		B			
d_A, Approach Delay [s/veh]	30.51			22.30			24.56			0.00		
Approach LOS	C			C			C			A		
d_I, Intersection Delay [s/veh]	24.02											
Intersection LOS	C											
Intersection V/C	0.557											

Emissions

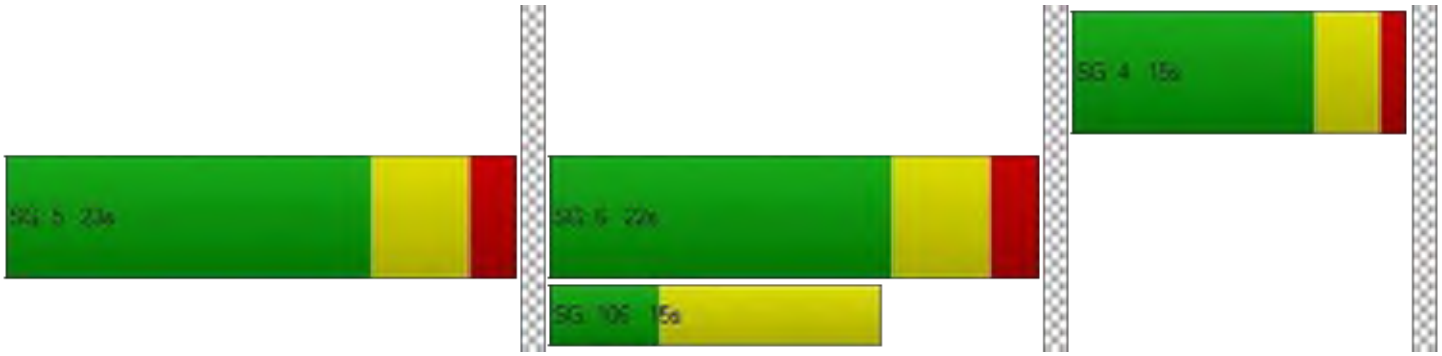
Vehicle Miles Traveled [mph]	31.07	81.38	0.70	18.17	1.88	
Stops [stops/h]	154.87	583.51	3.79	335.88	25.44	
Fuel consumption [US gal/h]	3.75	12.35	0.08	4.20	0.32	
CO [g/h]	262.27	862.96	5.94	293.36	22.71	
NOx [g/h]	51.03	167.90	1.16	57.08	4.42	
VOC [g/h]	60.78	200.00	1.38	67.99	5.26	

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	21.68	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	2.162	0.000
Crosswalk LOS	F	F	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	550	517	367	0
d_b, Bicycle Delay [s]	15.77	16.50	20.01	30.00
l_b,int, Bicycle LOS Score for Intersection	1.560	2.242	1.560	4.132
Bicycle LOS	A	B	A	D

Sequence

Ring 1	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Meridian Rd/Flower Rd

Control Type:	Two-way stop	Delay (sec / veh):	11.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.056

Intersection Setup

Name	Flower Rd		Meridian Rd		Meridian Rd	
Approach	Westbound		Northbound			
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Flower Rd		Meridian Rd		Meridian Rd	
Base Volume Input [veh/h]	0	31	645	98	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.4090	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	31	909	98	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	8	227	25	0	0
Total Analysis Volume [veh/h]	0	31	909	98	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.06	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	11.90	0.00	0.00	0.00	0.00
Movement LOS		B	A	A		
95th-Percentile Queue Length [veh/ln]	0.00	0.18	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	4.44	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	11.90		0.00		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.36					
Intersection LOS	B					

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Intersection Level Of Service Report
Intersection 4: Meridian Rd/Flower Rd

Control Type:	Roundabout	Delay (sec / veh):	7.2
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Meridian Rd			Meridian Rd			Meridian Market View			Flower Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

Volumes

Name	Meridian Rd			Meridian Rd			Meridian Market View			Flower Rd		
Base Volume Input [veh/h]	43	399	8	150	710	5	0	5	20	5	5	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.4090	1.0000	1.0000	1.4090	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	-8	0	-84	0	0	101	0	-8	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	8	0	0	0	0	0	0	0	22	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	51	554	8	66	1000	5	101	5	34	5	5	34
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	151	2	18	272	1	27	1	9	1	1	9
Total Analysis Volume [veh/h]	55	602	9	72	1087	5	110	5	37	5	5	37
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	2			2			2			2		
Circulating Flow Rate [veh/h]	191			66			1187			782		
Exiting Flow Rate [veh/h]	1152			764			66			88		
Demand Flow Rate [veh/h]	51	554	8	66	1000	5	101	5	34	5	5	34
Adjusted Demand Flow Rate [veh/h]	55	602	9	72	1087	5	110	5	37	5	5	37

Lanes

Overwrite Calculated Critical Headway	No	No	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00	3.00	3.00
A (intercept)	1350.00	1420.00	1350.00	1420.00	1420.00	1420.00
B (coefficient)	0.00092	0.00085	0.00092	0.00085	0.00085	0.00085
HV Adjustment Factor	0.98	0.98	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	320	361	559	630	156	48
Capacity of Entry and Bypass Lanes [veh/h]	1133	1208	1271	1343	518	731
Pedestrian Impedance	1.00	1.00	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1111	1184	1246	1316	508	716
X, volume / capacity	0.28	0.30	0.44	0.47	0.30	0.07

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	1.16	1.26	2.29	2.57	1.25	0.21
95th-Percentile Queue Length [ft]	29.10	31.48	57.27	64.30	31.19	5.26
Approach Delay [s/veh]	5.87		7.41		11.60	5.71
Approach LOS	A		A		B	A
Intersection Delay [s/veh]	7.18					
Intersection LOS	A					

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Intersection Level Of Service Report
Intersection 4: Meridian Rd/Flower Rd

Control Type:	Roundabout	Delay (sec / veh):	14.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	Meridian Rd			Meridian Rd			Meridian Market View			Flower Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

Volumes

Name	Meridian Rd			Meridian Rd			Meridian Market View			Flower Rd		
Base Volume Input [veh/h]	139	690	19	375	475	13	0	5	108	5	5	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.4090	1.0000	1.0000	1.4090	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	-45	0	-296	0	0	341	0	-45	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	27	0	0	0	0	0	32	0	17	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	166	927	19	79	669	13	373	5	80	5	5	31
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	252	5	21	182	4	101	1	22	1	1	8
Total Analysis Volume [veh/h]	180	1008	21	86	727	14	405	5	87	5	5	34
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	2			2			2			2		
Circulating Flow Rate [veh/h]	506			194			834			1625		
Exiting Flow Rate [veh/h]	835			1476			203			114		
Demand Flow Rate [veh/h]	166	927	19	79	669	13	373	5	80	5	5	31
Adjusted Demand Flow Rate [veh/h]	180	1008	21	86	727	14	405	5	87	5	5	34

Lanes

Overwrite Calculated Critical Headway	No	No	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00	3.00	3.00
A (intercept)	1350.00	1420.00	1350.00	1420.00	1420.00	1420.00
B (coefficient)	0.00092	0.00085	0.00092	0.00085	0.00085	0.00085
HV Adjustment Factor	0.98	0.98	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	580	654	397	448	507	45
Capacity of Entry and Bypass Lanes [veh/h]	848	924	1130	1205	699	357
Pedestrian Impedance	1.00	1.00	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	831	906	1108	1181	685	350
X, volume / capacity	0.68	0.71	0.35	0.37	0.73	0.13

Movement, Approach, & Intersection Results

Lane LOS	C	C	A	A	C	B
95th-Percentile Queue Length [veh]	5.55	6.13	1.59	1.74	6.26	0.43
95th-Percentile Queue Length [ft]	138.75	153.14	39.85	43.46	156.56	10.67
Approach Delay [s/veh]	16.54		6.72		21.49	12.39
Approach LOS	C		A		C	B
Intersection Delay [s/veh]	14.27					
Intersection LOS	B					

Appendix E – Supporting Documents

Natural Gas Distribution
Parcel
Public Right-of-Way Boundary

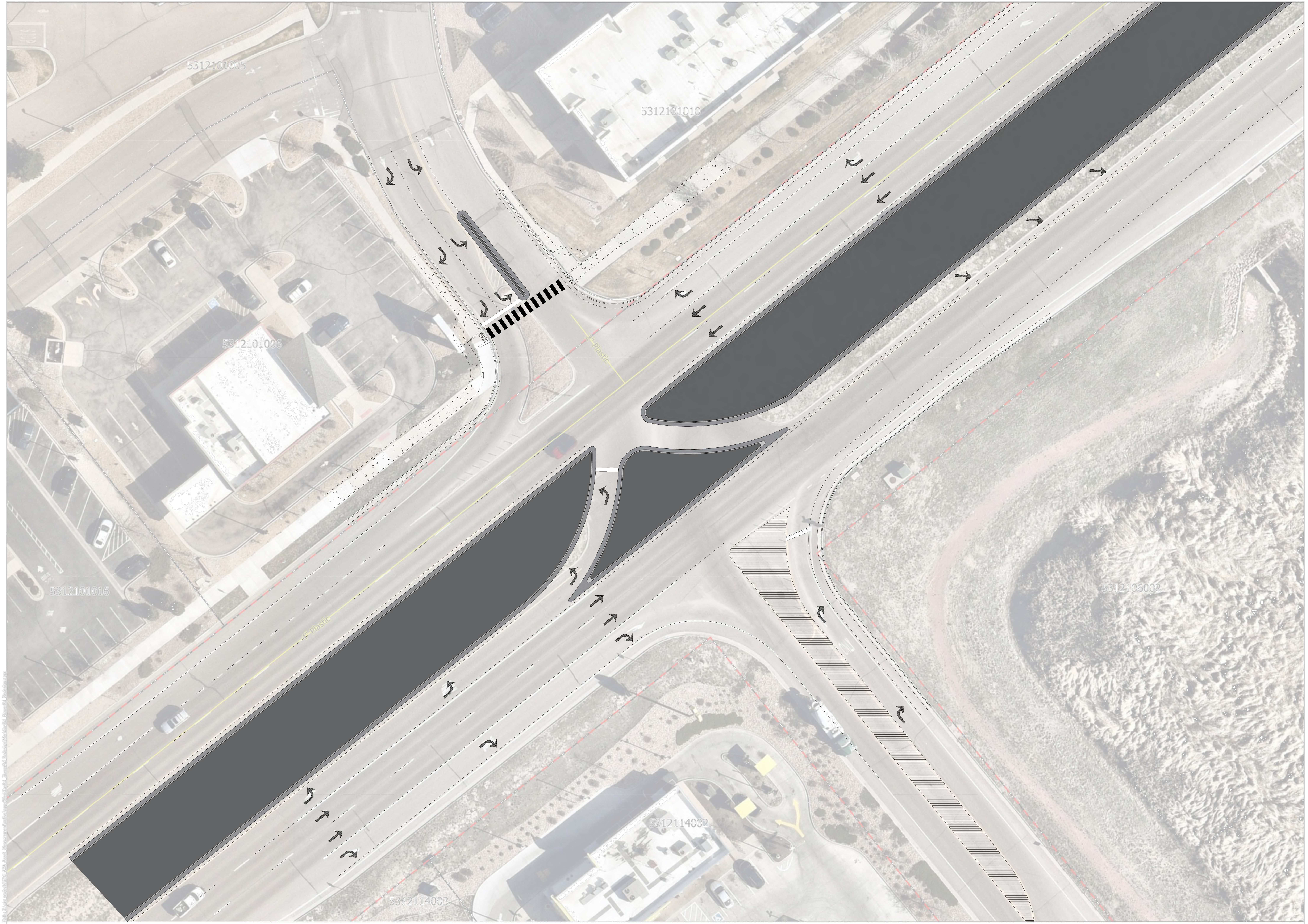
Matrix

1 inch = 20 feet

N

Alternative A

Flower Road & Meridian Road
Falcon, CO



Natural Gas Distribution
Parcel
Public Right-of-Way Boundary

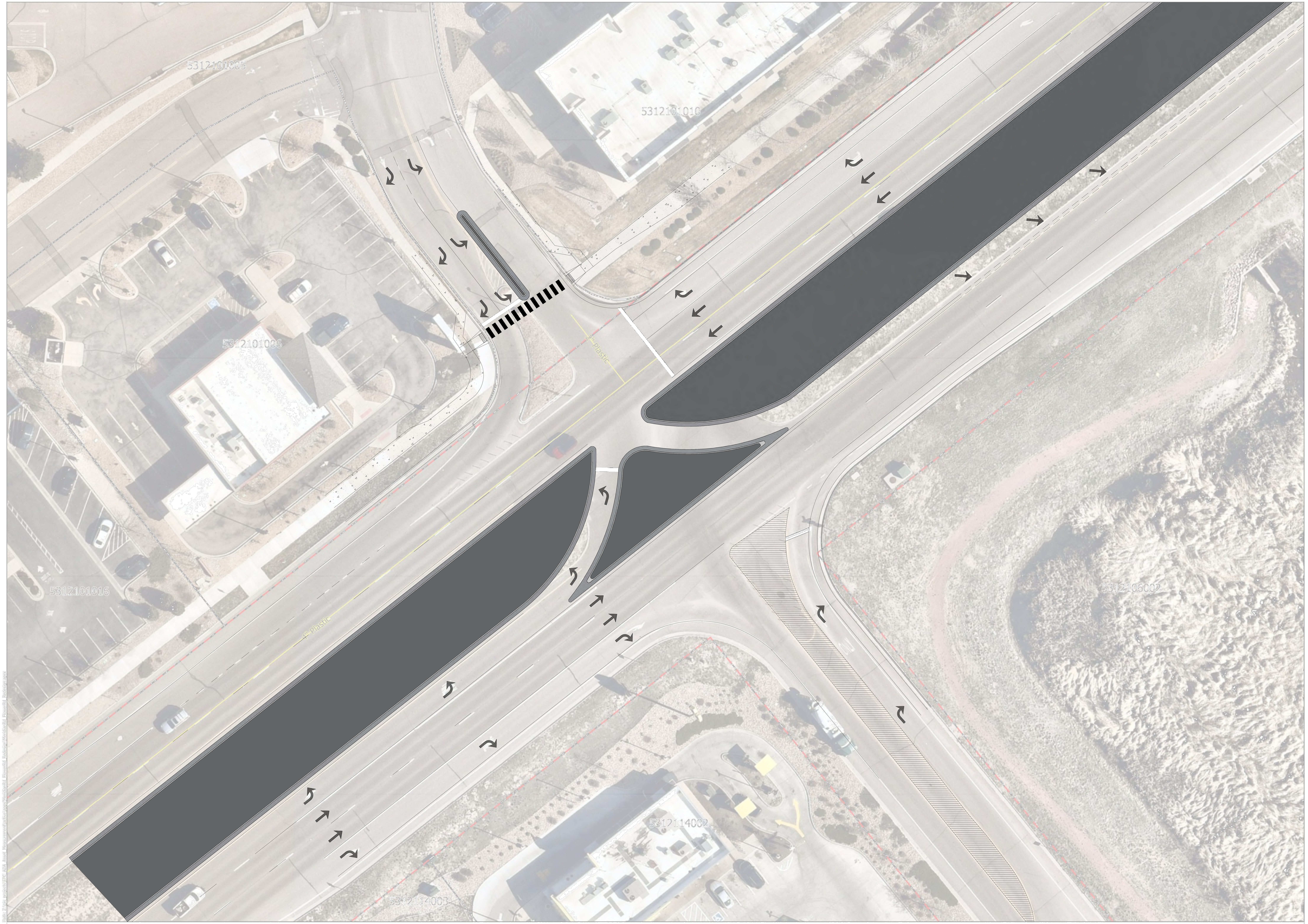
Matrix

1 inch = 20 feet

N

Alternative B

Flower Road & Meridian Road
Falcon, CO



Natural Gas Distribution
Parcel
Public Right-of-Way Boundary

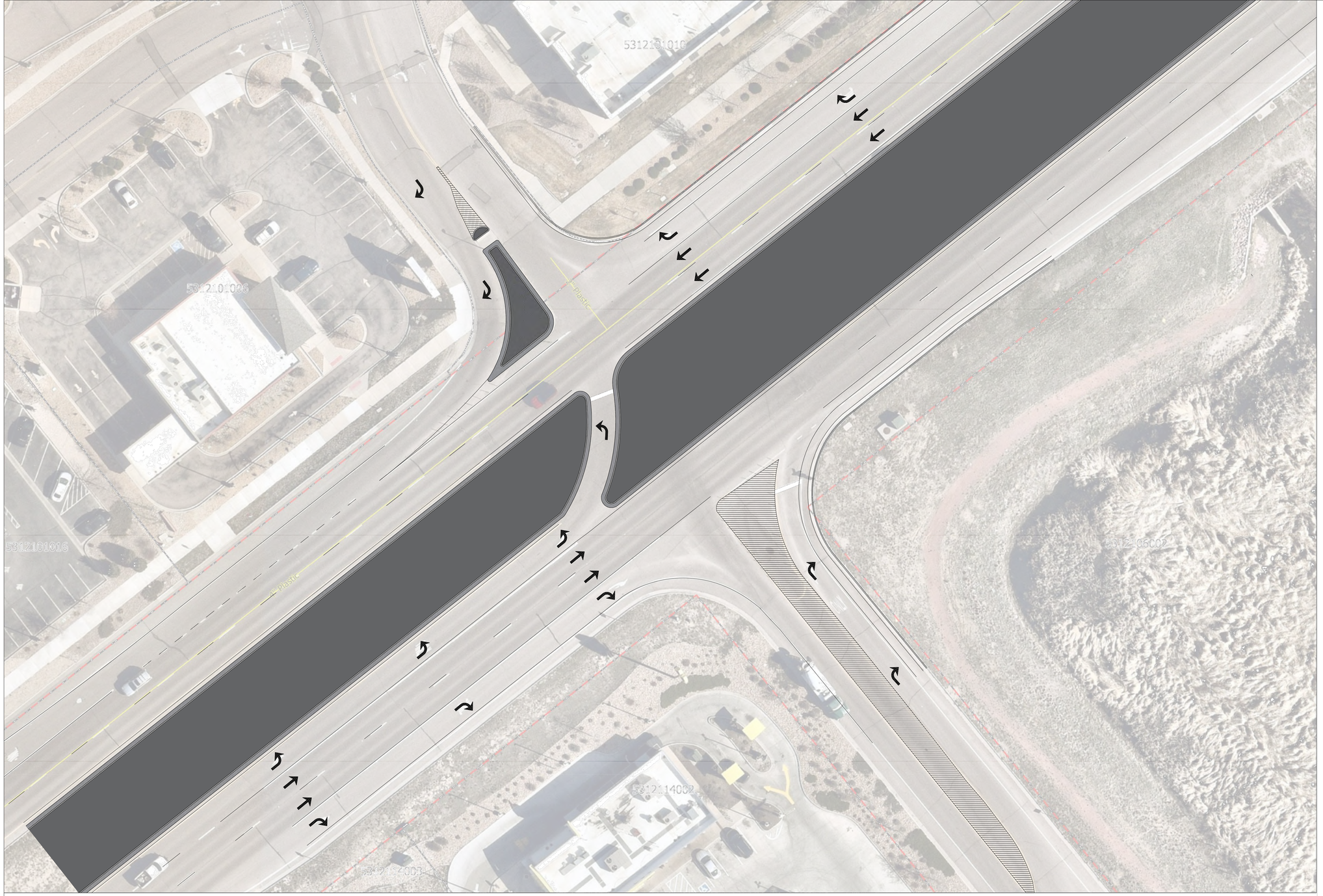
Matrix

1 inch = 20 feet

N

Alternative B1

Flower Road & Meridian Road
Falcon, CO



Gas Distribution

Right-of-Way Boundary

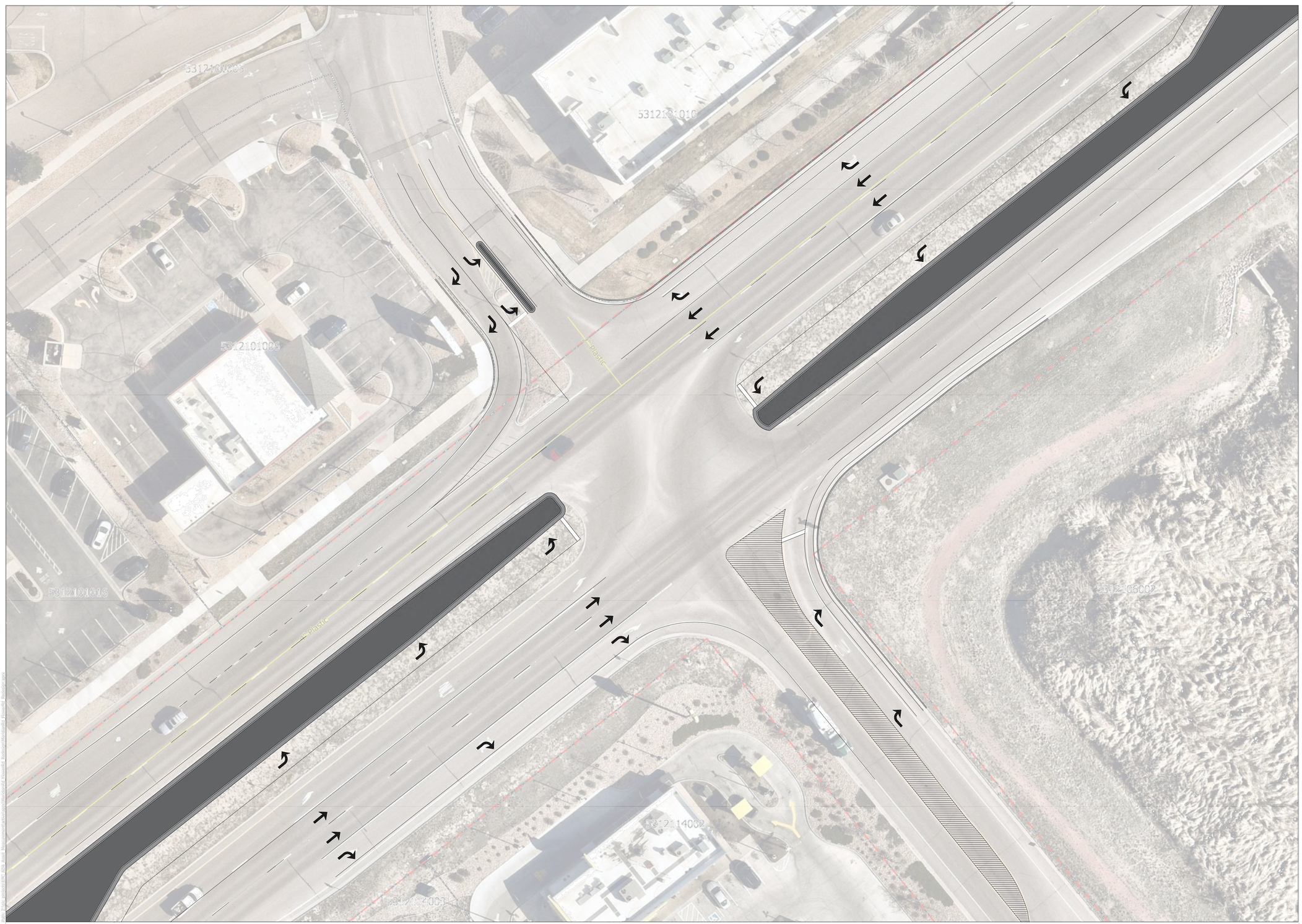
Matrix

1 inch = 20 feet

N

Alternative C

Flower Road & Meridian Road
Falcon, CO



Natural Gas Distribution
Parcel
Public Right-of-Way Boundary

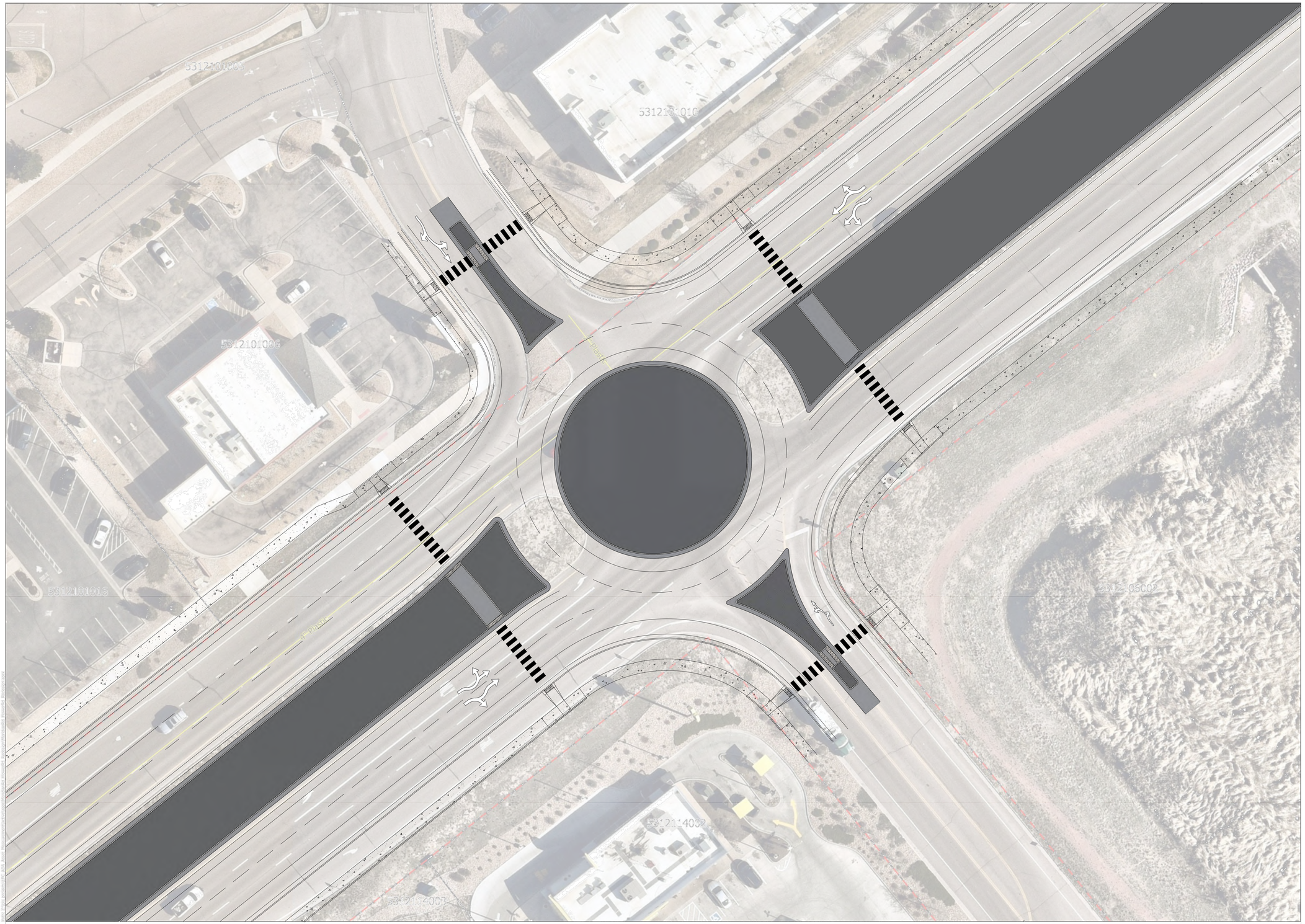
Matrix

1 inch = 20 feet

N

Alternative D

Flower Road & Meridian Road
Falcon, CO



Matrix

1 inch = 20 feet

N

Alternative E

Flower Road & Meridian Road
Falcon, CO