



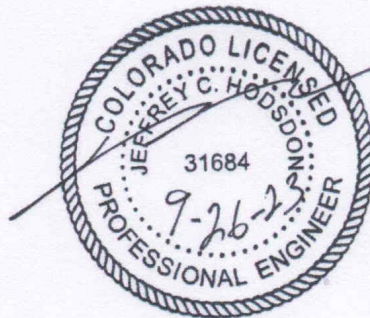
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Per ECM Appendix B the traffic impact study shall meet the criteria for a Full TIS due to the site generated traffic. Please revise report to meet criteria.

Shops at Meridian Ranch
Lot 2, Filing No. 1
Traffic Technical Memorandum
PCD File No. PPR2322
(LSC #S234020)
September 26, 2023

Traffic Engineer's Statement

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



Developer's Statement

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

9qbal Suinyh

09/30/2023.
Date

Shops at Meridian Ranch

Lot 2, Filing No.1

Traffic Technical Memorandum

Prepared for:

Hunjan Gas Stations LLC
c/o Brad Nichols
Planner
YOW Architects

SEPTEMBER 26, 2023

LSC Transportation Consultants, Inc.

Prepared by: Jeffrey C. Hodsdon, P.E. and Kirstin D. Ferrin, P.E.

LSC #S234020



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September 26, 2023

Hunjan Gas Stations LLC
c/o Brad Nichols
Planner
YOW Architects

RE: Shops at Meridian Ranch
Lot 2, Filing No. 1
El Paso County, Colorado
Traffic Technical Memorandum
LSC #S234020

Dear Mr. Nichols:

In response to your request, LSC Transportation Consultants, Inc. has prepared this traffic technical memorandum for the currently proposed development of a portion of Lot 2 Filing No. 1 of the Shops at Meridian Ranch. As shown in Figure 1, the site is located northeast of the intersection of Meridian Road and Stapleton Drive in El Paso County, Colorado. LSC completed a traffic technical memorandum for Meridian Ranch Commercial and Residential Filing 4B dated July 11, 2014 as part of the Shops at Meridian Ranch 1 Preliminary Plan ([EPD No. SP147](#)) submittal that included this parcel.

REPORT CONTENTS

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

- The traffic count data and street conditions;
- Short-term and 2043 baseline/background traffic volume estimates;
- The projected average weekday and peak-hour vehicle trips to be generated by the site and a comparison to the trip-generation estimate assumed in the 2014 Meridian Ranch Commercial and Residential Filing 4B Traffic Technical Memorandum;
- The assignment of the site's projected traffic volumes to the key area streets and intersections for the short and long term and the resulting total traffic volumes for the short and long term;
- The resulting traffic impacts, including level of service and queueing analysis, at key intersections;
- The project's obligation to the County roadway improvement fee program; and
- Findings and recommendations.

PREVIOUS TRAFFIC REPORTS COMPLETED IN THE AREA

A list of other traffic studies in the area of study completed within the past five years (that LSC is aware of) is attached for reference (Appendix Table 1).

The El Paso County Department of Public Works recently released a draft traffic report prepared by Wilson & Company (December 9, 2021) as part of Briargate-Stapleton Corridor Study. The forecast 2045 total traffic volumes in that study were developed using the PPACG 2045 fiscally constrained RTP model.

LAND USE AND ACCESS

Land Use

The site plan used in the July 22, 2014 traffic technical memorandum for the buildout of the Meridian Ranch Commercial site showed 58,005 square feet of retail floor space, plus a gas station with 20 vehicle fueling positions. However, as at the time most of the site plan was conceptual only, it was decided that the trip-generation estimate and analysis of traffic impacts should be studied for a maximum potential land use of up to 90,000 square feet of retail floor space in addition to the gas station.

Since completion of that report, 58,027 square feet of retail floor space have been constructed within the Shops at Meridian Ranch. About 9,097 square feet of the existing floor area was unoccupied in January 2023 when traffic counts were conducted.

The currently proposed plan is for a commercial building with 14,000 square feet of floor space. The building will include a 4,000-square-foot convenience store, a 7,500-square-foot liquor store, and 2,500 square feet for general retail uses. The proposed plan also includes 12 vehicle fueling positions. The site plan is shown in Figure 2.

If the currently vacant parcels within the Shops at Meridian Ranch (Lots 1 and 2 of the Shops at Meridian Ranch Filing No. 1) are developed as shown on the July 22, 2014 site plan, the resulting buildout land use would total about 76,427 square feet of retail floor space plus the currently proposed gas station. This would be 13,573 square feet below the maximum potential land use of 90,000 square feet used in the July 2014 trip-generation estimate and traffic analysis.

Site Access

There are three existing access points for the greater Shops at Meridian Ranch development, including a full-movement access to Stapleton Drive, a full-movement access to Tourmaline Drive, and a right-in-only access to Meridian Road. Two internal, individual-lot access points are proposed for this convenience store/gas station site development to the Shops at Meridian Ranch internal roadway system. The access to the east/west roadway is planned to be full movement. The access to the north/south roadway (on the east side of the site) is located about

165 feet north of Stapleton Drive (existing centerline spacing). The access to the east-west internal drive is shown about 240 feet west of the north-south entry drive extending south to Stapleton Drive. The access to the east-west internal drive is planned to initially be restricted to three-quarter movement (left-in/right-in/right-out only). It may be necessary to further restrict this access to right-in/right-out only in the future if operational issues occur.

Pedestrian and Bicycle Analysis

There are currently detached sidewalks along the frontage of the Shops at Meridian Ranch including on the north side of Stapleton Drive between Meridian Road and Meridian Ranch Boulevard and on the east side of Meridian Road between Stapleton Drive and Tourmaline Drive. There are currently no sidewalks on the south side of Stapleton Road, as only the north half of the ultimate cross section has been constructed. Section 3.1 of the draft *Briargate Parkway-Stapleton Road Corridor Study Appendix D: Access Control Plan* dated December 9, 2021, identifies an ultimate hybrid section for Briargate/Stapleton between Black Forest Road and Meridian Road that will resemble the City of Colorado Springs typical section that includes a six-foot outside shoulder to provide a shared facility for bicycles and a six-foot detached sidewalk. Although not included in the corridor study, it is likely that a similar ultimate cross section will be constructed for the section between Meridian Road and US Highway 24.

Sidewalks are planned on the north and south side of the proposed development adjacent to the internal drives.

ROADWAY AND TRAFFIC CONDITIONS

Area Roadways

The major roadways in the site's vicinity are shown in Figure 1 and are described below. Copies of the 2016 El Paso County *Major Transportation Corridors Plan (MTCP) 2040 Roadway Plan*, and 2016 *MTCP 2060 Corridor Preservation Plan (CPP)* with the site location identified on them have been attached to this report.

Stapleton Drive currently extends east from Towner Drive to US Highway (Hwy) 24 and then continues southeast as Curtis Road. It is planned to be ultimately extended west to connect with the Briargate Parkway extension. Adjacent to the site, Stapleton Drive is currently a two-lane roadway with a posted speed limit of 45 miles per hour (mph). It is shown as an Urban four-lane Principal Arterial on the El Paso County *Major Transportation Corridors Plan* and El Paso County *Corridor Preservation Plan (CPP)*.

Meridian Road extends north from South Blaney Road to County Line Road. The posted speed limit on Meridian Road in the vicinity of Stapleton Drive is 55 mph. Meridian Road is shown as a four-lane Principal Arterial south of Rex Road, a four-lane Minor Arterial north of Rex Road, and a two-lane Minor Arterial north of Murphy Road on the El Paso County *MTCP*.

Existing Traffic Volumes

Figure 3 shows the existing morning and afternoon peak-hour traffic volumes at the Shops at Meridian Ranch site access to Stapleton Drive. These volumes are based on manual intersection turning-movement counts conducted by LSC in January 2023. The count-data sheets are attached for reference. The data sheets also include counts for off-peak hours utilized in the signal warrant evaluation.

Existing Levels of Service

Level of service (LOS) is a quantitative measure of the level of delay at an intersection. Level of service is indicated on a scale from "A" to "F." LOS A represents control delay of less than 10 seconds for unsignalized and signalized intersections. LOS F represents control delay of more than 50 seconds for unsignalized intersections and more than 80 seconds for signalized intersections. Table 1 shows the level of service delay ranges.

Table 1: Intersection Levels of Service Delay Ranges

Level of Service	Signalized Intersections	Unsignalized Intersections
	Average Control Delay (seconds per vehicle)	Average Control Delay (seconds per vehicle) ⁽¹⁾
A	10 sec or less	10 sec or less
B	10-20 sec	10-15 sec
C	20-35 sec	15-25 sec
D	35-55 sec	25-35 sec
E	55-80 sec	35-50 sec
F	80 sec or more	50 sec or more

(1) For unsignalized intersections if V/C ratio is greater than 1.0 the level of service is LOS F regardless of the projected average control delay per

Figure 3 presents the results of the existing intersection level of service analysis, based on the unsignalized method of analysis procedures from the *Highway Capacity Manual, 6th Edition* by the Transportation Research Board. The peak-hour factors used for each approach are based on the traffic volumes for the peak fifteen minutes of the entire intersection. If the peak 15 minutes for an approach occurs during an interval other than the peak 15 minutes of the entire intersection, the suggested peak-hour value based on the total approach volume from Table 9-1 of the *Synchro Studio 10 User Guide* was used instead. The level of service reports are attached.

As shown in Figure 3 the southbound left-turn movement currently operates at LOS C during both the morning and afternoon peak hours.

A signal warrant evaluation of existing conditions is included on page 7 of this report.

BACKGROUND TRAFFIC

Background traffic is the traffic estimated to be on the adjacent roadways without the proposed development's trip generation of site-generated traffic volumes. Background traffic includes the through traffic and the traffic generated by development of other lots within the Shops at Meridian Ranch but assumes zero traffic generated by the currently proposed gas station.

Figure 4 shows the projected short-term background traffic volumes for the year 2028. These volumes are based on the existing traffic volumes from Figure 3 plus about 3 percent per year of growth through traffic on Stapleton Road plus traffic projected to be generated once the recently constructed building southwest of Tourmaline Drive/Fleece Flower Way is occupied.

Figure 5 shows the projected 20-year background traffic volumes for the year 2043. These volumes assume Stapleton Drive has been extended west (as Briargate Parkway/Stapleton Drive) to connect with the existing section of Briargate Parkway. The 2043 background traffic volumes were based on the volumes shown in the *Briargate-Stapleton Corridor Study (Draft)* by Wilson & Company dated December 9, 2021 and on previous work completed by LSC in the area.

TRIP GENERATION

The site-generated vehicle trips were estimated using the nationally published trip-generation rates from *Trip Generation, 11th Edition, 2021* by the Institute of Transportation Engineers (ITE). Table 2 shows the trip-generation estimates. Also shown in the table, for comparison are the original buildout trip-generation estimates as presented in the July 22, 2014 traffic study.

The total number of vehicle trips generated has been reduced to account for the "pass-by" phenomena. A pass-by trip is made by a motorist who would already be on the adjacent roadways regardless of the proposed development, but who stops in at the site while passing by. The motorist would then continue on his or her way to a final destination in the original direction. The pass-by percentages shown in Table 2 are from the *Trip Generation Handbook - An ITE Proposed Recommended Practice, 3rd Edition, 2017* by ITE.

At buildout, the proposed development is expected to generate about 1,796 new external vehicle trips on the average weekday, with about half entering and half exiting the site during a 24-hour period. During the morning peak hour, about 113 vehicles would enter and 109 vehicles would exit the site. During the afternoon peak hour, about 170 vehicles would enter and 172 vehicles would exit the site.

Assuming the currently vacant parcels within the Shops at Meridian Ranch are developed with about 18,400 additional square feet of retail floor space, the entire Shops at Meridian Ranch development is projected to generate about 5,108 new external vehicle-trips on the average weekday. This is about 323 fewer vehicle trips per day than was estimated in the July 2014 study. During the morning peak hour, about 182 vehicles would enter and 151 vehicles would exit the

entire Shops at Meridian Ranch development. This is about 10 more entering vehicles and 6 more exiting vehicles than was estimated in the July 2014 study. During the afternoon peak hour about 359 vehicles would enter and 368 vehicles would exit the entire Shops at Meridian Ranch development. This is about 52 fewer entering vehicles and 54 fewer exiting vehicles than was estimated in the July 2014 study.

The increase in the projected morning peak-hour trip generation despite the decrease in total floor area is due to changes in the trip-generation rates from the 9th edition of Trip Generation which were used in the 2014 report and the rates shown in the 11th edition which were used for the current trip generation estimate.

The minor increase in trip-generation estimate during the average morning peak hour should not present a problem, however, as the access points and adjacent intersections will be designed for the afternoon peak-hour traffic, which is significantly higher than the morning peak hour.

DIRECTIONAL DISTRIBUTION AND ASSIGNMENT

The directional distribution of the site-generated traffic volumes on the area roadways is an important factor in determining the site's traffic impacts. Figure 6 shows the short-term and long-term directional-distribution estimates for the site-generated traffic volumes. The directional-distribution estimate has been based on the location of the site with respect to area residential, employment, school, commercial, and activity centers; the land use proposed; the access/roadway connections assumed; and the roadway network. The short-term directional-distribution estimate assumes the existing street network. The long-term directional-distribution estimate assumes Briargate Parkway has been extended east of the Sketch Plan area and Banning Lewis Parkway completed (between Stapleton/Briargate and US Hwy 24).

When the external trip-distribution percentages (from Figure 6) are applied to the trip-generation estimates (from Table 2), the resulting site-generated traffic volumes can be determined. The pass-by trips have been assigned separately, based on the 2028 and 2043 background traffic volumes on Stapleton Drive shown in Figures 4 and 5, respectively. Figure 7 shows the short-term site-generated traffic volumes and Figure 8 shows the long-term site-generated traffic volumes.

TOTAL TRAFFIC

Figure 9 shows the projected 2028 total traffic volumes. The short-term total traffic volumes are the sum of the 2028 background traffic volumes (from Figure 4) plus the short-term site-generated traffic volumes (from Figure 7).

Figure 10 shows the projected 2043 total traffic volumes. The 2043 total traffic volumes are the sum of the 2043 background traffic volumes (from Figure 5) plus the long-term site-generated traffic volumes (from Figure 8).

PROJECTED LEVELS OF SERVICE

The key area intersections and site-access points have been analyzed to determine the projected future levels of service, based on the unsignalized method of analysis procedures from the *Highway Capacity Manual, 6th Edition* by the Transportation Research Board and Synchro signalized intersection procedures. The results of the analysis are contained in Figures 4, 5, 9, and 10. The level of service reports are attached.

The Shops at Meridian Ranch access to Stapleton Drive is currently stop-sign controlled. If this access remains stop-sign controlled, the southbound left-turn movement is projected to operate at LOS F during the peak hours, based on the 2028 total traffic volumes. If the east leg of Stapleton Drive is restriped as a two-way, left-turn lane, all movements are projected to operate at LOS D or better during the peak hours through 2028. By 2043, it was assumed that this intersection will need to be converted to traffic-signal control. As a signal-controlled intersection, all movements are projected to operate at LOS D or better based on the projected 2043 total traffic volumes.

All allowable turning movements at the proposed access to the north/south internal road are projected to operate at LOS B or better through 2043.

Please provide escrow

SIGNAL WARRANT ANALYSIS

The Meridian Ranch Commercial and Residential Filing 4B Traffic Technical Memorandum dated July 22, 2014 included a traffic-signal warrant analysis of the Shops at Meridian Ranch access to Stapleton Drive. That analysis identified that Four-Hour and Eight-Hour Vehicular Volume traffic signal warrants would likely be met when about 55,000 square feet of retail floor space and the gas station are occupied. As currently more than 55,000 square feet of retail floor space have been constructed, besides the currently-proposed filing which includes the planned gas station, these signal warrants have been updated based on the existing traffic conditions. The satisfaction of warrants does not indicate that a signal must be installed. The decision to allow a signal to be installed rests with the County.

Tables 3 and 4 show the results of the analysis of existing conditions, projected existing plus site-generated conditions, 2028 total conditions and 2043 total condition. Table 3 assumes the southbound left-turn movement only as the “minor approach” and all of the eastbound and westbound traffic volumes (left, through, and right-turn movements) as the “major street”. Table 4 assumes the eastbound left-turn movement as the “minor approach” and only the westbound through and right-turn movements as the “major street”. The off-peak existing traffic volumes were based on traffic counts conducted by LSC in January 2023 and the off-peak site-generated future hourly volumes and 2028 background hourly volumes for the balance of the shopping center have been estimated based on vehicle time-of-day distribution data for shopping center, gas station with convenience store, and liquor store land uses published by the Institute of Transportation Engineers.

As shown in Tables 3 and 4, neither a Four-Hour nor an Eight-Hour Vehicular-Volume Traffic-Signal Warrant is projected to be met in the short term. Both the Four-Hour and Eight-

Hour Vehicular-Volume Traffic Signal Warrants are projected to warrant analysis should be updated with any future filing Meridian Ranch.

ACCESS CONFIGURATION AND CIRCULATION RECOMMENDATIONS

Figure 11 shows the recommended signing and striping plan for

The north/south entry drive from Stapleton and the intersecting east/west internal drive is planned, by the master developer, to be configured for east/west stop-sign control and a free northbound approach (no stop sign).

- As shown in Figure 11, stop signs should control the eastbound and westbound approaches. Supplemental signs under these stop signs should indicate that northbound (inbound) traffic has an uncontrolled/free movement and does NOT stop. Stop-line markings should be installed on the eastbound and westbound approaches (it appears that the eastbound approach stop bar already exists).

Regarding the proposed lot access to the north/south, internal/private shopping center entry drive/street (on the east side of the site) located about 165 feet north of Stapleton Drive (centerline spacing):

- This access point should be signed and marked for no exiting (eastbound) left turns. It is unlikely that this movement would otherwise see anything other than low and infrequent left turns anyway.
- LSC recommends that the northbound entering left-turning movement be considered a temporary condition, given the spacing from the Stapleton intersection, as LSC anticipates this access will likely need to be restricted to right-in/right-out only under the following conditions:
 - In conjunction with the future addition of eastbound Stapleton, protected/permissive left-turn phasing (this phasing would obviously be post-signalization of the access intersection with Stapleton) (This condition assumes the Shops at Meridian Ranch access to Stapleton Drive is signalized with the opening of the store).
 - Or potentially, once the Shops at Meridian Ranch access to Stapleton Drive is converted to traffic-signal control (if not signalized with the initial opening of the store).
 - If operational or traffic-safety issues occur before or after signalization of the access intersection with Stapleton (or once signalized, before or after the addition of eastbound left-turn protected-permissive phasing).
- LSC recommends interim use of a W3-4 sign ("Be Prepared to Stop") for the departure (northbound leg) of the Stapleton/north-south access drive in conjunction with a left-in movement at the gas station access. The sign placement would be behind the center of the storm sewer inlet located north of the radius PCR on the northeast corner of the

Current volumes necessitate a left turn into the access. Please provide recommendations for a left turn lane and provide queueing analysis to ensure it does not impact the intersection of the private road and Stapleton. Staff is concerned with the potential issues listed below and would recommend this access be a right in right out. We would consider the left turn into the access if the analysis shows that it can work.

intersection. The sign should face slightly south-southwest for good visibility for eastbound left-turning vehicles from Stapleton.

- The anticipated future closure of the northbound entering left-turning movement is planned to be implemented through the addition of pavement markings and regulatory traffic signs. Potentially, flexible reflective delineator posts may need to be used to prevent left-turning movements. The shopping center owner/operator would be responsible for maintenance and replacement when no longer serviceable. Also, these may need to be flexible to allow for trucks exiting the access, as trucks will likely pass over them when turning.
- Pavement markings within the southbound lanes and signs should be installed for southbound traffic on the north-south access drive upstream (north of) the internal gas station access. The pavement markings and signs should clearly mark a “Do Not Block” zone at the gas station access point. The purpose is to prevent a southbound static queue from blocking entry to the gas station by northbound left-turning vehicles.
- The initial operations should be monitored for southbound queuing upstream of the east gas station access. If queuing occurs in the southbound left-turn lane north of the access and “do not block” zone, the portion of the southbound left-turn lane north of the gas station access may need to be temporarily closed off. The reason would be to prevent the situation where northbound left-turning (entering) vehicles have difficulty seeing southbound vehicles in the right lane due to the presence of southbound queued vehicles in the southbound left lane. This has the potential to create a safety issue which could be avoided by temporarily closing the southbound left lane upstream of the gas station access. There would still be separate southbound left- and right-turn lanes between the access and Stapleton.

ROADWAY IMPROVEMENT FEE PROGRAM

This project will be required to participate in the
The applicant will opt-out of the PID options. The
with the opt-out option is \$8,800 per 1,000
Commercial,” and \$4,958 per 1,000 square feet
on 4,000-square feet and 10,000 square feet, r
payable at building permit would be \$84,780. No

The property is located in the Woodmen Road Metro District. The development does not pay road impact fees to El Paso County per resolution 13-041. However, fees are paid to the district. Please refer to comment on EDARP from Woodmen Road Metro with the fee breakdown and provide calculation. Please revise section to address this comment.

CONCLUSIONS AND RECOMMENDATIONS

Trip Generation

- At buildout, the proposed gas station is expected to generate about 1,796 new external vehicle trips on the average weekday, with about half entering and half exiting the site during a 24-hour period. During the morning peak hour, about 113 vehicles would enter and 109 vehicles would exit the site. During the afternoon peak hour, about 170 vehicles would enter and 172 vehicles would exit the site.

Recommendations

- The existing eastbound left-turn lane and westbound right-turn deceleration and acceleration lane at The Shops at Meridian Ranch access to Stapleton Drive meet the criteria contained in the El Paso County *Engineering Criteria Manual*. No additional improvements are anticipated to be required on Stapleton Drive, Meridian Road, or Tourmaline Drive with the construction of the proposed gas station.
- Please refer to the section entitled "Access Configuration and Circulation Recommendations."
- The Shops at Meridian Ranch access to Stapleton Drive is **not** projected to meet either an Eight-Hour or a Four-Hour Vehicular-Volume traffic-signal warrant based on the 2028 background traffic plus projected traffic volumes associated with the development of the currently-proposed filing. This intersection is projected to operate at a satisfactory level of service (LOS D or better) during peak hours as a stop-sign-controlled intersection if Stapleton Drive is restriped with a two-way, left-turn center lane east of the access. Traffic-signal warrant(s) are anticipated to be met with buildout of the remaining vacant parcels within the Shops and Meridian Ranch and/or growth of through traffic on Stapleton Drive.
- Table 5 shows an estimate of the proposed developments fair share contribution for escrow towards signalization of this access.
- The road impact fee amount is calculated to be \$84,780 (subject to change). Please refer to the Road Impact Fee section above for additional details.

* * * * *

Please see comment in previous page regarding road impact fees.

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

Respectfully Submitted,

LSC TRANSPORTATION CONSULTANTS, INC.

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

JCH/KDF:jas

Enclosures: Tables 2-5
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Tables 2-5



Table 2
Trip Generation Estimate
 The Shops at Meridian Ranch Lot 2, Filing 1

Lot	Land Use Code	Land Use Description	Trip Generation Units	Trip Generation Rates ⁽¹⁾					Total Trips Generated					Internal Trips	Total External Trips Generated					Pass-By Trips ⁽²⁾	New External Trips Generated Average Weekday Traffic	
				Average Weekday Traffic	Morning Peak Hour In	Morning Peak Hour Out	Afternoon Peak Hour In	Afternoon Peak Hour Out	Average Weekday Traffic	Morning Peak Hour In	Morning Peak Hour Out	Afternoon Peak Hour In	Afternoon Peak Hour Out		Average Weekday Traffic	Morning Peak Hour In	Morning Peak Hour Out	Afternoon Peak Hour In	Afternoon Peak Hour Out			
Currently Proposed Land Use																						
	945	Gasoline/Service Station with Convenience Market (VFP ⁽³⁾ 9-15)	4.0 KSF ⁽⁴⁾	700.43	28.26	28.26	27.26	27.26	2,802	113	113	109	109	5%	2,662	107	107	104	104	56%	1,171	
2	899	Liquor Store	7.5 KSF	107.21	0.47	0.12	8.31	8.31	804	3	1	62	63	2.75%	782	3	1	60	61	34%	516	
	821	Shopping Plaza (40-150 KSF With No Supermarket)	2.5 KSF	67.52	1.07	0.66	2.54	2.65	169	3	1	6	7	2.75%	164	3	1	6	7	34%	108	
			14.0 KSF												3,608	113	109	170	172		1,796	
For Reference Only:																						
Existing Land Use																						
3	821	Shopping Plaza (40-150 KSF With No Supermarket)	29,260 KSF	67.52	1.07	0.66	2.54	2.65	1,976	31	19	74	77	2.75%	1,921	31	19	72	75	34%	1,268	
4D	821	Shopping Plaza (40-150 KSF With No Supermarket)	17,352 KSF	67.52	1.07	0.66	2.54	2.65	1,172	19	11	44	46	2.75%	1,139	18	11	43	45	34%	752	
4E	821	Shopping Plaza (40-150 KSF With No Supermarket)	11,415 KSF	67.52	1.07	0.66	2.54	2.65	771	12	8	29	30	2.75%	750	12	7	28	29	34%	495	
		Existing Total	58,027 KSF												3,810	61	37	144	149		2,515	
															Existing Plus Currently Proposed	3,810	61	37	144	149		2,515
Future Land Use																						
1	821	Shopping Plaza (40-150 KSF With No Supermarket)	13 KS					.65	878	14	9	33	34	2.75%	854	14	8	32	33	34%	563	
2	821	Shopping Plaza (40-150 KSF With No Supermarket)	5.4 KS					.65	365	6	4	14	14	2.75%	355	6	3	13	14	34%	234	
		Future Total	18,400 KS												1,208	19	12	46	47		797	
		Background Total (not including the Lot 2, Filing 1)	76,427 KSF												5,018	80	49	189	197		3,312	
															Buildout Total	8,626	193	158	359	368		5,108
Trip Generation Estimate Shown in the Meridian Ranch Commercial and Residential Filing 4B Traffic Technical Memorandum by LSC, July 11, 2014																						
---	820	Shopping Center	90 KSF	70.46	0.98	0.63	3.23	3.36	6,342	88	56	290	302	2.75%	6,167	86	55	282	294	34%	4,070	
---	945	Gasoline/Service Station with Convenience Market	20 VFP	162.78	5.08	5.08	6.76	6.76	3,256	102	102	135	135	5%	3,093	97	97	128	128	56%	1,361	
									9,597	190	158	426	437		9,260	182	151	411	422		5,431	
															Change in Trip Generation Estimate	-634	10	6	-52	-54		-323

this does not include the proposed use. Please revise

Existing Plus Currently Proposed 3,810 61 37 144 149 2,515

Notes:
 (1) Source: "Trip Generation, 11th Edition, 2021" by the Institute of Transportation Engineers (ITE)
 (2) Source: "Trip Generation Handbook - An ITE Proposed Recommended Practice, 3rd Edition, 2017" by ITE
 (3) VFP = vehicle fueling position
 (4) KSF = thousand square feet
 Source: LSC Transportation Consultants, Inc. Sep-23

Table 3
Traffic Signal Warrant Analysis
 Shops at Meridian Ranch Access/Stapleton Drive
 Shops at Meridian Ranch Lot 2 Filing No. 1

Warrant Analysis⁽¹⁾

Hour	Traffic Volumes (vehicles per hour)		Warrant 1: Eight Hour Vehicular Volume Evaluation						Warrant 2: Four Hour Vehicular Volume	
			Warrant Thresholds				Warrant Threshold Met?		70% Warrant Threshold Minor Minimum	Warrant Threshold Met? North Leg
	Major ⁽²⁾	Minor Leg ⁽³⁾	Condition A (70%)		Condition B (70%)		North Leg			
			Major	Minor	Major	Minor	Condition A	Condition B		

Existing Traffic

6:30 AM	767	6	350	105	525	53	No	No	70	No
7:30 AM	798	11	350	105	525	53	No	No	70	No
8:30 AM	474	12	350	105	525	53	No	No	160	No
11:45 AM	428	21	350	105	525	53	No	No	160	No
12:45 PM	422	26	350	105	525	53	No	No	160	No
1:45 PM	457	17	350	105	525	53	No	No	160	No
3:00 PM	826	19	350	105	525	53	No	No	60	No
4:00 PM	780	36	350	105	525	53	No	No	70	No
5:00 PM	796	27	350	105	525	53	No	No	70	No

Numbers of Hours the Warrant Thresholds Are Met	0	0	0
Warrant Met?	No		No

Existing Plus Site-Generated Traffic

6:30 AM	809	34	350	105	525	53	No	No	60	No
7:30 AM	852	47	350	105	525	53	No	No	60	No
8:30 AM	530	49	350	105	525	53	No	No	125	No
11:45 AM	492	72	350	105	525	53	No	No	160	No
12:45 PM	487	75	350	105	525	53	No	No	160	No
1:45 PM	529	71	350	105	525	53	No	Yes	125	No
3:00 PM	912	83	350	105	525	53	No	Yes	60	Yes
4:00 PM	867	100	350	105	525	53	No	Yes	60	Yes
5:00 PM	899	102	350	105	525	53	No	Yes	60	Yes

Numbers of Hours the Warrant Thresholds Are Met	0	4	3
Warrant Met?	No		No

2028 Total Traffic

6:30 AM	929	34	350	105	525	53	No	No	60	No
7:30 AM	972	47	350	105	525	53	No	No	60	No
8:30 AM	594	49	350	105	525	53	No	No	125	No
11:45 AM	556	76	350	105	525	53	No	Yes	125	No
12:45 PM	548	79	350	105	525	53	No	Yes	125	No
1:45 PM	599	75	350	105	525	53	No	Yes	125	No
3:00 PM	1035	87	350	105	525	53	No	Yes	60	Yes
4:00 PM	981	104	350	105	525	53	No	Yes	60	Yes
5:00 PM	1016	106	350	105	525	53	Yes	Yes	60	Yes

Numbers of Hours the Warrant Thresholds Are Met	1	6	3
Warrant Met?	No		No

2043 Total Traffic

6:30 AM	1150	36	350	105	525	53	No	No	60	No
7:30 AM	1161	53	350	105	525	53	No	Yes	60	No
8:30 AM	706	58	350	105	525	53	No	Yes	70	No
11:45 AM	772	89	350	105	525	53	No	Yes	70	Yes
12:45 PM	760	92	350	105	525	53	No	Yes	70	Yes
1:45 PM	804	88	350	105	525	53	No	Yes	60	Yes
3:00 PM	1391	100	350	105	525	53	No	Yes	60	Yes
4:00 PM	1313	117	350	105	525	53	Yes	Yes	60	Yes
5:00 PM	1326	119	350	105	525	53	Yes	Yes	60	Yes

Numbers of Hours the Warrant Thresholds Are Met	2	8	6
Warrant Met?	Yes		Yes

Notes:

- (1) Thresholds are based on 1 lane on the major approach and 1 lane on the minor approach with the 70% factor applied for a posted speed limit above 40 mph
- (2) The major street traffic includes all movements (left, through, and right) on Stapleton Drive
- (3) The minor street traffic includes left-turn volume only from the Shops at Meridian Ranch access

Table 4
Traffic Signal Warrant Analysis
With The Eastbound Left-Turn as the Minor Approach
Existing and Projected 2028 Total Traffic Conditions
Shops at Meridian Ranch Access/Stapleton Drive
Shops at Meridian Ranch Lot 2 Filing No. 1

Warrant Analysis⁽¹⁾

Hour	Traffic Volumes (vehicles per hour)		Warrant 1: Eight Hour Vehicular Volume Evaluation					Warrant 2: Four Hour Vehicular Volume		
			Warrant Thresholds				Warrant Threshold Met?		70% Warrant Threshold Minimum	Warrant Threshold Met?
	(WB Only)	Minor ⁽³⁾ (EB LT)	Condition A (70%)		Condition B (70%)		North Leg			
			Major (WB)	Minor (EB LT)	Major (WB)	Minor (EB LT)	Condition A	Condition B	Minor (EB LT)	

Existing Traffic

6:30 AM	543	11	350	105	525	53	No	No	125	No
7:30 AM	436	23	350	105	525	53	No	No	160	No
8:30 AM	254	46	350	105	525	53	No	No	Low Vol	No
11:45 AM	217	31	350	105	525	53	No	No	Low Vol	No
12:45 PM	217	42	350	105	525	53	No	No	Low Vol	No
1:45 PM	199	21	350	105	525	53	No	No	Low Vol	No
3:00 PM	367	42	350	105	525	53	No	No	205	No
4:00 PM	349	46	350	105	525	53	No	No	205	No
5:00 PM	311	44	350	105	525	53	No	No	205	No

Numbers of Hours the Warrant Thresholds Are Met	0	0	0
Warrant Met?	No		No

Existing Plus Site-Generated Traffic

6:30 AM	551	65	350	105	525	53	No	Yes	125	No
7:30 AM	446	92	350	105	525	53	No	No	160	No
8:30 AM	264	117	350	105	525	53	No	No	Low Vol	No
11:45 AM	230	121	350	105	525	53	No	No	Low Vol	No
12:45 PM	230	133	350	105	525	53	No	No	Low Vol	No
1:45 PM	213	120	350	105	525	53	No	No	Low Vol	No
3:00 PM	385	156	350	105	525	53	Yes	No	205	No
4:00 PM	367	161	350	105	525	53	Yes	No	205	No
5:00 PM	332	179	350	105	525	53	No	No	205	No

Numbers of Hours the Warrant Thresholds Are Met	2	1	0
Warrant Met?	No		No

2028 Total Traffic

6:30 AM	637	65	350	105	525	53	No	Yes	90	No
7:30 AM	512	92	350	105	525	53	No	No	125	No
8:30 AM	300	117	350	105	525	53	No	No	205	No
11:45 AM	265	123	350	105	525	53	No	No	Low Vol	No
12:45 PM	265	135	350	105	525	53	No	No	Low Vol	No
1:45 PM	245	122	350	105	525	53	No	No	Low Vol	No
3:00 PM	442	158	350	105	525	53	Yes	No	160	No
4:00 PM	420	163	350	105	525	53	Yes	No	160	Yes
5:00 PM	379	181	350	105	525	53	Yes	No	205	No

Numbers of Hours the Warrant Thresholds Are Met	3	1	1
Warrant Met?	No		No

Notes:

- (1) Thresholds are based on 1 lane on the major approach and 1 lane on the minor approach with the 70% factor applied for a posted speed limit above 40 mph
- (2) The major street traffic includes only the westbound through and right-turn movements on Stapleton Drive
- (3) The minor street traffic includes the eastbound left-turn (EB LT) volume only

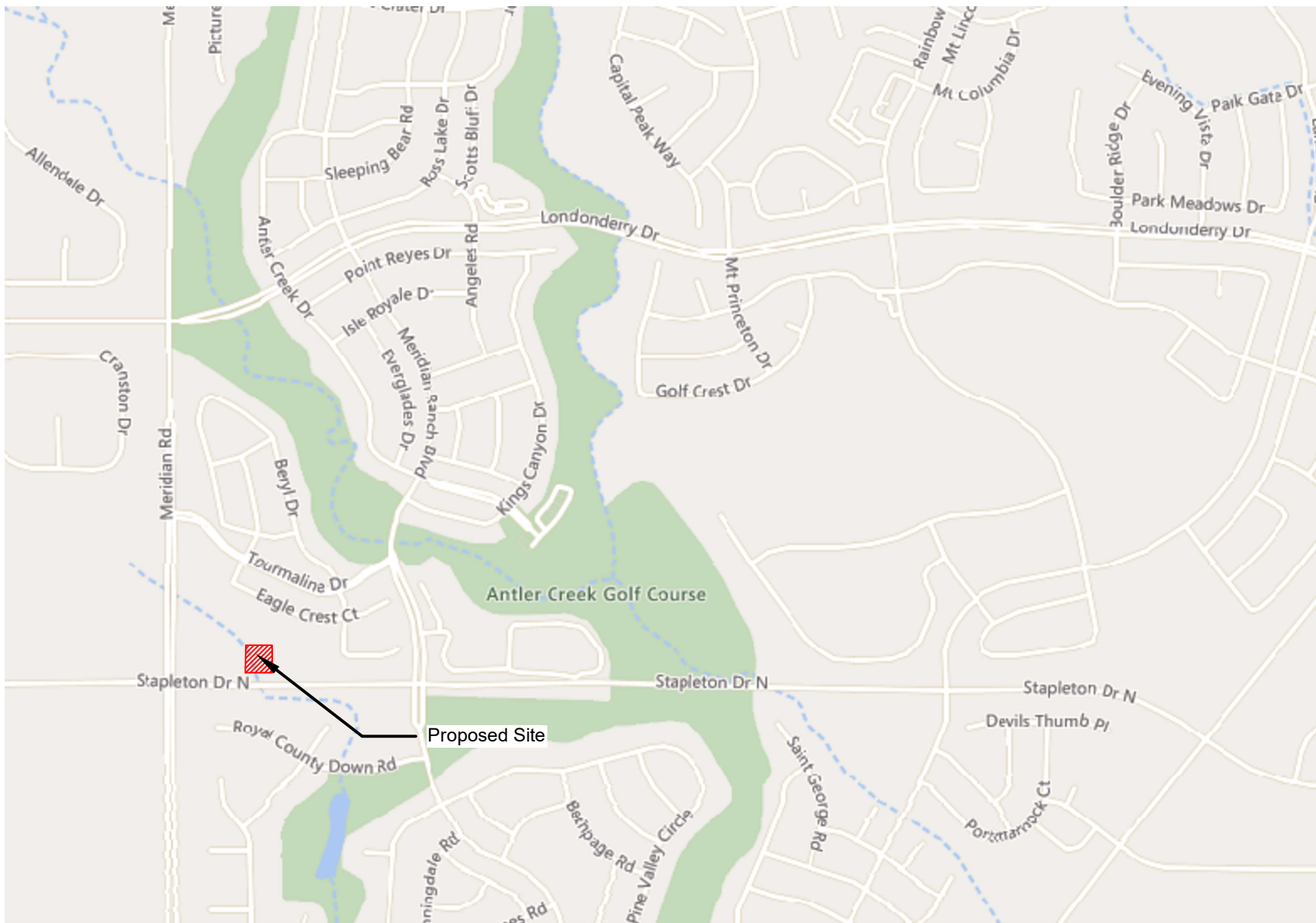
Table 5
Signal Escrow Analysis
Shops at Meridian Ranch Access/Stapleton Drive
Shops at Meridian Ranch Lot 2 Filing No. 1

Filing	Traffic Volume (vehicles per hour)										AM & PM		Portion of total cost estimate of \$700,000
	AM Peak Hour					PM Peak Hour					Total		
	EB LT	WB RT	SB LT	SB RT	Total	EB LT	WB RT	SB LT	SB RT	Total	veh/hr	%	
Existing Traffic	16	19	7	36	78	61	33	59	41	194	272	29.0%	\$202,768.90
Currently Proposed Lot 2 Filing 1	56	55	37	70	218	104	63	73	94	334	552	58.8%	\$411,501.60
Future Filings	7	8	2	10	27	19	15	17	37	88	115	12.2%	\$85,729.50
Total	79	82	46	116	323	184	111	149	172	616	939		\$700,000.00

Source: LSC Transportation Consultants, Inc.

Sep-23

Figures 1-10



Not to scale



Figure 1
Vicinity Map

The Shops at Meridian Ranch Lot 2 Filing No. 1 (LSC# S234020)



Approximate
Scale
1" = 250'

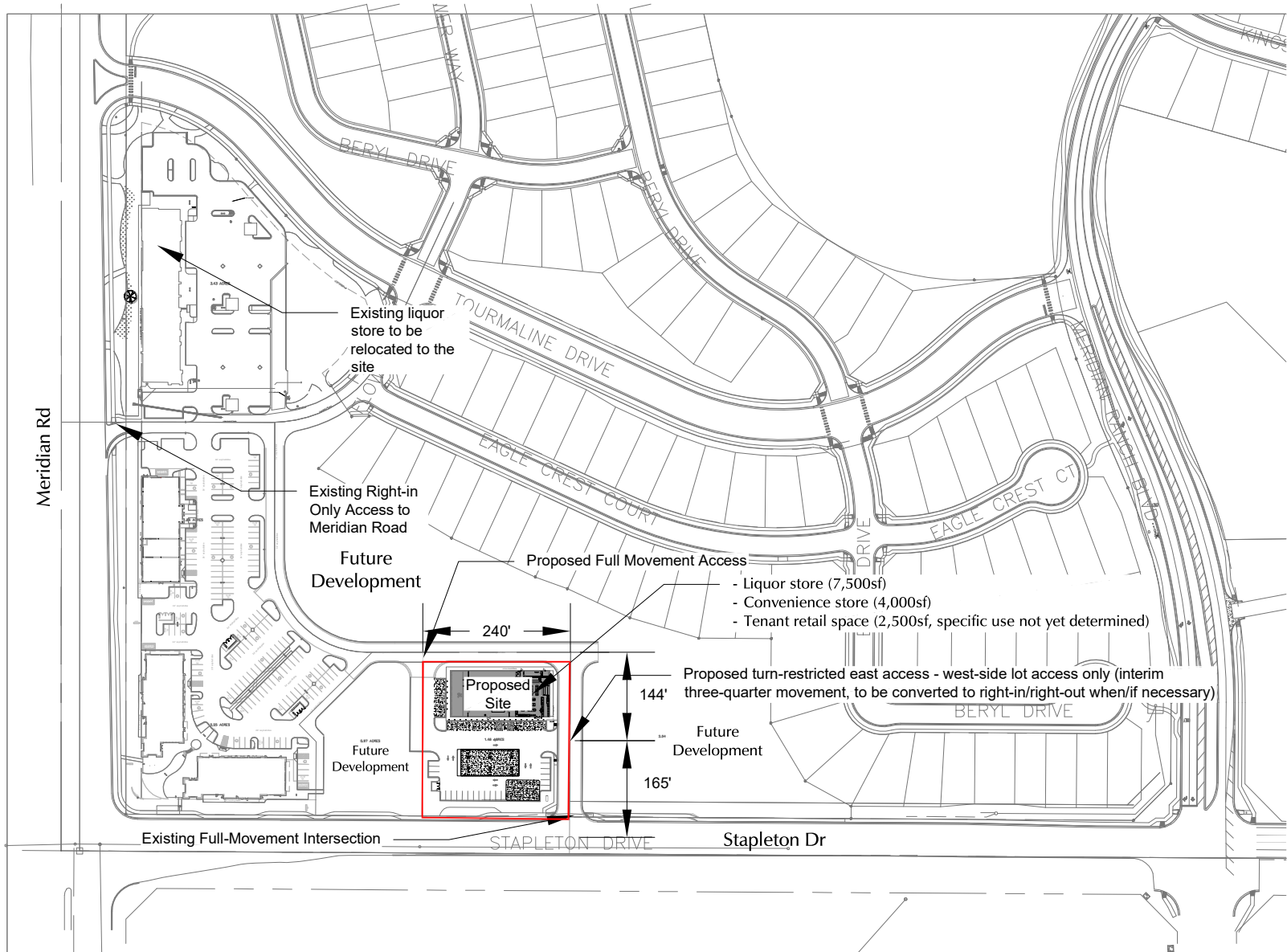
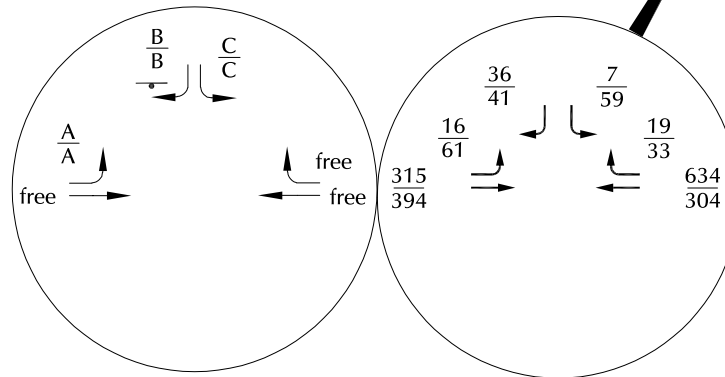
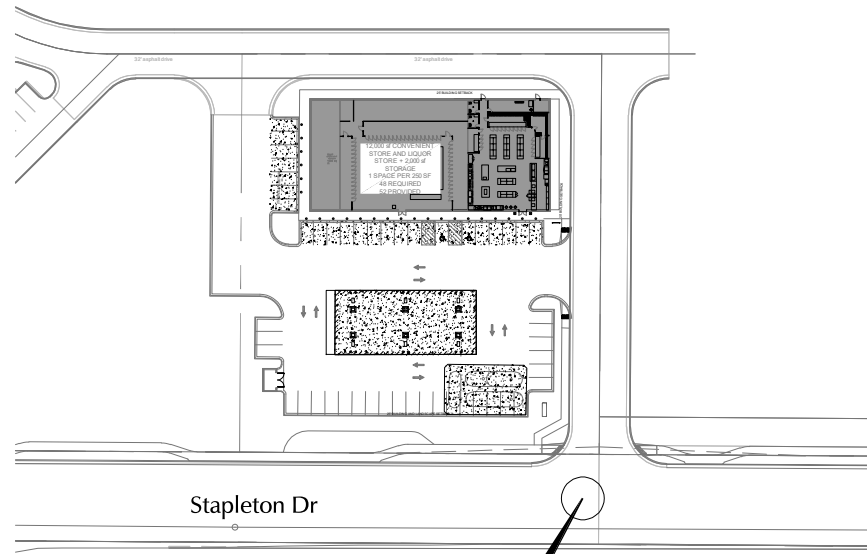


Figure 2
Site Plan

The Shops at Meridian Ranch Lot 2 Filing No. 1 (LSC# S234020)



LEGEND: $\frac{XX}{XX}$ = AM Peak-Hour Traffic (veh/hr) / PM Peak-Hour Traffic (veh/hr) Counts by LSC January 2023*

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

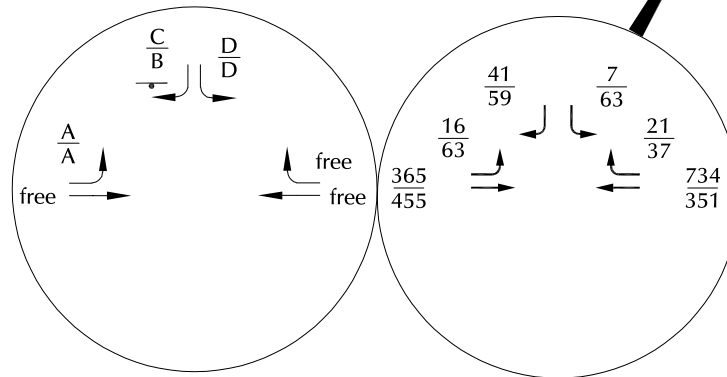
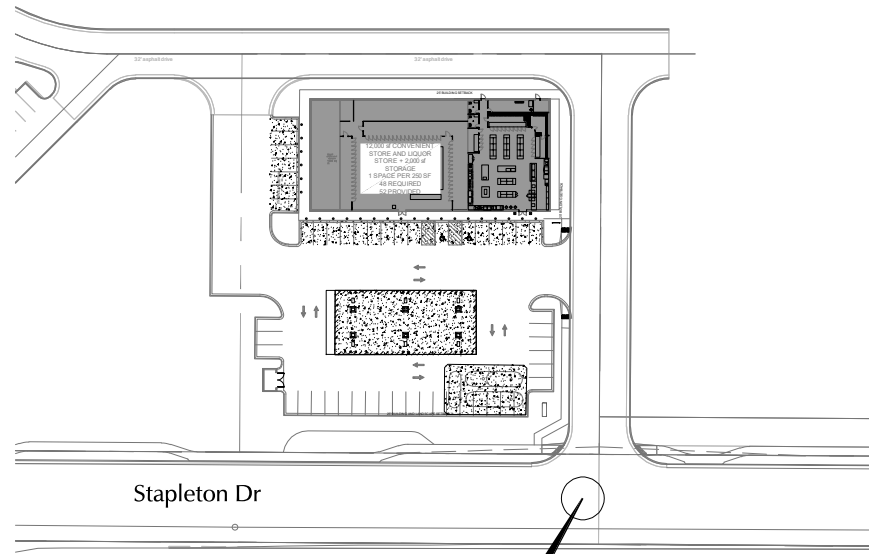
⊥ = Stop Sign *Note: Additional off-peak count data in the text

Existing Conditions

Figure 3

The Shops at Meridian Ranch Lot 2 Filing No. 1 (LSC# S234020)





LEGEND:

$\frac{XX}{XX}$ = AM Peak-Hour Traffic (veh/hr)
 PM Peak-Hour Traffic (veh/hr)

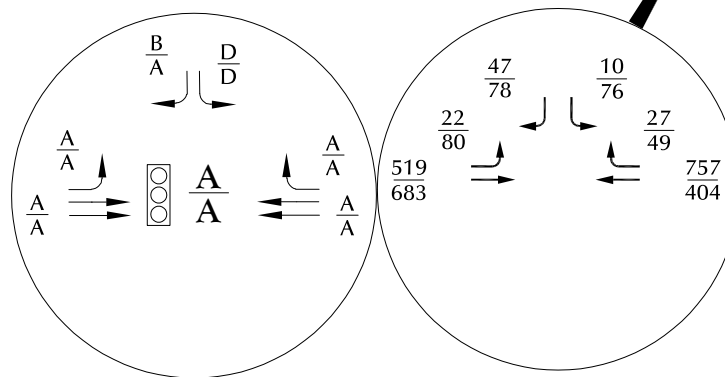
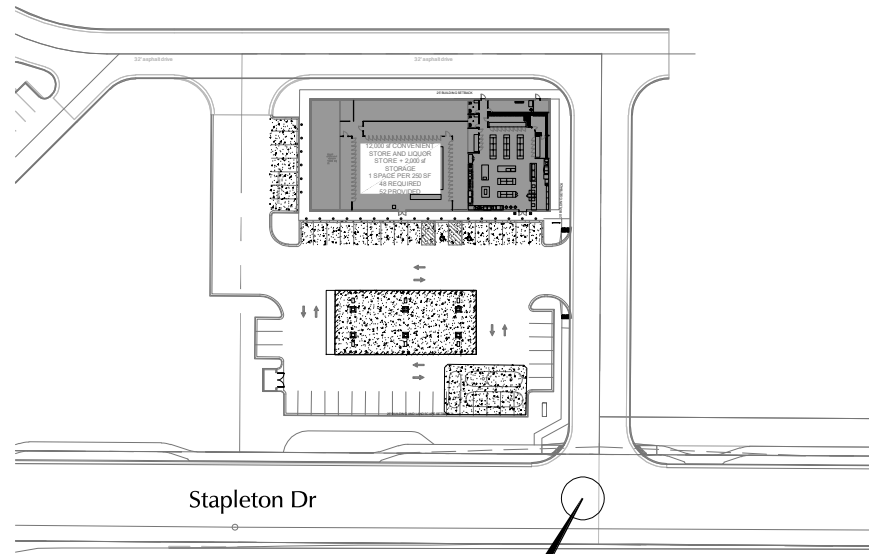
$\frac{A}{B}$ = AM Individual Movement Peak-Hour Level of Service
 PM Individual Movement Peak-Hour Level of Service

⊥ = Stop Sign

Figure 4
**2028 Projected Background
 Conditions**

The Shops at Meridian Ranch Lot 2 Filing No. 1 (LSC# S234020)



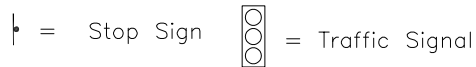


LEGEND:

$$\frac{XX}{XX} = \frac{\text{AM Peak-Hour Traffic (veh/hr)}}{\text{PM Peak-Hour Traffic (veh/hr)}}$$

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

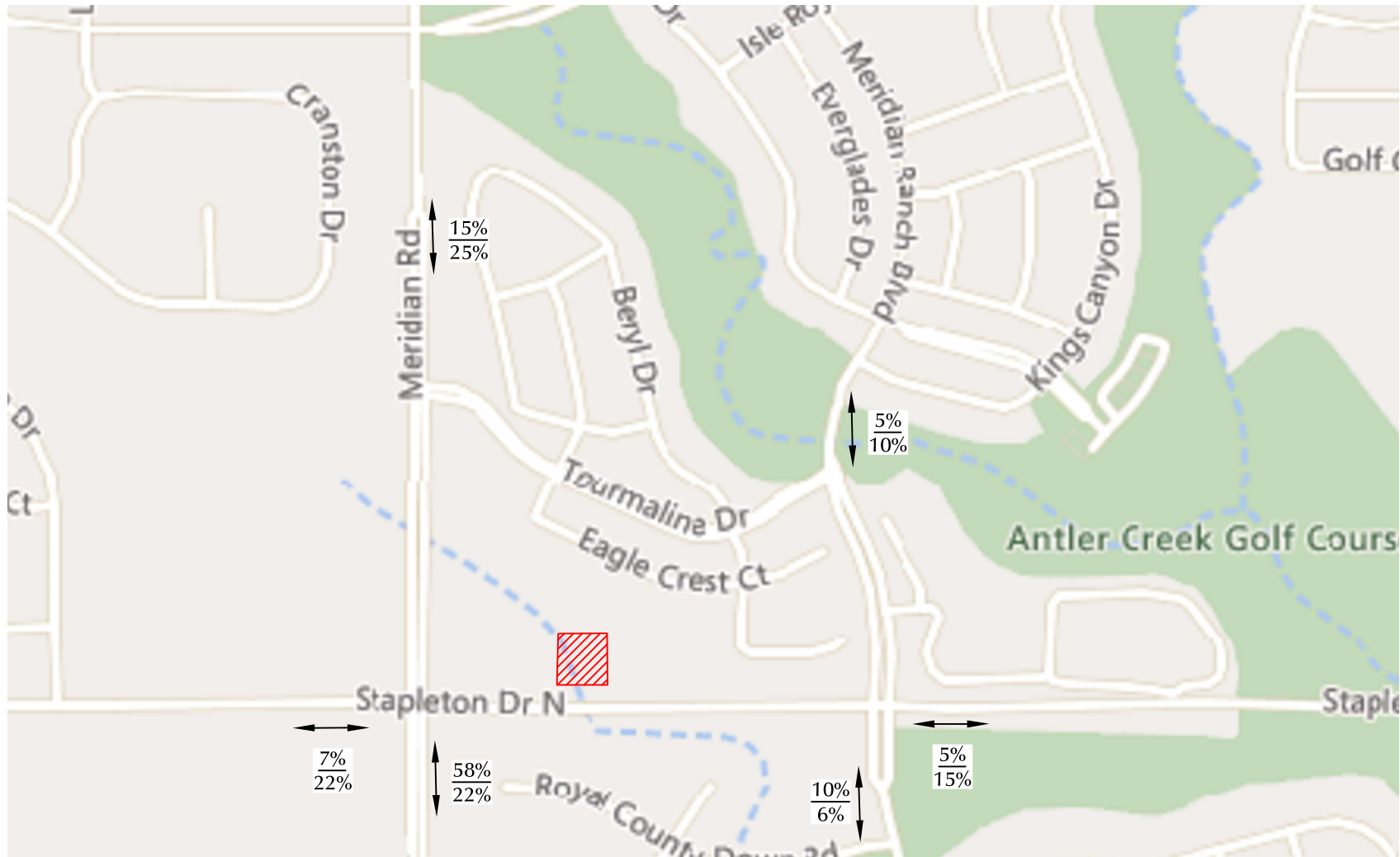
$$\frac{C}{D} = \frac{\text{AM Entire Intersection Peak-Hour Level of Service}}{\text{PM Entire Intersection Peak-Hour Level of Service}}$$



2043 Background Conditions

The Shops at Meridian Ranch Lot 2 Filing No. 1 (LSC# S234020)

Figure 5



North
Not to scale

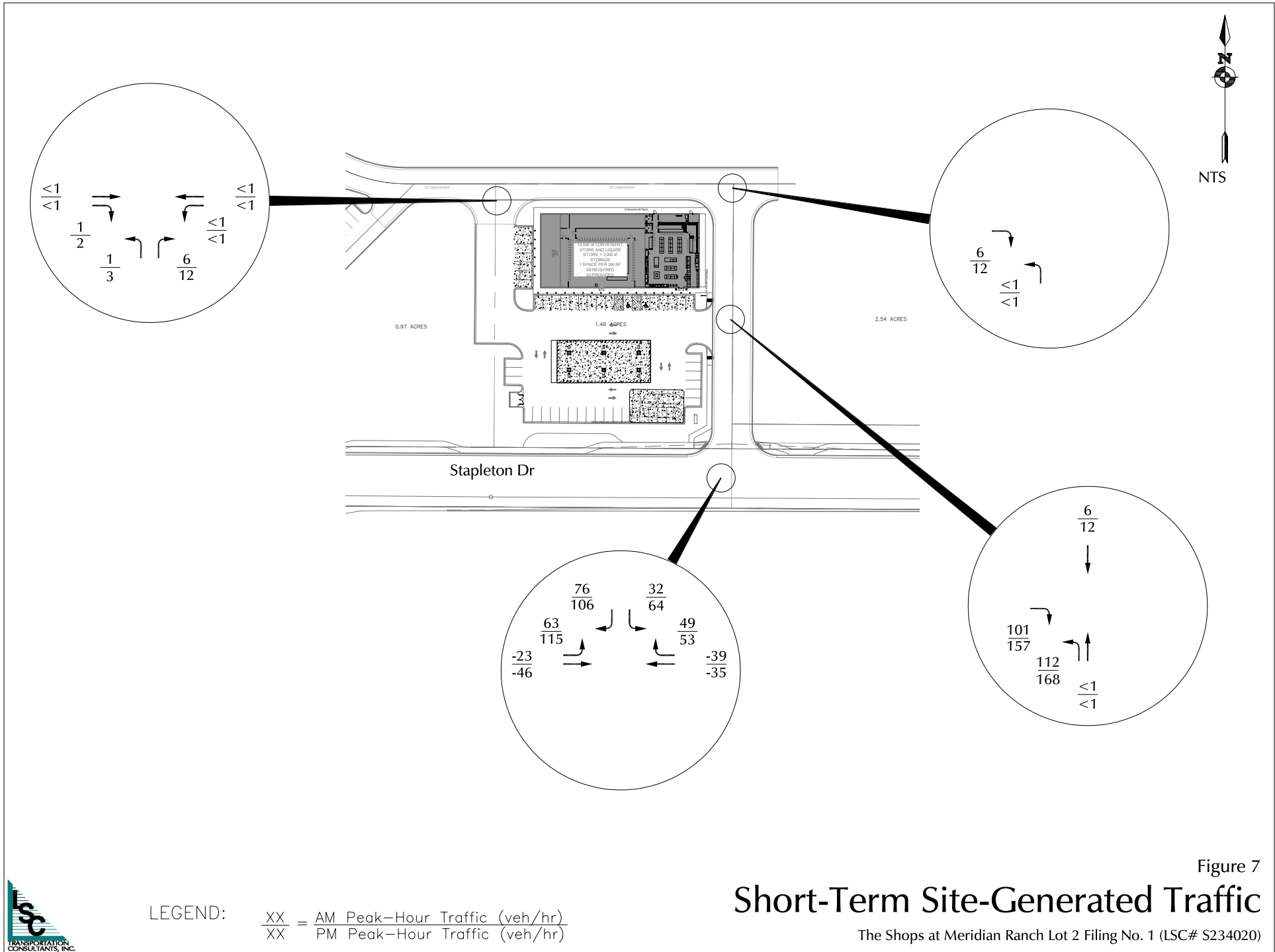
$$\frac{XX\%}{XX\%} = \frac{\text{Short-Term Percent Directional Distribution}}{\text{Long-Term Percent Directional Distribution}}$$

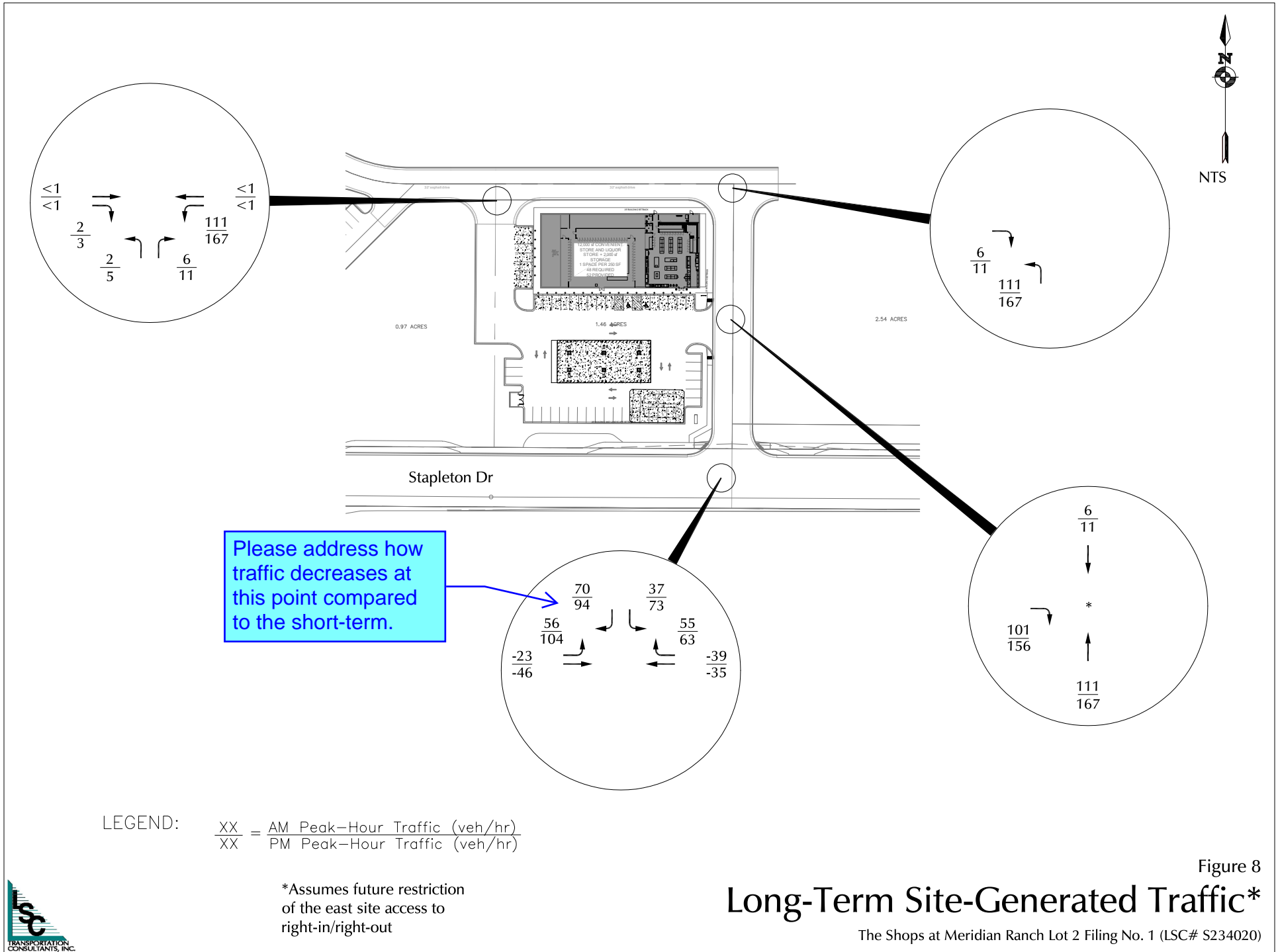
Note: Passby trips have been assigned separately - generally based on the magnitude and direction of traffic on the adjacent Stapleton Drive.

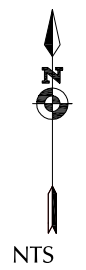
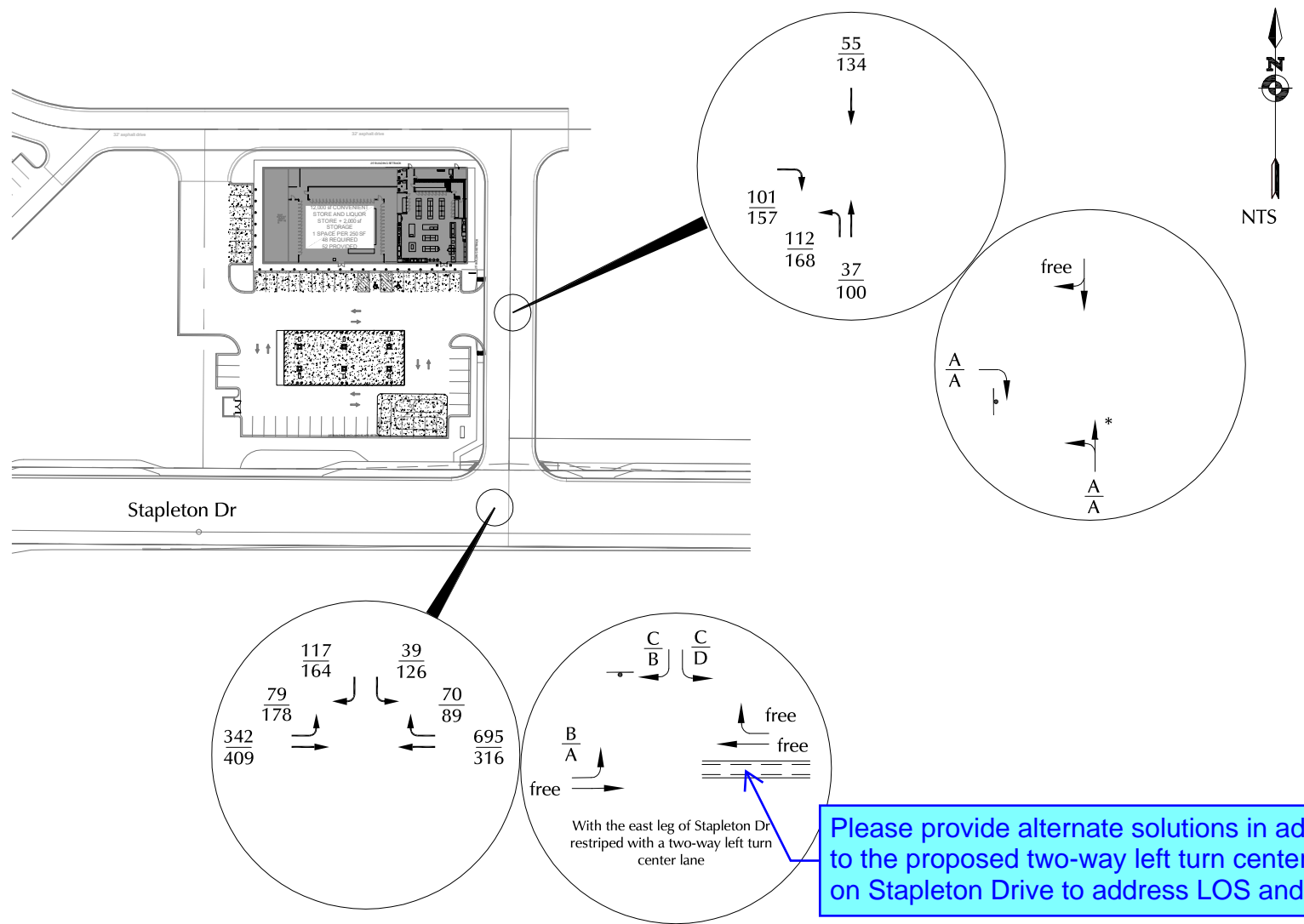
Figure 6
Estimated Directional Distribution of Site-Generated Traffic

The Shops at Meridian Ranch Lot 2 Filing No. 1 (LSC# S234020)









LEGEND:

$\frac{XX}{XX}$ = AM Peak-Hour Traffic (veh/hr)
 $\frac{XX}{XX}$ = PM Peak-Hour Traffic (veh/hr)

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

= Stop Sign = Traffic Signal

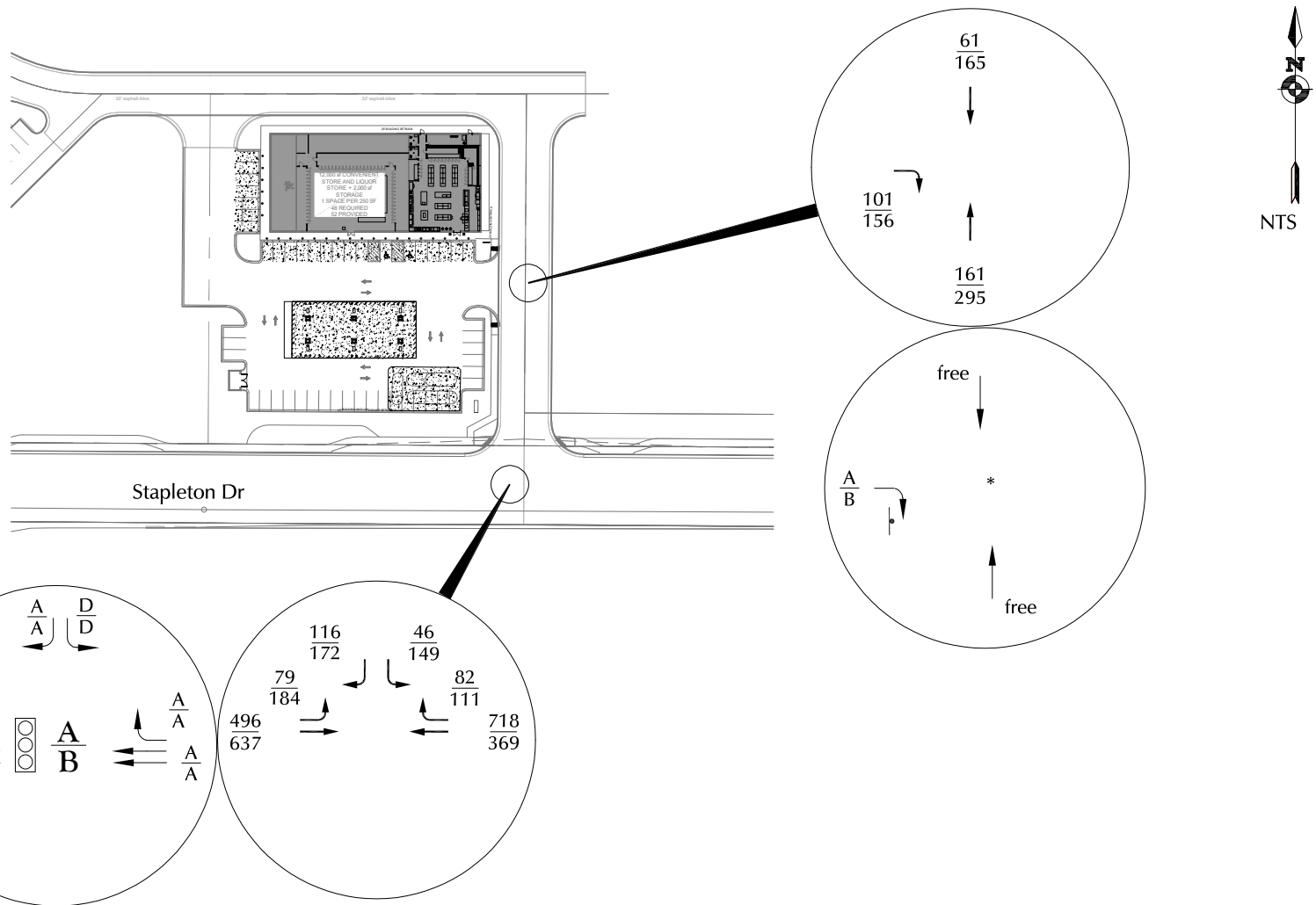
$\frac{C}{D}$ = $\frac{\text{AM Entire Intersection Peak-Hour Level of Service}}{\text{PM Entire Intersection Peak-Hour Level of Service}}$

*Assumed configuration [Note: there is a short, 30' segment of a TWLTL (dashed for northbound traffic) between the north end of the dual solid yellow centerline stripe to the centerline of the access]

Please provide alternate solutions in addition to the proposed two-way left turn center lane on Stapleton Drive to address LOS and traffic.



Figure 9
2028 Total Traffic Conditions
 The Shops at Meridian Ranch Lot 2 Filing No. 1 (LSC# S234020)



LEGEND:

$\frac{XX}{XX}$ = AM Peak-Hour Traffic (veh/hr)
 $\frac{XX}{XX}$ = PM Peak-Hour Traffic (veh/hr)

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

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

= Stop Sign = Traffic Signal

*Assumes future restriction of the east site access to right-in/right-out



Figure 10
2043 Total Traffic Conditions*

The Shops at Meridian Ranch Lot 2 Filing No. 1 (LSC# S234020)

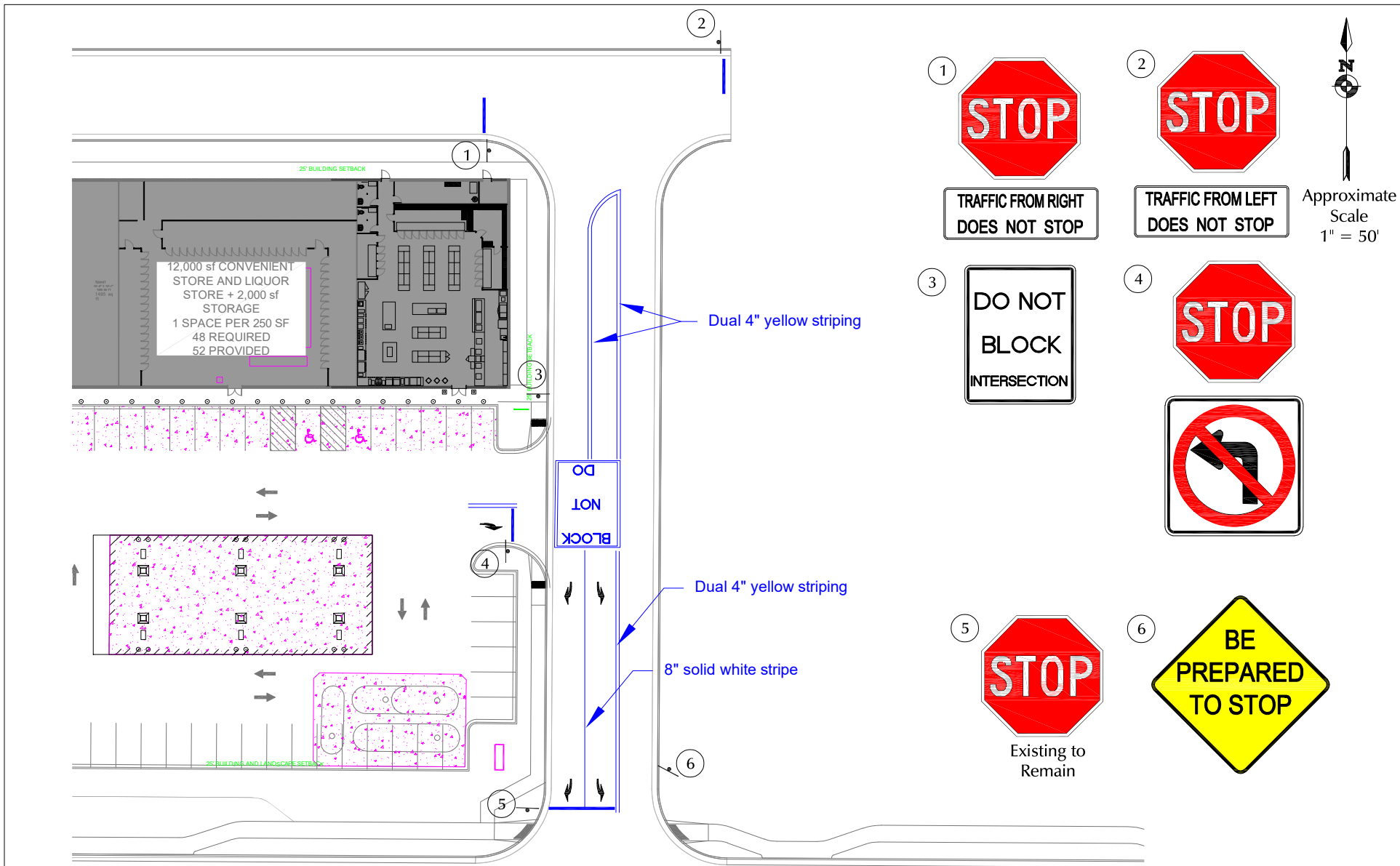


Figure 11
 Access Drive Signing & Pavement
 Markings Recommendations

The Shops at Meridian Ranch Lot 2 (LSC# S234020)

Appendix Table 1

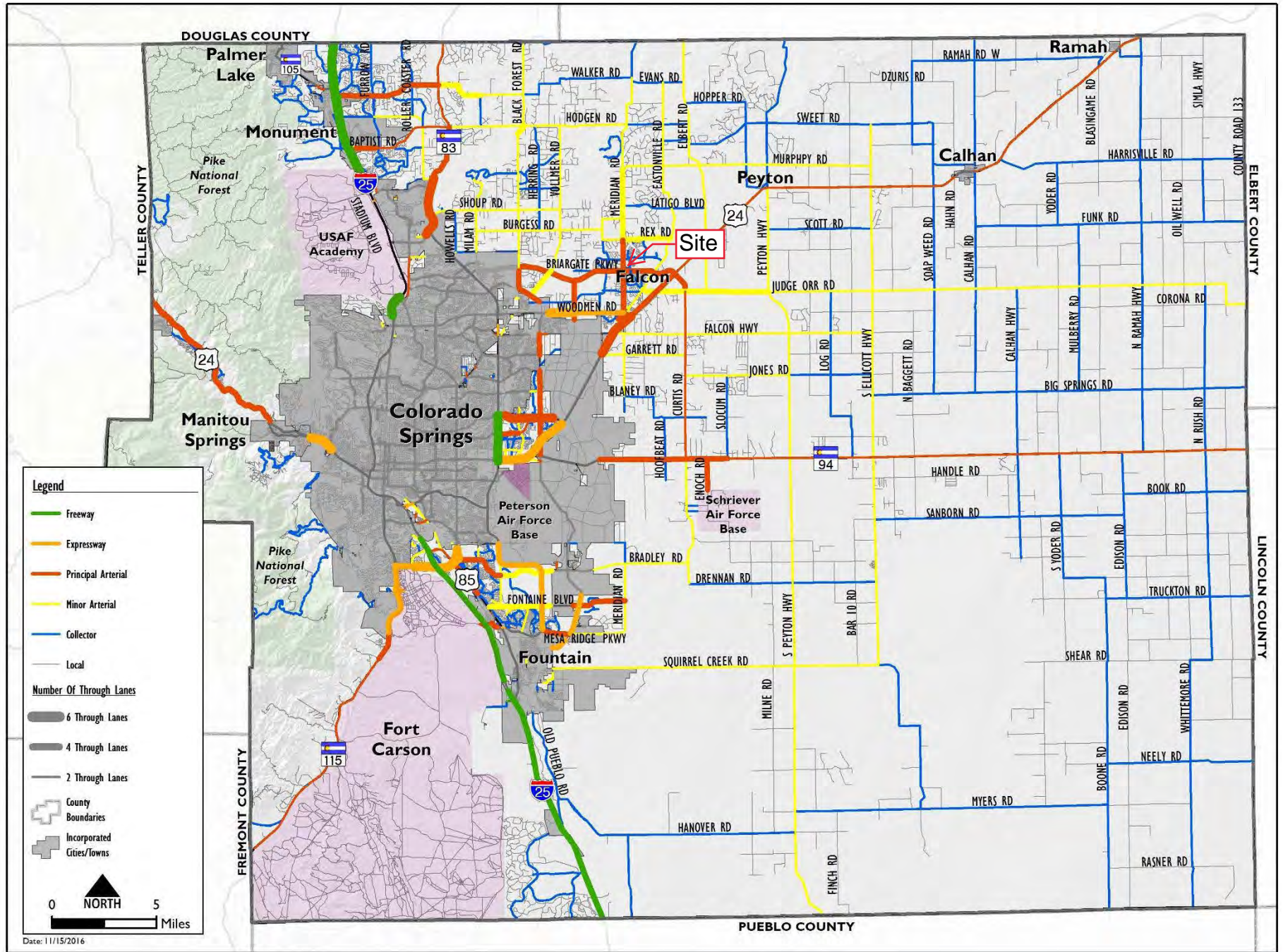


Appendix Table 1
Area Traffic Impact Studies
Shops at Meridian Ranch Lot 2

Study	PCD File No⁽¹⁾	Consultant	Date
Meridian Ranch Commercial and Residential Filing 4B Traffic Technical Memorandum	SP147	LSC Transportation Consultants, Inc	July 11, 2014
The Shops at Meridian Ranch Lot 4 Traffic Technical Memorandum	PPR223	LSC Transportation Consultants, Inc	May 15, 2019
Autumn Acres Master Traffic Impact Analysis	SKP231	LSC Transportation Consultants, Inc	December 23, 2022
Briargate-Stapleton Corridor Study (DRAFT)	briargate-stapleton.com	Wilson & Company	December 9, 2021
Notes:			
(1) Follow the links listed below to obtain the most recent version of each listed study. To obtain a copy of the version of each study used in preparing this report please contact LSC			
Source: LSC Transportation Consultants, Inc.			<i>Feb-23</i>

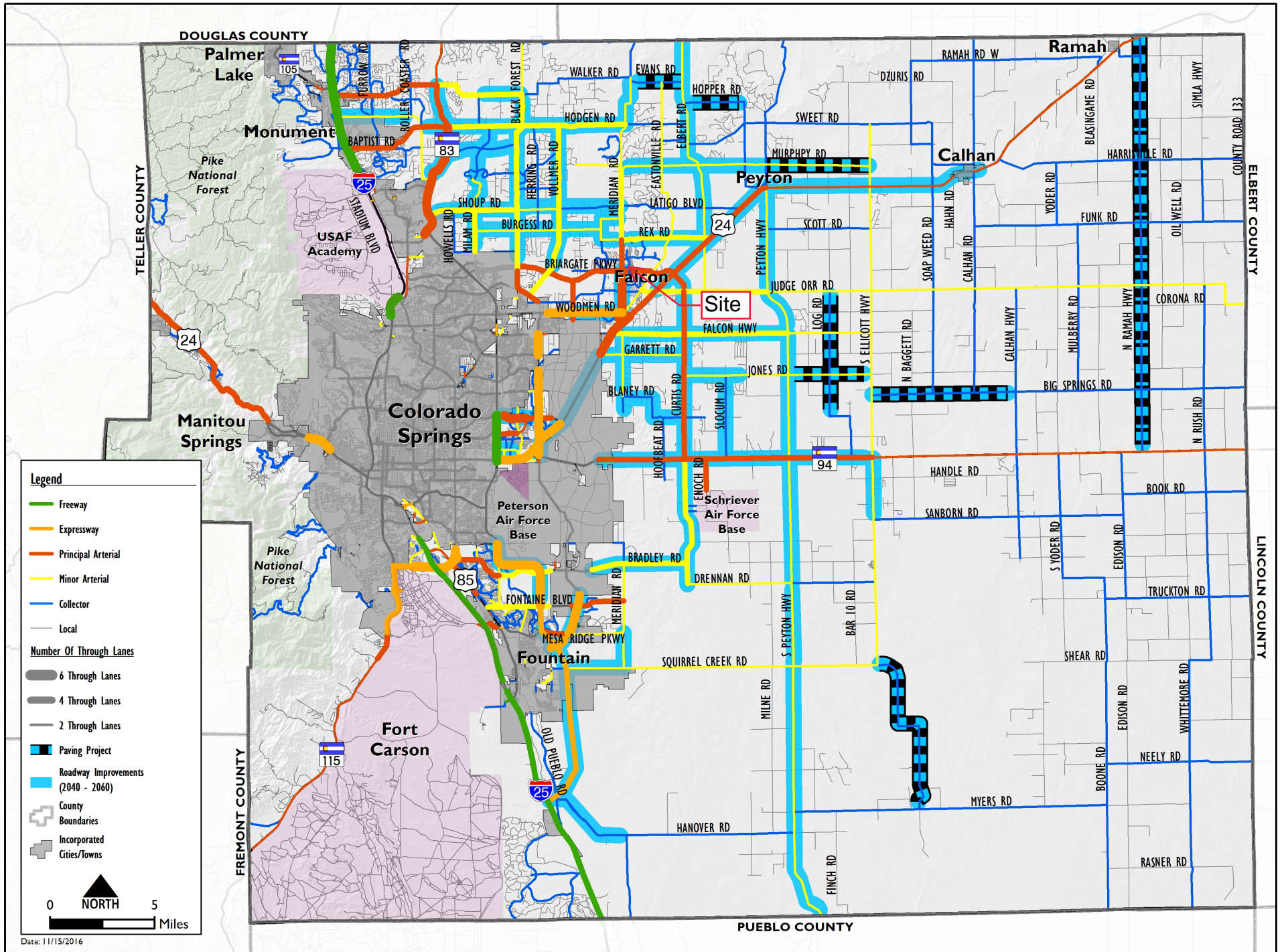
MTCP Maps





Map 14: 2040 Roadway Plan (Classification and Lanes)

Map 17: 2060 Corridor Preservation



Traffic Counts



LSC Transportation Consultants, Inc.

2504 E. Pikes Peak Ave, Suite 304
 Colorado Springs, CO 80909
 719-633-2868

File Name : Meridian Ranch Retail Access - Stapelton Dr AM

Site Code : S234020

Start Date : 1/24/2023

Page No : 1

Groups Printed- Unshifted

Start Time	Meridian Ranch Retail Access Southbound					Stapelton Dr Westbound					Northbound					Stapelton Dr Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
06:30	1	0	0	0	1	0	36	0	0	36	0	0	0	0	0	0	12	2	0	14	51
06:35	7	0	0	0	7	1	26	0	0	27	0	0	0	0	0	0	10	1	0	11	45
06:40	0	0	1	0	1	0	24	0	0	24	0	0	0	0	0	0	13	1	0	14	39
06:45	6	0	0	0	6	0	26	0	0	26	0	0	0	0	0	0	15	0	0	15	47
06:50	3	0	1	0	4	0	32	0	0	32	0	0	0	0	0	0	9	0	0	9	45
06:55	5	0	0	0	5	1	42	0	0	43	0	0	0	0	0	0	18	1	0	19	67
Total	22	0	2	0	24	2	186	0	0	188	0	0	0	0	0	0	77	5	0	82	294
07:00	2	0	0	0	2	1	47	0	0	48	0	0	0	0	0	0	20	1	0	21	71
07:05	2	0	0	0	2	3	52	0	0	55	0	0	0	0	0	0	23	2	0	25	82
07:10	6	0	1	0	7	1	54	0	0	55	0	0	0	0	0	0	23	0	0	23	85
07:15	2	0	3	0	5	0	55	0	0	55	0	0	0	0	0	0	25	0	0	25	85
07:20	2	0	0	0	2	2	63	0	0	65	0	0	0	0	0	0	24	1	0	25	92
07:25	3	0	0	0	3	1	76	0	0	77	0	0	0	0	0	0	21	2	0	23	103
07:30	2	0	0	0	2	1	64	0	0	65	0	0	0	0	0	0	27	1	0	28	95
07:35	4	0	1	0	5	1	50	0	0	51	0	0	0	0	0	0	35	2	0	37	93
07:40	3	0	0	0	3	2	54	0	0	56	0	0	0	0	0	0	28	1	0	29	88
07:45	1	0	0	0	1	1	48	0	0	49	0	0	0	0	0	0	36	1	0	37	87
07:50	4	0	2	0	6	5	29	0	0	34	0	0	0	0	0	0	35	4	0	39	79
07:55	3	0	1	0	4	3	21	0	0	24	0	0	0	0	0	0	32	2	0	34	62
Total	34	0	8	0	42	21	613	0	0	634	0	0	0	0	0	0	329	17	0	346	1022
08:00	1	0	0	0	1	0	22	0	0	22	0	0	0	0	0	0	30	1	0	31	54
08:05	4	0	1	0	5	0	23	0	0	23	0	0	0	0	0	0	22	0	0	22	50
08:10	0	0	2	0	2	2	25	0	0	27	0	0	0	0	0	0	26	3	0	29	58
08:15	1	0	1	0	2	5	24	0	0	29	0	0	0	0	0	0	38	6	0	44	75
08:20	2	0	1	0	3	4	26	0	0	30	0	0	0	0	0	0	14	2	0	16	49
08:25	1	0	2	0	3	4	22	0	0	26	0	0	0	0	0	0	16	0	0	16	45
08:30	4	0	1	0	5	0	28	0	0	28	0	0	0	0	0	0	15	4	0	19	52
08:35	3	0	0	0	3	1	13	0	0	14	0	0	0	0	0	0	17	4	0	21	38
08:40	1	0	2	0	3	3	15	0	0	18	0	0	0	0	0	0	12	1	0	13	34
08:45	3	0	0	0	3	1	22	0	0	23	0	0	0	0	0	0	19	2	0	21	47
08:50	4	0	2	0	6	3	17	0	0	20	0	0	0	0	0	0	8	4	0	12	38
08:55	3	0	1	0	4	10	14	0	0	24	0	0	0	0	0	0	16	8	0	24	52
Total	27	0	13	0	40	33	251	0	0	284	0	0	0	0	0	0	233	35	0	268	592
Grand Total	83	0	23	0	106	56	1050	0	0	1106	0	0	0	0	0	0	639	57	0	696	1908
Apprch %	78.3	0	21.7	0		5.1	94.9	0	0		0	0	0	0		0	91.8	8.2	0		
Total %	4.4	0	1.2	0	5.6	2.9	55	0	0	58	0	0	0	0	0	0	33.5	3	0	36.5	

LSC Transportation Consultants, Inc.

2504 E. Pikes Peak Ave, Suite 304
 Colorado Springs, CO 80909
 719-633-2868

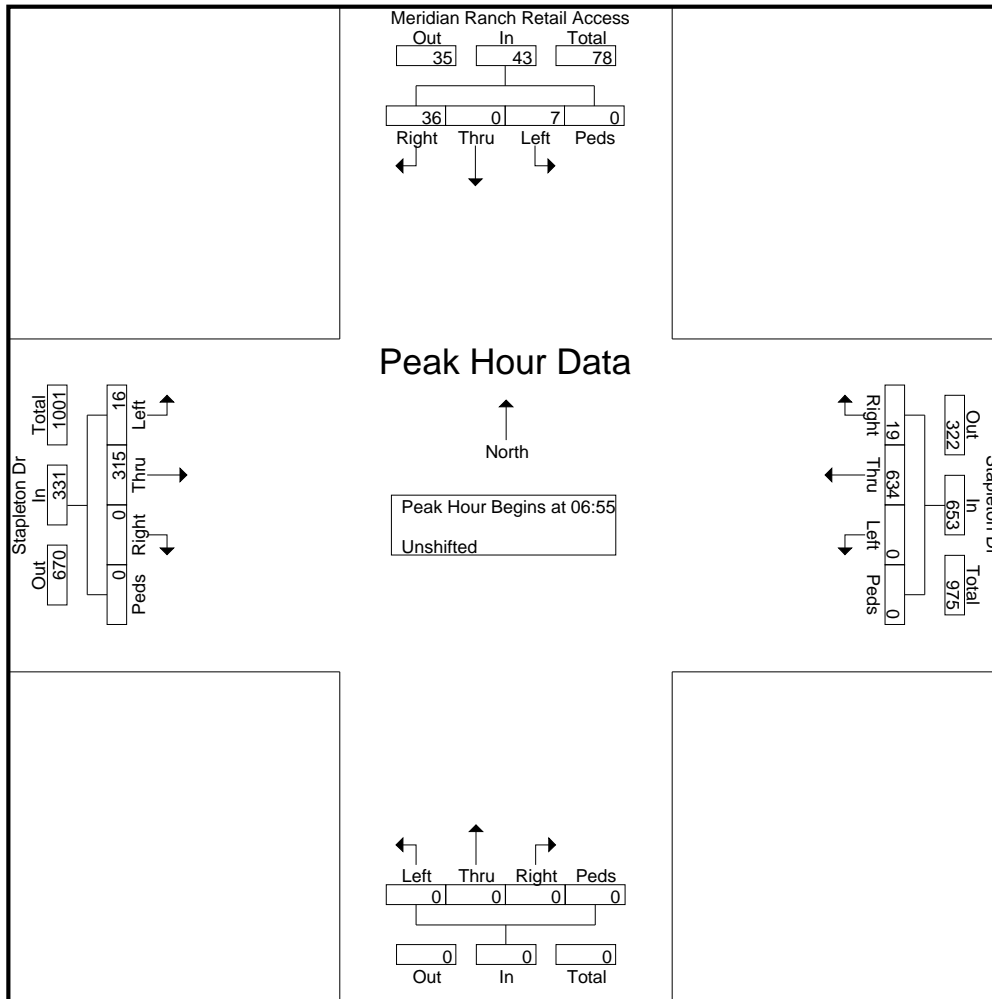
File Name : Meridian Ranch Retail Access - Stapleton Dr AM

Site Code : S234020

Start Date : 1/24/2023

Page No : 2

Start Time	Meridian Ranch Retail Access Southbound					Stapleton Dr Westbound					Northbound					Stapleton Dr Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 06:30 to 08:55 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 06:55																					
06:55	5	0	0	0	5	1	42	0	0	43	0	0	0	0	0	0	18	1	0	19	67
07:00	2	0	0	0	2	1	47	0	0	48	0	0	0	0	0	0	20	1	0	21	71
07:05	2	0	0	0	2	3	52	0	0	55	0	0	0	0	0	0	23	2	0	25	82
07:10	6	0	1	0	7	1	54	0	0	55	0	0	0	0	0	0	23	0	0	23	85
07:15	2	0	3	0	5	0	55	0	0	55	0	0	0	0	0	0	25	0	0	25	85
07:20	2	0	0	0	2	2	63	0	0	65	0	0	0	0	0	0	24	1	0	25	92
07:25	3	0	0	0	3	1	76	0	0	77	0	0	0	0	0	0	21	2	0	23	103
07:30	2	0	0	0	2	1	64	0	0	65	0	0	0	0	0	0	27	1	0	28	95
07:35	4	0	1	0	5	1	50	0	0	51	0	0	0	0	0	0	35	2	0	37	93
07:40	3	0	0	0	3	2	54	0	0	56	0	0	0	0	0	0	28	1	0	29	88
07:45	1	0	0	0	1	1	48	0	0	49	0	0	0	0	0	0	36	1	0	37	87
07:50	4	0	2	0	6	5	29	0	0	34	0	0	0	0	0	0	35	4	0	39	79
Total Volume	36	0	7	0	43	19	634	0	0	653	0	0	0	0	0	0	315	16	0	331	1027
% App. Total	83.7	0	16.3	0		2.9	97.1	0	0		0	0	0	0		0	95.2	4.8	0		
PHF	.500	.000	.194	.000	.512	.317	.695	.000	.000	.707	.000	.000	.000	.000	.000	.000	.729	.333	.000	.707	.831



LSC Transportation Consultants, Inc.

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 719-633-2868

File Name : Meridian Ranch Retail Access - Stapelton Dr Mid

Site Code : S234020

Start Date : 1/17/2023

Page No : 1

Groups Printed- Unshifted

Start Time	Meridian Ranch Retail Access Southbound					Stapelton Dr Westbound					Northbound					Stapelton Dr Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
11:45	4	0	2	0	6	1	21	0	0	22	0	0	0	0	0	0	13	4	0	17	45
11:50	4	0	1	0	5	3	15	0	0	18	0	0	0	0	0	0	9	3	0	12	35
11:55	3	0	2	0	5	0	20	0	0	20	0	0	0	0	0	0	20	2	0	22	47
Total	11	0	5	0	16	4	56	0	0	60	0	0	0	0	0	0	42	9	0	51	127
12:00	5	0	4	0	9	1	13	0	0	14	0	0	0	0	0	0	21	3	0	24	47
12:05	6	0	3	0	9	2	7	0	0	9	0	0	0	0	0	0	10	3	0	13	31
12:10	6	0	1	0	7	1	17	0	0	18	0	0	0	0	0	0	20	3	0	23	48
12:15	5	0	1	0	6	4	13	0	0	17	0	0	0	0	0	0	14	0	0	14	37
12:20	3	0	2	0	5	2	21	0	0	23	0	0	0	0	0	0	12	6	0	18	46
12:25	3	0	2	0	5	1	15	0	0	16	0	0	0	0	0	0	15	3	0	18	39
12:30	4	0	2	0	6	1	21	0	0	22	0	0	0	0	0	0	14	0	0	14	42
12:35	3	0	1	0	4	3	20	0	0	23	0	0	0	0	0	0	12	2	0	14	41
12:40	3	0	0	0	3	0	15	0	0	15	0	0	0	0	0	0	20	2	0	22	40
12:45	8	0	1	0	9	3	22	0	0	25	0	0	0	0	0	0	19	5	0	24	58
12:50	3	0	2	0	5	2	21	0	0	23	0	0	0	0	0	0	9	3	0	12	40
12:55	6	0	2	0	8	2	14	0	0	16	0	0	0	0	0	0	12	4	0	16	40
Total	55	0	21	0	76	22	199	0	0	221	0	0	0	0	0	0	178	34	0	212	509
13:00	12	0	3	0	15	1	16	0	0	17	0	0	0	0	0	0	9	5	0	14	46
13:05	9	0	0	0	9	1	15	0	0	16	0	0	0	0	0	0	14	3	0	17	42
13:10	5	0	1	0	6	2	20	0	0	22	0	0	0	0	0	0	12	2	0	14	42
13:15	4	0	5	0	9	1	16	0	0	17	0	0	0	0	0	0	13	3	0	16	42
13:20	5	0	2	0	7	0	21	0	0	21	0	0	0	0	0	0	19	5	0	24	52
13:25	5	0	3	0	8	0	14	0	0	14	0	0	0	0	0	0	15	4	0	19	41
13:30	2	0	3	0	5	1	8	0	0	9	0	0	0	0	0	0	18	3	0	21	35
13:35	2	0	4	0	6	1	12	0	0	13	0	0	0	0	0	0	15	2	0	17	36
13:40	7	0	0	0	7	3	21	0	0	24	0	0	0	0	0	0	8	3	0	11	42
13:45	4	0	4	0	8	3	17	0	0	20	0	0	0	0	0	0	28	5	0	33	61
13:50	2	0	5	0	7	4	19	0	0	23	0	0	0	0	0	0	19	1	0	20	50
13:55	1	0	2	0	3	0	12	0	0	12	0	0	0	0	0	0	28	0	0	28	43
Total	58	0	32	0	90	17	191	0	0	208	0	0	0	0	0	0	198	36	0	234	532
14:00	3	0	0	0	3	2	16	0	0	18	0	0	0	0	0	0	14	3	0	17	38
14:05	6	0	0	0	6	1	16	0	0	17	0	0	0	0	0	0	22	1	0	23	46
14:10	5	0	2	0	7	0	13	0	0	13	0	0	0	0	0	0	18	1	0	19	39
Grand Total	138	0	60	0	198	46	491	0	0	537	0	0	0	0	0	0	472	84	0	556	1291
Apprch %	69.7	0	30.3	0		8.6	91.4	0	0		0	0	0	0		0	84.9	15.1	0		
Total %	10.7	0	4.6	0	15.3	3.6	38	0	0	41.6	0	0	0	0	0	0	36.6	6.5	0	43.1	

LSC Transportation Consultants, Inc.

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File Name : Meridian Ranch Retail Access - Stapelton Dr PM

Site Code : S234020

Start Date : 1/17/2023

Page No : 1

Groups Printed- Unshifted

Start Time	Meridian Ranch Retail Access Southbound					Stapelton Dr Westbound					Northbound					Stapelton Dr Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
15:00	4	0	0	0	4	1	34	0	0	35	0	0	0	0	0	0	21	2	0	23	62
15:05	3	0	1	0	4	2	24	0	0	26	0	0	0	0	0	0	43	7	0	50	80
15:10	8	0	1	0	9	3	24	0	0	27	0	0	0	0	0	0	45	4	0	49	85
15:15	2	0	6	0	8	1	33	0	0	34	0	0	0	0	0	0	47	3	0	50	92
15:20	5	0	0	0	5	3	31	0	0	34	0	0	0	0	0	0	33	3	0	36	75
15:25	1	0	1	0	2	1	18	0	0	19	0	0	0	0	0	0	47	4	0	51	72
15:30	8	0	3	0	11	3	37	0	0	40	0	0	0	0	0	0	27	0	0	27	78
15:35	0	0	4	0	4	1	23	0	0	24	0	0	0	0	0	0	28	6	0	34	62
15:40	3	0	0	0	3	2	25	0	0	27	0	0	0	0	0	0	27	2	0	29	59
15:45	0	0	0	0	0	4	32	0	0	36	0	0	0	0	0	0	41	2	0	43	79
15:50	3	0	2	0	5	0	25	0	0	25	0	0	0	0	0	0	25	6	0	31	61
15:55	4	0	1	0	5	4	36	0	0	40	0	0	0	0	0	0	33	3	0	36	81
Total	41	0	19	0	60	25	342	0	0	367	0	0	0	0	0	0	417	42	0	459	886
16:00	2	0	4	0	6	0	39	0	0	39	0	0	0	0	0	0	37	2	0	39	84
16:05	3	0	1	0	4	3	32	0	0	35	0	0	0	0	0	0	30	1	0	31	70
16:10	4	0	5	0	9	6	27	0	0	33	0	0	0	0	0	0	37	2	0	39	81
16:15	2	0	0	0	2	1	32	0	0	33	0	0	0	0	0	0	34	4	0	38	73
16:20	3	0	2	0	5	0	19	0	0	19	0	0	0	0	0	0	37	1	0	38	62
16:25	1	0	1	0	2	1	18	0	0	19	0	0	0	0	0	0	31	5	0	36	57
16:30	6	0	4	0	10	3	21	0	0	24	0	0	0	0	0	0	27	5	0	32	66
16:35	8	0	2	0	10	6	22	0	0	28	0	0	0	0	0	0	39	7	0	46	84
16:40	8	0	5	0	13	2	32	0	0	34	0	0	0	0	0	0	30	4	0	34	81
16:45	5	0	3	0	8	3	19	0	0	22	0	0	0	0	0	0	27	5	0	32	62
16:50	4	0	3	0	7	5	24	0	0	29	0	0	0	0	0	0	24	4	0	28	64
16:55	4	0	6	0	10	4	30	0	0	34	0	0	0	0	0	0	32	6	0	38	82
Total	50	0	36	0	86	34	315	0	0	349	0	0	0	0	0	0	385	46	0	431	866
17:00	4	0	3	0	7	1	28	0	0	29	0	0	0	0	0	0	43	3	0	46	82
17:05	7	0	4	0	11	2	32	0	0	34	0	0	0	0	0	0	44	3	0	47	92
17:10	3	0	0	0	3	2	27	0	0	29	0	0	0	0	0	0	21	10	0	31	63
17:15	4	0	2	0	6	3	30	0	0	33	0	0	0	0	0	0	32	4	0	36	75
17:20	2	0	4	0	6	1	20	0	0	21	0	0	0	0	0	0	37	5	0	42	69
17:25	4	0	5	0	9	1	19	0	0	20	0	0	0	0	0	0	38	5	0	43	72
17:30	4	0	3	0	7	2	12	0	0	14	0	0	0	0	0	0	35	0	0	35	56
17:35	8	0	1	0	9	3	20	0	0	23	0	0	0	0	0	0	31	4	0	35	67
17:40	4	0	2	0	6	3	16	0	0	19	0	0	0	0	0	0	42	7	0	49	74
17:45	4	0	0	0	4	5	25	0	0	30	0	0	0	0	0	0	38	2	0	40	74
17:50	3	0	1	0	4	4	23	0	0	27	0	0	0	0	0	0	39	0	0	39	70
17:55	4	0	2	0	6	5	27	0	0	32	0	0	0	0	0	0	41	1	0	42	80
Total	51	0	27	0	78	32	279	0	0	311	0	0	0	0	0	0	441	44	0	485	874
Grand Total	142	0	82	0	224	91	936	0	0	1027	0	0	0	0	0	0	1243	132	0	1375	2626
Apprch %	63.4	0	36.6	0		8.9	91.1	0	0		0	0	0	0		0	90.4	9.6	0		
Total %	5.4	0	3.1	0	8.5	3.5	35.6	0	0	39.1	0	0	0	0	0	0	47.3	5	0	52.4	

Levels of Service



HCM 6th TWSC
8: Stapleton Dr & Shops at Meridian Ranch

Existing Traffic
AM Peak Hour

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗	↗	↘	↘	↘
Traffic Vol, veh/h	16	315	634	19	7	36
Future Vol, veh/h	16	315	634	19	7	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	155	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	85	85	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	362	746	22	9	46

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	768	0	-	0	1144 746
Stage 1	-	-	-	-	746 -
Stage 2	-	-	-	-	398 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	846	-	-	-	221 413
Stage 1	-	-	-	-	469 -
Stage 2	-	-	-	-	678 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	846	-	-	-	216 413
Mov Cap-2 Maneuver	-	-	-	-	216 -
Stage 1	-	-	-	-	459 -
Stage 2	-	-	-	-	678 -

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	16
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	846	-	-	-	216	413
HCM Lane V/C Ratio	0.022	-	-	-	0.042	0.112
HCM Control Delay (s)	9.3	-	-	-	22.4	14.8
HCM Lane LOS	A	-	-	-	C	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1	0.4

HCM 6th TWSC
8: Stapleton Dr & Shops at Meridian Ranch

Existing Traffic
PM Peak Hour

Intersection						
Int Delay, s/veh	2.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗	↗	↘	↘	↘
Traffic Vol, veh/h	61	394	304	33	59	41
Future Vol, veh/h	61	394	304	33	59	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	155	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	66	428	330	36	71	49

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	366	0	-	0	890 330
Stage 1	-	-	-	-	330 -
Stage 2	-	-	-	-	560 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1193	-	-	-	313 712
Stage 1	-	-	-	-	728 -
Stage 2	-	-	-	-	572 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1193	-	-	-	296 712
Mov Cap-2 Maneuver	-	-	-	-	296 -
Stage 1	-	-	-	-	688 -
Stage 2	-	-	-	-	572 -

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	16.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1193	-	-	-	296	712
HCM Lane V/C Ratio	0.056	-	-	-	0.24	0.069
HCM Control Delay (s)	8.2	-	-	-	21	10.4
HCM Lane LOS	A	-	-	-	C	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.9	0.2

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗	↗	↘	↘	↘
Traffic Vol, veh/h	16	365	734	21	7	41
Future Vol, veh/h	16	365	734	21	7	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	155	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	85	85	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	420	864	25	9	53

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	889	0	-	0	1320 864
Stage 1	-	-	-	-	864 -
Stage 2	-	-	-	-	456 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	762	-	-	-	173 354
Stage 1	-	-	-	-	413 -
Stage 2	-	-	-	-	638 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	762	-	-	-	169 354
Mov Cap-2 Maneuver	-	-	-	-	169 -
Stage 1	-	-	-	-	403 -
Stage 2	-	-	-	-	638 -

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	18.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	762	-	-	-	169	354
HCM Lane V/C Ratio	0.024	-	-	-	0.053	0.148
HCM Control Delay (s)	9.8	-	-	-	27.5	16.9
HCM Lane LOS	A	-	-	-	D	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2	0.5

Intersection						
Int Delay, s/veh	2.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗	↗	↘	↘	↘
Traffic Vol, veh/h	63	455	351	37	63	59
Future Vol, veh/h	63	455	351	37	63	59
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	155	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	68	495	382	40	76	71

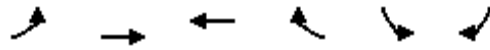
Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	422	0	-	0	1013 382
Stage 1	-	-	-	-	382 -
Stage 2	-	-	-	-	631 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1137	-	-	-	265 665
Stage 1	-	-	-	-	690 -
Stage 2	-	-	-	-	530 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1137	-	-	-	249 665
Mov Cap-2 Maneuver	-	-	-	-	249 -
Stage 1	-	-	-	-	649 -
Stage 2	-	-	-	-	530 -

Approach	EB	WB	SB
HCM Control Delay, s	1	0	18.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1137	-	-	-	249	665
HCM Lane V/C Ratio	0.06	-	-	-	0.305	0.107
HCM Control Delay (s)	8.4	-	-	-	25.7	11.1
HCM Lane LOS	A	-	-	-	D	B
HCM 95th %tile Q(veh)	0.2	-	-	-	1.2	0.4

Timings
8: Stapleton Dr & Shops at Meridian Ranch

2042 Background Traffic
AM Peak Hour

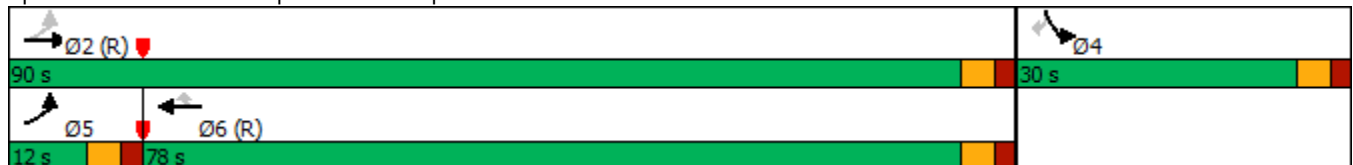


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑↑	↑↑	↗	↖	↗
Traffic Volume (vph)	22	519	757	27	10	47
Future Volume (vph)	22	519	757	27	10	47
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2			6		4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	12.0	90.0	78.0	78.0	30.0	30.0
Total Split (%)	10.0%	75.0%	65.0%	65.0%	25.0%	25.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Max	C-Max	C-Max	Max	Max
Act Effct Green (s)	85.0	85.0	78.3	78.3	25.0	25.0
Actuated g/C Ratio	0.71	0.71	0.65	0.65	0.21	0.21
v/c Ratio	0.05	0.22	0.35	0.03	0.03	0.13
Control Delay	5.5	6.3	3.8	1.4	38.3	11.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.5	6.3	3.8	1.4	38.3	11.6
LOS	A	A	A	A	D	B
Approach Delay		6.2	3.7		16.5	
Approach LOS		A	A		B	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 14 (12%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 50
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.35
 Intersection Signal Delay: 5.2
 Intersection Capacity Utilization 33.4%
 Analysis Period (min) 15
 Intersection LOS: A
 ICU Level of Service A

Splits and Phases: 8: Stapleton Dr & Shops at Meridian Ranch



Timings
8: Stapleton Dr & Shops at Meridian Ranch

2042 Background Traffic
PM Peak Hour

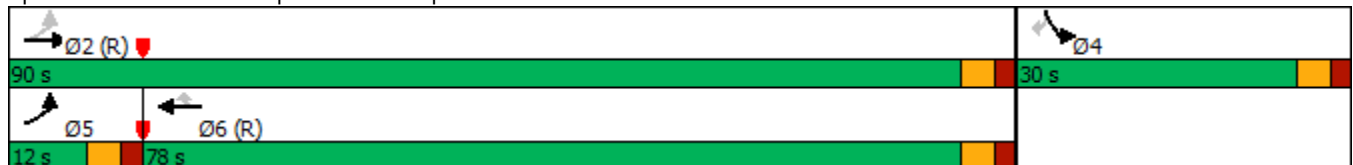


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑↑	↑↑	↗	↖	↗
Traffic Volume (vph)	80	683	404	49	76	78
Future Volume (vph)	80	683	404	49	76	78
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2			6		4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	12.0	90.0	78.0	78.0	30.0	30.0
Total Split (%)	10.0%	75.0%	65.0%	65.0%	25.0%	25.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Max	C-Max	C-Max	Max	Max
Act Effct Green (s)	85.0	85.0	75.5	75.5	25.0	25.0
Actuated g/C Ratio	0.71	0.71	0.63	0.63	0.21	0.21
v/c Ratio	0.13	0.29	0.19	0.05	0.22	0.21
Control Delay	5.8	6.8	6.8	4.2	41.3	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.8	6.8	6.8	4.2	41.3	9.8
LOS	A	A	A	A	D	A
Approach Delay		6.7	6.5		25.3	
Approach LOS		A	A		C	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 14 (12%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 50
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.29
 Intersection Signal Delay: 8.7
 Intersection Capacity Utilization 32.3%
 Analysis Period (min) 15
 Intersection LOS: A
 ICU Level of Service A

Splits and Phases: 8: Stapleton Dr & Shops at Meridian Ranch



Intersection						
Int Delay, s/veh	4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗	↗	↘	↘	↘
Traffic Vol, veh/h	79	342	695	70	39	117
Future Vol, veh/h	79	342	695	70	39	117
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	155	-	-	-	60	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	85	85	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	91	393	818	82	50	150

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	900	0	-	0	1393 818
Stage 1	-	-	-	-	818 -
Stage 2	-	-	-	-	575 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	755	-	-	-	156 376
Stage 1	-	-	-	-	434 -
Stage 2	-	-	-	-	563 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	755	-	-	-	137 376
Mov Cap-2 Maneuver	-	-	-	-	137 -
Stage 1	-	-	-	-	381 -
Stage 2	-	-	-	-	563 -

Approach	EB	WB	SB
HCM Control Delay, s	2	0	27
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	755	-	-	-	137	376
HCM Lane V/C Ratio	0.12	-	-	-	0.365	0.399
HCM Control Delay (s)	10.4	-	-	-	45.7	20.8
HCM Lane LOS	B	-	-	-	E	C
HCM 95th %tile Q(veh)	0.4	-	-	-	1.5	1.9

Intersection						
Int Delay, s/veh	3.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗	↗	↘	↘	↘
Traffic Vol, veh/h	79	342	695	70	39	117
Future Vol, veh/h	79	342	695	70	39	117
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	155	-	-	-	60	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	85	85	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	91	393	818	82	50	150

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	900	0	-	0	1393 818
Stage 1	-	-	-	-	818 -
Stage 2	-	-	-	-	575 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	755	-	-	-	156 376
Stage 1	-	-	-	-	434 -
Stage 2	-	-	-	-	563 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	755	-	-	-	137 376
Mov Cap-2 Maneuver	-	-	-	-	267 -
Stage 1	-	-	-	-	381 -
Stage 2	-	-	-	-	563 -

Approach	EB	WB	SB
HCM Control Delay, s	2	0	21
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	755	-	-	-	267	376
HCM Lane V/C Ratio	0.12	-	-	-	0.187	0.399
HCM Control Delay (s)	10.4	-	-	-	21.6	20.8
HCM Lane LOS	B	-	-	-	C	C
HCM 95th %tile Q(veh)	0.4	-	-	-	0.7	1.9

Intersection						
Int Delay, s/veh	5.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↖	↗	
Traffic Vol, veh/h	0	101	112	37	55	0
Future Vol, veh/h	0	101	112	37	55	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	106	118	39	58	0

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	58	58	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	4.12	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	0	1008	1546	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	1008	1546	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9	5.7	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1546	-	1008	-	-
HCM Lane V/C Ratio	0.076	-	0.105	-	-
HCM Control Delay (s)	7.5	0	9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	0.4	-	-

Intersection						
Int Delay, s/veh	12.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗	↗	↘	↘	↘
Traffic Vol, veh/h	178	409	316	89	126	164
Future Vol, veh/h	178	409	316	89	126	164
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	155	-	-	-	60	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	193	445	343	97	152	198

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	440	0	-	0	1174 343
Stage 1	-	-	-	-	343 -
Stage 2	-	-	-	-	831 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1120	-	-	-	212 700
Stage 1	-	-	-	-	719 -
Stage 2	-	-	-	-	428 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1120	-	-	-	176 700
Mov Cap-2 Maneuver	-	-	-	-	176 -
Stage 1	-	-	-	-	595 -
Stage 2	-	-	-	-	428 -

Approach	EB	WB	SB
HCM Control Delay, s	2.7	0	45.5
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1120	-	-	-	176	700
HCM Lane V/C Ratio	0.173	-	-	-	0.863	0.282
HCM Control Delay (s)	8.9	-	-	-	88.8	12.2
HCM Lane LOS	A	-	-	-	F	B
HCM 95th %tile Q(veh)	0.6	-	-	-	6.2	1.2

Intersection						
Int Delay, s/veh	5.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗	↗	↘	↘	↘
Traffic Vol, veh/h	178	409	316	89	126	164
Future Vol, veh/h	178	409	316	89	126	164
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	155	-	-	-	60	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	193	445	343	97	152	198

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	440	0	-	0	1174 343
Stage 1	-	-	-	-	343 -
Stage 2	-	-	-	-	831 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1120	-	-	-	212 700
Stage 1	-	-	-	-	719 -
Stage 2	-	-	-	-	428 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1120	-	-	-	176 700
Mov Cap-2 Maneuver	-	-	-	-	304 -
Stage 1	-	-	-	-	595 -
Stage 2	-	-	-	-	428 -

Approach	EB	WB	SB
HCM Control Delay, s	2.7	0	19.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1120	-	-	-	304	700
HCM Lane V/C Ratio	0.173	-	-	-	0.499	0.282
HCM Control Delay (s)	8.9	-	-	-	28.1	12.2
HCM Lane LOS	A	-	-	-	D	B
HCM 95th %tile Q(veh)	0.6	-	-	-	2.6	1.2

Intersection						
Int Delay, s/veh	5.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↖	↗	↖
Traffic Vol, veh/h	0	157	168	100	134	0
Future Vol, veh/h	0	157	168	100	134	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	165	177	105	141	0

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	141	141	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	4.12	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	0	907	1442	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	907	1442	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.9	4.9	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1442	-	907	-	-
HCM Lane V/C Ratio	0.123	-	0.182	-	-
HCM Control Delay (s)	7.8	0	9.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.4	-	0.7	-	-

Timings
8: Stapleton Dr & Shops at Meridian Ranch

2042 Total Traffic
AM Peak Hour

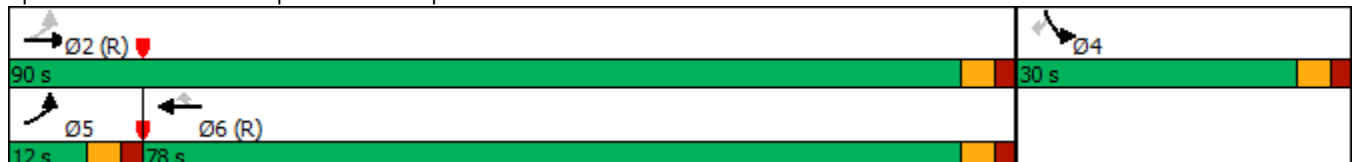


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑↑	↑↑	↗	↖	↗
Traffic Volume (vph)	79	496	718	82	46	116
Future Volume (vph)	79	496	718	82	46	116
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2			6		4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	12.0	90.0	78.0	78.0	30.0	30.0
Total Split (%)	10.0%	75.0%	65.0%	65.0%	25.0%	25.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Max	C-Max	C-Max	Max	Max
Act Effct Green (s)	85.0	85.0	75.5	75.5	25.0	25.0
Actuated g/C Ratio	0.71	0.71	0.63	0.63	0.21	0.21
v/c Ratio	0.18	0.21	0.34	0.08	0.13	0.29
Control Delay	6.2	6.2	3.4	1.2	39.9	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.2	6.2	3.4	1.2	39.9	8.8
LOS	A	A	A	A	D	A
Approach Delay		6.2	3.2		17.6	
Approach LOS		A	A		B	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 14 (12%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 50
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.34
 Intersection Signal Delay: 5.8
 Intersection Capacity Utilization 40.9%
 Analysis Period (min) 15
 Intersection LOS: A
 ICU Level of Service A

Splits and Phases: 8: Stapleton Dr & Shops at Meridian Ranch



Intersection						
Int Delay, s/veh	2.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑	↘	
Traffic Vol, veh/h	0	101	0	161	61	0
Future Vol, veh/h	0	101	0	161	61	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	106	0	169	64	0

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	-	64	-	0	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-
Pot Cap-1 Maneuver	0	1000	0	-	-
Stage 1	0	-	0	-	-
Stage 2	0	-	0	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	-	1000	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- 1000	-	-
HCM Lane V/C Ratio	- 0.106	-	-
HCM Control Delay (s)	- 9	-	-
HCM Lane LOS	- A	-	-
HCM 95th %tile Q(veh)	- 0.4	-	-

Timings
8: Stapleton Dr & Shops at Meridian Ranch

2042 Total Traffic
PM Peak Hour

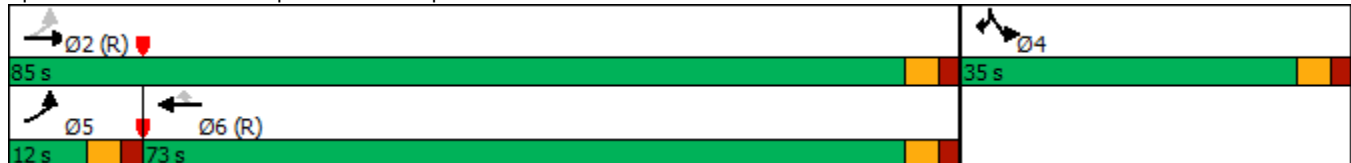


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗↗	↖↖	↖	↘	↘
Traffic Volume (vph)	184	637	369	111	149	172
Future Volume (vph)	184	637	369	111	149	172
Turn Type	pm+pt	NA	NA	Perm	Prot	Prot
Protected Phases	5	2	6		4	4
Permitted Phases	2			6		
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	12.0	85.0	73.0	73.0	35.0	35.0
Total Split (%)	10.0%	70.8%	60.8%	60.8%	29.2%	29.2%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Max	C-Max	C-Max	Max	Max
Act Effct Green (s)	80.0	80.0	68.0	68.0	30.0	30.0
Actuated g/C Ratio	0.67	0.67	0.57	0.57	0.25	0.25
v/c Ratio	0.30	0.28	0.19	0.12	0.36	0.34
Control Delay	8.8	8.6	7.5	4.6	39.8	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.8	8.6	7.5	4.6	39.8	7.0
LOS	A	A	A	A	D	A
Approach Delay		8.7	6.8		22.2	
Approach LOS		A	A		C	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 14 (12%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 50
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.36
 Intersection Signal Delay: 10.8
 Intersection Capacity Utilization 41.1%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service A

Splits and Phases: 8: Stapleton Dr & Shops at Meridian Ranch



Intersection						
Int Delay, s/veh	2.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑	↘	
Traffic Vol, veh/h	0	156	0	295	165	0
Future Vol, veh/h	0	156	0	295	165	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	164	0	311	174	0

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	-	174	-	0	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-
Pot Cap-1 Maneuver	0	869	0	-	-
Stage 1	0	-	0	-	-
Stage 2	0	-	0	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	-	869	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	869	-	-
HCM Lane V/C Ratio	-	0.189	-	-
HCM Control Delay (s)	-	10.1	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.7	-	-