



Please see comments on the sketch plan document regarding the proposed access points and revise the analysis accordingly.
Also, refer to comments provided by the traffic consultant FHU that are posted on EDARP.

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Autumn Acres
Master Traffic Impact Analysis
(LSC #S224050)
PCD File No.: EA-226
December 23, 2022

Replace with SKP231

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.

Date

Autumn Acres

Master Traffic Impact Analysis

Prepared for:

Mr. Kevin Donovan

<via email>

DECEMBER 23, 2022

LSC Transportation Consultants, Inc.

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

LSC #S224050



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December 23, 2022

Mr. Kevin Donovan
<via email>

RE: Autumn Acres
El Paso County, Colorado
Master Traffic Impact Analysis
LSC #S224050

Dear Mr. Donovan:

In response to your request, LSC Transportation Consultants, Inc. has prepared this master traffic impact analysis for the Autumn Acres Sketch Plan in El Paso County, Colorado. As shown in Figure 1, the 160-acre site is located southwest of the intersection of Meridian Road and Stapleton Drive in El Paso County, Colorado.

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 2042 baseline/background traffic volume estimates;
- The projected average weekday and peak-hour vehicle trips to be generated by the site;
- The assignment of the site's projected traffic volumes to the key area streets and intersections for the short and long term and the resulting total traffic volumes for the short and long term;
- The resulting traffic impacts, including level of service analysis at key intersections; 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). This study accounts for the land use, trip generation, and the roadway network included in these studies.

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, as well as reference studies including the *Black Forest Widening Project*

Traffic Impact Study and traffic impact studies completed for the Wolf Ranch, The Ranch, Sterling Ranch, Highland Park, and Eagle Rising developments.

LAND USE AND ACCESS

Site Plan

Figure 2 shows the proposed Autumn Acres sketch plan. As shown on the sketch plan, the site is planned to be developed with about 329 single-family homes, 50 patio homes, 140 townhomes, 10 acres of commercial development, and 8 acres for self storage. A copy of the proposed phasing plan has been attached.

Site Access

A full-movement site access is proposed to Stapleton Drive (an Urban Principal Arterial) aligning with Liberty Grove Drive. This intersection is about 1,445 feet west of Meridian Road and 1,455 feet east of Scenic Brush Drive, which does not meet the ½-mile intersection spacing required in the *El Paso County Engineering Criteria Manual (ECM)* for an Urban Principal Arterial. As the existing spacing between Towner Road and Meridian Road is less than one mile, it is not possible to locate a new access that will meet this criterion. Although the proposed access does not meet the spacing required by the *ECM* it aligns with an existing intersection and is located about midway between the two nearest intersections. The primary purpose of required spacing of intersections is to allow for optimal traffic-signal progression and to ensure adequate length for auxiliary turn lanes; however, the Stapleton/Liberty Grove/full-movement site access is proposed to be constructed as a two-lane modern roundabout which will negate these requirements.

A right-in/right-out-only access is proposed to Stapleton Drive about 640 feet east of Liberty Grove Drive and two three-quarter movement (left-in/right-in/right-out-only) access points are proposed to Meridian Road about 920 and 2,065 feet south of Stapleton Drive. These access points will also require deviations to the criteria contained in the *ECM*.

Site Distance

The existing available sight distance was measured at the proposed site-access points to Meridian Road and Stapleton Drive. The *ECM* requires a sight distance of a minimum of 555 feet at an intersection on a road with a design speed of 50 mph. The available sight distance exceeds this minimum at all of the proposed access points.

state that site distance will be analyzed in detail when access layout is finalized.

Pedestrian and Bicycle Accommodations

There are two existing school sites located within two miles of the site, Falcon Middle School and Bennett Ranch Elementary. These schools are located north of Stapleton Drive and east of Towner Avenue. There is also a regional park located just west of the site.

The west side of Towner avenue from Jagger Way to Londonderry has a sidewalk. Revise accordingly.

Figure 3 shows the likely pedestrian paths to the school sites. There are currently no sidewalks on Stapleton Drive between Liberty Grove Drive and Towner Avenue and on Towner Avenue between Stapleton Drive and Jagger Way. El Paso County is currently studying the Briargate-Stapleton Corridor as part of a Pikes Peak Rural Transportation Authority (PPRTA) study. However, funding for corridor improvements has not yet been identified. Interim phases of safety and capacity improvements will likely be needed to facilitate pedestrian and bicycle accommodations.

Sidewalks and other pedestrian and bicycle facilities should be included on these internal roadways, based on the El Paso County standard cross-section for the proposed classification of each roadway. Pedestrian and bicycle facilities should also be reevaluated and addressed with each applicable Preliminary Plan submittal. Detailed pedestrian plans should be evaluated at the Preliminary Plan/PUD/subdivision level.

ROADWAY AND TRAFFIC CONDITIONS

state that the corridor access plans for Stapelton and Meridian identify sidewalk and c/g in the roadway cross sections.

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 Rex Road 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 4 shows the existing morning and afternoon peak-hour traffic volumes at the intersections of Stapleton/Meridian and Stapleton/Liberty Grove. These volumes are based on manual intersection turning-movement counts conducted by LSC in April 2022. The count-data sheets are attached for reference.

Review the Meridian (North) Corridor Plan and update the paragraph. Figure 9-3 of the corridor plan shows 6 lane for ultimate condition from Woodmen Hills to Rex Road.

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 vehicle.

Figure 4 presents the results of the existing intersection level of service analysis. The signalized intersection of Stapleton/Meridian was analyzed using Synchro and the intersection of Stapleton/Liberty Grove was analyzed 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.

Stapleton/Meridian

All movements at the traffic-signal-controlled intersection of Stapleton/Meridian are currently operating at LOS D or better during the peak hours.

Stapleton/Liberty Grove

The southbound approach at the two-way stop-sign-controlled intersection of Stapleton/Liberty Grove is currently operating at LOS C or better during the hours.

2042 BACKGROUND TRAFFIC

Figure 5 shows the projected 20-year background traffic volumes for the year 2042. These volumes assume Stapleton Drive has been extended west (as Briargate Parkway/Stapleton Drive) to connect with the existing section of Briargate Parkway. The 2042 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.

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, Autumn Acres is expected to generate about 9,760 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 344 vehicles would enter and 485 vehicles would exit the site. During the afternoon peak hour, about 614 vehicles would enter and 511 vehicles would exit the site.

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. Figures 6 and 7 shows the directional distribution estimates for the residential and non-residential site-generated traffic volumes, respectively. The directional-distribution estimate has been based on the location of the site with respect to the regional residential, employment, commercial, and activity centers; the land use proposed; the access/roadway connections assumed; and the roadway network. The short-term directional distribution assumes 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 Figures 6 and 7) 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 existing and 2042 background traffic volumes on Stapleton Drive and Meridian Road, shown in Figures 3 and 4.

Figure 8 shows the short-term site-generated traffic volumes and Figure 9 shows the long-term site-generated traffic volumes.

TOTAL TRAFFIC

Figure 10 shows the projected short-term total traffic volumes. The short-term total traffic volumes are the sum of the existing traffic volumes (from Figure 4) plus the short-term site-generated traffic volumes (from Figure 8).

Figure 11 shows the projected 2042 total traffic volumes. The 2042 total traffic volumes are the sum of the 2042 background traffic volumes (from Figure 5) plus the long-term site-generated traffic volumes (from Figure 9).

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 5, 10 and 11. The level of service reports are attached.

Stapleton/Meridian

The intersection of Stapleton/Meridian is currently traffic-signal controlled with protected/permitted phasing for the northbound and southbound left-turn movements only. All movements at this intersection are projected to operate at LOS D or better during the peak hours, based on the projected short-term total traffic volumes if protected/permitted phasing is added for the eastbound and westbound left-turn movements.

By 2042 it was assumed that Stapleton would be constructed to its final cross-section east and west of Meridian Road and that two eastbound and westbound through lanes and dual northbound and westbound left-turn lanes would be constructed at the intersection with Meridian. All movements at this intersection are projected to operate at LOS D or better during the peak hours, based on the projected 2042 total traffic volumes and the lane geometry shown in Figure 11.

Stapleton/Liberty Grove

The intersection of Stapleton/Liberty Grove is proposed to be reconstructed as a two-lane modern roundabout. As a modern roundabout, all movements are projected to operate at LOS C or better during the peak hours, based on the projected short-term and 2042 total traffic volumes.

Stapleton/Proposed Right-in/Right-out Site Access

Remove from analysis.

All movements at the proposed site access are projected to operate at LOS A during the peak hours, based on the projected short-term and 2042 total traffic volumes. The analysis assumes an eastbound right-turn acceleration lane on Stapleton Drive.

Meridian/Proposed Three-Quarter Movement Site-Access Points

Two three-quarter movement site-access points are proposed to Meridian Road. The northbound left-turn movement at both access points are projected to operate at LOS C or better during the peak hours, based on the projected short-term and 2042 total traffic volumes. The analysis assumed southbound right-turn acceleration lanes on Meridian Road at both site-access points.

Update analysis. The northern access is not likely to be approved.

STAPLETON DRIVE/MERIDIAN ROAD LEFT-TURN PHASE ANALYSIS

The intersection of Stapleton Drive/Meridian Road is currently traffic-signal controlled. The existing signal-timing plan has protected phasing for the southbound and northbound left-turn movements but not the eastbound and westbound left-turn movements. Although not required at the sketch plan level, a preliminary analysis of the need to add additional protected phases has been included in the appendix to aid in planning for the area. This preliminary analysis would be revisited and confirmed or adjusted at the preliminary plan stage in a site- specific TIS.

FUNCTIONAL CLASSIFICATIONS AND LANEAGE

Figure 12 shows the recommended functional classifications for the roadways in the vicinity of the site. The functional classifications and number of through lanes are consistent with the current El Paso County *MTCP*. Figure 12 shows the recommended number of through lanes on the roadways in the vicinity of the site.

Please submit the deviation requests. Currently the TIS appears to have been uploaded in the deviation request slot in EDARP

DEVIATION REQUESTS

The following deviation requests to the criteria contained in the *El Paso County Engineering Criteria Manual (ECM)* have been included with this submittal:

- A deviation request for full-movement access to Stapleton Road aligning with Liberty Grove Drive
- A deviation request for right-in/right-out-only access to Stapleton Road about 640 feet east of Liberty Grove Drive and 805 feet west of Meridian Road.
- A deviation request for three-quarter movement (left-in/right-in/right-out only) access to Meridian Road about 920 feet south of Stapleton Road.
- A deviation request for three-quarter movement (left-in/right-in/right-out only) access to Meridian Road about 2,065 feet south of Stapleton Road.

Remove bullet point 2 and 3.

identify that this request is also for intersection spacing where 1/2 mile is required.

TRANSPORTATION IMPROVEMENT FEE PROGRAM

The Autumn Acres development will be required to participate in the Countywide Transportation Improvement Fee Program. The fees will be determined at the subdivision stage and payable following plat recording and/or building-permit issuance.

CONCLUSIONS AND RECOMMENDATIONS

Trip Generation

- At buildout, Autumn Acres is expected to generate about 9,760 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 344 vehicles would enter and 485 vehicles would exit the site. During the afternoon peak hour, about 614 vehicles would enter and 511 vehicles would exit the site.

Required Improvements

Table 4 contains a summary of the recommended improvements. As this is a sketch plan report, these are preliminary and would be revisited and confirmed or adjusted at preliminary plan stage in a site-specific TIS.

Reassess required improvements based on the other comments provided in the TIS.

Auxiliary Turn Lanes

- Based on the short-term total traffic volumes shown in Figure 10 and the criteria contained in the El Paso County *Engineering Criteria Manual (ECM)*, an eastbound right-turn deceleration lane is projected to be warranted on Stapleton Drive approaching the proposed right-in/right-out access. Based on a posted speed limit of 45 miles per hour (design speed of 50 mph), this lane should be 235 feet plus a 200-foot taper.
- Based on the short-term total traffic volumes shown in Figure 10 and the criteria contained in the El Paso County *Engineering Criteria Manual (ECM)*, an eastbound right-turn acceleration lane is projected to be warranted on Stapleton Drive at the proposed right-in/right-out access. Based on a posted speed limit of 45 miles per hour (design speed of 50 mph), this lane should be constructed as a continuous acceleration/deceleration lane between the site access and Meridian Road.
- Based on the short-term total traffic volumes shown in Figure 10 and the criteria contained in the El Paso County *Engineering Criteria Manual (ECM)*, southbound right-turn acceleration lanes are projected to be warranted on Meridian Road at Stapleton Drive and both of the proposed three-quarter movement site-access points. Right-turn deceleration lanes are also projected to be warranted on Meridian Road approaching both site-access points. Based on a posted speed limit of 55 miles per hour (design speed of 60 mph), the acceleration lanes should be 1,170 feet and the deceleration lanes should be 530 feet. As the proposed spacing will not accommodate

these lanes, LSC recommends a continuous right-turn acceleration/deceleration lane be constructed between Stapleton Drive and the south three-quarter-movement access point and an 870-foot southbound right-turn acceleration lane plus 300-foot taper be constructed from the south access point. These lanes will require a deviation to the criteria contained in the *ECM*.

- Based on the short-term total traffic volumes shown in Figure 10 and the criteria contained in the El Paso County *Engineering Criteria Manual (ECM)*, northbound left-turn lanes are projected to be warranted on Meridian Road approaching both of the proposed three-quarter movement site-access points. Based on a posted speed limit of 55 miles per hour (design speed of 60 mph), the lane approaching the north access should be 615 feet long plus a 240-foot taper. The lane approaching the south access should be 405 feet long plus a 240-foot taper.

* * * * *

Please contact me if

Sincerely,

LSC TRANSPORTATION

By: Jeffrey C. Hood
Principal

JCH/KDF:jas

Enclosures:

- Tables
- Figure
- Phasing
- Left-Turn Signal Timing Analysis
- Appendix Tables 1-2
- MTCP Maps
- Traffic Count Reports
- Level of Service Reports
- Crash History

Discuss long term improvements identified by the Meridian (North) Corridor Plan and the Briargate-Stapleton access control plan.

- Is the Roundabout at Liberty Grove an option identified in the control plan? If not, long range horizon analysis needs to analyze this intersection as RI/RO as depicted in the access control plan. Also, if the study does not identify this intersection as a roundabout then is this still a viable recommendation? What alternative intersection control should be considered.

- Elaborate on the Roundabout recommendation. How will this be designed to accommodate the existing 2 lane roadway and the future widening to 4 lane?

- Identify the ROW dedication and preservation along Stapleton & Meridian to accommodate the short-term impacts of the development and long-term improvements per the two access control plans.

Tables 2-3



Table 2
Trip Generation Estimate
Autumn Acres

Land Use Code	Land Use Description	Trip Generation Units	Trip Generation Rates ⁽¹⁾				Total Trips Generated				Pass-by Trip Percent ⁽²⁾	Total New "External" Trips Generated		
			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
210	Single Family Detached Housing	379 DU ⁽³⁾	9.43	0.18	0.52	0.59	0.35	3,574	69	196	224	132	0%	3,574
215	Single Family Attached Housing	240 DU	7.20	0.15	0.33	0.32	0.25	1,728	36	79	78	59	0%	1,728
821	Shopping Plaza (40-150 KSF No Supermarket)	65 KSF ⁽⁴⁾	67.52	1.07	0.66	2.54	2.65	4,389	70	43	165	172	34%	2,897
945	Gasoline/Service Station with Convenience Market (C-Store 4-5.5 KSF)	12 VFP ⁽⁵⁾	257.13	13.52	13.52	11.38	11.38	3,086	162	162	137	137	56%	1,358
151	Mini-Warehouse	140 KSF	1.45	0.05	0.04	0.07	0.08	203	7	5	10	11	0%	203
								12,980	344	485	614	511		9,760

Notes:

- (1) Source: based on *Trip Generation*, 11th Edition, 2021 by the Institute of Transportation Engineers (ITE)
- (2) Source: "Trip Generation Handbook - An ITE Proposed Recommended Practice 3rd Edition, September 2017" by ITE
- (3) DU = dwelling unit
- (4) KSF = 1,000 square feet
- (5) VFP = vehicle fueling position

**Table 3
Autumn Acres Sketch Plan
Roadway Improvements**

Item #	Improvement	Trigger	Timing	Responsibility
Roadway Segment Improvements				
1	Briargate Parkway/Stapleton Drive - Black Forest Road to Towner Avenue: Construct as a half section or full-section four-lane Principal Arterial	With development adjacent to the proposed right-way way		Area developments which would trigger the construction of the half-section and/or El Paso County (PPRTA and/or County Road Improvement Fee Program/PID)
2	Stapleton Drive Towner Avenue to Liberty Grove: Upgrade the existing "unimproved" roadway to a four-lane Urban Principal Arterial from Meridian Road to Towner Avenue. This roadway upgrade could potentially be phased by initially constructing a one-half section of ultimate four-lane Urban Principal Arterial.	trigger for half-section: Once the ADT on this segment of roadway exceeds 7,000 vehicles per day (vpd). trigger for full four-lane cross section: Once the ADT on this segment of roadway exceeds the capacity of a half section (if upgrade is phased and an interim half section is constructed first) estimated to be about 15,000 -20,000 ADT depending on the design of the half section and other capacity considerations.	The Briargate-Stapleton Corridor is currently being studied by El Paso County. The estimated current ADT on this section of Stapleton is 5,970 vpd. The half-section trigger of 7,000 vpd will not likely be met until Briargate/Stapleton is constructed west of Towner Avenue	Area developments which would trigger the construction of the half-section and/or El Paso County (PPRTA and/or County Road Improvement Fee Program/PID)
3	Stapleton Drive Liberty Grove to Meridian Road: Upgrade the existing "unimproved" roadway to a four-lane Urban Principal Arterial from Meridian Road to Towner Avenue. This roadway upgrade could potentially be phased by initially constructing a one-half section of ultimate four-lane Urban Principal Arterial.	trigger for half-section: Once the ADT on this segment of roadway exceeds 7,000 vehicles per day (vpd). trigger for full four-lane cross section: Once the ADT on this segment of roadway exceeds the capacity of a half section (if upgrade is phased and an interim half section is constructed first) estimated to be about 15,000 -20,000 ADT depending on the design of the half section and other capacity considerations.	The Briargate-Stapleton Corridor is currently being studied by El Paso County. The estimated current ADT on this section of Stapleton is 6,350 vpd. The half-section trigger of 7,000 vpd will likely be met with any additional development within Paint Brush Hills, The Ranch, the parcel northwest of Meridian/Stapleton or the currently Proposed Autumn Acres Sketch Plan. The trigger for the full four-lane cross section is not anticipated to be met with the addition of traffic generated by Autumn Acres alone	Autumn Acres or other area developments which would trigger the construction of the half-section and/or El Paso County (PPRTA and/or County Road Improvement Fee Program/PID)
4	Stapleton Drive - Meridian Road to US Hwy 24: Complete southern (eastbound) half	average daily traffic > 18,000 vehicles per day	Shown in 2040 MTCP	El Paso County west of Eastonville Road; 4 Way Ranch Metro District east of Eastonville Road.
Stapleton/Liberty Grove				
5	Construct as modern two-lane roundabout	With Autumn Acres	With Autumn Acres	Autumn Acres
Stapleton/Proposed Right-in/Right-out Access				
6	Construct eastbound right-turn deceleration lane on Stapleton Drive approaching the proposed right-in/right-out access. This lane should be 235 feet long plus a 200-foot taper	eastbound	With Autumn Acres	Autumn Acres
7	Construct eastbound right-turn acceleration lane on Stapleton Drive at the proposed right-in/right-out access. This lane should be constructed as a continuous accel/decel lane between the site access and Meridian Road.	northbound	With Autumn Acres	Autumn Acres
Stapleton/Meridian				
6	Add protected/permitted phasing for the eastbound and westbound left-turn movements	See Table 3	Existing deficiency	Autumn Acres or other area developments which would contribute traffic to Stapleton Drive at this intersection
7	Construct continuous southbound right-turn accel/decel lane on Meridian Road between Stapleton Drive and the proposed south three-quarter movement access	eastbound right-turn > 50 vph	Existing deficiency	Autumn Acres or other area developments which would contribute traffic to this movement
Meridian/North Three-Quarter Movement Access				
8	Constructed southbound right-turn deceleration lane on Meridian Road approaching the north three-quarter movement Access. Construct as continuous southbound right-turn accel/decel lane on Meridian Road between Stapleton Drive and the proposed south three-quarter movement access		With Autumn Acres	Autumn Acres
9	Constructed southbound right-turn acceleration lane on Meridian Road at the north three-quarter movement Access. Construct as continuous southbound right-turn accel/decel lane on Meridian Road between Stapleton Drive and the proposed south three-quarter movement access		With Autumn Acres	Autumn Acres
10	Construct northbound left-turn lane on Meridian Road approaching the north three-quarter movement access. This lane should be 615 feet long plus a 240-foot taper		With Autumn Acres	With Autumn Acres
Meridian/South Three-Quarter Movement Access				
11	Constructed southbound right-turn deceleration lane on Meridian Road approaching the south three-quarter movement Access. Construct as continuous southbound right-turn accel/decel lane on Meridian Road between Stapleton Drive and the proposed south three-quarter movement access	southbound right-turn > 25 vph	With Autumn Acres	Autumn Acres
12	Constructed southbound right-turn acceleration lane on Meridian Road at the north three-quarter movement Access. This lane should be 870 feet long plus a 300 foot taper.	eastbound right-turn > 50 vph	With Autumn Acres	Autumn Acres
13	Construct northbound left-turn lane on Meridian Road approaching the north three-quarter movement access. This lane should be 405 feet long plus a 240-foot taper	northbound-turn > 10 vph	With Autumn Acres	With Autumn Acres

Source: LSC Transportation Consultants, Inc. (December 2022)

Figures 1-12



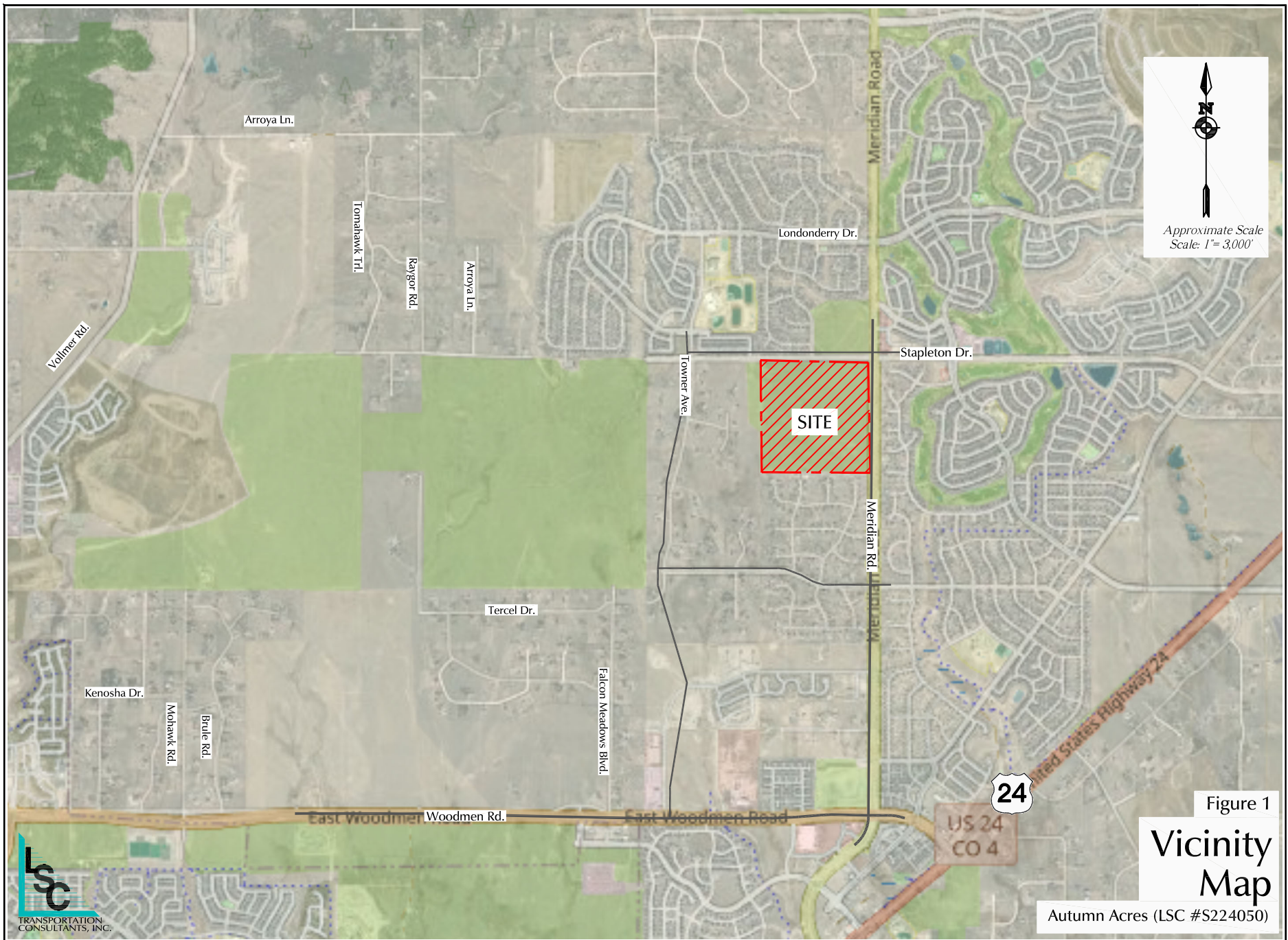
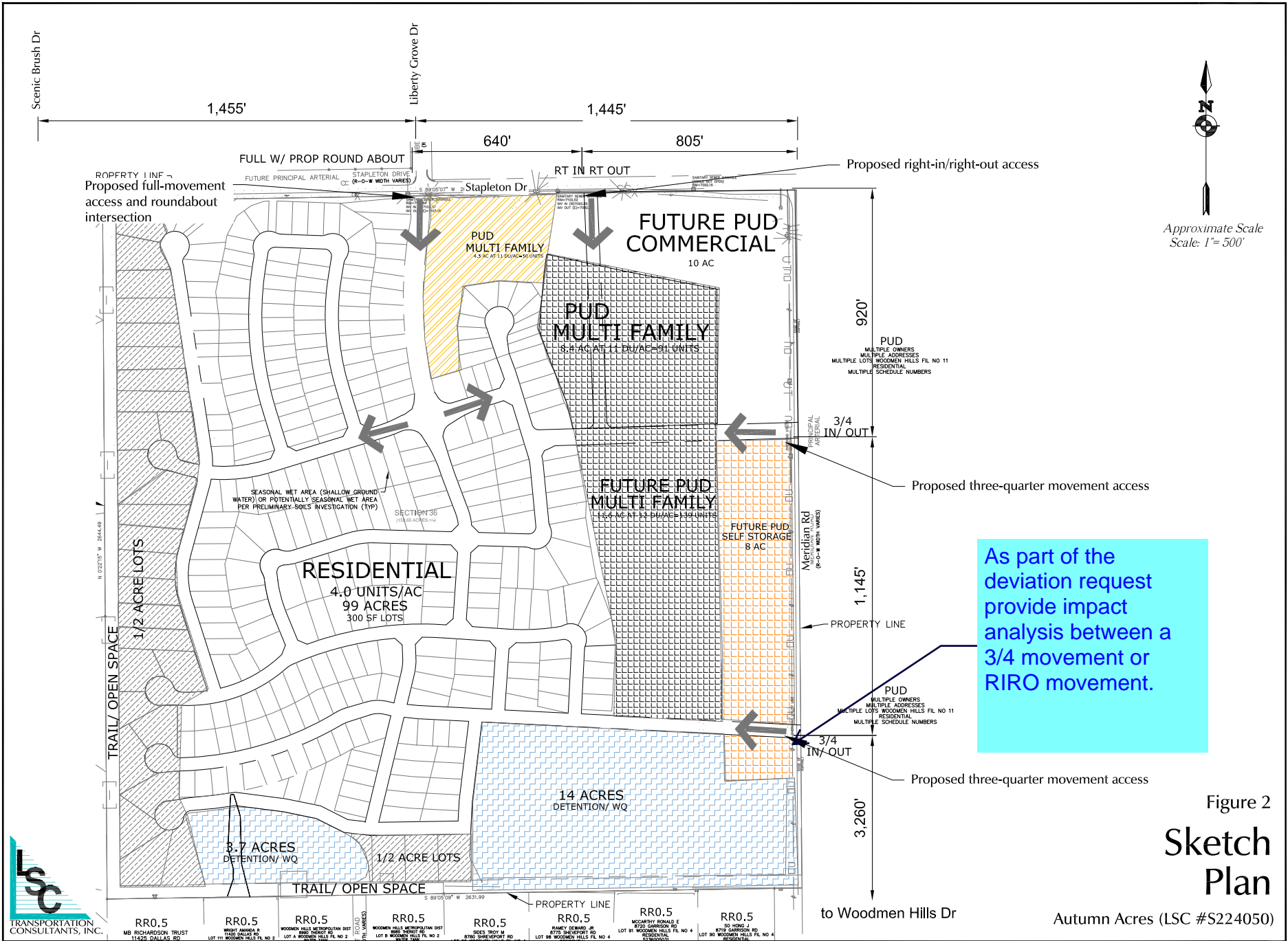


Figure 1

Vicinity Map

Autumn Acres (LSC #S224050)

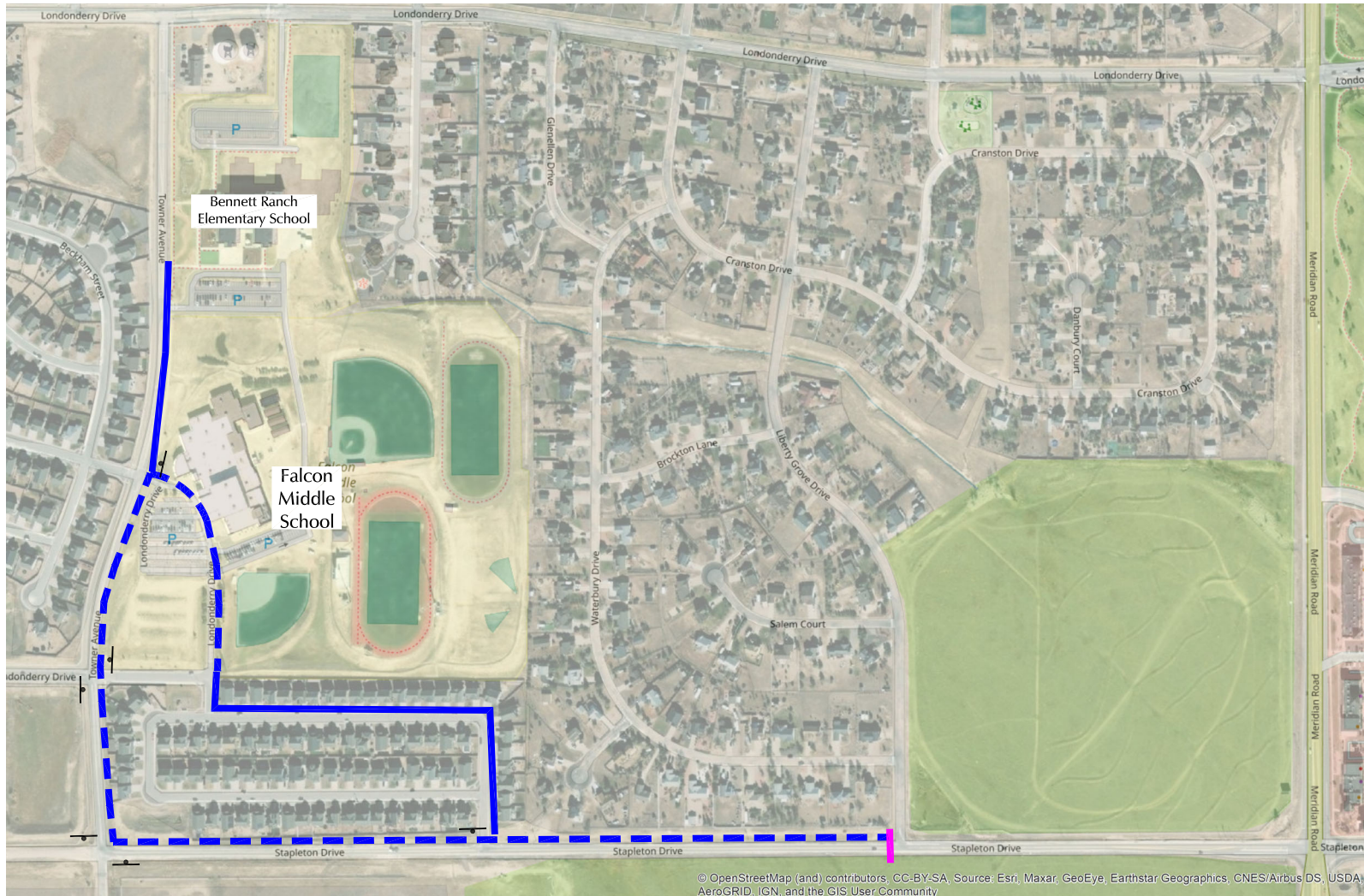


North Arrow
 Approximate Scale
 Scale: 1" = 500'

As part of the deviation request provide impact analysis between a 3/4 movement or RIRO movement.

Figure 2
Sketch Plan
 Autumn Acres (LSC #S224050)





Approximate Scale
Scale: 1" = 500'

© OpenStreetMap (and) contributors, CC-BY-SA, Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, U AeroGRID, IGN, and the GIS User Community

┆ = Stop Sign

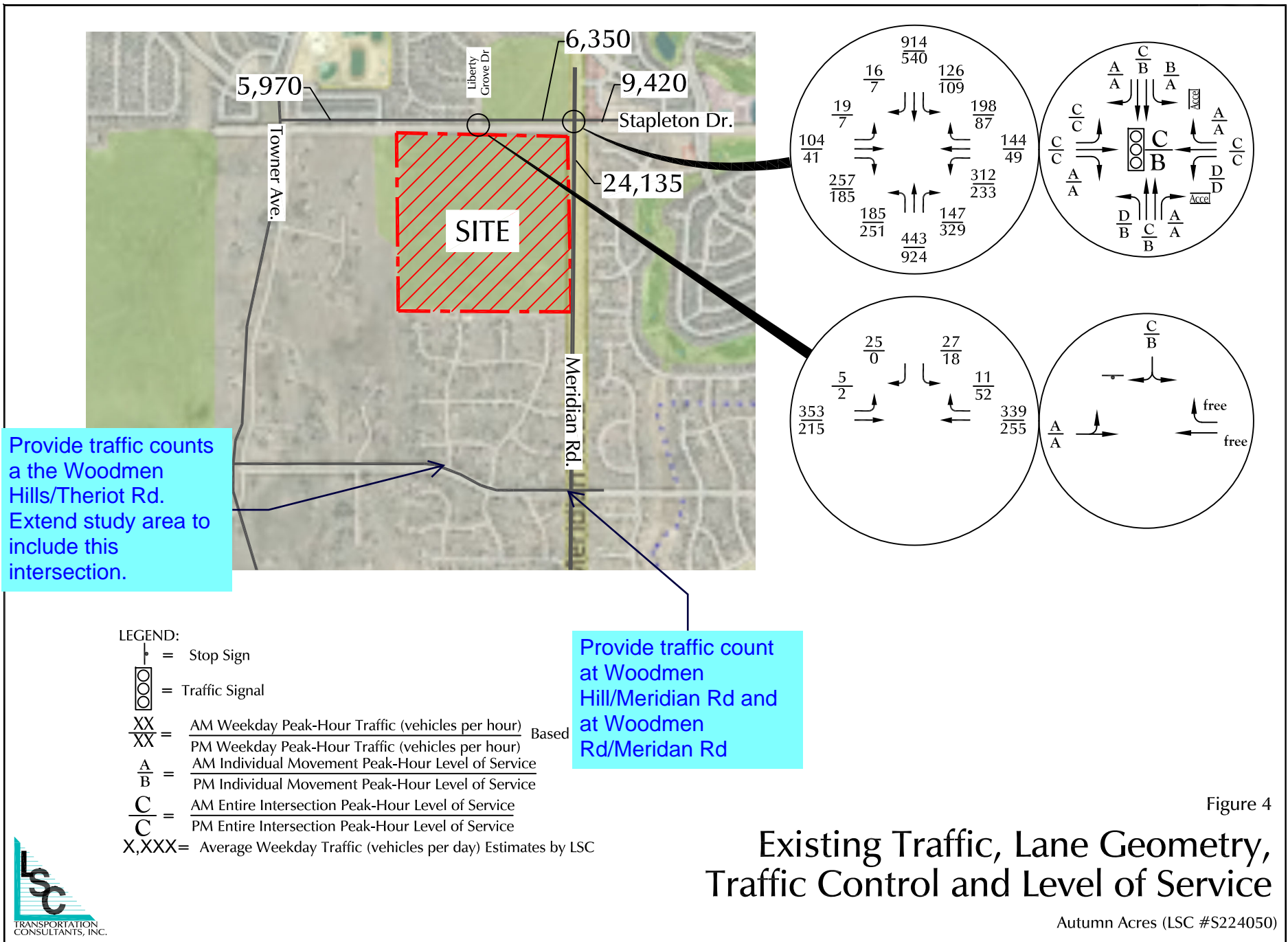
— Pedestrian Path (on existing sidewalk)

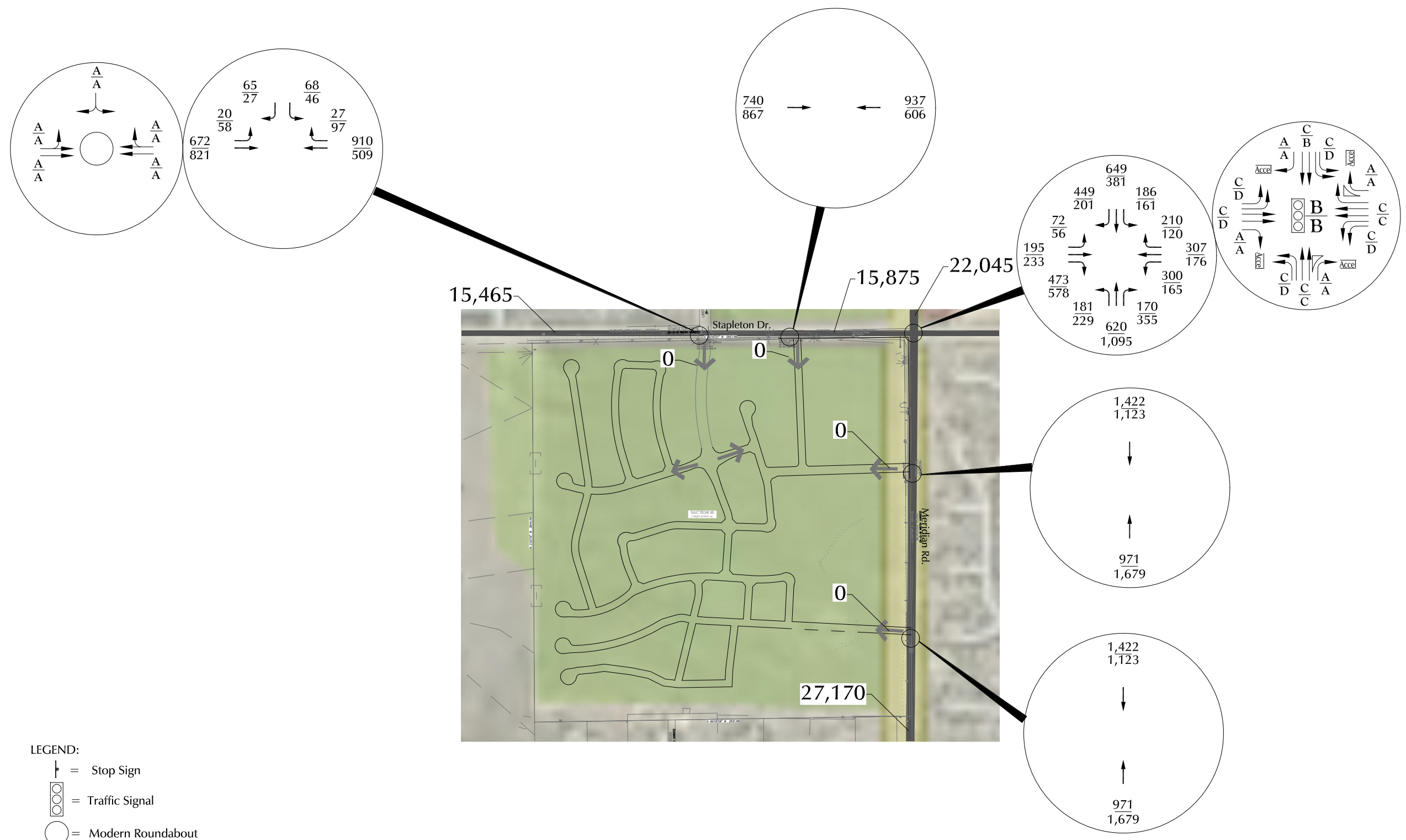
- - - Pedestrian Path (no existing sidewalk)

— School Crossing at Proposed Modern Roundabout Intersection



Figure 3
School Pedestrian Plan
Autumn Acres (LSC #S224050)

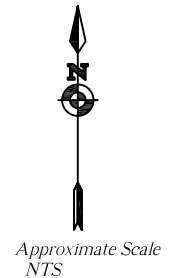
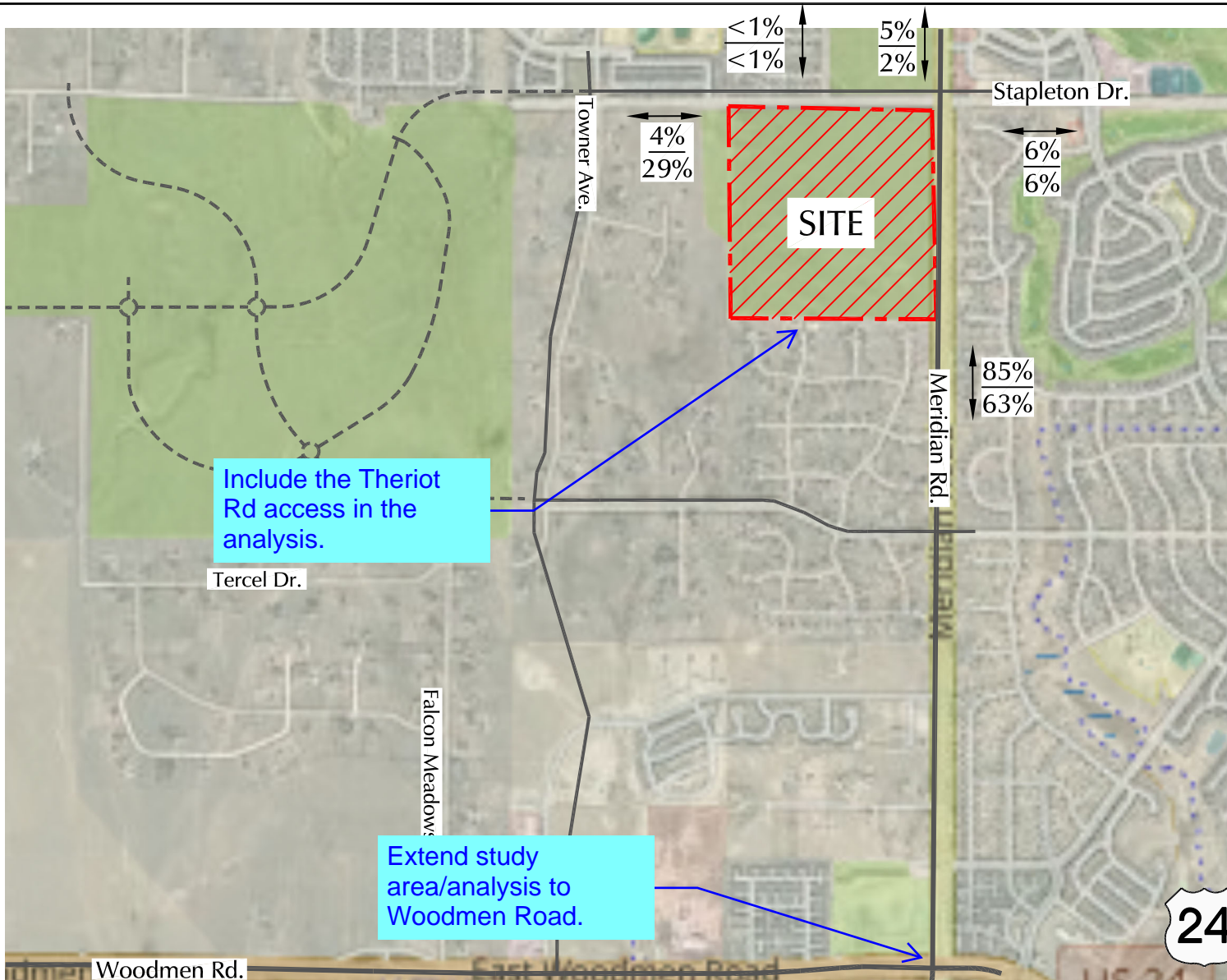




- LEGEND:
- = Stop Sign
 - = Traffic Signal
 - = Modern Roundabout
 - $\frac{XX}{XX}$ = AM Weekday Peak-Hour Traffic (vehicles per hour)
PM Weekday Peak-Hour Traffic (vehicles per hour)
 - $\frac{A}{B}$ = AM Individual Movement Peak-Hour Level of Service
PM Individual Movement Peak-Hour Level of Service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

Figure 5
 Year 2042 Background Traffic, Lane
 Geometry, Traffic Control and Level of Service





Include the Theriot Rd access in the analysis.

Extend study area/analysis to Woodmen Road.



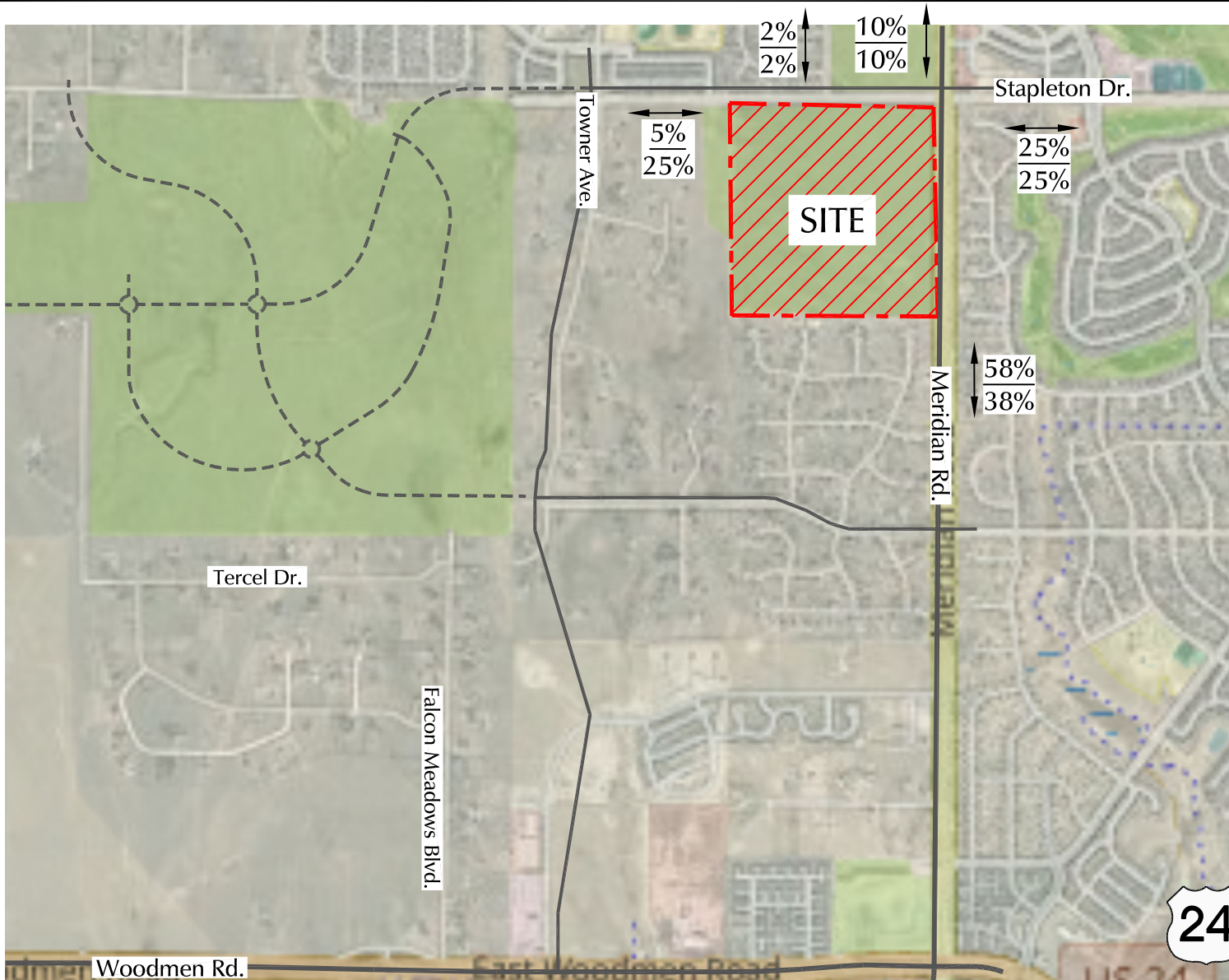
LEGEND:
 $\frac{XX\%}{XX\%} =$ Short-Term Percent Directional Distribution / Long-Term Percent Directional Distribution

Directional Distribution of Residential Site-Generated Traffic

Figure 6

Autumn Acres (LSC #S224050)





Approximate Scale
NTS

Directional Distribution of Non-Residential Site-Generated Traffic

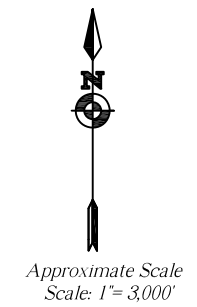
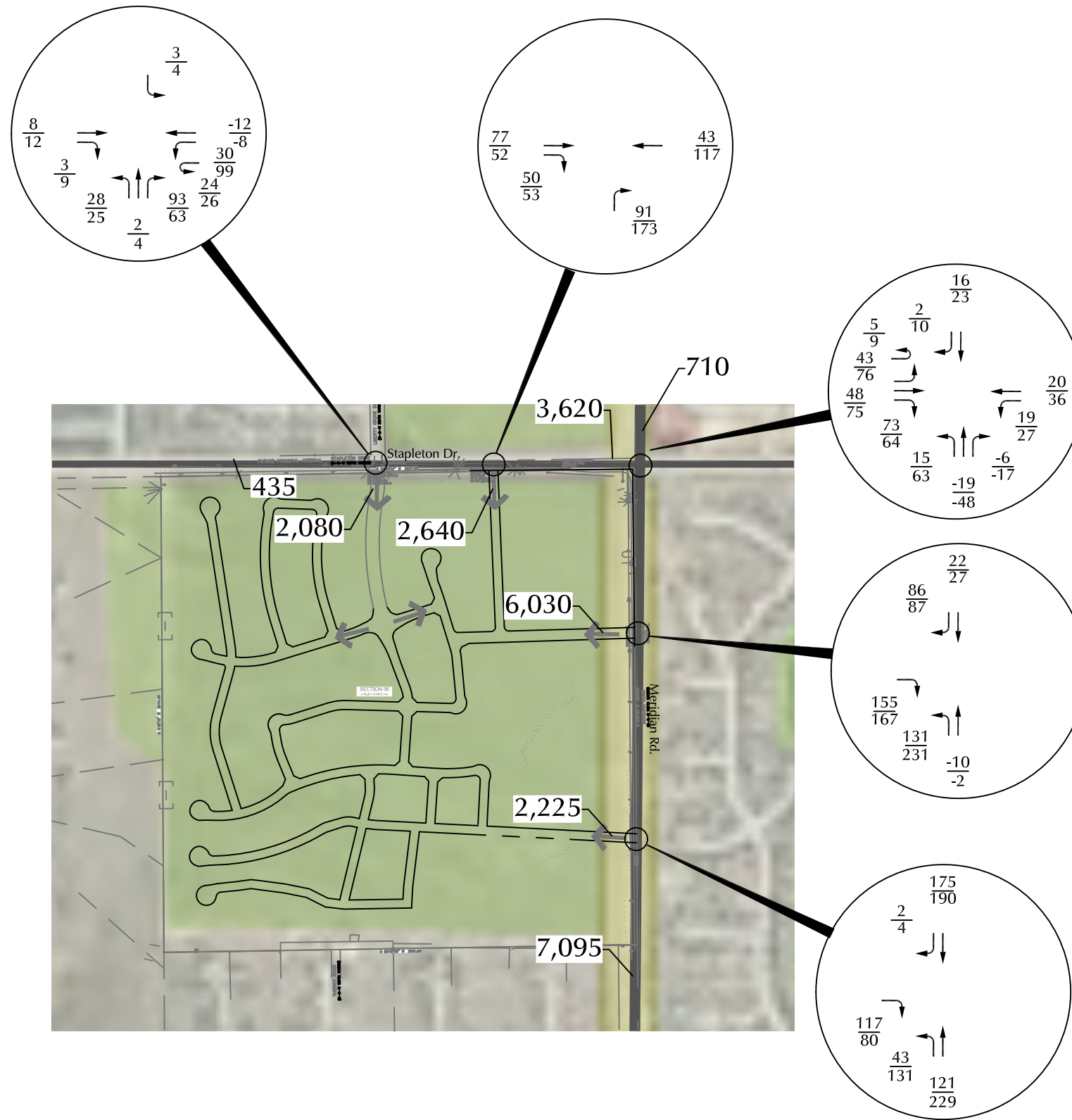
Figure 7

Autumn Acres (LSC #S224050)



LEGEND:

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




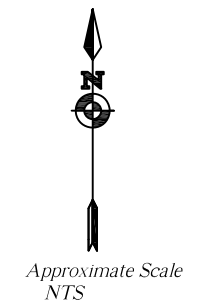
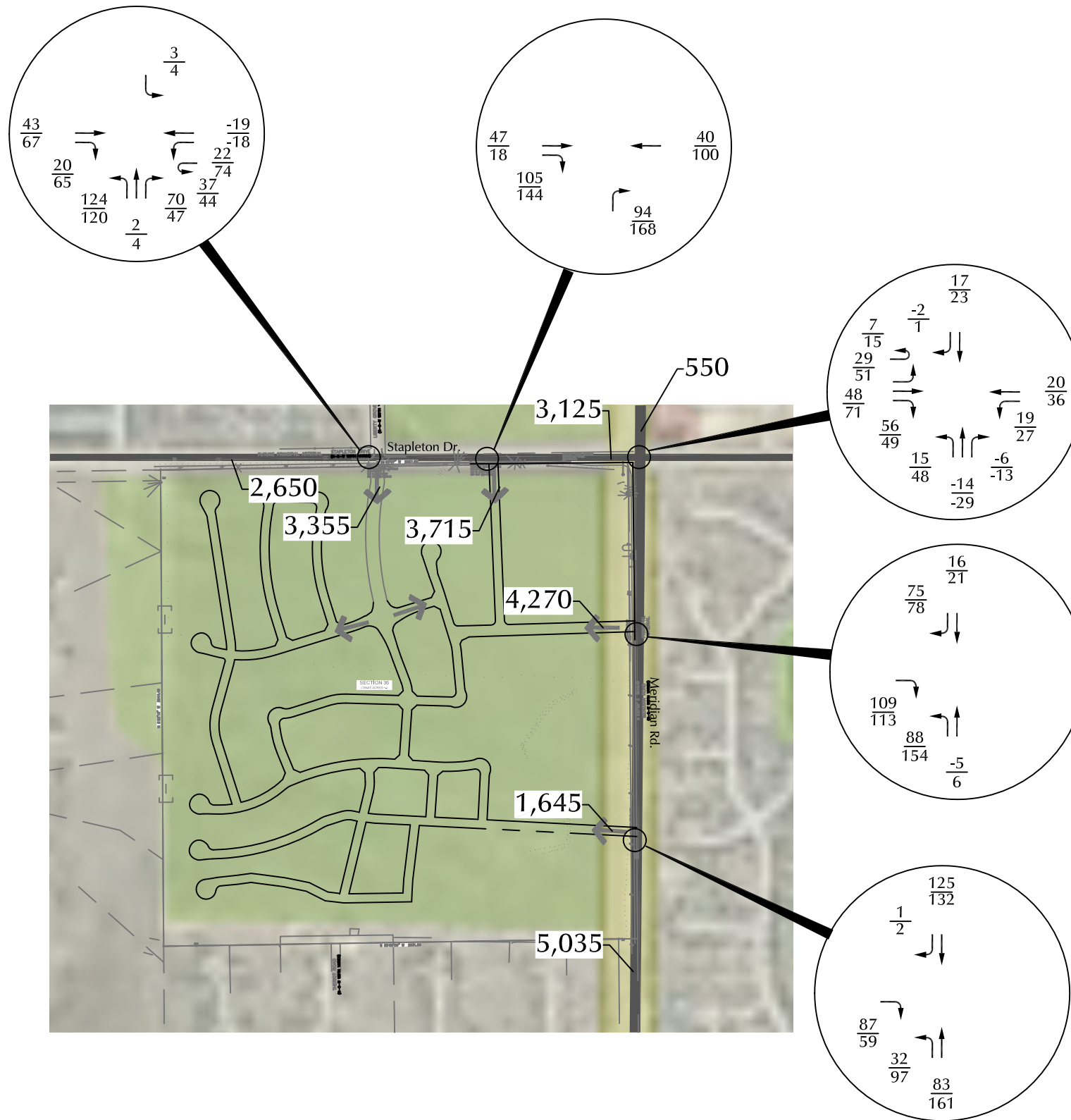

LEGEND:
 $\frac{XX}{XX}$ = AM Weekday Peak-Hour Traffic (vehicles per hour)
 $\frac{XX}{XX}$ = PM Weekday Peak-Hour Traffic (vehicles per hour)
 X,XXX = Average Weekday Traffic (vehicles per day)

Figure 8
Short-Term Site-Generated Traffic
 Autumn Acres (LSC #S224050)




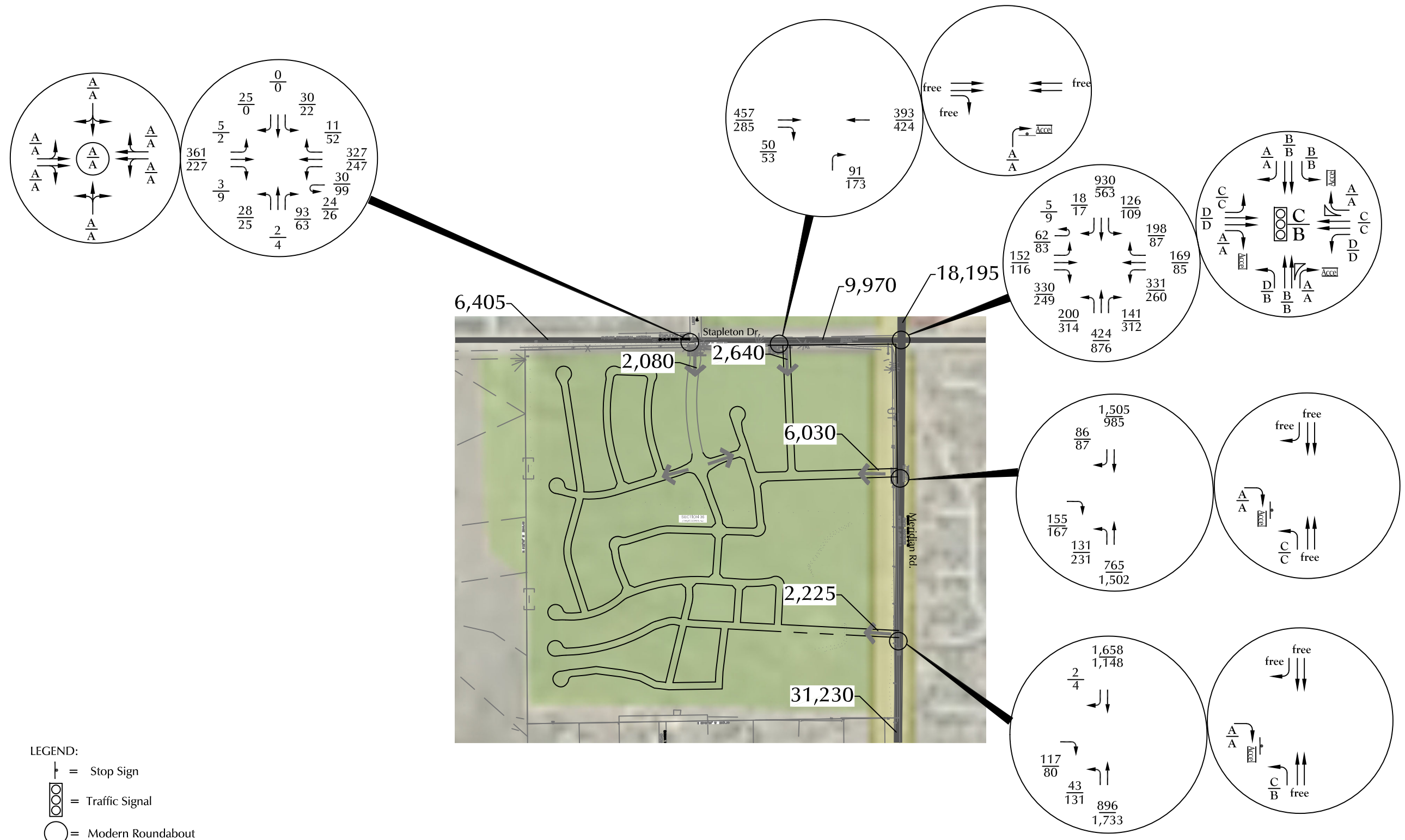

LEGEND:
 $\frac{XX}{XX}$ = AM Weekday Peak-Hour Traffic (vehicles per hour)
 $\frac{XX}{XX}$ = PM Weekday Peak-Hour Traffic (vehicles per hour)
 X,XXX = Average Weekday Traffic (vehicles per day)

Figure 9
**Long-Term
 Site-Generated Traffic**
 Autumn Acres (LSC #S224050)






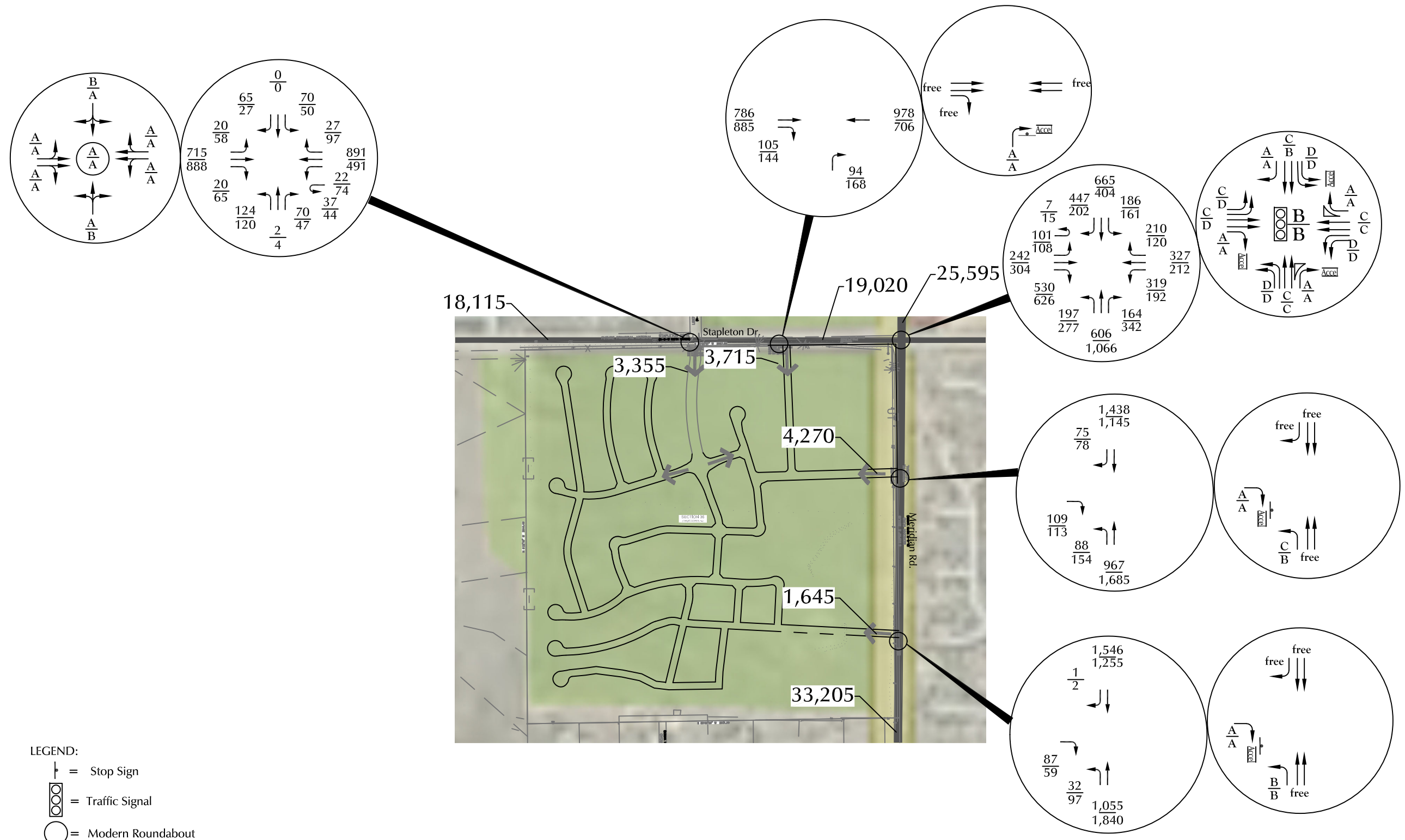
- LEGEND:
-  = Stop Sign
 -  = Traffic Signal
 -  = Modern Roundabout
 - $\frac{XX}{XX}$ = AM Weekday Peak-Hour Traffic (vehicles per hour)
PM Weekday Peak-Hour Traffic (vehicles per hour)
 - $\frac{A}{B}$ = AM Individual Movement Peak-Hour Level of Service
PM Individual Movement Peak-Hour Level of Service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

Figure 10
**Short-Term Total Traffic, Lane
 Geometry, Traffic Control and Level of Service**
 Autumn Acres (LSC #S224050)

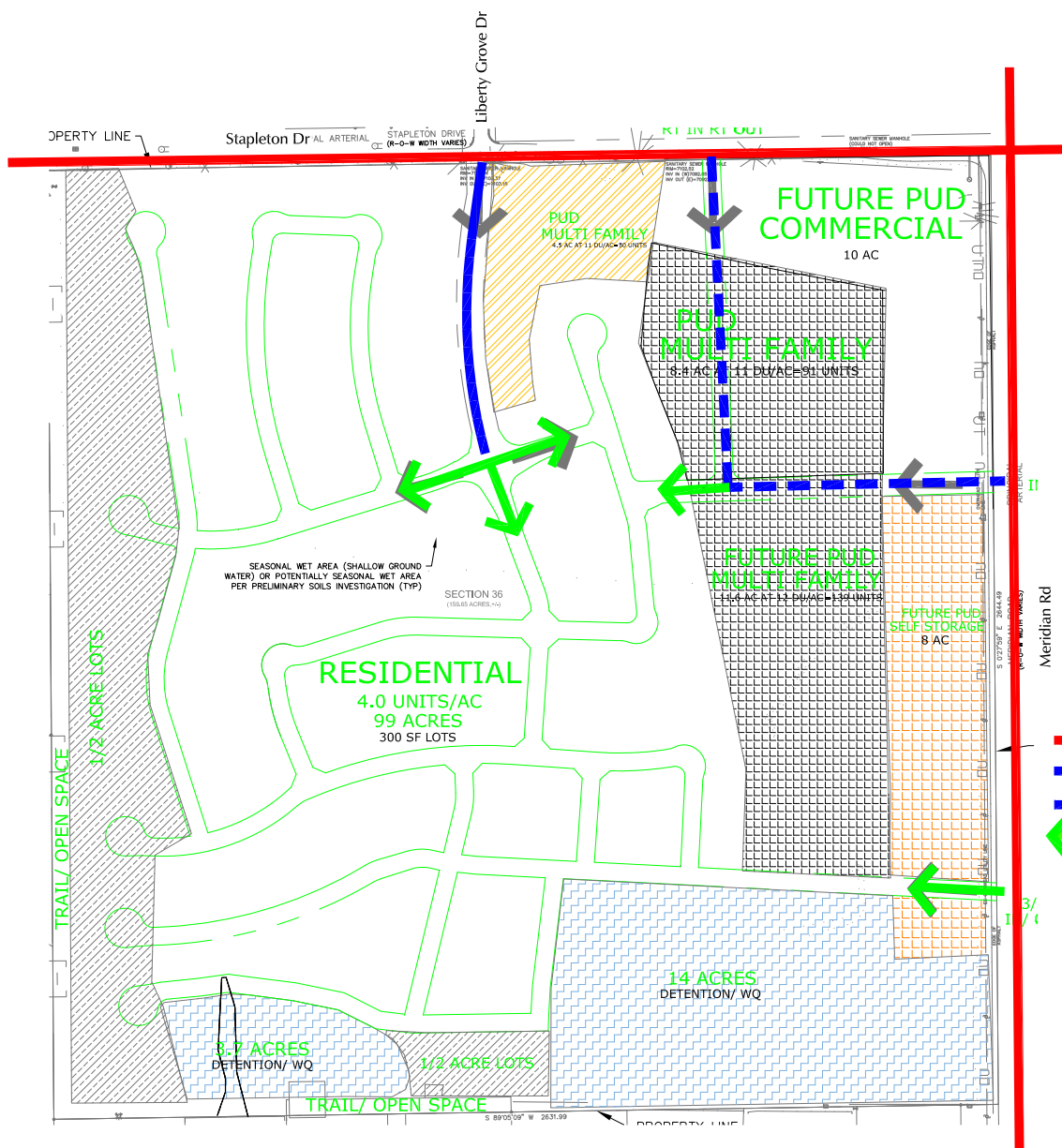




- LEGEND:
- = Stop Sign
 - = Traffic Signal
 - = Modern Roundabout
 - $\frac{XX}{XX}$ = AM Weekday Peak-Hour Traffic (vehicles per hour)
PM Weekday Peak-Hour Traffic (vehicles per hour)
 - $\frac{A}{B}$ = AM Individual Movement Peak-Hour Level of Service
PM Individual Movement Peak-Hour Level of Service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

Figure 11
 2042 Total Traffic, Lane
 Geometry, Traffic Control and Level of Service





Approximate Scale
Scale: 1" = 500'

- = 4-Lane Urban Principal Arterial
- = Urban Residential Collector
- - - = Urban Non-Residential Collector
- ← = Connection to Urban Local Internal Street Network

Figure 12
Recommended Classifications
 Autumn Acres (LSC #S224050)



Phasing Plan



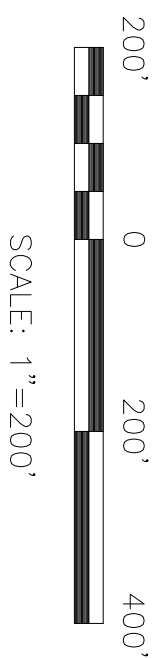
AUTUMN ACRES

NE1/4 S36 T12S R65W

PHASING PLAN

NOVEMBER 2022

- NOTES
1. THE MAIN ENTRANCE AT THE STABLETON DRIVE AND LIBERTY GROVE DRIVE INTERSECTION AND THE MAIN ENTRANCE AT THE STABLETON DRIVE AND THERIOT ROAD INTERSECTION WILL BE PART OF PHASE 1.
 2. THE MAIN ENTRANCE AT THE STABLETON DRIVE AND LIBERTY GROVE DRIVE WILL BE PART OF PHASE 1.
 3. DRAINAGE PATHS TO THE STORMWATER PONDS WILL BE PART OF PHASE 1.



AUTUMN ACRES	
PHASING PLAN	
DESIGNED BY: LD	
DRAWN BY: LD	
CHECKED BY: LD	
H-SCALE: AS NOTED	
V-SCALE: AS NOTED	
JOB NO.: 2199.13	
DATE ISSUED: 11/28/22	
SHEET NO.: 1 OF 1	

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 www.tnesinc.com

PREPARED FOR:
 MERIDIAN HILLS LLC
 ATTN: KEVIN DONOVAN
 106 CERRITO PT
 COLORADO SPRINGS, CO 80905
 719.473.0599

UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE APPROPRIATE REVIEWING AGENCIES, TERRA NOVA ENGINEERING, INC. APPROVES THEIR USE ONLY FOR THE PURPOSES DESIGNATED BY WRITTEN AUTHORIZATION.

NO.	REVISIONS	DESCRIPTION	DATE

Left-Turn Signal-Phasing Analysis



STAPLETON DRIVE/MERIDIAN ROAD LEFT-TURN PHASE ANALYSIS

The intersection of Stapleton Drive/Meridian Road is currently traffic-signal controlled. The existing signal-timing plan has protected phasing for the southbound and northbound left-turn movements but not the eastbound and westbound left-turn movements. LSC has analyzed the need to add additional protected phases, based on the criteria found in Exhibit 11-6 from the Federal Highway Administration Report *Signalized Intersections: Informational Guide* Publication Number: FHWA-SA-13-027, dated July 2013, copied below with our analysis.

Exhibit 11-6 Guidelines for use of left-turn phasing

Left-turn phasing (protected-permissive, permissive-protected, or protected-only) should be considered if any one of the following criteria is satisfied:

1. *A minimum of 2 left-turning vehicles per cycle and the product of opposing and left-turn hourly volumes exceeds the appropriate following value:*
 - a. *Random arrivals (no other traffic signals within 0.8 km (0.5 mi))*
One opposing lane: 45,000 Two opposing lanes: 90,000
 - b. *Platoon arrivals (other traffic signals within 0.8 km (0.5 mi))*
One opposing lane: 50,000 Two opposing lanes: 100,000

Appendix Table 2 shows the results of the analysis, based on criterion “a. Random arrivals” with two opposing lanes. As shown in Appendix Table 2, the existing morning peak-hour traffic volumes currently meet this criterion.

2. *The left-turning movement crosses 3 or more lanes of opposing through traffic.*

This criterion is not currently applicable to the intersection of Stapleton/Meridian.

3. *The posted speed of opposing traffic exceeds 45 mph.*

This criterion is currently met.

4. *Recent crash history for a 12-month period indicates 5 or more left-turn collisions that could be prevented by the installation of left-turn signals.*

The Colorado State Patrol (CSP) provided LSC with crash-history data for the intersection of Stapleton/Meridian from 2019 to 2022. During the reported time period, none of the collisions could potentially have been prevented by installation of eastbound and westbound left-turn

? revise accordingly

signals. Based on this data, criterion 4 is not currently met. The crash-history data has been attached.

5. *Sight distances to oncoming traffic are less than the minimum distances in Exhibit 11-7.*

This criterion is not applicable to the intersection of Golden Sage/Woodmen.

6. *The intersection has unusual geometric configurations, such as five legs, when an analysis indicates that left-turn or other special traffic-signal phases would be appropriate to provide positive direction to the motorist.*

This criterion is not applicable to the intersection of Stapleton/Meridian.

7. *An opposing left-turn approach has a left-turn signal or meets one or more of the criteria in this table.*

This criterion is not currently applicable to the intersection of Stapleton/Meridian.

8. *An engineering study indicates a need for left-turn signals. Items that may be considered include, but are not necessarily limited to, pedestrian volumes, traffic-signal progression, freeway interchange design, maneuverability of particular classes of vehicles, and operational requirements unique to preemption systems.*

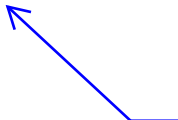
As criterion 1a and criterion 3 are currently met, an additional engineering study was not completed at this time.

Appendix Tables 1-2



Appendix Table 1
Area Traffic Impact Studies
Autumn Acres

Study	Date
Paint Brush Hills Filing 13E Traffic Impact Analysis	October 22, 2018
The Ranch Sketch Plan Traffic Impact Analysis	July 9, 2019
Paint Brush Hills Filing 14 Traffic Impact Analysis	January 13, 2021
Briargate-Stapleton Corridor Study (DRAFT), Wilson & Company	December 9, 2021
<i>Source: LSC Transportation Consultants, Inc. (August 2022)</i>	



Include the
Meridian(North)
Corridor Plan

Appendix Table 2
Left-Turn Signal Phase Warrant Analysis
Meridian/Stapleton
Autumn Acres Sketch Plan

Time	Existing Traffic Volumes ⁽¹⁾				
	Westbound Left-Turn Volume (vph)	Eastbound Through and Right-Turn (vph)	Product	Threshold ⁽³⁾	Met?
7:00 AM - 8:00 AM	312	355	110,760	90,000	YES
5:00 PM - 6:00 PM	233	226	52,658	90,000	NO

Notes:

(1) Based on manual turning movement counts by LSC in April 2022.

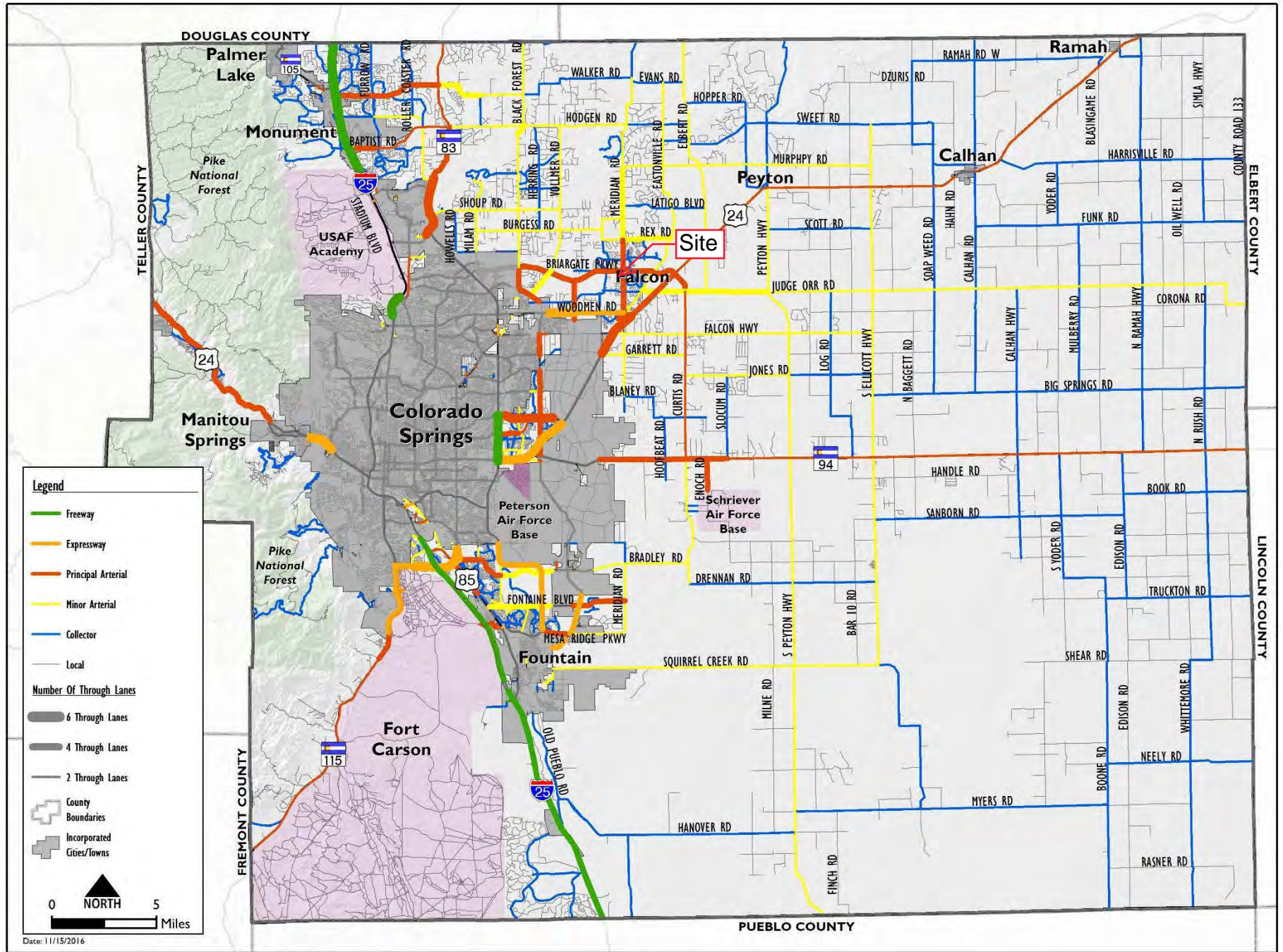
(2) Based on the criteria contained in Exhibit 11-6 from the Federal Highway Administration Report Signalized Intersections: Informational Guide Publication Number: FHWA-SA-13-027 dated July 2013

Source: LSC Transportation Consultants, Inc.

Dec-22

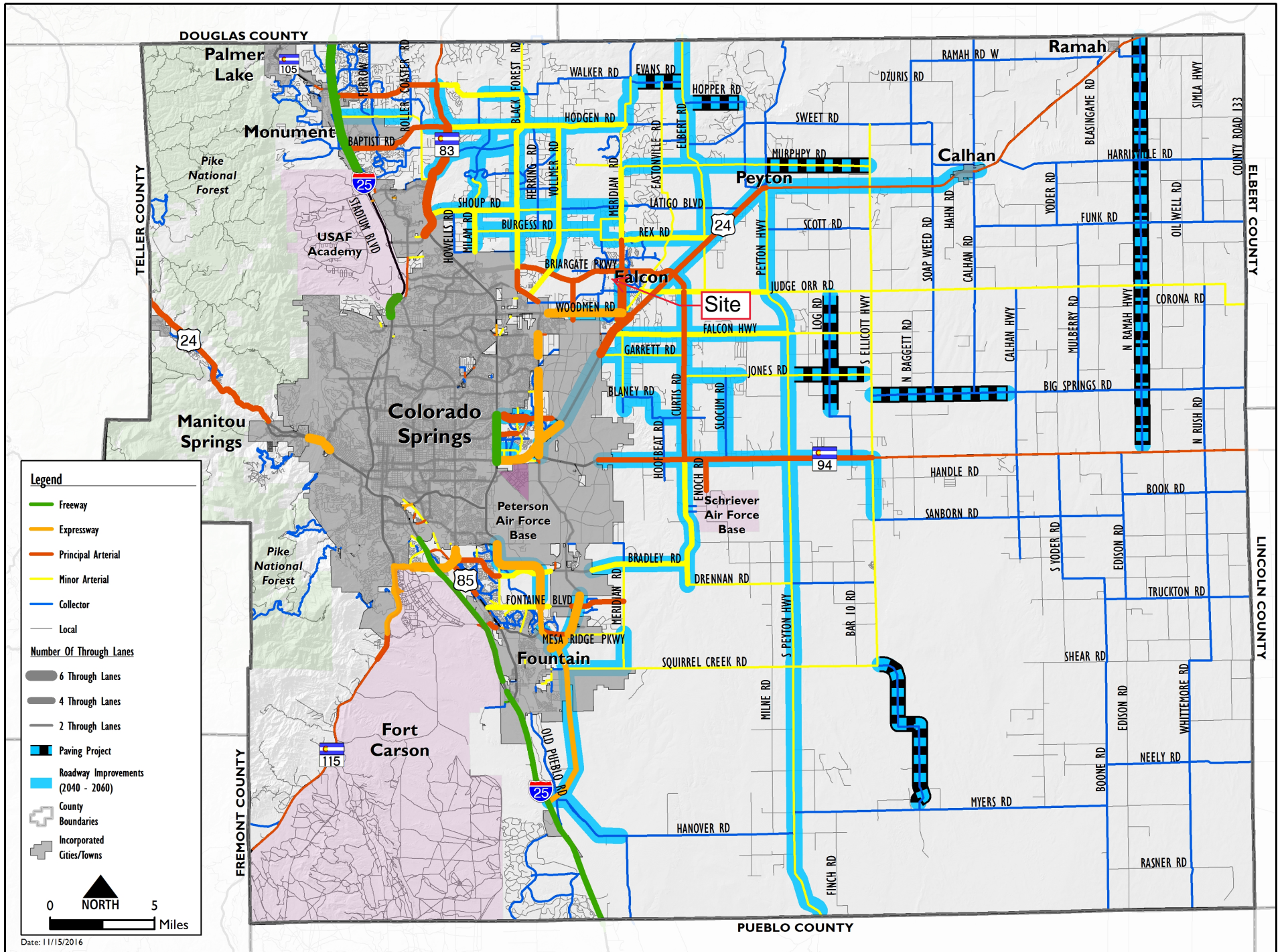
MTCP Maps





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 Rd - Stapleton Rd AM
 Site Code : S224050
 Start Date : 4/7/2022
 Page No : 1

Groups Printed- Unshifted

Start Time	Meridian Rd Southbound					Stapleton Rd Westbound					Meridian Rd Northbound					Stapleton Rd Eastbound					Int. Total
	Right	T	L	U	App. Total	Right	T	L	U	App. Total	Right	T	L	U	App. Total	Right	T	L	U	App. Total	
06:30 AM	0	56	5	0	61	5	1	23	0	29	6	17	4	0	27	17	3	0	0	20	137
06:35 AM	0	67	6	0	73	3	0	15	0	18	6	19	5	0	30	19	4	0	0	23	144
06:40 AM	0	69	6	0	75	4	0	23	0	27	11	19	3	0	33	11	1	2	0	14	149
06:45 AM	1	65	5	0	71	3	1	16	0	20	8	18	8	0	34	14	3	0	0	17	142
06:50 AM	0	68	13	0	81	7	2	27	0	36	18	24	6	0	48	20	2	0	0	22	187
06:55 AM	0	63	6	0	69	6	1	35	0	42	9	14	5	0	28	16	6	0	0	22	161
Total	1	388	41	0	430	28	5	139	0	172	58	111	31	0	200	97	19	2	0	118	920
07:00 AM	1	82	6	0	89	8	4	39	0	51	13	36	10	0	59	18	3	1	0	22	221
07:05 AM	0	96	7	0	103	10	6	28	0	44	12	17	14	0	43	26	2	2	0	30	220
07:10 AM	2	76	7	0	85	14	8	31	0	53	24	17	9	0	50	28	8	1	0	37	225
07:15 AM	1	80	8	0	89	16	13	24	0	53	16	24	26	0	66	16	8	1	0	25	233
07:20 AM	1	70	9	0	80	19	30	38	0	87	11	33	13	0	57	24	16	3	0	43	267
07:25 AM	3	75	11	0	89	19	20	30	0	69	7	45	26	0	78	16	5	0	0	21	257
07:30 AM	0	84	12	0	96	9	19	14	0	42	6	32	25	0	63	22	13	3	0	38	239
07:35 AM	2	60	10	0	72	31	22	18	0	71	11	42	21	0	74	30	12	1	0	43	260
07:40 AM	3	68	12	0	83	25	15	20	0	60	7	48	10	0	65	23	13	2	0	38	246
07:45 AM	3	73	13	0	89	22	5	21	0	48	8	54	11	0	73	19	8	2	0	29	239
07:50 AM	0	70	16	0	86	12	4	30	0	46	13	41	9	0	63	19	13	3	0	35	230
07:55 AM	0	80	15	0	95	13	3	19	0	35	19	54	9	0	82	10	3	0	0	13	225
Total	16	914	126	0	1056	198	149	312	0	659	147	443	183	0	773	251	104	19	0	374	2862
08:00 AM	1	48	9	0	58	13	2	19	0	34	14	46	1	0	61	9	2	0	0	11	164
08:05 AM	1	61	5	0	67	11	2	24	0	37	13	32	5	0	50	8	0	1	0	9	163
08:10 AM	0	58	11	0	69	4	0	24	0	28	14	42	2	0	58	8	0	2	0	10	165
08:15 AM	0	57	5	0	62	8	1	28	0	37	13	40	5	0	58	13	0	2	0	15	172
08:20 AM	0	75	7	0	82	6	1	15	0	22	16	50	9	0	75	9	3	0	0	12	191
08:25 AM	1	68	4	0	73	7	0	26	0	33	11	30	8	0	49	7	2	1	0	10	165
Grand Total	20	1669	208	0	1897	275	160	587	0	1022	286	794	244	0	1324	402	130	27	0	559	4802
Apprch %	1.1	88	11	0		26.9	15.7	57.4	0		21.6	60	18.4	0		71.9	23.3	4.8	0		
Total %	0.4	34.8	4.3	0	39.5	5.7	3.3	12.2	0	21.3	6	16.5	5.1	0	27.6	8.4	2.7	0.6	0	11.6	

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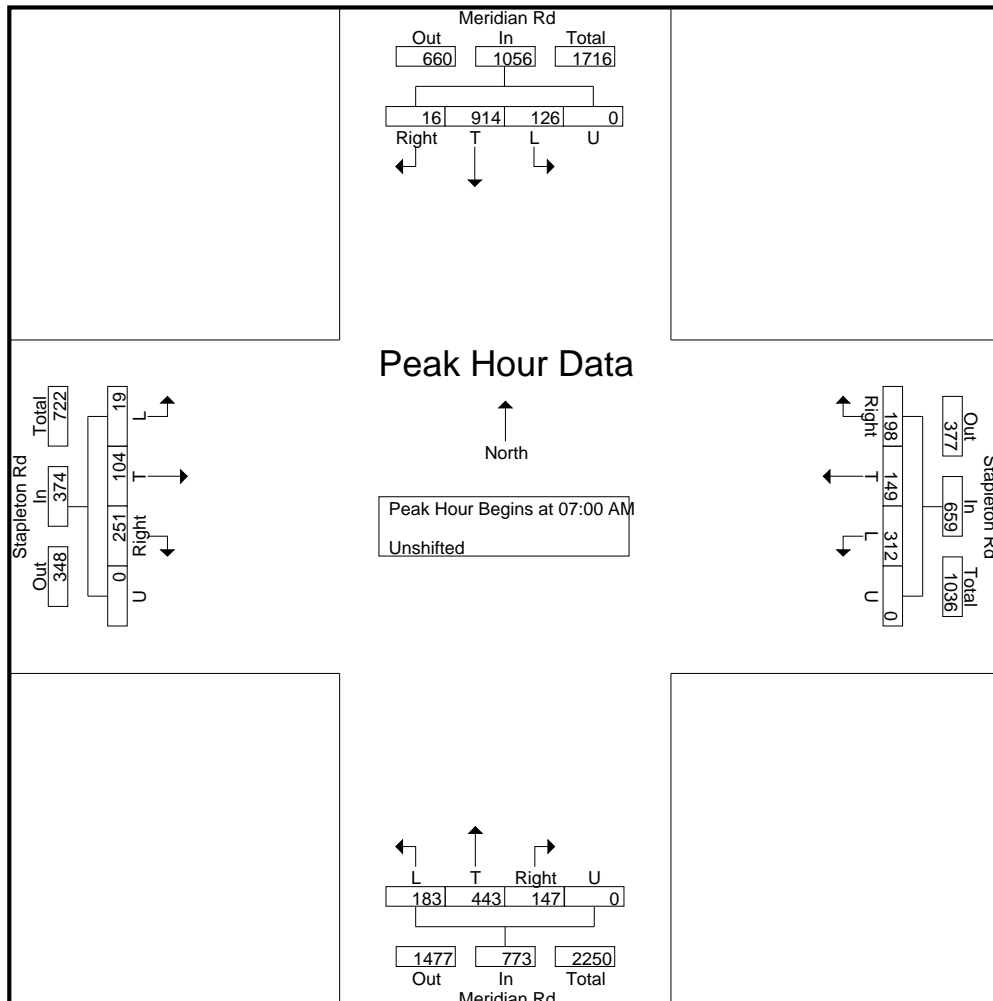
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Site Code : S224050

Start Date : 4/7/2022

Page No : 2

Start Time	Meridian Rd Southbound					Stapleton Rd Westbound					Meridian Rd Northbound					Stapleton Rd Eastbound					Int. Total
	Right	T	L	U	App. Total	Right	T	L	U	App. Total	Right	T	L	U	App. Total	Right	T	L	U	App. Total	
Peak Hour Analysis From 06:30 AM to 08:25 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	1	82	6	0	89	8	4	39	0	51	13	36	10	0	59	18	3	1	0	22	221
07:05 AM	0	96	7	0	103	10	6	28	0	44	12	17	14	0	43	26	2	2	0	30	220
07:10 AM	2	76	7	0	85	14	8	31	0	53	24	17	9	0	50	28	8	1	0	37	225
07:15 AM	1	80	8	0	89	16	13	24	0	53	16	24	26	0	66	16	8	1	0	25	233
07:20 AM	1	70	9	0	80	19	30	38	0	87	11	33	13	0	57	24	16	3	0	43	267
07:25 AM	3	75	11	0	89	19	20	30	0	69	7	45	26	0	78	16	5	0	0	21	257
07:30 AM	0	84	12	0	96	9	19	14	0	42	6	32	25	0	63	22	13	3	0	38	239
07:35 AM	2	60	10	0	72	31	22	18	0	71	11	42	21	0	74	30	12	1	0	43	260
07:40 AM	3	68	12	0	83	25	15	20	0	60	7	48	10	0	65	23	13	2	0	38	246
07:45 AM	3	73	13	0	89	22	5	21	0	48	8	54	11	0	73	19	8	2	0	29	239
07:50 AM	0	70	16	0	86	12	4	30	0	46	13	41	9	0	63	19	13	3	0	35	230
07:55 AM	0	80	15	0	95	13	3	19	0	35	19	54	9	0	82	10	3	0	0	13	225
Total Volume	16	914	126	0	1056	198	149	312	0	659	147	443	183	0	773	251	104	19	0	374	2862
% App. Total	1.5	86.6	11.9	0		30	22.6	47.3	0		19	57.3	23.7	0		67.1	27.8	5.1	0		
PHF	.444	.793	.656	.000	.854	.532	.414	.667	.000	.631	.510	.684	.587	.000	.786	.697	.542	.528	.000	.725	.893



LSC Transportation Consultants, Inc.

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

File Name : Meridian Rd - Stapleton Rd PM

Site Code : S224050

Start Date : 4/6/2022

Page No : 1

Groups Printed- Unshifted

Start Time	Meridian Rd Southbound					Stapleton Rd Westbound					Meridian Rd Northbound					Stapleton Rd Eastbound					Int. Total
	Right	T	L	U	App. Total	Right	T	L	U	App. Total	Right	T	L	U	App. Total	Right	T	L	U	App. Total	
04:00 PM	2	55	13	0	70	11	2	27	0	40	14	60	18	0	92	5	2	0	0	7	209
04:05 PM	0	56	6	0	62	6	7	28	0	41	24	66	23	0	113	9	2	2	0	13	229
04:10 PM	1	57	10	0	68	6	5	18	0	29	25	62	17	2	106	8	1	0	0	9	212
04:15 PM	1	49	6	0	56	10	4	18	0	32	22	93	16	0	131	7	0	0	0	7	226
04:20 PM	1	42	10	0	53	6	3	20	0	29	22	53	20	0	95	17	4	1	0	22	199
04:25 PM	0	62	9	0	71	8	6	21	0	35	24	70	24	0	118	11	1	0	0	12	236
04:30 PM	2	43	7	0	52	7	7	17	0	31	21	56	18	0	95	10	3	2	0	15	193
04:35 PM	0	64	5	0	69	9	3	21	0	33	18	86	18	0	122	10	3	2	0	15	239
04:40 PM	1	50	9	0	60	8	3	21	0	32	19	67	21	0	107	15	0	2	0	17	216
04:45 PM	2	47	9	0	58	7	5	17	0	29	36	64	14	0	114	11	0	1	0	12	213
04:50 PM	0	31	8	0	39	9	4	25	0	38	33	59	18	0	110	12	2	0	0	14	201
04:55 PM	1	48	13	0	62	5	6	14	0	25	27	68	24	0	119	7	2	0	0	9	215
Total	11	604	105	0	720	92	55	247	0	394	285	804	231	2	1322	122	20	10	0	152	2588
05:00 PM	0	51	6	0	57	4	7	15	0	26	25	53	29	0	107	14	2	1	0	17	207
05:05 PM	0	53	4	0	57	10	3	26	0	39	14	65	15	0	94	18	7	2	0	27	217
05:10 PM	1	46	3	0	50	9	3	19	0	31	34	100	25	0	159	11	1	0	0	12	252
05:15 PM	0	47	19	0	66	6	4	18	0	28	29	58	28	0	115	20	2	1	0	23	232
05:20 PM	0	46	12	0	58	6	5	30	0	41	36	76	17	0	129	19	4	0	0	23	251
05:25 PM	1	41	11	0	53	5	5	13	0	23	30	66	22	0	118	14	2	0	0	16	210
05:30 PM	0	49	11	0	60	6	5	20	0	31	30	72	11	0	113	9	3	1	0	13	217
05:35 PM	1	51	9	0	61	7	4	17	0	28	32	87	31	0	150	19	7	1	0	27	266
05:40 PM	2	39	7	0	48	10	5	22	0	37	34	81	22	0	137	19	5	0	0	24	246
05:45 PM	2	54	4	0	60	9	2	20	0	31	16	86	23	0	125	16	4	0	0	20	236
05:50 PM	0	27	11	0	38	9	4	19	0	32	24	60	12	1	97	18	4	1	0	23	190
05:55 PM	0	36	12	0	48	6	2	14	0	22	25	120	16	0	161	8	0	0	0	8	239
Total	7	540	109	0	656	87	49	233	0	369	329	924	251	1	1505	185	41	7	0	233	2763
Grand Total	18	1144	214	0	1376	179	104	480	0	763	614	1728	482	3	2827	307	61	17	0	385	5351
Apprch %	1.3	83.1	15.6	0		23.5	13.6	62.9	0		21.7	61.1	17	0.1		79.7	15.8	4.4	0		
Total %	0.3	21.4	4	0	25.7	3.3	1.9	9	0	14.3	11.5	32.3	9	0.1	52.8	5.7	1.1	0.3	0	7.2	

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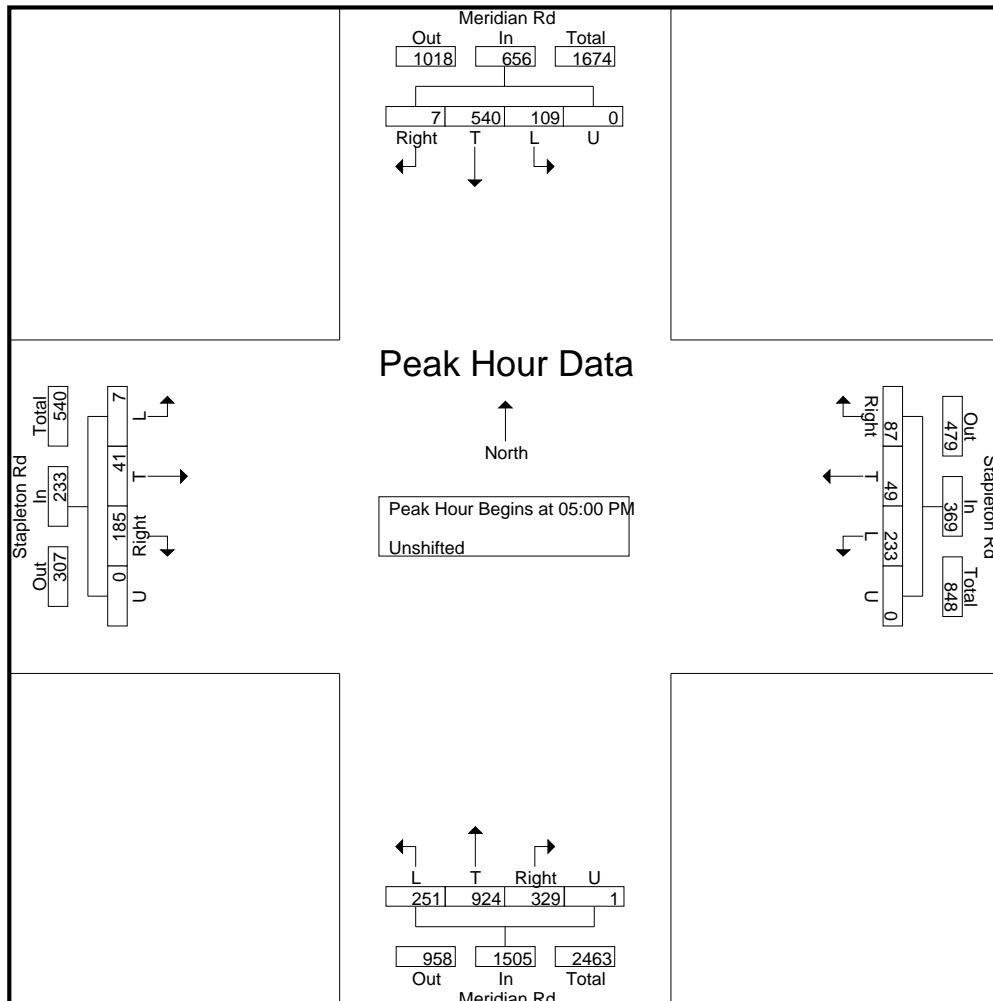
File Name : Meridian Rd - Stapleton Rd PM

Site Code : S224050

Start Date : 4/6/2022

Page No : 2

Start Time	Meridian Rd Southbound					Stapleton Rd Westbound					Meridian Rd Northbound					Stapleton Rd Eastbound					Int. Total
	Right	T	L	U	App. Total	Right	T	L	U	App. Total	Right	T	L	U	App. Total	Right	T	L	U	App. Total	
Peak Hour Analysis From 04:00 PM to 05:55 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	51	6	0	57	4	7	15	0	26	25	53	29	0	107	14	2	1	0	17	207
05:05 PM	0	53	4	0	57	10	3	26	0	39	14	65	15	0	94	18	7	2	0	27	217
05:10 PM	1	46	3	0	50	9	3	19	0	31	34	100	25	0	159	11	1	0	0	12	252
05:15 PM	0	47	19	0	66	6	4	18	0	28	29	58	28	0	115	20	2	1	0	23	232
05:20 PM	0	46	12	0	58	6	5	30	0	41	36	76	17	0	129	19	4	0	0	23	251
05:25 PM	1	41	11	0	53	5	5	13	0	23	30	66	22	0	118	14	2	0	0	16	210
05:30 PM	0	49	11	0	60	6	5	20	0	31	30	72	11	0	113	9	3	1	0	13	217
05:35 PM	1	51	9	0	61	7	4	17	0	28	32	87	31	0	150	19	7	1	0	27	266
05:40 PM	2	39	7	0	48	10	5	22	0	37	34	81	22	0	137	19	5	0	0	24	246
05:45 PM	2	54	4	0	60	9	2	20	0	31	16	86	23	0	125	16	4	0	0	20	236
05:50 PM	0	27	11	0	38	9	4	19	0	32	24	60	12	1	97	18	4	1	0	23	190
05:55 PM	0	36	12	0	48	6	2	14	0	22	25	120	16	0	161	8	0	0	0	8	239
Total Volume	7	540	109	0	656	87	49	233	0	369	329	924	251	1	1505	185	41	7	0	233	2763
% App. Total	1.1	82.3	16.6	0		23.6	13.3	63.1	0		21.9	61.4	16.7	0.1		79.4	17.6	3	0		
PHF	.292	.833	.478	.000	.828	.725	.583	.647	.000	.750	.762	.642	.675	.083	.779	.771	.488	.292	.000	.719	.866



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2504 E. Pikes Peak Ave, Suite 304
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 719-633-2868

File Name : Liberty Grove Dr - Stapleton Dr AM

Site Code : S224050

Start Date : 4/7/2022

Page No : 1

Groups Printed- Unshifted

Start Time	Liberty Grove Dr 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	
06:30	0	0	7	0	7	1	3	0	0	4	0	0	0	0	0	0	14	0	0	14	25
06:35	0	0	6	0	6	1	4	0	0	5	0	0	0	0	0	0	14	0	0	14	25
06:40	0	0	5	0	5	0	4	0	0	4	0	0	0	0	0	0	11	0	0	11	20
06:45	0	0	5	0	5	0	7	0	0	7	0	0	0	0	0	0	12	0	0	12	24
06:50	0	0	1	0	1	1	9	0	0	10	0	0	0	0	0	0	22	0	0	22	33
06:55	0	0	2	0	2	1	3	0	0	4	0	0	0	0	0	0	22	0	0	22	28
Total	0	0	26	0	26	4	30	0	0	34	0	0	0	0	0	0	95	0	0	95	155
07:00	0	0	3	0	3	1	16	0	0	17	0	0	0	0	0	0	18	0	0	18	38
07:05	0	0	3	0	3	1	21	0	0	22	0	0	0	0	0	0	33	0	0	33	58
07:10	1	0	4	0	5	1	15	0	0	16	0	0	0	0	0	0	30	0	0	30	51
07:15	1	0	5	0	6	0	39	0	0	39	0	0	0	0	0	0	22	0	0	22	67
07:20	2	0	3	0	5	1	39	0	0	40	0	0	0	0	0	0	37	0	0	37	82
07:25	3	0	2	0	5	1	47	0	0	48	0	0	0	0	0	0	21	1	0	22	75
07:30	2	0	0	0	2	1	44	0	0	45	0	0	0	0	0	0	42	0	0	42	89
07:35	4	0	0	0	4	1	50	0	0	51	0	0	0	0	0	0	39	0	0	39	94
07:40	1	0	1	0	2	1	28	0	0	29	0	0	0	0	0	0	39	3	0	42	73
07:45	4	0	3	0	7	0	19	0	0	19	0	0	0	0	0	0	40	1	0	41	67
07:50	3	0	2	0	5	1	10	0	0	11	0	0	0	0	0	0	18	0	0	18	34
07:55	4	0	1	0	5	2	11	0	0	13	0	0	0	0	0	0	14	0	0	14	32
Total	25	0	27	0	52	11	339	0	0	350	0	0	0	0	0	0	353	5	0	358	760
08:00	0	0	3	0	3	3	4	0	0	7	0	0	0	0	0	0	8	0	0	8	18
08:05	0	0	1	0	1	0	4	0	0	4	0	0	0	0	0	0	8	0	0	8	13
08:10	0	0	2	0	2	0	6	0	0	6	0	0	0	0	0	0	7	0	0	7	15
08:15	0	0	3	0	3	1	5	0	0	6	0	0	0	0	0	0	13	0	0	13	22
08:20	0	0	4	0	4	0	6	0	0	6	0	0	0	0	0	0	8	0	0	8	18
08:25	0	0	1	0	1	2	11	0	0	13	0	0	0	0	0	0	8	0	0	8	22
Grand Total	25	0	67	0	92	21	405	0	0	426	0	0	0	0	0	0	500	5	0	505	1023
Apprch %	27.2	0	72.8	0		4.9	95.1	0	0		0	0	0	0		0	99	1	0		
Total %	2.4	0	6.5	0	9	2.1	39.6	0	0	41.6	0	0	0	0	0	0	48.9	0.5	0	49.4	

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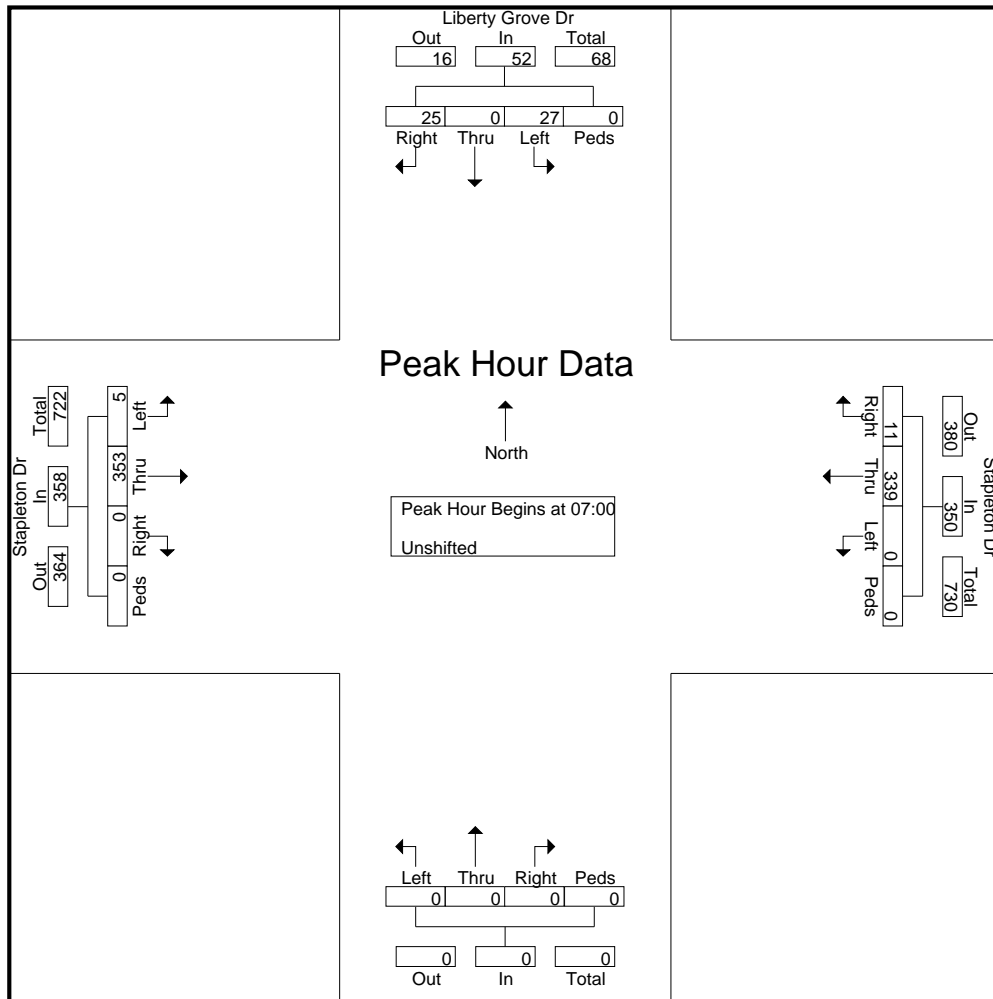
File Name : Liberty Grove Dr - Stapleton Dr AM

Site Code : S224050

Start Date : 4/7/2022

Page No : 2

Start Time	Liberty Grove Dr 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 08:25 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00																					
07:00	0	0	3	0	3	1	16	0	0	17	0	0	0	0	0	0	18	0	0	18	38
07:05	0	0	3	0	3	1	21	0	0	22	0	0	0	0	0	0	33	0	0	33	58
07:10	1	0	4	0	5	1	15	0	0	16	0	0	0	0	0	0	30	0	0	30	51
07:15	1	0	5	0	6	0	39	0	0	39	0	0	0	0	0	0	22	0	0	22	67
07:20	2	0	3	0	5	1	39	0	0	40	0	0	0	0	0	0	37	0	0	37	82
07:25	3	0	2	0	5	1	47	0	0	48	0	0	0	0	0	0	21	1	0	22	75
07:30	2	0	0	0	2	1	44	0	0	45	0	0	0	0	0	0	42	0	0	42	89
07:35	4	0	0	0	4	1	50	0	0	51	0	0	0	0	0	0	39	0	0	39	94
07:40	1	0	1	0	2	1	28	0	0	29	0	0	0	0	0	0	39	3	0	42	73
07:45	4	0	3	0	7	0	19	0	0	19	0	0	0	0	0	0	40	1	0	41	67
07:50	3	0	2	0	5	1	10	0	0	11	0	0	0	0	0	0	18	0	0	18	34
07:55	4	0	1	0	5	2	11	0	0	13	0	0	0	0	0	0	14	0	0	14	32
Total Volume	25	0	27	0	52	11	339	0	0	350	0	0	0	0	0	0	353	5	0	358	760
% App. Total	48.1	0	51.9	0		3.1	96.9	0	0		0	0	0	0		0	98.6	1.4	0		
PHF	.521	.000	.450	.000	.619	.458	.565	.000	.000	.572	.000	.000	.000	.000	.000	.000	.700	.139	.000	.710	.674



LSC Transportation Consultants, Inc.

2504 E. Pikes Peak Ave, Suite 304
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 719-633-2868

File Name : Liberty Grove Dr - Stapleton Dr PM

Site Code : 224050

Start Date : 4/13/2022

Page No : 1

Groups Printed- Class 1

Start Time	Liberty Grove Dr Southbound					Stapleton Rd Westbound					Northbound					Stapleton Rd 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	
16:00	0	0	3	0	3	7	13	0	0	20	0	0	0	0	0	0	12	0	0	12	35
16:05	0	0	1	0	1	5	17	0	0	22	0	0	0	0	0	0	15	0	0	15	38
16:10	1	0	4	0	5	2	12	0	0	14	0	0	0	0	0	0	10	0	0	10	29
16:15	0	0	0	0	0	3	21	0	0	24	0	0	0	0	0	0	11	0	0	11	35
16:20	0	0	1	0	1	8	9	0	0	17	0	0	0	0	0	0	8	0	0	8	26
16:25	0	0	1	0	1	3	17	0	0	20	0	0	0	0	0	0	10	1	0	11	32
16:30	0	0	1	0	1	2	20	0	0	22	0	0	0	0	0	0	18	0	0	18	41
16:35	0	0	3	0	3	2	8	0	0	10	0	0	0	0	0	0	11	0	0	11	24
16:40	0	0	1	0	1	5	10	0	0	15	0	0	0	0	0	0	11	0	0	11	27
16:45	0	0	3	0	3	1	19	0	0	20	0	0	0	0	0	0	7	0	0	7	30
16:50	0	0	1	0	1	4	16	0	0	20	0	0	0	0	0	0	8	0	0	8	29
16:55	0	0	1	0	1	5	19	0	0	24	0	0	0	0	0	0	10	0	0	10	35
Total	1	0	20	0	21	47	181	0	0	228	0	0	0	0	0	0	131	1	0	132	381
17:00	0	0	2	0	2	4	20	0	0	24	0	0	0	0	0	0	14	1	0	15	41
17:05	0	0	1	0	1	3	20	0	0	23	0	0	0	0	0	0	12	1	0	13	37
17:10	0	0	0	0	0	5	15	0	0	20	0	0	0	0	0	0	7	0	0	7	27
17:15	0	0	3	0	3	7	16	0	0	23	0	0	0	0	0	0	6	0	0	6	32
17:20	0	0	2	0	2	3	14	0	0	17	0	0	0	0	0	0	14	0	0	14	33
17:25	0	0	5	0	5	8	17	0	0	25	0	0	0	0	0	0	8	0	0	8	38
17:30	0	0	0	0	0	3	10	0	0	13	0	0	0	0	0	0	12	0	0	12	25
17:35	0	0	0	0	0	4	25	0	0	29	0	0	0	0	0	0	20	0	0	20	49
17:40	0	0	0	0	0	5	9	0	0	14	0	0	0	0	0	0	11	0	0	11	25
17:45	0	0	2	0	2	4	13	0	0	17	0	0	0	0	0	0	11	1	0	12	31
17:50	0	0	1	0	1	8	9	0	0	17	0	0	0	0	0	0	13	0	0	13	31
17:55	0	0	1	0	1	1	20	0	0	21	0	0	0	0	0	0	5	0	0	5	27
Total	0	0	17	0	17	55	188	0	0	243	0	0	0	0	0	0	133	3	0	136	396
Grand Total	1	0	37	0	38	102	369	0	0	471	0	0	0	0	0	0	264	4	0	268	777
Apprch %	2.6	0	97.4	0		21.7	78.3	0	0		0	0	0	0		0	98.5	1.5	0		
Total %	0.1	0	4.8	0	4.9	13.1	47.5	0	0	60.6	0	0	0	0	0	0	34	0.5	0	34.5	

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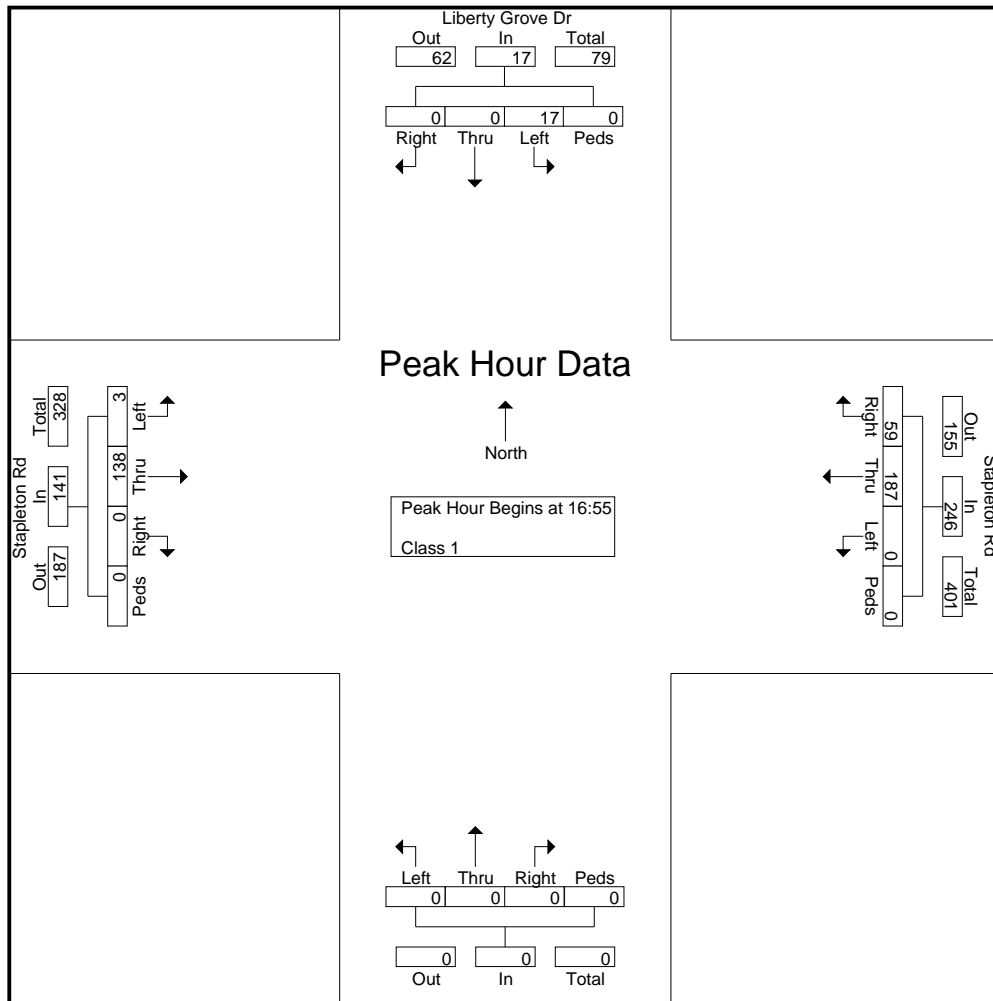
File Name : Liberty Grove Dr - Stapleton Dr PM

Site Code : 224050

Start Date : 4/13/2022

Page No : 2

Start Time	Liberty Grove Dr Southbound					Stapleton Rd Westbound					Northbound					Stapleton Rd 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 16:00 to 17:55 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:55																					
16:55	0	0	1	0	1	5	19	0	0	24	0	0	0	0	0	0	10	0	0	10	35
17:00	0	0	2	0	2	4	20	0	0	24	0	0	0	0	0	0	14	1	0	15	41
17:05	0	0	1	0	1	3	20	0	0	23	0	0	0	0	0	0	12	1	0	13	37
17:10	0	0	0	0	0	5	15	0	0	20	0	0	0	0	0	0	7	0	0	7	27
17:15	0	0	3	0	3	7	16	0	0	23	0	0	0	0	0	0	6	0	0	6	32
17:20	0	0	2	0	2	3	14	0	0	17	0	0	0	0	0	0	14	0	0	14	33
17:25	0	0	5	0	5	8	17	0	0	25	0	0	0	0	0	0	8	0	0	8	38
17:30	0	0	0	0	0	3	10	0	0	13	0	0	0	0	0	0	12	0	0	12	25
17:35	0	0	0	0	0	4	25	0	0	29	0	0	0	0	0	0	20	0	0	20	49
17:40	0	0	0	0	0	5	9	0	0	14	0	0	0	0	0	0	11	0	0	11	25
17:45	0	0	2	0	2	4	13	0	0	17	0	0	0	0	0	0	11	1	0	12	31
17:50	0	0	1	0	1	8	9	0	0	17	0	0	0	0	0	0	13	0	0	13	31
Total Volume	0	0	17	0	17	59	187	0	0	246	0	0	0	0	0	0	138	3	0	141	404
% App. Total	0	0	100	0		24	76	0	0		0	0	0	0		0	97.9	2.1	0		
PHF	.000	.000	.283	.000	.283	.615	.623	.000	.000	.707	.000	.000	.000	.000	.000	.000	.575	.250	.000	.588	.687



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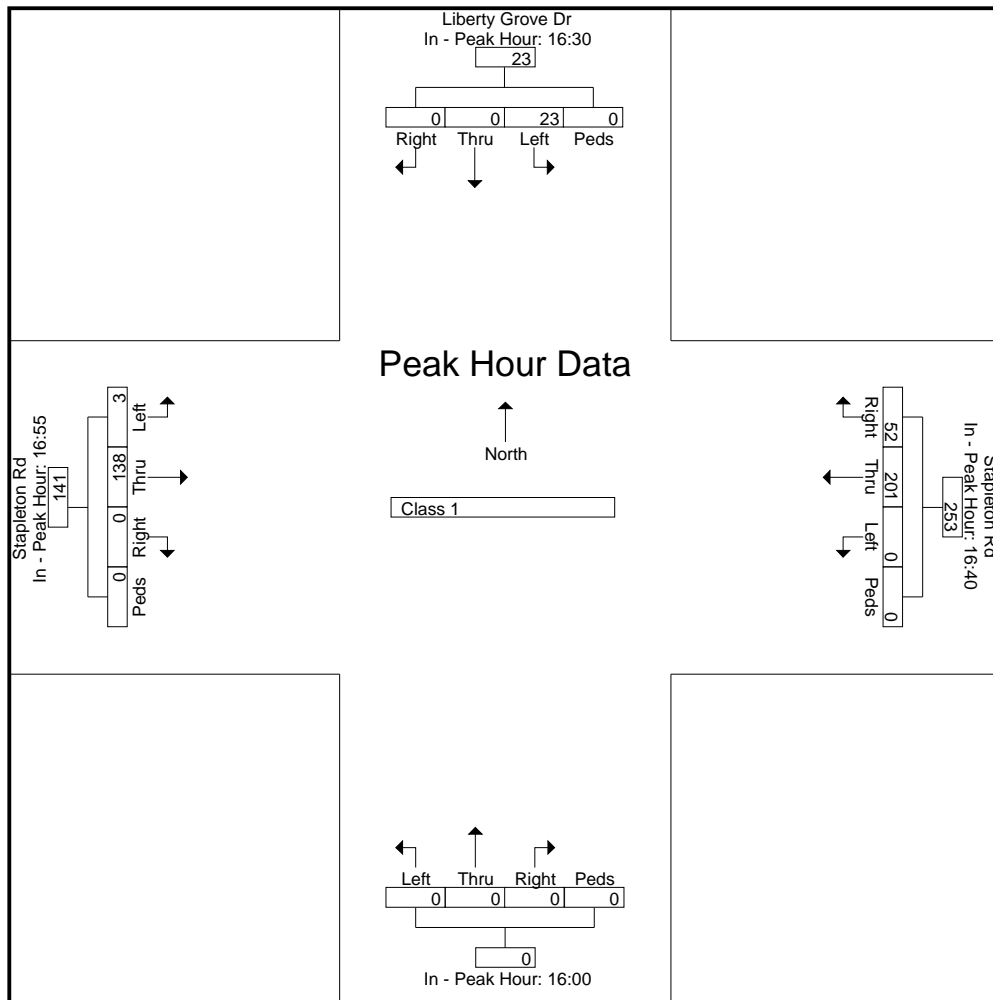
File Name : Liberty Grove Dr - Stapleton Dr PM

Site Code : 224050

Start Date : 4/13/2022

Page No : 3

Start Time	Liberty Grove Dr Southbound					Stapleton Rd Westbound					Northbound					Stapleton Rd 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 16:00 to 17:55 - Peak 1 of 1																					
Peak Hour for Each Approach Begins at:																					
	16:30					16:40					16:00					16:55					
+0 mins.	0	0	1	0	1	5	10	0	0	15	0	0	0	0	0	0	10	0	0	10	
+5 mins.	0	0	3	0	3	1	19	0	0	20	0	0	0	0	0	0	14	1	0	15	
+10 mins.	0	0	1	0	1	4	16	0	0	20	0	0	0	0	0	0	12	1	0	13	
+15 mins.	0	0	3	0	3	5	19	0	0	24	0	0	0	0	0	0	7	0	0	7	
+20 mins.	0	0	1	0	1	4	20	0	0	24	0	0	0	0	0	0	6	0	0	6	
+25 mins.	0	0	1	0	1	3	20	0	0	23	0	0	0	0	0	0	14	0	0	14	
+30 mins.	0	0	2	0	2	5	15	0	0	20	0	0	0	0	0	0	8	0	0	8	
+35 mins.	0	0	1	0	1	7	16	0	0	23	0	0	0	0	0	0	12	0	0	12	
+40 mins.	0	0	0	0	0	3	14	0	0	17	0	0	0	0	0	0	20	0	0	20	
+45 mins.	0	0	3	0	3	8	17	0	0	25	0	0	0	0	0	0	11	0	0	11	
+50 mins.	0	0	2	0	2	3	10	0	0	13	0	0	0	0	0	0	11	1	0	12	
+55 mins.	0	0	5	0	5	4	25	0	0	29	0	0	0	0	0	0	13	0	0	13	
Total Volume	0	0	23	0	23	52	201	0	0	253	0	0	0	0	0	0	138	3	0	141	
% App. Total	0	0	100	0		20.6	79.4	0	0		0	0	0	0		0	97.9	2.1	0		
PHF	.000	.000	.383	.000	.383	.542	.670	.000	.000	.727	.000	.000	.000	.000	.000	.000	.575	.250	.000	.588	



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2504 E. Pikes Peak Ave, Suite 304

Colorado Springs, CO 80909

719-633-2868

Levels of Service



Timings
1: Meridian Rd & Stapleton Dr

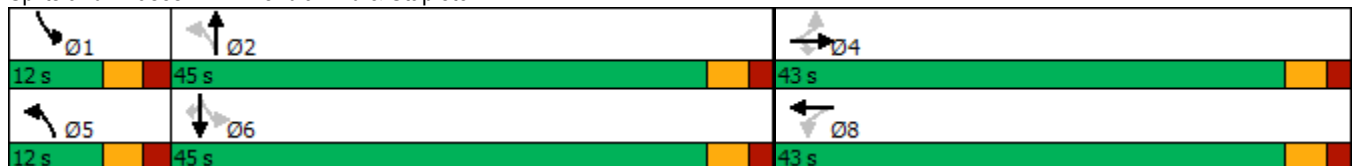
Existing Traffic
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	104	257	312	149	198	185	443	147	126	914	16
Future Volume (vph)	19	104	257	312	149	198	185	443	147	126	914	16
Turn Type	Perm	NA	Perm	Perm	NA	Free	pm+pt	NA	Free	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		Free	2		Free	6		6
Detector Phase	4	4	4	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0		10.0	20.0		10.0	20.0	20.0
Total Split (s)	43.0	43.0	43.0	43.0	43.0		12.0	45.0		12.0	45.0	45.0
Total Split (%)	43.0%	43.0%	43.0%	43.0%	43.0%		12.0%	45.0%		12.0%	45.0%	45.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	Max		None	Max	Max
Act Effct Green (s)	32.9	32.9	32.9	32.9	32.9	95.2	47.4	40.3	95.2	47.1	40.2	40.2
Actuated g/C Ratio	0.35	0.35	0.35	0.35	0.35	1.00	0.50	0.42	1.00	0.49	0.42	0.42
v/c Ratio	0.06	0.19	0.44	0.90	0.29	0.16	0.77	0.32	0.10	0.29	0.66	0.02
Control Delay	20.4	22.0	10.0	54.7	23.5	0.2	35.3	20.0	0.1	13.7	25.6	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.4	22.0	10.0	54.7	23.5	0.2	35.3	20.0	0.1	13.7	25.6	0.1
LOS	C	C	A	D	C	A	D	C	A	B	C	A
Approach Delay		13.8			31.3			19.9			23.8	
Approach LOS		B			C			B			C	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 95.2
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.90
 Intersection Signal Delay: 23.3
 Intersection Capacity Utilization 72.0%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service C

Splits and Phases: 1: Meridian Rd & Stapleton Dr



Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↑	↑	
Traffic Vol, veh/h	5	353	339	11	27	25
Future Vol, veh/h	5	353	339	11	27	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	115	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	73	73	87	87	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	484	390	13	35	32

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	403	0	-	0	888 390
Stage 1	-	-	-	-	390 -
Stage 2	-	-	-	-	498 -
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	1156	-	-	-	314 658
Stage 1	-	-	-	-	684 -
Stage 2	-	-	-	-	611 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1156	-	-	-	311 658
Mov Cap-2 Maneuver	-	-	-	-	311 -
Stage 1	-	-	-	-	679 -
Stage 2	-	-	-	-	611 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	15.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1156	-	-	-	417
HCM Lane V/C Ratio	0.006	-	-	-	0.16
HCM Control Delay (s)	8.1	0	-	-	15.3
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.6

Timings
1: Meridian Rd & Stapleton Dr

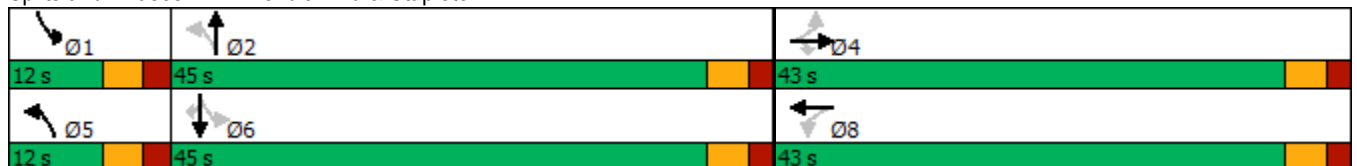
Existing Traffic
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	41	185	233	49	87	251	924	329	109	540	7
Future Volume (vph)	7	41	185	233	49	87	251	924	329	109	540	7
Turn Type	Perm	NA	Perm	Perm	NA	Free	pm+pt	NA	Free	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		Free	2		Free	6		6
Detector Phase	4	4	4	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0		10.0	20.0		10.0	20.0	20.0
Total Split (s)	43.0	43.0	43.0	43.0	43.0		12.0	45.0		12.0	45.0	45.0
Total Split (%)	43.0%	43.0%	43.0%	43.0%	43.0%		12.0%	45.0%		12.0%	45.0%	45.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	Max		None	Max	Max
Act Effct Green (s)	19.7	19.7	19.7	19.7	19.7	82.0	48.4	42.9	82.0	47.0	40.2	40.2
Actuated g/C Ratio	0.24	0.24	0.24	0.24	0.24	1.00	0.59	0.52	1.00	0.57	0.49	0.49
v/c Ratio	0.02	0.10	0.38	0.75	0.11	0.06	0.53	0.53	0.22	0.34	0.34	0.01
Control Delay	22.4	23.7	5.8	43.4	23.9	0.1	12.7	16.2	0.3	10.0	14.4	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.4	23.7	5.8	43.4	23.9	0.1	12.7	16.2	0.3	10.0	14.4	0.0
LOS	C	C	A	D	C	A	B	B	A	A	B	A
Approach Delay		9.5			30.6			12.2			13.5	
Approach LOS		A			C			B			B	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 82
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.75
 Intersection Signal Delay: 14.6
 Intersection Capacity Utilization 63.7%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service B

Splits and Phases: 1: Meridian Rd & Stapleton Dr



Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Vol, veh/h	2	215	255	52	18	0
Future Vol, veh/h	2	215	255	52	18	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	115	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	94	94	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	259	271	55	23	0

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	326	0	0	534	271
Stage 1	-	-	-	271	-
Stage 2	-	-	-	263	-
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	1234	-	-	507	768
Stage 1	-	-	-	775	-
Stage 2	-	-	-	781	-
Platoon blocked, %		-	-		
Mov Cap-1 Maneuver	1234	-	-	506	768
Mov Cap-2 Maneuver	-	-	-	506	-
Stage 1	-	-	-	773	-
Stage 2	-	-	-	781	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	12.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1234	-	-	-	506
HCM Lane V/C Ratio	0.002	-	-	-	0.046
HCM Control Delay (s)	7.9	0	-	-	12.5
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Timings
1: Meridian Rd & Stapleton Dr

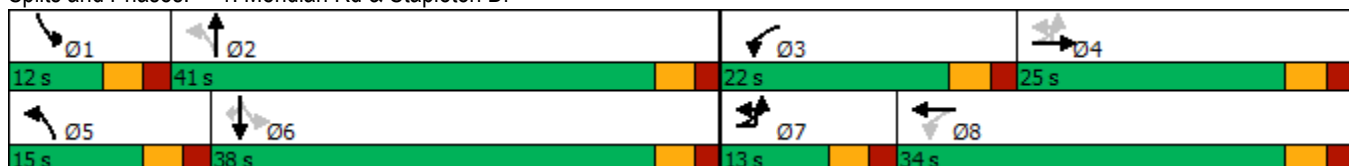
Short-Term Total Traffic
AM Peak Hour

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	5	62	152	330	331	169	198	200	424	141	126	930
Future Volume (vph)	5	62	152	330	331	169	198	200	424	141	126	930
Turn Type	pm+pt	pm+pt	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free	pm+pt	NA
Protected Phases	7	7	4		3	8		5	2		1	6
Permitted Phases	4	4		Free	8		Free	2		Free	6	
Detector Phase	7	7	4		3	8		5	2		1	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0
Minimum Split (s)	10.0	10.0	20.0		10.0	20.0		10.0	20.0		10.0	20.0
Total Split (s)	13.0	13.0	25.0		22.0	34.0		15.0	41.0		12.0	38.0
Total Split (%)	13.0%	13.0%	25.0%		22.0%	34.0%		15.0%	41.0%		12.0%	38.0%
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)		5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0
Lead/Lag	Lead	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes
Recall Mode	None	None	None		None	None		None	Max		None	Max
Act Effct Green (s)		17.1	9.7	89.5	31.6	21.4	89.5	46.0	36.0	89.5	39.9	33.0
Actuated g/C Ratio		0.19	0.11	1.00	0.35	0.24	1.00	0.51	0.40	1.00	0.45	0.37
v/c Ratio		0.29	0.45	0.24	0.90	0.25	0.16	0.77	0.32	0.10	0.29	0.77
Control Delay		23.5	41.3	0.4	49.5	29.7	0.2	37.0	19.5	0.1	13.1	30.0
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		23.5	41.3	0.4	49.5	29.7	0.2	37.0	19.5	0.1	13.1	30.0
LOS		C	D	A	D	C	A	D	B	A	B	C
Approach Delay			14.5			30.7			20.5			27.5
Approach LOS			B			C			C			C

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 89.5
 Natural Cycle: 80
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.90
 Intersection Signal Delay: 24.3
 Intersection LOS: C
 Intersection Capacity Utilization 76.0%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 1: Meridian Rd & Stapleton Dr



Timings
 1: Meridian Rd & Stapleton Dr

Short-Term Total Traffic
 AM Peak Hour

Lane Group	SBR
Lane Configurations	↑
Traffic Volume (vph)	18
Future Volume (vph)	18
Turn Type	Perm
Protected Phases	
Permitted Phases	6
Detector Phase	6
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	20.0
Total Split (s)	38.0
Total Split (%)	38.0%
Yellow Time (s)	3.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	0.0
Total Lost Time (s)	5.0
Lead/Lag	Lag
Lead-Lag Optimize?	Yes
Recall Mode	Max
Act Effct Green (s)	33.0
Actuated g/C Ratio	0.37
v/c Ratio	0.03
Control Delay	0.1
Queue Delay	0.0
Total Delay	0.1
LOS	A
Approach Delay	
Approach LOS	
Intersection Summary	

HCM 6th TWSC
2: Meridian Rd & North Three-Quarter Access

Short-Term Total Traffic
AM Peak Hour

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗	↘	↕	↕	↗
Traffic Vol, veh/h	0	155	131	765	1505	86
Future Vol, veh/h	0	155	131	765	1505	86
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	None
Storage Length	-	0	255	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	168	142	832	1618	92

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	-	-	1710	0	0
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	-	4.14	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	-	2.22	-	-
Pot Cap-1 Maneuver	0	0	367	-	-
Stage 1	0	0	-	-	-
Stage 2	0	0	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	-	-	367	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	3.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	367	-	-	-	-
HCM Lane V/C Ratio	0.388	-	-	-	-
HCM Control Delay (s)	20.9	-	0	-	-
HCM Lane LOS	C	-	A	-	-
HCM 95th %tile Q(veh)	1.8	-	-	-	-

HCM 6th TWSC
 3: Meridian Rd & South Three-Quarter Access

Short-Term Total Traffic
 AM Peak Hour

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗	↘	↕	↕	↗
Traffic Vol, veh/h	0	117	43	896	1658	2
Future Vol, veh/h	0	117	43	896	1658	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	None
Storage Length	-	-	250	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	127	47	974	1783	2

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	-	-	1785	0	0
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	-	4.14	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	-	2.22	-	-
Pot Cap-1 Maneuver	0	0	343	-	-
Stage 1	0	0	-	-	-
Stage 2	0	0	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	-	-	343	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	343	-	-	-	-
HCM Lane V/C Ratio	0.136	-	-	-	-
HCM Control Delay (s)	17.1	-	0	-	-
HCM Lane LOS	C	-	A	-	-
HCM 95th %tile Q(veh)	0.5	-	-	-	-

Intersection							
Intersection Delay, s/veh	4.7						
Intersection LOS	A						
Approach	EB		WB		NB		SB
Entry Lanes	2		2		1		1
Conflicting Circle Lanes	2		2		2		2
Adj Approach Flow, veh/h	506		451		148		70
Demand Flow Rate, veh/h	516		461		151		72
Vehicles Circulating, veh/h	103		44		580		483
Vehicles Exiting, veh/h	452		687		39		22
Ped Vol Crossing Leg, #/h	0		0		0		0
Ped Cap Adj	1.000		1.000		1.000		1.000
Approach Delay, s/veh	4.7		4.2		6.0		4.6
Approach LOS	A		A		A		A
Lane	Left	Right	Left	Right	Left	Left	
Designated Moves	LT	TR	LT	TR	LTR	LTR	
Assumed Moves	LT	TR	LT	TR	LTR	LTR	
RT Channelized							
Lane Util	0.471	0.529	0.471	0.529	1.000	1.000	
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.535	2.535	
Critical Headway, s	4.645	4.328	4.645	4.328	4.328	4.328	
Entry Flow, veh/h	243	273	217	244	151	72	
Cap Entry Lane, veh/h	1228	1301	1296	1368	867	942	
Entry HV Adj Factor	0.979	0.983	0.979	0.982	0.980	0.972	
Flow Entry, veh/h	238	268	212	240	148	70	
Cap Entry, veh/h	1202	1278	1269	1343	850	916	
V/C Ratio	0.198	0.210	0.167	0.178	0.174	0.076	
Control Delay, s/veh	4.7	4.6	4.2	4.2	6.0	4.6	
LOS	A	A	A	A	A	A	
95th %tile Queue, veh	1	1	1	1	1	0	

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑		↑
Traffic Vol, veh/h	457	50	0	393	0	91
Future Vol, veh/h	457	50	0	393	0	91
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	200	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	73	73	87	87	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	626	68	0	452	0	117

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3	Minor4
Conflicting Flow All	0	0	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-
Pot Cap-1 Maneuver	-	-	0	-	0	0
Stage 1	-	-	0	-	0	0
Stage 2	-	-	0	-	0	0
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	0	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	-	-	-	-

Timings
1: Meridian Rd & Stapleton Dr

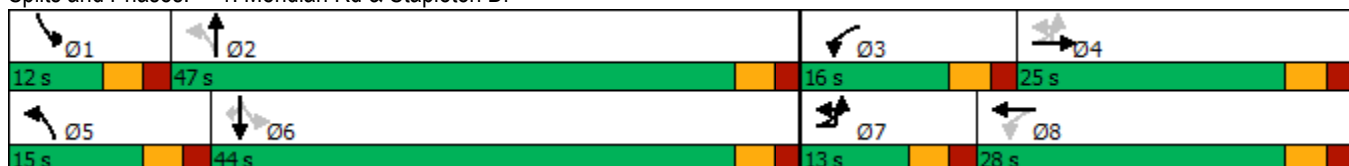
Short-Term Total Traffic
PM Peak Hour

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	83	9	116	249	260	85	87	314	876	312	109	563
Future Volume (vph)	83	9	116	249	260	85	87	314	876	312	109	563
Turn Type	pm+pt	pm+pt	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free	pm+pt	NA
Protected Phases	7	7	4		3	8		5	2		1	6
Permitted Phases	4	4		Free	8		Free	2		Free	6	
Detector Phase	7	7	4		3	8		5	2		1	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0
Minimum Split (s)	10.0	10.0	20.0		10.0	20.0		10.0	20.0		10.0	20.0
Total Split (s)	13.0	13.0	25.0		16.0	28.0		15.0	47.0		12.0	44.0
Total Split (%)	13.0%	13.0%	25.0%		16.0%	28.0%		15.0%	47.0%		12.0%	44.0%
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)		5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0
Lead/Lag	Lead	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes
Recall Mode	None	None	None		None	None		None	Max		None	Max
Act Effct Green (s)		16.2	8.5	88.6	23.0	14.2	88.6	52.2	42.2	88.6	45.8	39.0
Actuated g/C Ratio		0.18	0.10	1.00	0.26	0.16	1.00	0.59	0.48	1.00	0.52	0.44
v/c Ratio		0.36	0.37	0.17	0.81	0.16	0.06	0.68	0.55	0.21	0.36	0.39
Control Delay		28.8	40.6	0.2	48.6	34.6	0.1	17.2	18.3	0.3	11.3	17.9
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		28.8	40.6	0.2	48.6	34.6	0.1	17.2	18.3	0.3	11.3	17.9
LOS		C	D	A	D	C	A	B	B	A	B	B
Approach Delay			16.2			36.0			14.3			16.4
Approach LOS			B			D			B			B

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 88.6
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.81
 Intersection Signal Delay: 18.1
 Intersection LOS: B
 Intersection Capacity Utilization 66.5%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 1: Meridian Rd & Stapleton Dr



Timings
 1: Meridian Rd & Stapleton Dr

Short-Term Total Traffic
 PM Peak Hour

Lane Group	SBR
Lane Configurations	↑
Traffic Volume (vph)	17
Future Volume (vph)	17
Turn Type	Perm
Protected Phases	
Permitted Phases	6
Detector Phase	6
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	20.0
Total Split (s)	44.0
Total Split (%)	44.0%
Yellow Time (s)	3.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	0.0
Total Lost Time (s)	5.0
Lead/Lag	Lag
Lead-Lag Optimize?	Yes
Recall Mode	Max
Act Effct Green (s)	39.0
Actuated g/C Ratio	0.44
v/c Ratio	0.02
Control Delay	0.1
Queue Delay	0.0
Total Delay	0.1
LOS	A
Approach Delay	
Approach LOS	
Intersection Summary	

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗	↘	↕	↕	↗
Traffic Vol, veh/h	0	167	231	1502	985	87
Future Vol, veh/h	0	167	231	1502	985	87
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	None
Storage Length	-	0	255	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	94	94	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	192	246	1598	1071	95

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	-	-	1166	0	0
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	-	4.14	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	-	2.22	-	-
Pot Cap-1 Maneuver	0	0	595	-	-
Stage 1	0	0	-	-	-
Stage 2	0	0	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	-	-	595	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	595	-	-	-	-
HCM Lane V/C Ratio	0.413	-	-	-	-
HCM Control Delay (s)	15.2	-	0	-	-
HCM Lane LOS	C	-	A	-	-
HCM 95th %tile Q(veh)	2	-	-	-	-

HCM 6th TWSC
 3: Meridian Rd & South Three-Quarter Access

Short-Term Total Traffic
 PM Peak Hour

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗	↘	↕	↕	↗
Traffic Vol, veh/h	0	80	131	1733	1148	4
Future Vol, veh/h	0	80	131	1733	1148	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	None
Storage Length	-	-	250	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	94	94	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	103	139	1844	1248	4

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	-	-	1252	0	0
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	-	4.14	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	-	2.22	-	-
Pot Cap-1 Maneuver	0	0	552	-	-
Stage 1	0	0	-	-	-
Stage 2	0	0	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	-	-	552	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	552	-	-	-	-
HCM Lane V/C Ratio	0.252	-	-	-	-
HCM Control Delay (s)	13.7	-	0	-	-
HCM Lane LOS	B	-	A	-	-
HCM 95th %tile Q(veh)	1	-	-	-	-

Intersection						
Intersection Delay, s/veh	4.2					
Intersection LOS	A					
Approach	EB		WB		NB	SB
Entry Lanes	2		2		1	1
Conflicting Circle Lanes	2		2		2	2
Adj Approach Flow, veh/h	286		451		111	28
Demand Flow Rate, veh/h	291		460		114	29
Vehicles Circulating, veh/h	165		38		338	435
Vehicles Exiting, veh/h	299		414		118	63
Ped Vol Crossing Leg, #/h	0		0		0	0
Ped Cap Adj	1.000		1.000		1.000	1.000
Approach Delay, s/veh	4.1		4.2		4.4	4.1
Approach LOS	A		A		A	A
Lane	Left	Right	Left	Right	Left	Left
Designated Moves	LT	TR	LT	TR	LTR	LTR
Assumed Moves	LT	TR	LT	TR	LTR	LTR
RT Channelized						
Lane Util	0.471	0.529	0.470	0.530	1.000	1.000
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.535	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.328	4.328
Entry Flow, veh/h	137	154	216	244	114	29
Cap Entry Lane, veh/h	1160	1234	1303	1375	1065	981
Entry HV Adj Factor	0.980	0.983	0.982	0.980	0.973	0.966
Flow Entry, veh/h	134	151	212	239	111	28
Cap Entry, veh/h	1136	1213	1280	1347	1036	947
V/C Ratio	0.118	0.125	0.166	0.177	0.107	0.030
Control Delay, s/veh	4.2	4.0	4.2	4.1	4.4	4.1
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	1	1	0	0

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑		↑
Traffic Vol, veh/h	285	53	0	424	0	173
Future Vol, veh/h	285	53	0	424	0	173
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	200	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	94	94	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	343	64	0	451	0	199

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3	Minor4
Conflicting Flow All	0	0	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-
Pot Cap-1 Maneuver	-	-	0	-	0	0
Stage 1	-	-	0	-	0	0
Stage 2	-	-	0	-	0	0
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	0	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	-	-	-	-

Timings
1: Meridian Rd & Stapleton Dr

2042 Background Traffic
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	195	473	300	307	210	181	620	170	186	649	449
Future Volume (vph)	72	195	473	300	307	210	181	620	170	186	649	449
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			Free
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Total Split (s)	12.0	30.0		15.0	33.0		12.0	63.0		12.0	63.0	
Total Split (%)	10.0%	25.0%		12.5%	27.5%		10.0%	52.5%		10.0%	52.5%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)	6.6	9.3	65.4	10.1	15.2	65.4	7.1	18.8	65.4	7.1	18.8	65.4
Actuated g/C Ratio	0.10	0.14	1.00	0.15	0.23	1.00	0.11	0.29	1.00	0.11	0.29	1.00
v/c Ratio	0.22	0.41	0.31	0.60	0.39	0.14	0.52	0.64	0.11	0.53	0.67	0.30
Control Delay	30.5	29.0	0.5	32.6	25.2	0.2	34.5	23.5	0.1	34.9	24.1	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.5	29.0	0.5	32.6	25.2	0.2	34.5	23.5	0.1	34.9	24.1	0.5
LOS	C	C	A	C	C	A	C	C	A	C	C	A
Approach Delay		10.9			21.5			21.5			17.4	
Approach LOS		B			C			C			B	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 65.4
 Natural Cycle: 55
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.67
 Intersection Signal Delay: 18.0
 Intersection LOS: B
 Intersection Capacity Utilization 53.7%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 1: Meridian Rd & Stapleton Dr



Intersection					
Intersection Delay, s/veh	6.0				
Intersection LOS	A				
Approach	EB		WB		SB
Entry Lanes	2		2		1
Conflicting Circle Lanes	2		2		2
Adj Approach Flow, veh/h	728		986		140
Demand Flow Rate, veh/h	742		1006		142
Vehicles Circulating, veh/h	73		21		977
Vehicles Exiting, veh/h	1046		794		50
Ped Vol Crossing Leg, #/h	0		0		0
Ped Cap Adj	1.000		1.000		1.000
Approach Delay, s/veh	5.4		6.1		8.8
Approach LOS	A		A		A
Lane	Left	Right	Left	Right	Left
Designated Moves	LT	TR	LT	TR	LR
Assumed Moves	LT	TR	LT	TR	LR
RT Channelized					
Lane Util	0.470	0.530	0.470	0.530	1.000
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.328
Entry Flow, veh/h	349	393	473	533	142
Cap Entry Lane, veh/h	1262	1335	1324	1395	619
Entry HV Adj Factor	0.980	0.982	0.980	0.980	0.986
Flow Entry, veh/h	342	386	463	522	140
Cap Entry, veh/h	1237	1310	1297	1368	610
V/C Ratio	0.277	0.294	0.357	0.382	0.229
Control Delay, s/veh	5.4	5.4	6.1	6.2	8.8
LOS	A	A	A	A	A
95th %tile Queue, veh	1	1	2	2	1

Timings
1: Meridian Rd & Stapleton Dr

2042 Background Traffic
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	233	578	165	176	120	229	1095	355	161	381	201
Future Volume (vph)	56	233	578	165	176	120	229	1095	355	161	381	201
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			Free
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Total Split (s)	12.0	30.0		12.0	30.0		15.0	66.0		12.0	63.0	
Total Split (%)	10.0%	25.0%		10.0%	25.0%		12.5%	55.0%		10.0%	52.5%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)	6.6	11.2	78.7	7.1	14.2	78.7	9.9	33.0	78.7	7.1	30.3	78.7
Actuated g/C Ratio	0.08	0.14	1.00	0.09	0.18	1.00	0.13	0.42	1.00	0.09	0.39	1.00
v/c Ratio	0.21	0.49	0.38	0.56	0.29	0.08	0.56	0.78	0.24	0.55	0.29	0.13
Control Delay	38.7	35.9	0.7	44.8	32.5	0.1	40.0	23.7	0.4	44.2	17.3	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.7	35.9	0.7	44.8	32.5	0.1	40.0	23.7	0.4	44.2	17.3	0.2
LOS	D	D	A	D	C	A	D	C	A	D	B	A
Approach Delay		12.6			28.5			21.0			18.5	
Approach LOS		B			C			C			B	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 78.7
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.78
 Intersection Signal Delay: 19.5
 Intersection LOS: B
 Intersection Capacity Utilization 62.7%
 ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 1: Meridian Rd & Stapleton Dr



Intersection					
Intersection Delay, s/veh	5.6				
Intersection LOS	A				
Approach	EB		WB		SB
Entry Lanes	2		2		1
Conflicting Circle Lanes	2		2		2
Adj Approach Flow, veh/h	925		638		76
Demand Flow Rate, veh/h	943		651		78
Vehicles Circulating, veh/h	49		62		547
Vehicles Exiting, veh/h	576		930		166
Ped Vol Crossing Leg, #/h	0		0		0
Ped Cap Adj	1.000		1.000		1.000
Approach Delay, s/veh	6.1		5.0		5.0
Approach LOS	A		A		A
Lane	Left	Right	Left	Right	Left
Designated Moves	LT	TR	LT	TR	LR
Assumed Moves	LT	TR	LT	TR	LR
RT Channelized					
Lane Util	0.470	0.530	0.470	0.530	1.000
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.328
Entry Flow, veh/h	443	500	306	345	78
Cap Entry Lane, veh/h	1290	1362	1275	1347	892
Entry HV Adj Factor	0.981	0.980	0.980	0.981	0.974
Flow Entry, veh/h	435	490	300	338	76
Cap Entry, veh/h	1266	1335	1250	1321	869
V/C Ratio	0.343	0.367	0.240	0.256	0.087
Control Delay, s/veh	6.0	6.1	5.0	4.9	5.0
LOS	A	A	A	A	A
95th %tile Queue, veh	2	2	1	1	0

Timings
1: Meridian Rd & Stapleton Dr

2042 Total Traffic
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	242	530	319	327	210	197	606	164	186	665	447
Future Volume (vph)	101	242	530	319	327	210	197	606	164	186	665	447
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			Free
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Total Split (s)	12.0	30.0		15.0	33.0		12.0	63.0		12.0	63.0	
Total Split (%)	10.0%	25.0%		12.5%	27.5%		10.0%	52.5%		10.0%	52.5%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)	6.8	10.3	67.1	10.1	16.1	67.1	7.1	19.5	67.1	7.1	19.5	67.1
Actuated g/C Ratio	0.10	0.15	1.00	0.15	0.24	1.00	0.11	0.29	1.00	0.11	0.29	1.00
v/c Ratio	0.32	0.47	0.35	0.65	0.41	0.14	0.57	0.62	0.11	0.54	0.68	0.30
Control Delay	32.6	29.7	0.6	35.5	25.3	0.2	37.5	23.5	0.1	36.4	24.8	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.6	29.7	0.6	35.5	25.3	0.2	37.5	23.5	0.1	36.4	24.8	0.5
LOS	C	C	A	D	C	A	D	C	A	D	C	A
Approach Delay		12.5			23.0			22.4			18.1	
Approach LOS		B			C			C			B	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 67.1
 Natural Cycle: 55
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.68
 Intersection Signal Delay: 18.9
 Intersection LOS: B
 Intersection Capacity Utilization 56.5%
 ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 1: Meridian Rd & Stapleton Dr



Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗	↘	↑↑	↑↑	↗
Traffic Vol, veh/h	0	109	88	967	1438	75
Future Vol, veh/h	0	109	88	967	1438	75
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	None
Storage Length	-	0	255	-	-	-
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	115	93	1018	1514	79

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	-	-	1593	0	0
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	-	4.14	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	-	2.22	-	-
Pot Cap-1 Maneuver	0	0	408	-	-
Stage 1	0	0	-	-	-
Stage 2	0	0	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	-	-	408	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	1.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	408	-	-	-	-
HCM Lane V/C Ratio	0.227	-	-	-	-
HCM Control Delay (s)	16.4	-	0	-	-
HCM Lane LOS	C	-	A	-	-
HCM 95th %tile Q(veh)	0.9	-	-	-	-

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗	↘	↕	↕	↗
Traffic Vol, veh/h	0	87	32	1055	1546	1
Future Vol, veh/h	0	87	32	1055	1546	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	None
Storage Length	-	-	250	-	-	-
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	92	34	1111	1627	1

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	-	-	1628	0	0
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	-	4.14	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	-	2.22	-	-
Pot Cap-1 Maneuver	0	0	395	-	-
Stage 1	0	0	-	-	-
Stage 2	0	0	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	-	-	395	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	395	-	-	-	-
HCM Lane V/C Ratio	0.085	-	-	-	-
HCM Control Delay (s)	15	-	0	-	-
HCM Lane LOS	B	-	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	-	-

Intersection							
Intersection Delay, s/veh	7.4						
Intersection LOS	A						
Approach	EB		WB		NB		SB
Entry Lanes	2		2		1		1
Conflicting Circle Lanes	2		2		2		2
Adj Approach Flow, veh/h	795		1028		207		142
Demand Flow Rate, veh/h	810		1049		211		144
Vehicles Circulating, veh/h	138		157		904		1154
Vehicles Exiting, veh/h	1160		958		44		52
Ped Vol Crossing Leg, #/h	0		0		0		0
Ped Cap Adj	1.000		1.000		1.000		1.000
Approach Delay, s/veh	6.1		7.5		9.8		10.7
Approach LOS	A		A		A		B
Lane	Left	Right	Left	Right	Left	Left	
Designated Moves	LT	TR	LT	TR	LTR	LTR	
Assumed Moves	LT	TR	LT	TR	LTR	LTR	
RT Channelized							
Lane Util	0.470	0.530	0.470	0.530	1.000	1.000	
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.535	2.535	
Critical Headway, s	4.645	4.328	4.645	4.328	4.328	4.328	
Entry Flow, veh/h	381	429	493	556	211	144	
Cap Entry Lane, veh/h	1189	1263	1168	1243	659	532	
Entry HV Adj Factor	0.981	0.982	0.980	0.980	0.981	0.986	
Flow Entry, veh/h	374	421	483	545	207	142	
Cap Entry, veh/h	1166	1240	1145	1218	646	525	
V/C Ratio	0.320	0.340	0.422	0.447	0.320	0.270	
Control Delay, s/veh	6.1	6.1	7.5	7.6	9.8	10.7	
LOS	A	A	A	A	A	B	
95th %tile Queue, veh	1	2	2	2	1	1	

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑↑		↑
Traffic Vol, veh/h	786	105	0	978	0	94
Future Vol, veh/h	786	105	0	978	0	94
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	200	-	-	-	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	827	111	0	1029	0	99

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3	Minor4
Conflicting Flow All	0	0	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-
Pot Cap-1 Maneuver	-	-	0	-	0	0
Stage 1	-	-	0	-	0	0
Stage 2	-	-	0	-	0	0
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	0	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	-	-	-	-

Timings
1: Meridian Rd & Stapleton Dr

2042 Total Traffic
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	108	304	626	192	212	120	277	1066	342	161	404	202
Future Volume (vph)	108	304	626	192	212	120	277	1066	342	161	404	202
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			Free
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Total Split (s)	12.0	30.0		12.0	30.0		15.0	66.0		12.0	63.0	
Total Split (%)	10.0%	25.0%		10.0%	25.0%		12.5%	55.0%		10.0%	52.5%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)	7.0	12.9	80.6	7.1	13.0	80.6	10.2	33.1	80.6	7.1	30.0	80.6
Actuated g/C Ratio	0.09	0.16	1.00	0.09	0.16	1.00	0.13	0.41	1.00	0.09	0.37	1.00
v/c Ratio	0.43	0.56	0.42	0.67	0.39	0.08	0.68	0.77	0.23	0.56	0.32	0.13
Control Delay	42.8	36.4	0.8	50.3	33.6	0.1	45.0	24.6	0.3	45.9	18.5	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.8	36.4	0.8	50.3	33.6	0.1	45.0	24.6	0.3	45.9	18.5	0.2
LOS	D	D	A	D	C	A	D	C	A	D	B	A
Approach Delay		16.0			32.1			23.0			19.4	
Approach LOS		B			C			C			B	

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 80.6	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 21.7	Intersection LOS: C
Intersection Capacity Utilization 64.6%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Meridian Rd & Stapleton Dr



Intersection						
Int Delay, s/veh	0.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗	↘	↑↑	↑↑	↗
Traffic Vol, veh/h	0	113	154	1685	1145	78
Future Vol, veh/h	0	113	154	1685	1145	78
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	None
Storage Length	-	0	255	-	-	-
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	119	162	1774	1205	82

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	-	-	1287
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.22
Pot Cap-1 Maneuver	0	0	535
Stage 1	0	0	-
Stage 2	0	0	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	535
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	1.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	535	-	-	-	-
HCM Lane V/C Ratio	0.303	-	-	-	-
HCM Control Delay (s)	14.6	-	0	-	-
HCM Lane LOS	B	-	A	-	-
HCM 95th %tile Q(veh)	1.3	-	-	-	-

HCM 6th TWSC
 3: Meridian Rd & South Three-Quarter Access

2042 Total Traffic
 PM Peak Hour

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗	↘	↕↕	↕↕	↗
Traffic Vol, veh/h	0	59	97	1840	1255	2
Future Vol, veh/h	0	59	97	1840	1255	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	None
Storage Length	-	-	250	-	-	-
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	62	102	1937	1321	2

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	-	-	1323	0	0
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	-	4.14	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	-	2.22	-	-
Pot Cap-1 Maneuver	0	0	518	-	-
Stage 1	0	0	-	-	-
Stage 2	0	0	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	-	-	518	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0.7	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	518	-	-	-	-
HCM Lane V/C Ratio	0.197	-	-	-	-
HCM Control Delay (s)	13.6	-	0	-	-
HCM Lane LOS	B	-	A	-	-
HCM 95th %tile Q(veh)	0.7	-	-	-	-

Intersection							
Intersection Delay, s/veh	7.6						
Intersection LOS	A						
Approach	EB		WB		NB		SB
Entry Lanes	2		2		1		1
Conflicting Circle Lanes	2		2		2		2
Adj Approach Flow, veh/h	1064		743		179		81
Demand Flow Rate, veh/h	1085		758		183		83
Vehicles Circulating, veh/h	181		195		1117		783
Vehicles Exiting, veh/h	685		1105		149		170
Ped Vol Crossing Leg, #/h	0		0		0		0
Ped Cap Adj	1.000		1.000		1.000		1.000
Approach Delay, s/veh	8.0		6.3		11.7		6.3
Approach LOS	A		A		B		A
Lane	Left	Right	Left	Right	Left	Left	
Designated Moves	LT	TR	LT	TR	LTR	LTR	
Assumed Moves	LT	TR	LT	TR	LTR	LTR	
RT Channelized							
Lane Util	0.470	0.530	0.470	0.530	1.000	1.000	
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.535	2.535	
Critical Headway, s	4.645	4.328	4.645	4.328	4.328	4.328	
Entry Flow, veh/h	510	575	356	402	183	83	
Cap Entry Lane, veh/h	1143	1218	1128	1203	549	730	
Entry HV Adj Factor	0.981	0.981	0.981	0.979	0.978	0.976	
Flow Entry, veh/h	500	564	349	394	179	81	
Cap Entry, veh/h	1121	1194	1106	1178	537	712	
V/C Ratio	0.446	0.472	0.316	0.334	0.333	0.114	
Control Delay, s/veh	8.0	8.0	6.3	6.3	11.7	6.3	
LOS	A	A	A	A	B	A	
95th %tile Queue, veh	2	3	1	1	1	0	

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑↑		↑
Traffic Vol, veh/h	885	144	0	706	0	168
Future Vol, veh/h	885	144	0	706	0	168
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	200	-	-	-	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	932	152	0	743	0	177

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3	Minor4
Conflicting Flow All	0	0	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-
Pot Cap-1 Maneuver	-	-	0	-	0	0
Stage 1	-	-	0	-	0	0
Stage 2	-	-	0	-	0	0
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	0	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	-	-	-	-

Crash History



AccidentDate	ReferencePointName	ReferencePointAtName	AccidentNarrative
1/4/2019	MERIDIAN RD	N STAPLETON DR	Vehicle #1 was southbound on Meridian Rd, in the left lane. Vehicle #2 was in the left lane of southbound Meridian Rd, stopped for the light at Stapleton Dr. Vehicle #1 did not stop and collided its front with the rear of vehicle #2. Both vehicles moved to private lot prior to officer arrival.
2/8/2019	MERIDIAN RD	STAPLETON DR	Vehicle #1 was northbound on Meridian Rd, in the left turn lane for Stapleton Dr. Vehicle #2 was southbound on Meridian road in the left lane. Vehicle #1 started a left turn in front of vehicle #2's path. Driver #2 steered right in an attempt to avoid a collision. Vehicle #2's front collided with the passenger side of vehicle #1. Both vehicles moved prior to arrival.
2/11/2019	N MERIDIAN RD	STAPLETON DR	Vehicle 1 was northbound on North Meridian Road in the right traffic lane. Vehicle 2 was northbound on North Meridian Road, in the right traffic lane, ahead of Vehicle 1. Vehicle 2 stopped for a red traffic light. Vehicle 1 slowed and struck Vehicle 2, on its rear, with its front. Both vehicles were moved from the scene prior to officer arrival..
7/12/2019	MERIDIAN ROAD	STAPLETON DRIVE	Vehicle #2 was stopped at the stoplight for Stapleton Drive on North Meridian Road southbound in the left lane. Vehicle #1 was traveling southbound on N. Meridian Road. Vehicle #1 collided with the rear of Vehicle #2 with its front. After impact, both vehicles remained blocking the #1 southbound lane of North Meridian Road.
11/5/2019	MERIDIAN RD	STAPLETON DR	Vehicle #1 was southbound on Meridian Road turning left onto Stapleton Drive. Vehicle #2 was traveling north on Meridian Road approaching Stapleton Drive. Vehicle #1 turned left in front of vehicle #2 and the front of vehicle #1 impacted the front of vehicle #2. Vehicle #1 came to rest in the intersection. Vehicle #2 ran off the right side of the roadway and impacted a traffic light pole on its right side, coming to final rest against the pole.
12/9/2019	N MERIDIAN RD	STAPLETON DR	Vehicle 1 was southbound on North Meridian Road in Traffic Lane # 1. Vehicle 2 was eastbound on Stapleton Drive in Traffic Lane #2 and stopped for a red traffic signal. After the signal turned green, Vehicle 2 traveled eastbound into the intersection. Vehicle 1 continued southbound, disregarded a red traffic signal, and struck Vehicle 2, on its left side, with its front. Vehicle 1 rotated counterclockwise (Vehicle 1 struck Vehicle 2, on its left side, with its right side) and traveled 58.5' southeast and came to rest, on its wheels, facing northwest. Vehicle 2 rotated clockwise and traveled southeast/south for 46.6' and came to rest, on its wheels, facing west.
3/11/2020	MERIDIAN RD	STAPLETON DR	Vehicles 1 and 2 were southbound on Meridian Rd approaching Stapleton Dr in the right lane. Vehicle 2 was stopped for traffic ahead. Vehicle 1 failed to stop and collided its front with the rear of vehicle 2. Vehicle 2 was pushed forward and began to rotate clockwise. While rotating, vehicle 2 went off the right side of the roadway then rolled 1/2 times. Vehicle 2 came to a rest facing southeast on its roof off the right side of the roadway. Vehicle 1 was moved prior to investigation.
8/6/2020	MERIDIAN RD	STAPLETON DR	Vehicle #1 was traveling southbound on Meridian Road in the left turn lane for eastbound Stapleton Drive. Vehicle #2 was traveling northbound on Meridian Road in the left lane approaching the intersection at Stapleton Drive. Vehicle #1 proceeded to turn left and its front left struck Vehicle #2's left side. Vehicle #1 spun 1/4 turn counterclockwise. Vehicle #2 ran off the northeast corner of the intersection over a curb and its front struck two boulders as it came to final rest on its wheels facing northeast. Vehicle #1 was driven from final rest to the right curb edge north of the intersection.
11/25/2020	MERIDIAN RD	STAPLETON DR	Vehicle 1 was south bound on Meridian Road attempting to turn left onto Stapleton Drive and head east in El Paso County, Colorado. Vehicle 2 was north bound on Meridian Road in the number two lane at the same intersection. Vehicle 1 turned left in front of Vehicle 2 and Vehicle 1 hit Vehicle 2 in the intersection. Vehicle 1 rotated counter clock wise from point of impact in the intersection and came to final rest in the intersection facing west. Vehicle 2 rotated counter clock wise from point of impact and came to final rest along the curb on Stapleton Road, facing west.
4/10/2021	MERIDIAN RD	STAPLETON DR	Vehicle #1 was southbound on Meridian turning left onto Stapleton. Vehicle #2 was northbound on Meridian. The front of vehicle #2 collided with the right rear side of vehicle #1. Vehicles were moved prior to investigation.
4/22/2021	MERIDIAN RD	STAPLETON DR	Vehicle #1 was north on Meridian Road turning left to go west on Stapleton Drive. Vehicle #2 was south on Meridian Road going through the intersection of Meridian Road/Stapleton Drive, and Vehicle #3 was east on Stapleton Drive, turning right to go south on Meridian Drive. Vehicle #1 crossed into the intersection on a solid green light, but failed to yield to oncoming traffic, and collided its front into the front driver side of Vehicle #2. After impact, Vehicle #1 continued westbound and collided its passenger side into the front driver side of Vehicle #3, which was waiting at a red light waiting to turn right onto Meridian Road. All 3 vehicles came to final rest on their wheels, and were moved prior to investigation.
9/1/2021	MERIDIAN RD	STAPLETON DR	Vehicle#1 was stopped behind Vehicle#2 on Meridian Road in northbound lane#1 at the red traffic signal with Stapleton Drive. Vehicle#1 moved forward and its front with the rear of Vehicle#2 approximately 24 feet south of the intersection within lane #1. Both vehicles were driven to a safe location prior to investigation.
10/5/2021	MERIDIAN RD	STAPLETON DR	Vehicle 1 was southbound on North Meridian Road, and stopped for traffic, in the left turn lane. Vehicle 2 was northbound on North Meridian Road, in the left lane. Vehicle 2 continued northbound. Vehicle 1 turned left. Vehicle 2 swerved to avoid impact. Vehicle 1 swerved to avoid impact and struck Vehicle 2, on its left side, with its front. Vehicle 2 traveled northeast off of the right side of the roadway, and struck a wall with its right side. Vehicle 1 came to rest, on its wheels, facing northeast. Vehicle 2 came to rest, on its wheels, facing northwest.
12/14/2021	MERIDIAN RD	STAPLETON DR	Vehicle #1 was east bound on Stapleton Road, in lane 03, a right hand turn lane, for south bound Meridian Road. Vehicle #2 was in front of vehicle #1, and had stopped for a red light. Vehicle #1 crashed front-to-back into vehicle #2 which was stationary. Both vehicles were left in the turn lane, and blocking. Vehicles moved out of the travel lane once I arrived. Both vehicles driven to a nearby parking lot to complete necessary documentation.